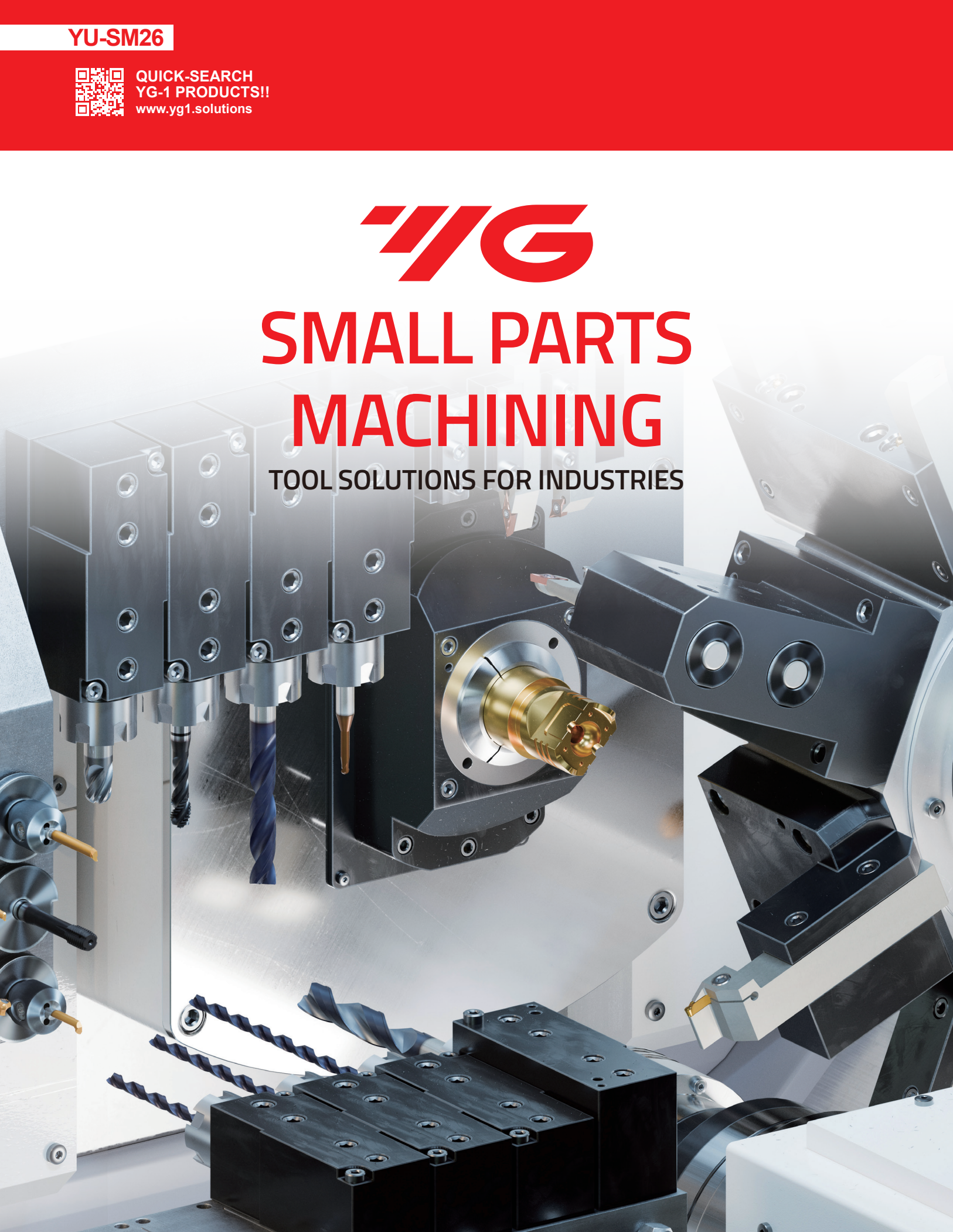
YU-SM26

QUICK-SEARCH
YG-1 PRODUCTS!!
www.yg1.solutions

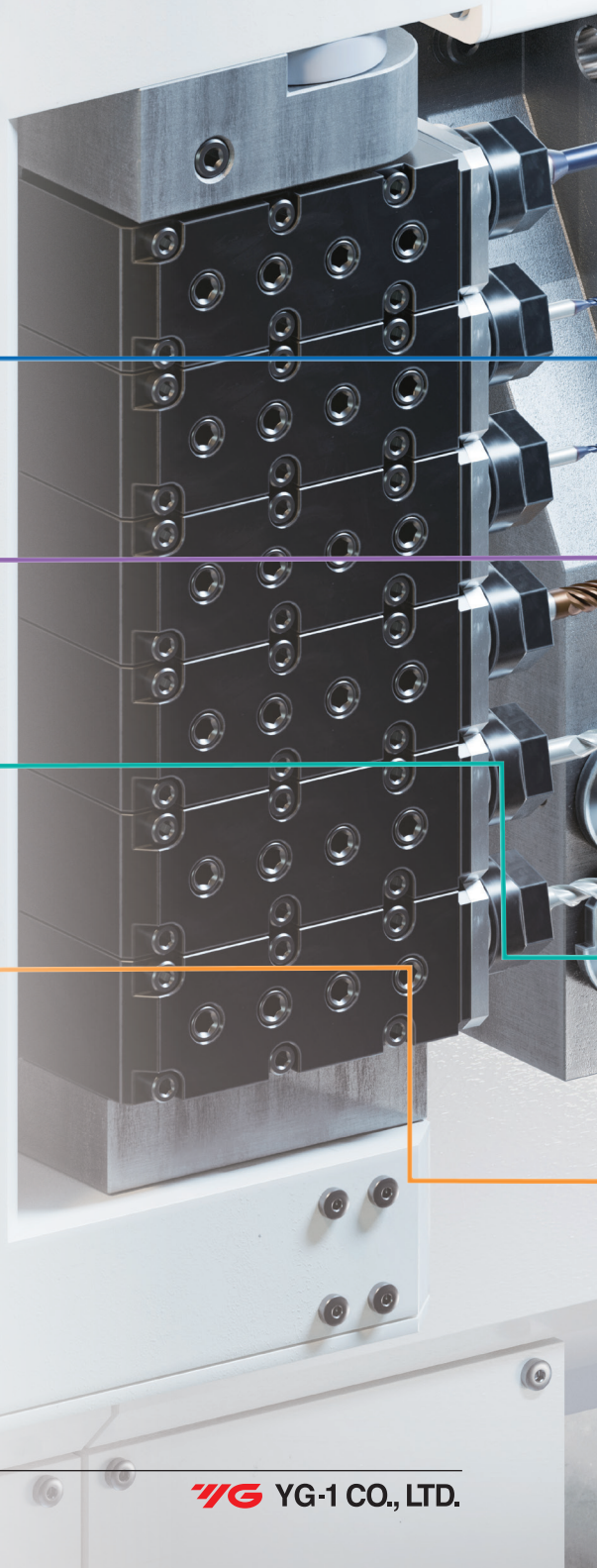
SMALL PARTS MACHINING

TOOL SOLUTIONS FOR INDUSTRIES



SMALL PARTS MACHINING

YG-1's Small Parts Machining program delivers complete precision tooling solutions engineered specifically for today's swiss-type, sliding-head, and conventional mill/turn multi-axis lathes.
Designed for superior stability, repeatability, and surface finish, our comprehensive product lines offer sizes optimized for Small Parts Machining in steels, stainless steels, titanium, and other non-ferrous materials.
Leveraging YG-1's global manufacturing expertise, premium carbide substrates, and state-of-the-art coatings, this portfolio ensures extended tool life, consistent performance, and reliable process control in the most demanding small-part applications.
From medical and aerospace components to electronics, automotive, and precision engineering industries, YG-1 provides complete, high-performance tooling solutions that maximize productivity and precision in every cut.



Page A

A MILLING

Solid Carbide End Mill

Page B

B HOLEMAKING

Solid Carbide Drill

Page C

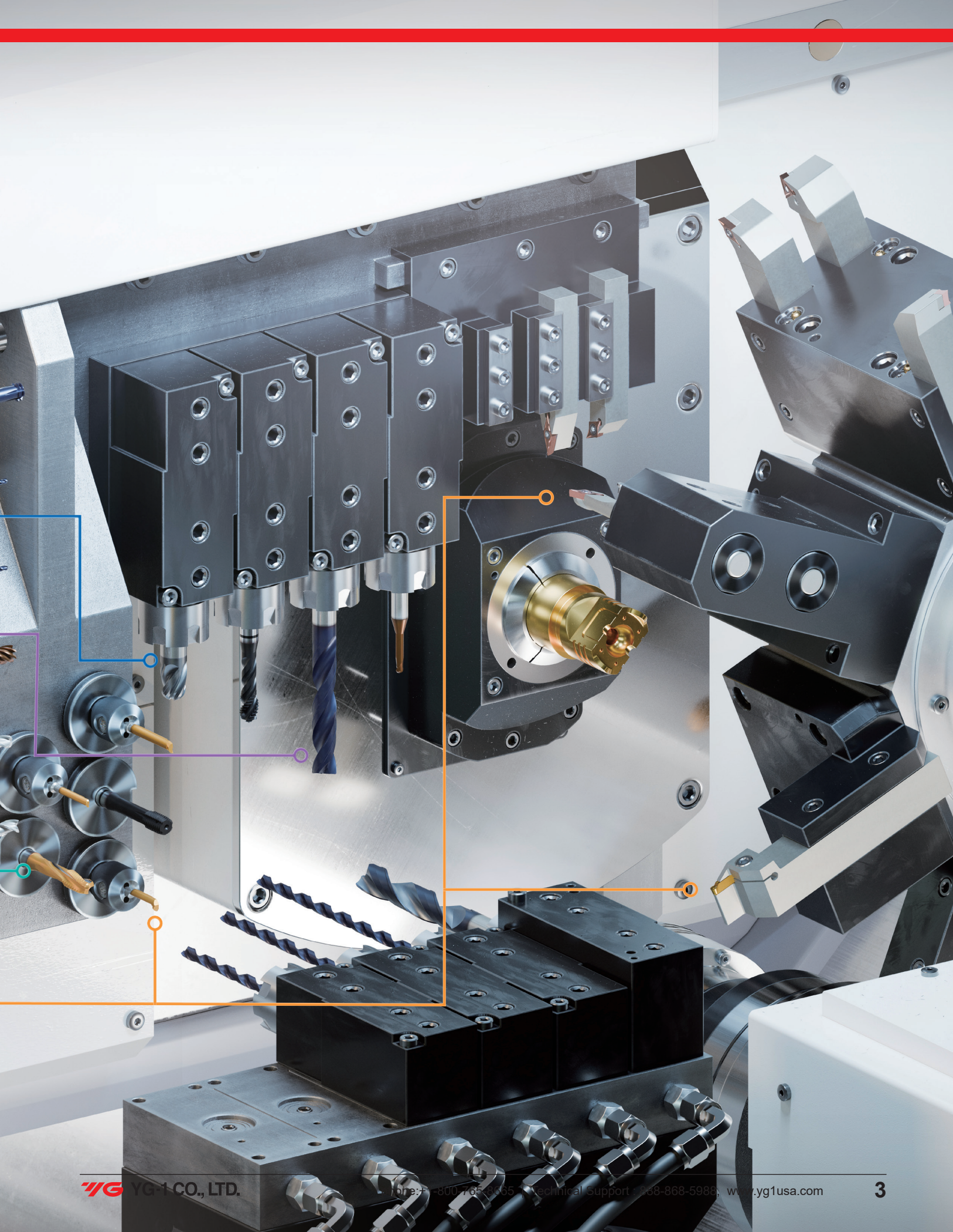
C THREADING

HSS-PM Tap / HSS-E Tap / Solid Carbide Thread Mill

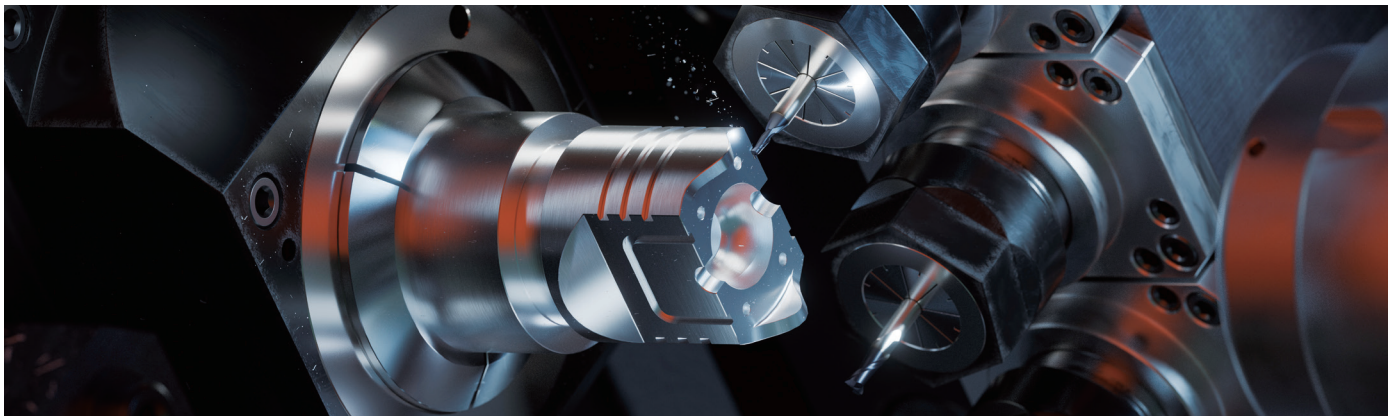
Page D

D INDEXABLE INSERT

Turning / Parting & Grooving



INDUSTRIES & APPLICATIONS

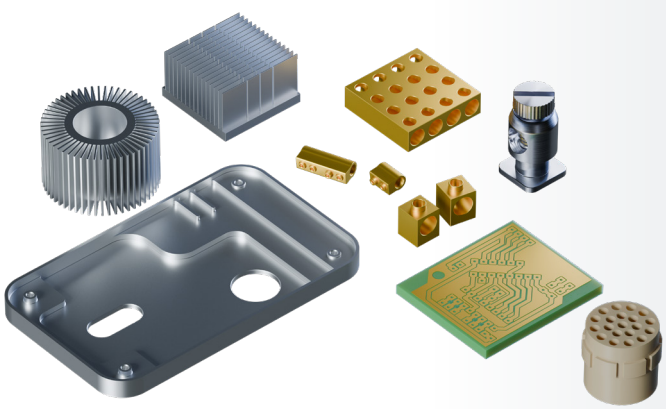




Medical Devices

Small implants, precision components and surgical tooling

The medical manufacturing sector demands absolute precision, superior surface finishes, and strict material control across a wide range of biocompatible alloys. From small orthopedic implants to surgical instruments and minimally invasive device components, manufacturers rely on high-performance tooling to achieve tight tolerances, repeatability, and exceptional surface integrity in complex, small-diameter parts.



Electronics

Micro-features for electronic devices and telecom systems

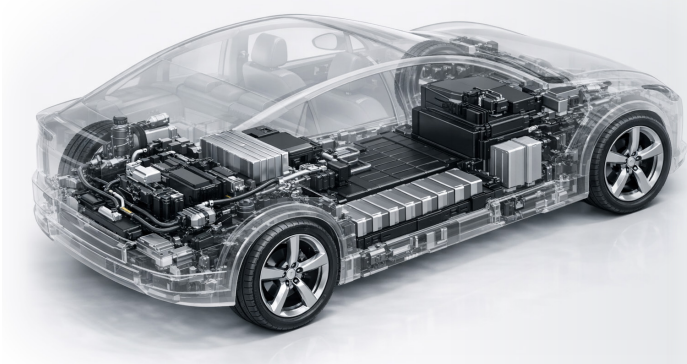
Miniaturization and rapid innovation continue to drive the electronics market, requiring advanced machining solutions for intricate features and delicate materials. Precision tooling supports the production of connectors, housings, heat sinks, and micro-components used across consumer electronics, semiconductor equipment, and advanced communication technologies where accuracy and consistency are critical.



Watchmaking and Jewelry

Intricate features and fine detail in timepieces and precious metals

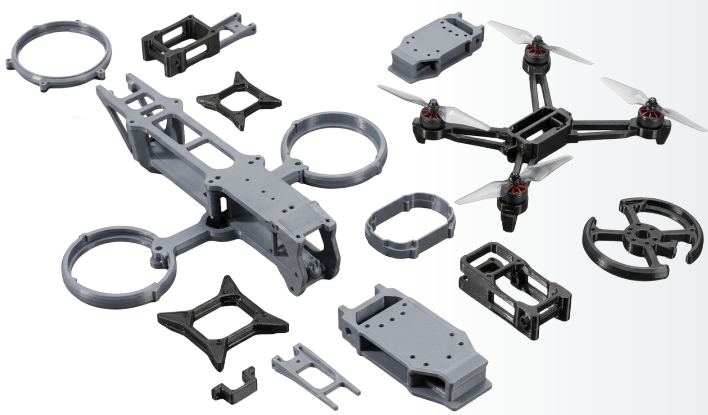
Watchmaking and fine jewelry production require exceptional detail, superior surface finishes, and the ability to machine intricate geometries in precious and specialty materials. High-precision cutting tools enable manufacturers to produce complex micro-features, decorative elements, and tight-tolerance components with consistency and refined surface quality.



Automotive and General Machining

Automotive components, hydraulic valves and pistons, precision-machined parts

Automotive and general engineering manufacturers demand reliable, high-efficiency machining for a wide range of precision parts produced in high volumes. From fuel and hydraulic systems to small structural and functional components, optimized tooling solutions support consistent performance, extended tool life, and cost-effective production across diverse materials and applications.



Space and Flight Systems

Aircraft and drone parts, spacecraft components, communication systems

Manufacturers serving flight, space, and advanced communication platforms require uncompromising precision and process reliability. From aircraft and unmanned flight hardware to spacecraft and communication system components, high-performance tooling enables the machining of complex small parts in demanding materials while maintaining tight tolerances and consistent quality for mission-critical applications.

SMALL PARTS MACHINING
TOOL SELECTION

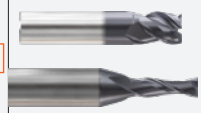
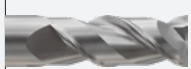


MILLING

for Small Parts Machining

SOLID CARBIDE END MILLS

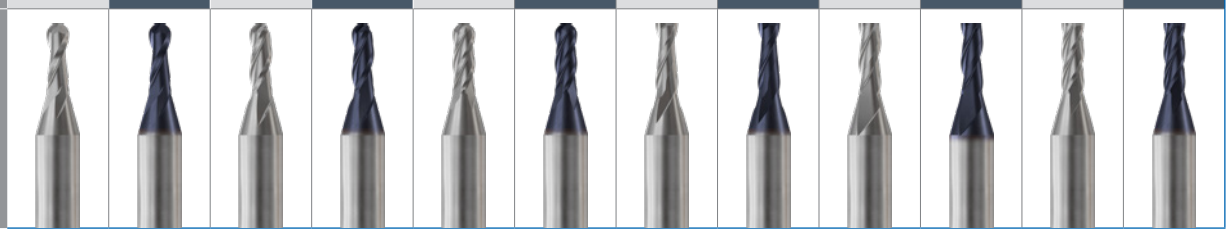
P M K N S H : Excellent
P M K N S H : Good

Work Material	Item	Feature/Application	Shape	Surface Treatment / Coating	Flute	Size Range Min	Size Range Max	Page
P M N	 YG Miniature End Mill	Precise Detail Machining / Offering Complete Portfolio	Square Ball Nose	Non-Coating AlTiN	2, 3, 4	0.5mm 1/32”	3mm 1/8”	A6
P M K S	 EV Mills	Economical High-Performance Solid Carbide End Mills / Chatter-Free design for High-Speed Milling	Square Corner Radius Ball Nose	Y-Coating	2, 3, 4	1.0mm 1/16"	16mm 5/8”	A30
P M K	 YGBasiX	For General-Purpose Machining End Mill / Competitive Price	Square Corner Radius Ball Nose	X-Coating	4, 5	1/8”	5/8”	A59
P M K S	 V7 Plus A	High-Performance and Heavy Cutting for Steel, Stainless Steel and Cast Iron Applications	Square Corner Radius Ball Nose	Y-Coating	4, 6	3mm 1/8”	16mm 5/8”	A74
P M K S	 TitaNox-Power HPC	High-Performance and Heavy Cutting for Titanium, Nickel Based Alloys and Stainless Steel	Square Corner Radius	AlTiN C-Coating	5, 7	1/8"	5/8"	A90
N	 Alu-Power	For Aluminum Alloys and Other Non-Ferrous Materials	Square Corner Radius Ball Nose	Non-Coating TiCN	2, 3	2mm 1/16”	16mm 5/8”	A100
N	 Alu-Power HPC	High-Performance Aluminum and Non-Ferrous Materials	Square Corner Radius Ball Nose	Non-Coating DLC	3	1/8"	5/8"	A118
N	 CRX S	For machining Copper & Copper Alloys	Square Corner Radius Ball Nose	DLC	2	0.5mm	12mm	A129
P H	 X1-EH	Highly Accurate Fine-Finishing for Steels HRc40-70 / Tight Tolerance / Long Tool Life / Wide Range Portfolio	Square Corner Radius Ball Nose	C-Coating	2, 4, 6	0.1mm 1/32”	16mm 5/8”	A139
P M K H	 4G Mills	High Speed Cutting for Steels up to HRc55 / Full Range Offering / Dry & Wet Cutting	Square Corner Radius Ball Nose	Y-Coating	2, 4	.004"	5/8"	A156

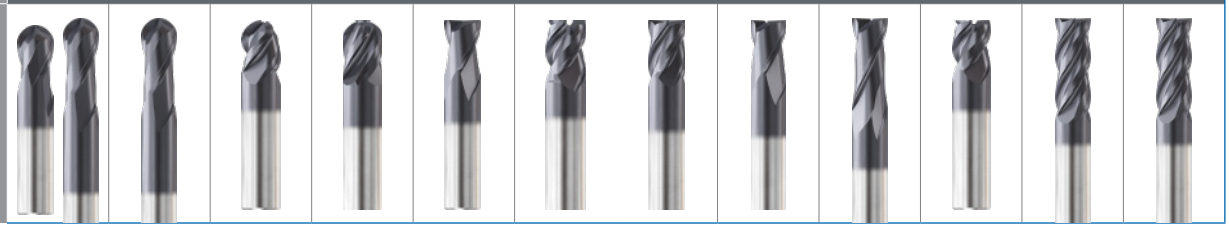
YG MINIATURE END MILLS
EV Mill END MILLS
YGBasiX END MILLS
V7 PLUS A END MILLS
TitaNox-POWER HPC END MILLS
ALU-POWER END MILLS
ALU-POWER HPC END MILLS
CRX-s END MILLS
X1-EH END MILLS
4G MILL END MILLS

YG MINIATURE END MILLS
EV Mill END MILLS
YGBasiX END MILLS
V7 PLUS A END MILLS
TitaNox-POWER HPC END MILLS
ALU-POWER END MILLS
ALU-POWER HPC END MILLS
CRX-s END MILLS
X1-EH END MILLS
4G MILL END MILLS

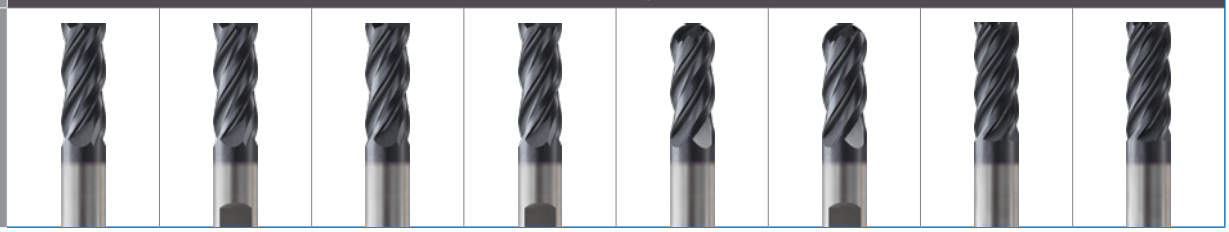
YG MINIATURE END MILLS

SERIES	E5K73	EMK73	E5K74	EMK74	E5K75	EMK75	E5K70	EMK70	E5K71	EMK71	E5K72	EMK72
FLUTE	2		3		4		2		3		4	
HELIX ANGLE	30°		30°		30°		30°		30°		30°	
CUTTING EDGE SHAPE	BALL NOSE		BALL NOSE		BALL NOSE		SQUARE		SQUARE		SQUARE	
SIZE MIN	R0.25mm		R0.25mm		R0.25mm		0.5mm		0.5mm		0.5mm	
SIZE MAX	R1/16		R1/16		R1/16		1/8		1/8		1/8	
PAGE	A6-A7		A6-A7		A6-A7		A8-A11		A8-A11		A8-A11	
LENGTH	-		-		-		-		-		-	
SURFACE TREATMENT	Uncoated	AlTiN	Uncoated	AlTiN	Uncoated	AlTiN	Uncoated	AlTiN	Uncoated	AlTiN	Uncoated	AlTiN
MODEL												

EV MILL END MILLS

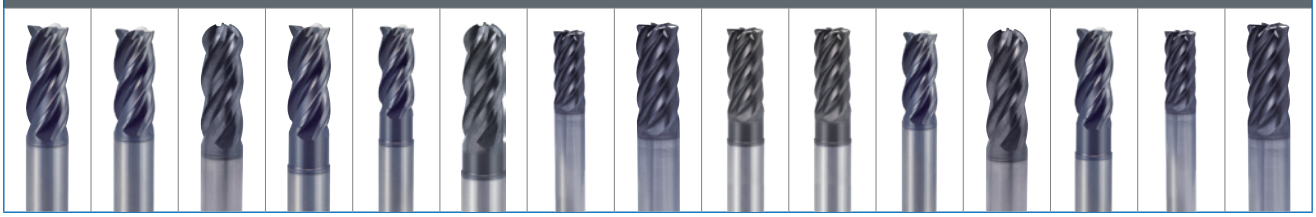
SERIES	GMK53	GMK31	GMK88	GMK90	GMK86	GMK89	GMK91	GMK85	GMK32	GMK87	GMK54	GMK33
FLUTE	2	2	3	4	2	3	4	2	2	3	4	4
HELIX ANGLE	30°	30°	43°/45°/47° (MULTIPLE HELIX)	35°/37° (MULTIPLE HELIX)	30°	43°/45°/47° (MULTIPLE HELIX)	35°/38° (MULTIPLE HELIX)	30°	30°	43°/45°/47° (MULTIPLE HELIX)	35°/38° (MULTIPLE HELIX)	37°, 35°/38° (MULTIPLE HELIX)
CUTTING EDGE SHAPE	BALL NOSE	BALL NOSE	BALL NOSE	BALL NOSE	CORNER RADIUS	CORNER RADIUS	CORNER RADIUS	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE
SIZE MIN	R1/32	R1.0	R1/16	R1/16	D1/8	D1/8	D1/8	D1/8	D1.0	D1/8	D1/8	D2.0
SIZE MAX	R1/4	R8.0	R1/4	R1/4	D1/2	D1/2	D1/2	D1/2	D10.0	D1/2	D5/8	D12.0
PAGE	A30	A31	A32	A33	A34-A35	A36-A37	A38-A39	A40	A41	A42	A43	A44
LENGTH	-	-	-	-	-	-	-	-	-	-	-	-
SURFACE TREATMENT	Y-Coating											
MODEL												

YGBasiX END MILLS

SERIES	G9J48	G9J49	G9J52	G9J53	G9J50	G9J51	G9K79	G9K80
FLUTE	4	4	4	4	4	4	5	5
HELIX ANGLE	35°/37° (MULTIPLE HELIX)	35°/37° (MULTIPLE HELIX)	35°/37° (MULTIPLE HELIX)	35°/37° (MULTIPLE HELIX)	35°/37° (MULTIPLE HELIX)	35°/37° (MULTIPLE HELIX)	38°	38°
CUTTING EDGE SHAPE	SQUARE	SQUARE	CORNER RADIUS	CORNER RADIUS	BALL NOSE	BALL NOSE	SQUARE	CORNER RADIUS
SIZE MIN	1/8	3/8	1/8	3/8	R1/16	R3/16	D1/8	D1/8
SIZE MAX	5/16	5/8	5/16	5/8	R5/32	R5/16	D5/8	D5/8
PAGE	A59	A60	A61	A62-63	A64	A64	A65	A66-A69
LENGTH	-	-	-	-	-	-	-	-
SURFACE TREATMENT	X-Coating							
MODEL								

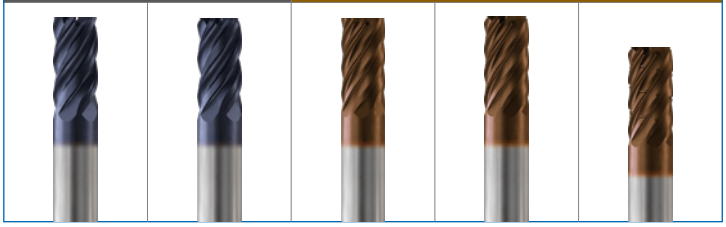
V7PLUS A END MILLS

UGMF68	UGMF70	UGMG53	UGMF72	UGMF74	UGMH10	UGMG20	UGMG22	UGMH08	UGMH09	GMF54 GMF58	GMG55	GMF62	GMG12 GMG14	GMG16 GMG18
4			4			6		6		4		4	6	
35°/37° (MULTIPLE HELIX)			35°/37° (MULTIPLE HELIX)			45°	45°	45°	45°	35°/37° (MULTIPLE HELIX)		35°/37° (MULTIPLE HELIX)	45°	45°
SQUARE	CORNER RADIUS	BALL NOSE	SQUARE	CORNER RADIUS	BALL NOSE	SQUARE	CORNER RADIUS	SQUARE	CORNER RADIUS	CORNER RADIUS	BALL NOSE	CORNER RADIUS	SQUARE	CORNER RADIUS
D1/8	D1/8	R1/16	D1/8	D1/8	R1/16	D1/4	D1/4	D1/4	D1/4	D3.0	R1.5	D3.0	D6.0	D6.0
D5/8	D5/8	R5/16	D5/8	D5/8	R5/16	D5/8	D5/8	D5/8	D5/8	D16.0	R8.0	D16.0	D16.0	D16.0
A74-A75			A76			A79		A80		A77		A78	A81	
-			EXTENDED REACH			-		EXTENDED REACH		-		EXTENDED REACH	-	
Y-Coating														



TitaNox-Power HPC END MILLS

EMI42	EMI43	HHK82	HHK83	HHK84
5		7		
38°		38°		
SQUARE	CORNER RADIUS	SQUARE	CORNER RADIUS	CORNER RADIUS (CHIP BREAKER)
D1/8	D1/8	D1/8	D1/8	D1/8
D5/8	D5/8	D5/8	D5/8	D5/8
A90-A91		A93-A94		A95
STANDARD LENGTH		STANDARD LENGTH		STANDARD LENGTH
AlTiN		C-Coating		



ALU-POWER END MILLS

E5254 EG254	E5976 EG976	E5980 EG980	E5981 EG981	E5982 EG982	E5973 EG973	E5974 EG974	E5978 EG978	E5522 EG522	EG930	EG909	EG910
2	2	3	3	3	2	3	2	2	2	2	2
42°	37°	45°	45°	45°	30°	50°	37°	45°	25°	30°	50°
SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	CORNER RADIUS	BALL NOSE	BALL NOSE	SQUARE	CORNER RADIUS	CORNER RADIUS	BALL NOSE
D1/16	D1/4	D1/8	D1/8	D1/4	D5/32	R1/8	R1/8	D3.0	D2.0	D4.0	R3.0
D5/8	D5/8	D5/8	D5/8	D5/8	D5/8	R3/8	R1/2	D16.0	D16.0	D16.0	R8.0
A100	A101	A102	A103	A104	A105	A106	A107	A108	A109	A110	A111
REGULAR LENGTH	EXTENDED NECK	STUB LENGTH	REGULAR LENGTH	LONG LENGTH	NECK	STUB CUT LENGTH NECK	LONG REACH	LONG LENGTH	STUB CUT LENGTH	STUB CUT LENGTH NECK	STUB CUT LENGTH NECK
TiCN									TiCN		
Uncoated											



YG MINIATURE END MILLS
EV Mill END MILLS
YGBasiX END MILLS
V7 PLUS A END MILLS
TitaNox-POWER HPC END MILLS
ALU-POWER END MILLS
ALU-POWER HPC END MILLS
CRX-s END MILLS
X1-EH END MILLS
4G MILL END MILLS

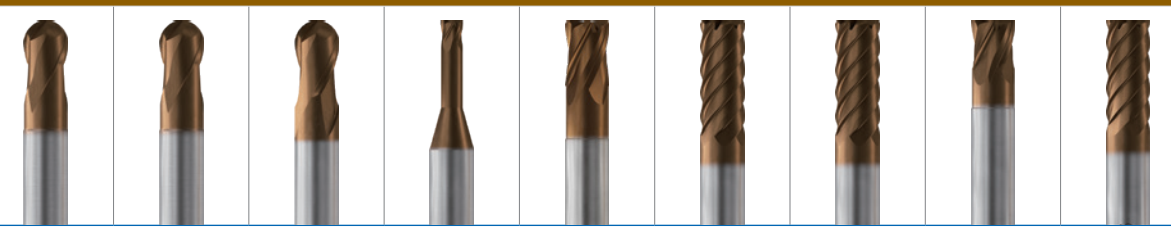
ALU-POWER HPC END MILLS

SERIES	JAG95	JAG97	E5G95	E5G97	JAG96	JAG98	E5G96	E5G98	JAI58	E5I58	JAI59	E5I59
FLUTE	3		3		3		3		3		3	
HELIX ANGLE	37°		37°		37°		37°		37°		37°	
CUTTING EDGE SHAPE	SQUARE	CORNER RADIUS	SQUARE	CORNER RADIUS	SQUARE	CORNER RADIUS	SQUARE	CORNER RADIUS	BALL NOSE		BALL NOSE	
SIZE MIN	D1/8	D1/8	D1/8	D1/8	D1/4	D1/4	D1/4	D1/4	R1/16	R1/16	R3/16	R3/16
SIZE MAX	D5/8	D5/8	D5/8	D5/8	D5/8	D5/8	D5/8	D5/8	R5/16	R5/16	R5/16	R5/16
PAGE	A118-A119		A120-A121		A122		A123		A124-A125		A126-A127	
LENGTH	STANDARD LENGTH		STANDARD LENGTH		EXTENDED NECK		EXTENDED NECK		STANDARD LENGTH		EXTENDED NECK	
SURFACE TREATMENT	DLC		Uncoated		DLC		Uncoated		DLC	Uncoated	DLC	Uncoated
MODEL												

CRX S END MILLS

SERIES	SGED28	SGED27	SGED29	SGED31	SGED30
FLUTE	2	2	2	2	2
HELIX ANGLE	30°	30°	30°	30°	30°
CUTTING EDGE SHAPE	BALL NOSE	BALL NOSE	CORNER RADIUS	SQUARE	SQUARE
SIZE MIN	R0.5	R0.25	D1.0	D1.0	D0.5
SIZE MAX	R6.0	R6.0	D12.0	D12.0	D12.0
PAGE	A129	A130-A131	A132-A133	A134	A135-A136
LENGTH	-	EXTENDED NECK	EXTENDED NECK	-	EXTENDED NECK
SURFACE TREATMENT	DLC				
MODEL					

X1-EH END MILLS

SERIES	HPK48	HPK46	HPK44	HPK26	HPK17	HPK27	HPK18	HPK21	HPK23
FLUTE	2	2	2	4	4	6	6	4	4&6
HELIX ANGLE	30°	30°	30°	27°/30° (up to Ø1/8: 30°)	27°/30° (up to Ø1/8: 30°)	45°	45°	27°/30° (up to Ø1/8: 30°)	45°
CUTTING EDGE SHAPE	BALL NOSE	BALL NOSE	BALL NOSE	CORNER RADIUS	CORNER RADIUS	CORNER RADIUS	CORNER RADIUS	SQUARE	SQUARE
SIZE MIN	R1/64	R0.5	R0.05	D1/16	D1.0	D1/4	D6.0	D1.0	D1.0
SIZE MAX	R1/4	R6.0	R6.0	D1/2	D12.0	D5/8	D16.0	D16.0	D12.0
PAGE	A139	A140	A141	A142	A143-A144	A145	A146	A147	A148
LENGTH	NECK	NECK	-	NECK	NECK	-	-	EXTENDED NECK	-
SURFACE TREATMENT	C-Coating								
MODEL									

4G MILL END MILLS

GMF15	GMF16	GMF17	GMF18	GMF19	GMF20	GMF21	GMF22	GMF24	GMF25	GMF28
2	2	4	2	2	4	4	2	2	4	4
30°	30°	30°	30°	30°	27°/30° (MULTIPLE HELIX)	27°/30° (MULTIPLE HELIX)	30°	30°	27°/30° (MULTIPLE HELIX)	30°
BALL NOSE	BALL NOSE	BALL NOSE	CORNER RADIUS	CORNER RADIUS	CORNER RADIUS	CORNER RADIUS	SQUARE	SQUARE	SQUARE	SQUARE
R.002	R.004	R1/16	D3/64	D.008	D3/64	D3/64	D.008	D3/64	D3/64	D3/64
R5/16	R1/4	R1/4	D1/2	D5/8	D1/2	D5/8	D1/2	D1/2	D5/8	D1/2
A156	A157	A160	A161	A163	A169	A171	A176	A179	A181	A182
-	NECK	-	-	NECK	-	NECK	NECK	LONG LENGTH	-	NECK
Y-Coating										
										

GUIDE TO ICONS

Tool Material

CARBIDE Carbide

No. of Flute

2 3 3&4 4-6

Helix Angle

30° 30° 43°/45° 43°/44°/45°

Tolerance of Radius

R ±0.005 R ±0.01 Tolerance of Ball Radius

R ±0.010 R ±0.015 Tolerance of Corner Radius

Tool End

Square

45° Chamfer

R Radius

Cutting Condition

The Type of Shank

PLAIN FLAT

Surface Treatment

C Coating — YG-1 C-Coating

AlTiN — Aluminum Titanium Nitride Coating

X Coating — YG-1 X-Coating

Y Coating — YG-1 Y-Coating

DLC — Diamond-Like Carbon Coating

UNCOATED — Non-coated

TiCN — Titanium Carbon Nitride Coating

YG MINIATURE END MILLS

	2 Flute	3 Flute	4 Flute	SERIES
Uncoated	E5K73	E5K74	E5K75	
AlTiN Coated	EMK73	EMK74	EMK75	

CARBIDE, 2 & 3 & 4 FLUTE BALL NOSE - MINIATURE

- Sharp cutting edges for clean, burr-free finishes
- Engineered for maximum precision on intricate workpieces

2 Flute

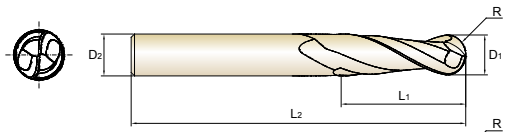


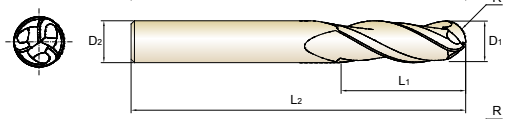
3 Flute

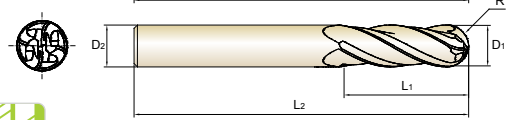


4 Flute











p.A12-A17

Unit : INCH / METRIC

Radius of Ball Nose (R)	OD (D_1)	SD (D_2)	LOC (L_1)	OAL (L_2)	2 Flute Ball Nose		3 Flute Ball Nose		4 Flute Ball Nose	
					Uncoated	AlTiN	Uncoated	AlTiN	Uncoated	AlTiN
					EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
R0.25mm	0.5mm	1/8	.030	1-1/2	E5K73901	EMK73901	E5K74901	EMK74901	E5K75901	EMK75901
		1/8	.060	1-1/2	E5K73902	EMK73902	E5K74902	EMK74902	E5K75902	EMK75902
R0.3mm	0.6mm	1/8	.036	1-1/2	E5K73903	EMK73903	E5K74903	EMK74903	E5K75903	EMK75903
		1/8	.072	1-1/2	E5K73904	EMK73904	E5K74904	EMK74904	E5K75904	EMK75904
R0.35mm	0.7mm	1/8	.042	1-1/2	E5K73905	EMK73905	E5K74905	EMK74905	E5K75905	EMK75905
		1/8	.084	1-1/2	E5K73906	EMK73906	E5K74906	EMK74906	E5K75906	EMK75906
R1/64	1/32	1/8	.046	1-1/2	E5K73002	EMK73002	E5K74002	EMK74002	E5K75002	EMK75002
		1/8	.093	1-1/2	E5K73907	EMK73907	E5K74907	EMK74907	E5K75907	EMK75907
R0.45mm	0.9mm	1/8	.052	1-1/2	E5K73908	EMK73908	E5K74908	EMK74908	E5K75908	EMK75908
		1/8	.105	1-1/2	E5K73909	EMK73909	E5K74909	EMK74909	E5K75909	EMK75909
R0.5mm	1.0mm	1/8	.058	1-1/2	E5K73910	EMK73910	E5K74910	EMK74910	E5K75910	EMK75910
		1/8	.117	1-1/2	E5K73911	EMK73911	E5K74911	EMK74911	E5K75911	EMK75911
R0.55mm	1.1mm	1/8	.129	1-1/2	E5K73912	EMK73912	E5K74912	EMK74912	E5K75912	EMK75912
R.0234	3/64	1/8	.070	1-1/2	E5K73003	EMK73003	E5K74003	EMK74003	E5K75003	EMK75003
		1/8	.141	1-1/2	E5K73913	EMK73913	E5K74913	EMK74913	E5K75913	EMK75913
R0.65mm	1.3mm	1/8	.153	1-1/2	E5K73914	EMK73914	E5K74914	EMK74914	E5K75914	EMK75914

Ball Radius Tolerance (in)	Mill Dia.Tolerance (in)	Shank Dia.Tolerance
±.0008	±.0005	h5

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	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	○	○	○	○	○	○	○	○													

YG MINIATURE END MILLS

SERIES	2 Flute	3 Flute	4 Flute
Uncoated	E5K73	E5K74	E5K75
AlTiN Coated	EMK73	EMK74	EMK75

CARBIDE, 2 & 3 & 4 FLUTE BALL NOSE - MINIATURE

- Sharp cutting edges for clean, burr-free finishes
- Engineered for maximum precision on intricate workpieces

2 Flute

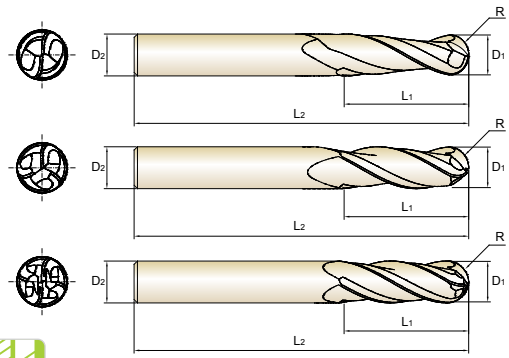


3 Flute



4 Flute





CARBIDE | 2 | 3 | 4 | 30° | R ±.0008 | UNCOATED | AlTiN | PLAIN

p.A12-A17

Unit : INCH / METRIC

Radius of Ball Nose (R)	OD (D_1)	SD (D_2)	LOC (L_1)	OAL (L_2)	2 Flute Ball Nose		3 Flute Ball Nose		4 Flute Ball Nose	
					Uncoated	AlTiN	Uncoated	AlTiN	Uncoated	AlTiN
					EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
R0.7mm	1.4mm	1/8	.082	1-1/2	E5K73915	EMK73915	E5K74915	EMK74915	E5K75915	EMK75915
		1/8	.165	1-1/2	E5K73916	EMK73916	E5K74916	EMK74916	E5K75916	EMK75916
R0.75mm	1.5mm	1/8	.089	1-1/2	E5K73917	EMK73917	E5K74917	EMK74917	E5K75917	EMK75917
		1/8	.177	1-1/2	E5K73918	EMK73918	E5K74918	EMK74918	E5K75918	EMK75918
R1/32	1/16	1/8	.093	1-1/2	E5K73004	EMK73004	E5K74004	EMK74004	E5K75004	EMK75004
		1/8	.186	1-1/2	E5K73919	EMK73919	E5K74919	EMK74919	E5K75919	EMK75919
R.039	5/64	1/8	.117	1-1/2	E5K73005	EMK73005	E5K74005	EMK74005	E5K75005	EMK75005
		1/8	.234	1-1/2	E5K73920	EMK73920	E5K74920	EMK74920	E5K75920	EMK75920
R3/64	3/32	1/8	.139	1-1/2	E5K73006	EMK73006	E5K74006	EMK74006	E5K75006	EMK75006
		1/8	.279	1-1/2	E5K73921	EMK73921	E5K74921	EMK74921	E5K75921	EMK75921
R.054	7/64	1/8	.164	1-1/2	E5K73007	EMK73007	E5K74007	EMK74007	E5K75007	EMK75007
		1/8	.327	1-1/2	E5K73922	EMK73922	E5K74922	EMK74922	E5K75922	EMK75922
R1.5mm	3.0mm	1/8	.177	1-1/2	E5K73923	EMK73923	E5K74923	EMK74923	E5K75923	EMK75923
		1/8	.354	1-1/2	E5K73924	EMK73924	E5K74924	EMK74924	E5K75924	EMK75924
R1/16	1/8	1/8	.187	1-1/2	E5K73008	EMK73008	E5K74008	EMK74008	E5K75008	EMK75008
		1/8	3/8	1-1/2	E5K73925	EMK73925	E5K74925	EMK74925	E5K75925	EMK75925

Ball Radius Tolerance (in)	Mill Dia.Tolerance (in)	Shank Dia.Tolerance
±.0008	±.0005	h5

◎ : 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	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	○	○	○	○	○	○	○	○													

YG MINIATURE END MILLS

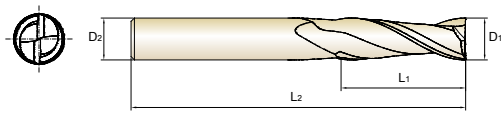
	2 Flute	3 Flute	4 Flute	SERIES
Uncoated	E5K70	E5K71	E5K72	
AlTiN Coated	EMK70	EMK71	EMK72	

2 & 3 & 4 FLUTE SQUARE - MINIATURE

- Sharp cutting edges for clean, burr-free finishes
- Engineered for maximum precision on intricate workpieces

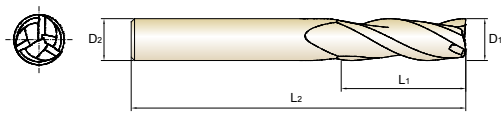
2 Flute





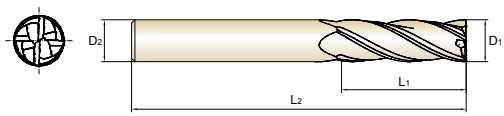
3 Flute





4 Flute







p.A18-A29

Unit : INCH / METRIC

OD (D_1)	SD (D_2)	LOC (L_1)	OAL (L_2)	2 Flute Square End		3 Flute Square End		4 Flute Square End	
				Uncoated	AlTiN	Uncoated	AlTiN	Uncoated	AlTiN
				EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
0.5mm	1/8	.030	1-1/2	E5K70901	EMK70901	E5K71901	EMK71901	E5K72901	EMK72901
		.060	1-1/2	E5K70902	EMK70902	E5K71902	EMK71902	E5K72902	EMK72902
0.6mm	1/8	.036	1-1/2	E5K70903	EMK70903	E5K71903	EMK71903	E5K72903	EMK72903
		.072	1-1/2	E5K70904	EMK70904	E5K71904	EMK71904	E5K72904	EMK72904
0.7mm	1/8	.042	1-1/2	E5K70905	EMK70905	E5K71905	EMK71905	E5K72905	EMK72905
		.084	1-1/2	E5K70906	EMK70906	E5K71906	EMK71906	E5K72906	EMK72906
1/32	1/8	.046	1-1/2	E5K70002	EMK70002	E5K71002	EMK71002	E5K72002	EMK72002
		.093	1-1/2	E5K70907	EMK70907	E5K71907	EMK71907	E5K72907	EMK72907
0.9mm	1/8	.052	1-1/2	E5K70908	EMK70908	E5K71908	EMK71908	E5K72908	EMK72908
		.105	1-1/2	E5K70909	EMK70909	E5K71909	EMK71909	E5K72909	EMK72909
1mm	1/8	.058	1-1/2	E5K70910	EMK70910	E5K71910	EMK71910	E5K72910	EMK72910
		.117	1-1/2	E5K70911	EMK70911	E5K71911	EMK71911	E5K72911	EMK72911
1.1mm	1/8	.065	1-1/2	E5K70912	EMK70912	E5K71912	EMK71912	E5K72912	EMK72912
		.129	1-1/2	E5K70913	EMK70913	E5K71913	EMK71913	E5K72913	EMK72913
3/64	1/8	.070	1-1/2	E5K70003	EMK70003	E5K71003	EMK71003	E5K72003	EMK72003
		.141	1-1/2	E5K70914	EMK70914	E5K71914	EMK71914	E5K72914	EMK72914

NEXT PAGE ▶

Mill Dia.Tolerance (in)	Shank Dia.Tolerance
±.0005	h5

◎ : 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	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	○	○	○	○	○	○	○	○													

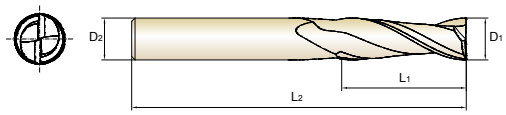
YG MINIATURE END MILLS

2 & 3 & 4 FLUTE SQUARE - MINIATURE

- Sharp cutting edges for clean, burr-free finishes
- Engineered for maximum precision on intricate workpieces

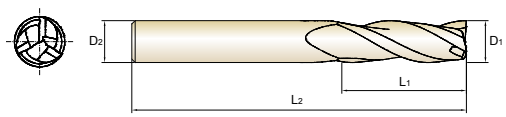
2 Flute





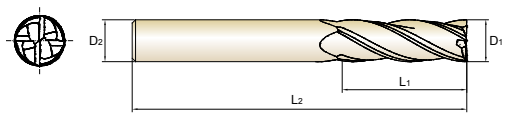
3 Flute





4 Flute







p.A18-A29

Unit : INCH / METRIC

OD (D_1)	SD (D_2)	LOC (L_1)	OAL (L_2)	2 Flute Square End		3 Flute Square End		4 Flute Square End	
				Uncoated	AlTiN	Uncoated	AlTiN	Uncoated	AlTiN
				EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
1.3mm	1/8	.077	1-1/2	E5K70915	EMK70915	E5K71915	EMK71915	E5K72915	EMK72915
		.153	1-1/2	E5K70916	EMK70916	E5K71916	EMK71916	E5K72916	EMK72916
1.4mm	1/8	.082	1-1/2	E5K70917	EMK70917	E5K71917	EMK71917	E5K72917	EMK72917
		.165	1-1/2	E5K70918	EMK70918	E5K71918	EMK71918	E5K72918	EMK72918
1.5mm	1/8	.089	1-1/2	E5K70919	EMK70919	E5K71919	EMK71919	E5K72919	EMK72919
		.177	1-1/2	E5K70920	EMK70920	E5K71920	EMK71920	E5K72920	EMK72920
1/16	1/8	.093	1-1/2	E5K70004	EMK70004	E5K71004	EMK71004	E5K72004	EMK72004
		.186	1-1/2	E5K70921	EMK70921	E5K71921	EMK71921	E5K72921	EMK72921
1.6mm	1/8	.095	1-1/2	E5K70922	EMK70922	E5K71922	EMK71922	E5K72922	EMK72922
		.189	1-1/2	E5K70923	EMK70923	E5K71923	EMK71923	E5K72923	EMK72923
1.7mm	1/8	.201	1-1/2	E5K70924	EMK70924	E5K71924	EMK71924	E5K72924	EMK72924
1.8mm	1/8	.107	1-1/2	E5K70925	EMK70925	E5K71925	EMK71925	E5K72925	EMK72925
		.213	1-1/2	E5K70926	EMK70926	E5K71926	EMK71926	E5K72926	EMK72926
1.9mm	1/8	.112	1-1/2	E5K70927	EMK70927	E5K71927	EMK71927	E5K72927	EMK72927
		.225	1-1/2	E5K70928	EMK70928	E5K71928	EMK71928	E5K72928	EMK72928

Mill Dia.Tolerance (in)	Shank Dia.Tolerance
± .0005	h5

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	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	○	○	○	○	○	○	○	○													

YG MINIATURE END MILLS

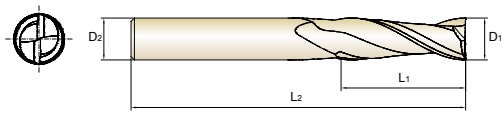
	2 Flute	3 Flute	4 Flute	SERIES
Uncoated	E5K70	E5K71	E5K72	
AlTiN Coated	EMK70	EMK71	EMK72	

2 & 3 & 4 FLUTE SQUARE - MINIATURE

- Sharp cutting edges for clean, burr-free finishes
- Engineered for maximum precision on intricate workpieces

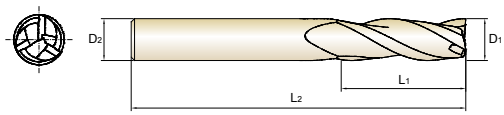
2 Flute





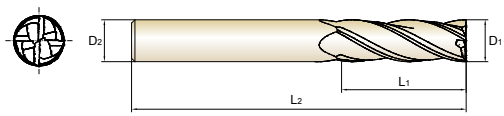
3 Flute





4 Flute







p.A18-A29

Unit : INCH / METRIC

OD (D1)	SD (D2)	LOC (L1)	OAL (L2)	2 Flute Square End		3 Flute Square End		4 Flute Square End	
				Uncoated	AlTiN	Uncoated	AlTiN	Uncoated	AlTiN
				EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
5/64	1/8	.117	1-1/2	E5K70005	EMK70005	E5K71005	EMK71005	E5K72005	EMK72005
		.234	1-1/2	E5K70929	EMK70929	E5K71929	EMK71929	E5K72929	EMK72929
2.1mm	1/8	.249	1-1/2	E5K70930	EMK70930	E5K71930	EMK71930	E5K72930	EMK72930
2.2mm	1/8	.261	1-1/2	E5K70931	EMK70931	E5K71931	EMK71931	E5K72931	EMK72931
2.3mm	1/8	.273	1-1/2	E5K70932	EMK70932	E5K71932	EMK71932	E5K72932	EMK72932
3/32	1/8	.139	1-1/2	E5K70006	EMK70006	E5K71006	EMK71006	E5K72006	EMK72006
		.279	1-1/2	E5K70933	EMK70933	E5K71933	EMK71933	E5K72933	EMK72933
2.4mm	1/8	.141	1-1/2	E5K70934	EMK70934	E5K71934	EMK71934	E5K72934	EMK72934
		.282	1-1/2	E5K70935	EMK70935	E5K71935	EMK71935	E5K72935	EMK72935
2.5mm	1/8	.147	1-1/2	E5K70936	EMK70936	E5K71936	EMK71936	E5K72936	EMK72936
		.294	1-1/2	E5K70937	EMK70937	E5K71937	EMK71937	E5K72937	EMK72937
2.6mm	1/8	.306	1-1/2	E5K70938	EMK70938	E5K71938	EMK71938	E5K72938	EMK72938
2.7mm	1/8	.318	1-1/2	E5K70939	EMK70939	E5K71939	EMK71939	E5K72939	EMK72939
7/64	1/8	.164	1-1/2	E5K70007	EMK70007	E5K71007	EMK71007	E5K72007	EMK72007
		.327	1-1/2	E5K70940	EMK70940	E5K71940	EMK71940	E5K72940	EMK72940

Mill Dia.Tolerance (in)	Shank Dia.Tolerance
± .0005	h5

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	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	○	○	○	○	○	○	○	○													

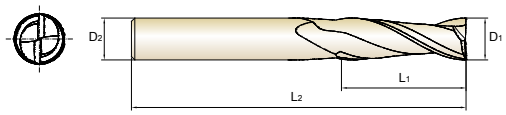
YG MINIATURE END MILLS

2 & 3 & 4 FLUTE SQUARE - MINIATURE

- Sharp cutting edges for clean, burr-free finishes
- Engineered for maximum precision on intricate workpieces

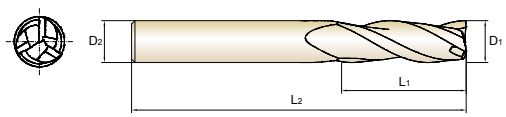
2 Flute





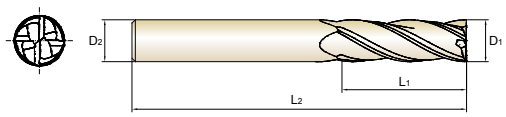
3 Flute





4 Flute





CARBIDE | 2 | 3 | 4 | 30° | UNCOATED | AlTiN | PLAIN

p.A18-A29

Unit : INCH / METRIC

OD (D_1)	SD (D_2)	LOC (L_1)	OAL (L_2)	2 Flute Square End		3 Flute Square End		4 Flute Square End	
				Uncoated	AlTiN	Uncoated	AlTiN	Uncoated	AlTiN
				EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
2.8mm	1/8	.333	1-1/2	E5K70941	EMK70941	E5K71941	EMK71941	E5K72941	EMK72941
2.9mm	1/8	.341	1-1/2	E5K70942	EMK70942	E5K71942	EMK71942	E5K72942	EMK72942
3.0mm	1/8	.177	1-1/2	E5K70943	EMK70943	E5K71943	EMK71943	E5K72943	EMK72943
		.354	1-1/2	E5K70944	EMK70944	E5K71944	EMK71944	E5K72944	EMK72944
1/8	1/8	.187	1-1/2	E5K70008	EMK70008	E5K71008	EMK71008	E5K72008	EMK72008
		3/8	1-1/2	E5K70945	EMK70945	E5K71945	EMK71945	E5K72945	EMK72945

Mill Dia.Tolerance (in)	Shank Dia.Tolerance
± .0005	h5

◎ : 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	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	○	○	○	○	○	○	○	○													

YG MINIATURE END MILLS

RECOMMENDED CUTTING CONDITIONS

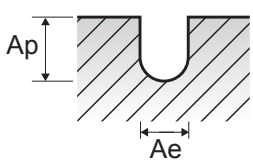
EMK73 SERIES — 2 FLUTE BALL NOSE [AlTiN coated] - SLOTTING

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

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)															
				0.5mm	0.6mm	0.7mm	1/32	0.9mm	1.0mm	1.1mm	3/64	1.3mm	1.4mm	1.5mm	1/16	5/64	3/32	7/64	3.0mm	1/8
P	1-5	Non-alloy steel	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
			IPT (fz)	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0004	.0005	.0005	.0005
			RPM	127200	106010	90860	80130	70670	63610	57820	53420	48920	45430	42400	40070	32050	26710	22900	21210	20030
			IPM (FEED)	25	21	18	24	28	25	23	24	21	21	21	21	21	21	21	21	21
	6-8	Low alloy steel	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
			IPT (fz)	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0004	.0005	.0005	.0005
			RPM	127200	106010	90860	80130	70670	63610	57820	53420	48920	45430	42400	40070	32050	26710	22900	21210	20030
			IPM (FEED)	25	21	18	24	28	25	23	24	21	21	21	21	21	21	21	21	21
	9		SFM (Vc)	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110
			IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002
			RPM	21210	17660	15150	13350	11780	10600	9640	8900	8150	7570	7070	6680	5350	4450	3820	3530	3330
			IPM (FEED)	4	4	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	10-11.1	High alloyed steel, and tool steel	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
			IPT (fz)	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0004	.0005	.0005	.0005
			RPM	127200	106010	90860	80130	70670	63610	57820	53420	48920	45430	42400	40070	32050	26710	22900	21210	20030
			IPM (FEED)	25	21	18	24	28	25	23	24	21	21	21	21	21	21	21	21	21
	11.2		SFM (Vc)	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110
			IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002
			RPM	21210	17660	15150	13350	11780	10600	9640	8900	8150	7570	7070	6680	5350	4450	3820	3530	3330
			IPM (FEED)	4	4	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2
M	12-13	Stainless steel (SUS 420, X40Cr13, 420)	SFM (Vc)	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165
			IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0003	.0003	.0003
			RPM	31800	26500	22710	20030	17660	15900	14460	13350	12240	11360	10600	10020	8020	6680	5730	5300	5000
			IPM (FEED)	6	5	5	3	4	3	3	3	3	3	3	3	3	3	3	3	3
	14	Stainless steel (SUS 316, 316, X5CrNiMo 17 12 2, SUS 630, PH 15-5)	SFM (Vc)	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220
			IPT (fz)	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0004	.0004	.0005	.0005
			RPM	42400	35340	30290	26710	23550	21210	19270	17800	16310	15150	14130	13350	10680	8900	7640	7070	6680
			IPM (FEED)	8	7	6	7	7	7	7	7	6	6	6	6	6	6	6	6	6
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	SFM (Vc)	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095
			IPT (fz)	.0003	.0003	.0004	.0004	.0005	.0005	.0006	.0007	.0006	.0007	.0007	.0008	.0009	.0011	.0013	.0014	.0015
			RPM	212000	176670	151430	133550	117780	106010	96370	89030	81550	75720	70670	66770	53420	44520	38160	35340	33380
			IPM (FEED)	107	107	107	107	116	116	116	116	100	100	100	100	100	101	100	100	100
	26-28	Copper and Copper Alloys (Bronze / Brass)	SFM (Vc)	545	545	545	545	545	545	545	545	545	545	545	545	545	545	545	545	545
			IPT (fz)	.0002	.0003	.0003	.0004	.0004	.0004	.0005	.0005	.0005	.0005	.0006	.0006	.0008	.0009	.0011	.0011	.0012
			RPM	106010	88330	75720	66770	58890	53000	48180	44520	40770	37860	35340	33380	26710	22250	19080	17660	16700
			IPM (FEED)	47	47	47	47	46	46	46	46	40	40	40	40	41	40	40	40	40

*** Reduce cutting speed -15% for uncoated tools**

NEXT PAGE ▶



Ae	Ap
1.0D	OD≤3/64 : 0.2D Ø 3/64<OD : 0.5D

YG MINIATURE END MILLS

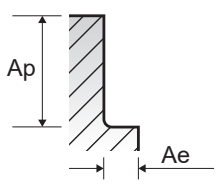
RECOMMENDED CUTTING CONDITIONS

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

EMK73 SERIES — 2 FLUTE BALL NOSE [AlTiN coated]- SIDE CUTTING

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)															
				0.5mm	0.6mm	0.7mm	1/32	0.9mm	1.0mm	1.1mm	3/64	1.3mm	1.4mm	1.5mm	1/16	5/64	3/32	7/64	3.0mm	1/8
P	1-5	Non-alloy steel	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
			IPT (fz)	.0001	.0001	.0002	.0002	.0002	.0002	.0003	.0003	.0003	.0003	.0003	.0003	.0004	.0005	.0006	.0006	.0007
			RPM	127200	106010	90860	80130	70670	63610	57820	53420	48920	45430	42400	40070	32050	26710	22900	21210	20030
			IPM (FEED)	30	30	30	30	31	31	31	31	27	27	27	27	27	27	27	27	27
	6-8	Low alloy steel	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
			IPT (fz)	.0001	.0001	.0002	.0002	.0002	.0002	.0003	.0003	.0003	.0003	.0003	.0003	.0004	.0005	.0006	.0006	.0007
			RPM	127200	106010	90860	80130	70670	63610	57820	53420	48920	45430	42400	40070	32050	26710	22900	21210	20030
			IPM (FEED)	30	30	30	30	31	31	31	31	27	27	27	27	27	27	27	27	27
	9		SFM (Vc)	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110
			IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0003	.0003	.0003
			RPM	21210	17660	15150	13350	11780	10600	9640	8900	8150	7570	7070	6680	5350	4450	3820	3530	3330
			IPM (FEED)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	10-11.1	High alloyed steel, and tool steel	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
			IPT (fz)	.0001	.0001	.0002	.0002	.0002	.0002	.0003	.0003	.0003	.0003	.0003	.0003	.0004	.0005	.0006	.0006	.0007
			RPM	127200	106010	90860	80130	70670	63610	57820	53420	48920	45430	42400	40070	32050	26710	22900	21210	20030
			IPM (FEED)	30	30	30	30	31	31	31	31	27	27	27	27	27	27	27	27	27
	11.2		SFM (Vc)	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110
			IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0003	.0003	.0003
			RPM	21210	17660	15150	13350	11780	10600	9640	8900	8150	7570	7070	6680	5350	4450	3820	3530	3330
			IPM (FEED)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
M	12-13	Stainless steel (SUS 420, X40Cr13, 420)	SFM (Vc)	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165
			IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0004	.0004
			RPM	31800	26500	22710	20030	17660	15900	14460	13350	12240	11360	10600	10020	8020	6680	5730	5300	5000
			IPM (FEED)	4	4	4	4	5	5	5	5	4	4	4	4	4	4	4	4	4
	14	Stainless steel (SUS 316, 316, X5CrNiMo 17 12 2, SUS 630, PH 15-5)	SFM (Vc)	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220
			IPT (fz)	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0003	.0003	.0003	.0004	.0005	.0005	.0006	.0006
			RPM	42400	35340	30290	26710	23550	21210	19270	17800	16310	15150	14130	13350	10680	8900	7640	7070	6680
			IPM (FEED)	10	10	10	10	10	10	10	10	8	8	8	8	8	8	8	8	8
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	SFM (Vc)	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095
			IPT (fz)	.0004	.0005	.0005	.0006	.0007	.0008	.0009	.0009	.0009	.0010	.0010	.0011	.0014	.0016	.0019	.0021	.0022
			RPM	212000	176670	151430	133550	117780	106010	96370	89030	81550	75720	70670	66770	53420	44520	38160	35340	33380
			IPM (FEED)	166	166	166	166	167	167	167	167	144	144	144	144	145	144	145	145	145
	26-28	Copper and Copper Alloys (Bronze / Brass)	SFM (Vc)	545	545	545	545	545	545	545	545	545	545	545	545	545	545	545	545	545
			IPT (fz)	.0003	.0004	.0004	.0005	.0006	.0006	.0007	.0008	.0007	.0008	.0008	.0009	.0011	.0013	.0015	.0016	.0017
			RPM	106010	88330	75720	66770	58890	53000	48180	44520	40770	37860	35340	33380	26710	22250	19080	17660	16700
			IPM (FEED)	67	67	67	67	67	67	67	67	57	57	57	57	58	57	58	58	58

*** Reduce cutting speed -15% for uncoated tools**



Ae	Ap
OD≤3/64 : 0.13D Ø 3/64<OD : 0.25D	1.0D

YG MINIATURE END MILLS

RECOMMENDED CUTTING CONDITIONS

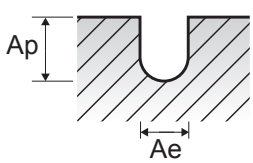
EMK74 SERIES — 3 FLUTE BALL NOSE [AlTiN coated] - SLOTTING

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

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)															
				0.5mm	0.6mm	0.7mm	1/32	0.9mm	1.0mm	1.1mm	3/64	1.3mm	1.4mm	1.5mm	1/16	5/64	3/32	7/64	3.0mm	1/8
P	1-5	Non-alloy steel	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
			IPT (fz)	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0004	.0004	.0004	.0005
			RPM	127200	106010	90860	80130	70670	63610	57820	53420	48920	45430	42400	40070	32050	26710	22900	21210	20030
			IPM (FEED)	24	24	24	24	32	32	32	32	28	28	28	28	28	28	28	28	28
	6-8	Low alloy steel	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
			IPT (fz)	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0004	.0004	.0004	.0005
			RPM	127200	106010	90860	80130	70670	63610	57820	53420	48920	45430	42400	40070	32050	26710	22900	21210	20030
			IPM (FEED)	24	24	24	24	32	32	32	32	28	28	28	28	28	28	28	28	28
	9		SFM (Vc)	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110
			IPT (fz)	.00004	.00005	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002
			RPM	21210	17660	15150	13350	11780	10600	9640	8900	8150	7570	7070	6680	5350	4450	3820	3530	3330
			IPM (FEED)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	10-11.1	High alloyed steel, and tool steel	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
			IPT (fz)	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0004	.0004	.0004	.0005
			RPM	127200	106010	90860	80130	70670	63610	57820	53420	48920	45430	42400	40070	32050	26710	22900	21210	20030
			IPM (FEED)	24	24	24	24	32	32	32	32	28	28	28	28	28	28	28	28	28
	11.2		SFM (Vc)	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110
			IPT (fz)	.00004	.00005	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002
			RPM	21210	17660	15150	13350	11780	10600	9640	8900	8150	7570	7070	6680	5350	4450	3820	3530	3330
			IPM (FEED)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
M	12-13	Stainless steel (SUS 420, X40Cr13, 420)	SFM (Vc)	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165
			IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0003	.0003
			RPM	31800	26500	22710	20030	17660	15900	14460	13350	12240	11360	10600	10020	8020	6680	5730	5300	5000
			IPM (FEED)	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4
	14	Stainless steel (SUS 316, 316, X5CrNiMo 17 12 2, SUS 630, PH 15-5)	SFM (Vc)	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220
			IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0004	.0004	.0004
			RPM	42400	35340	30290	26710	23550	21210	19270	17800	16310	15150	14130	13350	10680	8900	7640	7070	6680
			IPM (FEED)	10	10	10	10	10	10	10	10	8	8	8	8	9	9	9	9	9
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	SFM (Vc)	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095
			IPT (fz)	.0002	.0003	.0003	.0004	.0004	.0005	.0005	.0006	.0006	.0006	.0006	.0007	.0009	.0010	.0012	.0013	.0014
			RPM	212000	176670	151430	133550	117780	106010	96370	89030	81550	75720	70670	66770	53420	44520	38160	35340	33380
			IPM (FEED)	156	156	156	156	158	158	158	158	136	136	136	136	136	135	136	136	136
	26-28	Copper and Copper Alloys (Bronze / Brass)	SFM (Vc)	545	545	545	545	545	545	545	545	545	545	545	545	545	545	545	545	545
			IPT (fz)	.0002	.0002	.0003	.0003	.0036	.0039	.0043	.0047	.0004	.0005	.0005	.0005	.0007	.0008	.0010	.0010	.0011
			RPM	106010	88330	75720	66770	58890	53000	48180	44520	40770	37860	35340	33380	26710	22250	19080	17660	16700
			IPM (FEED)	62	62	62	62	628	628	628	628	54	54	54	54	54	54	55	55	55

*** Reduce cutting speed -15% for uncoated tools**

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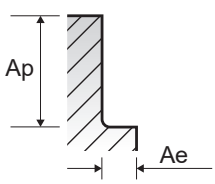
Ae	Ap
1.0D	OD≤3/64 : 0.2D Ø 3/64<OD : 0.5D

EMK74 SERIES — 3 FLUTE BALL NOSE [AlTiN coated]- SIDE CUTTING

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

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)															
				0.5mm	0.6mm	0.7mm	1/32	0.9mm	1.0mm	1.1mm	3/64	1.3mm	1.4mm	1.5mm	1/16	5/64	3/32	7/64	3.0mm	1/8
P	1-5	Non-alloy steel	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
			IPT (fz)	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0003	.0002	.0003	.0003	.0003	.0004	.0005	.0005	.0006	.0006
			RPM	127200	106010	90860	80130	70670	63610	57820	53420	48920	45430	42400	40070	32050	26710	22900	21210	20030
			IPM (FEED)	41	41	41	41	42	42	42	42	36	36	36	36	37	36	37	37	37
	6-8	Low alloy steel	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
			IPT (fz)	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0003	.0002	.0003	.0003	.0003	.0004	.0005	.0005	.0006	.0006
			RPM	127200	106010	90860	80130	70670	63610	57820	53420	48920	45430	42400	40070	32050	26710	22900	21210	20030
			IPM (FEED)	41	41	41	41	42	42	42	42	36	36	36	36	37	36	37	37	37
	9		SFM (Vc)	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110
			IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0003	.0003
			RPM	21210	17660	15150	13350	11780	10600	9640	8900	8150	7570	7070	6680	5350	4450	3820	3530	3330
			IPM (FEED)	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	10-11.1	High alloyed steel, and tool steel	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
			IPT (fz)	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0003	.0002	.0003	.0003	.0003	.0004	.0005	.0005	.0006	.0006
			RPM	127200	106010	90860	80130	70670	63610	57820	53420	48920	45430	42400	40070	32050	26710	22900	21210	20030
			IPM (FEED)	41	41	41	41	42	42	42	42	36	36	36	36	37	36	37	37	37
	11.2		SFM (Vc)	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110
			IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0003	.0003
			RPM	21210	17660	15150	13350	11780	10600	9640	8900	8150	7570	7070	6680	5350	4450	3820	3530	3330
			IPM (FEED)	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
M	12-13	Stainless steel (SUS 420, X40Cr13, 420)	SFM (Vc)	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165
			IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0001	.0001	.0002	.0002	.0002	.0003	.0003	.0003	.0004
			RPM	31800	26500	22710	20030	17660	15900	14460	13350	12240	11360	10600	10020	8020	6680	5730	5300	5000
			IPM (FEED)	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	5
	14	Stainless steel (SUS 316, 316, X5CrNiMo 17 12 2, SUS 630, PH 15-5)	SFM (Vc)	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220
			IPT (fz)	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0004	.0004	.0005	.0005	.0006
			RPM	42400	35340	30290	26710	23550	21210	19270	17800	16310	15150	14130	13350	10680	8900	7640	7070	6680
			IPM (FEED)	13	13	13	13	13	13	13	13	11	11	11	11	11	11	11	11	11
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	SFM (Vc)	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095
			IPT (fz)	.0004	.0004	.0005	.0006	.0006	.0007	.0008	.0009	.0008	.0009	.0009	.0010	.0012	.0015	.0017	.0019	.0020
			RPM	212000	176670	151430	133550	117780	106010	96370	89030	81550	75720	70670	66770	53420	44520	38160	35340	33380
			IPM (FEED)	224	224	224	224	227	227	227	227	194	194	194	194	196	194	196	196	196
	26-28	Copper and Copper Alloys (Bronze / Brass)	SFM (Vc)	545	545	545	545	545	545	545	545	545	545	545	545	545	545	545	545	545
			IPT (fz)	.0003	.0003	.0004	.0005	.0005	.0006	.0006	.0007	.0006	.0007	.0007	.0008	.0010	.0012	.0014	.0015	.0016
			RPM	106010	88330	75720	66770	58890	53000	48180	44520	40770	37860	35340	33380	26710	22250	19080	17660	16700
			IPM (FEED)	90	90	90	90	91	91	91	91	78	78	78	78	79	77	78	78	78

*** Reduce cutting speed -15% for uncoated tools**



Ae	Ap
OD≤3/64 : 0.13D Ø 3/64<OD : 0.25D	1.0D

YG MINIATURE END MILLS

RECOMMENDED CUTTING CONDITIONS

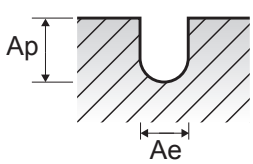
SFM(Vc) = ft./min.
IPT(fz) = in./tooth
RPM = rev./min.
IPM(Feed) = in./min.

EMK75 SERIES — 4 FLUTE BALL NOSE [AlTiN coated] - SLOTTING

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)															
				0.5mm	0.6mm	0.7mm	1/32	0.9mm	1.0mm	1.1mm	3/64	1.3mm	1.4mm	1.5mm	1/16	5/64	3/32	7/64	3.0mm	1/8
P	1-5	Non-alloy steel	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
			IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0004	.0004	.0004
			RPM	127200	106010	90860	80130	70670	63610	57820	53420	48920	45430	42400	40070	32050	26710	22900	21210	20030
			IPM (FEED)	38	38	38	38	38	38	38	38	34	34	34	34	33	33	34	34	34
	6-8	Low alloy steel	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
			IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0004	.0004	.0004
			RPM	127200	106010	90860	80130	70670	63610	57820	53420	48920	45430	42400	40070	32050	26710	22900	21210	20030
			IPM (FEED)	38	38	38	38	38	38	38	38	34	34	34	34	33	33	34	34	34
	9		SFM (Vc)	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110
			IPT (fz)	.00003	.00004	.00004	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002
			RPM	21210	17660	15150	13350	11780	10600	9640	8900	8150	7570	7070	6680	5350	4450	3820	3530	3330
			IPM (FEED)	3	3	3	3	3	3	3	3	2	2	2	2	3	2	3	3	3
	10-11.1	High alloyed steel, and tool steel	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
			IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0004	.0004	.0004
			RPM	127200	106010	90860	80130	70670	63610	57820	53420	48920	45430	42400	40070	32050	26710	22900	21210	20030
			IPM (FEED)	38	38	38	38	38	38	38	38	34	34	34	34	33	33	34	34	34
	11.2		SFM (Vc)	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110
			IPT (fz)	.00003	.00004	.00004	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002
			RPM	21210	17660	15150	13350	11780	10600	9640	8900	8150	7570	7070	6680	5350	4450	3820	3530	3330
			IPM (FEED)	3	3	3	3	3	3	3	3	2	2	2	2	3	2	3	3	3
M	12-13	Stainless steel (SUS 420, X40Cr13, 420)	SFM (Vc)	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165
			IPT (fz)	.00004	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002
			RPM	31800	26500	22710	20030	17660	15900	14460	13350	12240	11360	10600	10020	8020	6680	5730	5300	5000
			IPM (FEED)	6	6	6	6	5	5	5	5	5	5	5	5	5	5	5	5	5
	14	Stainless steel (SUS 316, 316, X5CrNiMo 17 12 2, SUS 630, PH 15-5)	SFM (Vc)	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220
			IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0004	.0004
			RPM	42400	35340	30290	26710	23550	21210	19270	17800	16310	15150	14130	13350	10680	8900	7640	7070	6680
			IPM (FEED)	12	12	12	12	11	11	11	11	10	10	10	10	10	10	10	10	10
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	SFM (Vc)	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095
			IPT (fz)	.0002	.0003	.0003	.0004	.0004	.0004	.0005	.0005	.0005	.0005	.0006	.0006	.0008	.0009	.0011	.0011	.0012
			RPM	212000	176670	151430	133550	117780	106010	96370	89030	81550	75720	70670	66770	53420	44520	38160	35340	33380
			IPM (FEED)	187	187	187	187	185	185	185	185	160	160	160	160	162	160	160	160	160
	26-28	Copper and Copper Alloys (Bronze / Brass)	SFM (Vc)	545	545	545	545	545	545	545	545	545	545	545	545	545	545	545	545	545
			IPT (fz)	.0002	.0002	.0002	.0003	.0003	.0004	.0004	.0004	.0004	.0004	.0005	.0005	.0006	.0007	.0008	.0009	.0010
			RPM	106010	88330	75720	66770	58890	53000	48180	44520	40770	37860	35340	33380	26710	22250	19080	17660	16700
			IPM (FEED)	75	75	75	75	75	75	75	75	64	64	64	64	64	64	65	65	65

*** Reduce cutting speed -15% for uncoated tools**

NEXT PAGE ▶



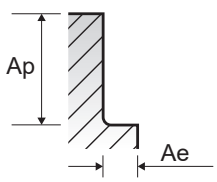
Ae	Ap
1.0D	OD≤3/64 : 0.2D Ø 3/64<OD : 0.5D

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

EMK75 SERIES — 4 FLUTE BALL NOSE [AlTiN coated]- SIDE CUTTING

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)															
				0.5mm	0.6mm	0.7mm	1/32	0.9mm	1.0mm	1.1mm	3/64	1.3mm	1.4mm	1.5mm	1/16	5/64	3/32	7/64	3.0mm	1/8
P	1-5	Non-alloy steel	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
			IPT (fz)	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0003	.0004	.0005	.0005	.0005
			RPM	127200	106010	90860	80130	70670	63610	57820	53420	48920	45430	42400	40070	32050	26710	22900	21210	20030
			IPM (FEED)	48	48	48	48	49	49	49	49	43	43	43	43	44	43	43	43	43
	6-8	Low alloy steel	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
			IPT (fz)	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0003	.0004	.0005	.0005	.0005
			RPM	127200	106010	90860	80130	70670	63610	57820	53420	48920	45430	42400	40070	32050	26710	22900	21210	20030
			IPM (FEED)	48	48	48	48	49	49	49	49	43	43	43	43	44	43	43	43	43
	9		SFM (Vc)	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110
			IPT (fz)	.00004	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0003
			RPM	21210	17660	15150	13350	11780	10600	9640	8900	8150	7570	7070	6680	5350	4450	3820	3530	3330
			IPM (FEED)	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3
	10-11.1	High alloyed steel, and tool steel	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
			IPT (fz)	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0003	.0004	.0005	.0005	.0005
			RPM	127200	106010	90860	80130	70670	63610	57820	53420	48920	45430	42400	40070	32050	26710	22900	21210	20030
			IPM (FEED)	48	48	48	48	49	49	49	49	43	43	43	43	44	43	43	43	43
	11.2		SFM (Vc)	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110
			IPT (fz)	.00004	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0003
			RPM	21210	17660	15150	13350	11780	10600	9640	8900	8150	7570	7070	6680	5350	4450	3820	3530	3330
			IPM (FEED)	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3
M	12-13	Stainless steel (SUS 420, X40Cr13, 420)	SFM (Vc)	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165
			IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0003	.0003	.0003
			RPM	31800	26500	22710	20030	17660	15900	14460	13350	12240	11360	10600	10020	8020	6680	5730	5300	5000
			IPM (FEED)	7	7	7	7	7	7	7	7	6	6	6	6	6	6	6	6	6
	14	Stainless steel (SUS 316, 316, X5CrNiMo 17 12 2, SUS 630, PH 15-5)	SFM (Vc)	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220
			IPT (fz)	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0004	.0004	.0005	.0005
			RPM	42400	35340	30290	26710	23550	21210	19270	17800	16310	15150	14130	13350	10680	8900	7640	7070	6680
			IPM (FEED)	15	15	15	15	15	15	15	15	13	13	13	13	13	13	13	13	13
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	SFM (Vc)	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095
			IPT (fz)	.0003	.0004	.0004	.0005	.0006	.0006	.0007	.0008	.0007	.0008	.0008	.0009	.0011	.0013	.0015	.0016	.0017
			RPM	212000	176670	151430	133550	117780	106010	96370	89030	81550	75720	70670	66770	53420	44520	38160	35340	33380
			IPM (FEED)	267	267	267	267	267	267	267	267	230	230	230	230	231	230	232	232	232
	26-28	Copper and Copper Alloys (Bronze / Brass)	SFM (Vc)	545	545	545	545	545	545	545	545	545	545	545	545	545	545	545	545	545
			IPT (fz)	.0003	.0003	.0004	.0004	.0005	.0005	.0006	.0006	.0006	.0006	.0007	.0007	.0009	.0010	.0012	.0013	.0014
			RPM	106010	88330	75720	66770	58890	53000	48180	44520	40770	37860	35340	33380	26710	22250	19080	17660	16700
			IPM (FEED)	107	107	107	107	107	107	107	107	92	92	92	92	93	92	93	93	93

*** Reduce cutting speed -15% for uncoated tools**



Ae	Ap
OD≤3/64 : 0.13D Ø 3/64<OD : 0.25D	1.0D

YG MINIATURE END MILLS

RECOMMENDED CUTTING CONDITIONS

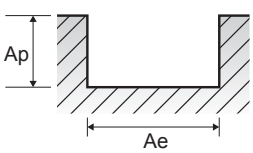
SFM(Vc) = ft./min.
IPT(fz) = in./tooth
RPM = rev./min.
IPM(Feed) = in./min.

EMK70 SERIES — 2 FLUTE [AlTiN coated] - SLOTTING

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)													
				0.5mm	0.6mm	0.7mm	1/32	0.9mm	1.0mm	1.1mm	3/64	1.3mm	1.4mm	1.5mm	1/16	1.6mm	1.7mm
P	1-5	Non-alloy steel	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655
			IPT (fz)	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0003
			RPM	127200	106010	90860	80130	70670	63610	57820	53420	48920	45430	42400	40070	39760	37410
			IPM (FEED)	25	21	18	24	28	25	23	24	21	21	21	21	24	22
	6-8	Low alloy steel	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655
			IPT (fz)	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0003
			RPM	127200	106010	90860	80130	70670	63610	57820	53420	48920	45430	42400	40070	39760	37410
			IPM (FEED)	25	21	18	24	28	25	23	24	21	21	21	21	24	22
	9		SFM (Vc)	110	110	110	110	110	110	110	110	110	110	110	110	110	110
			IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001
			RPM	21210	17660	15150	13350	11780	10600	9640	8900	8150	7570	7070	6680	6620	6230
			IPM (FEED)	4	4	3	2	2	2	2	2	2	2	2	2	2	2
	10-11.1	High alloyed steel, and tool steel	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655
			IPT (fz)	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0003
			RPM	127200	106010	90860	80130	70670	63610	57820	53420	48920	45430	42400	40070	39760	37410
			IPM (FEED)	25	21	18	24	28	25	23	24	21	21	21	21	24	22
	11.2		SFM (Vc)	110	110	110	110	110	110	110	110	110	110	110	110	110	110
			IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001
			RPM	21210	17660	15150	13350	11780	10600	9640	8900	8150	7570	7070	6680	6620	6230
			IPM (FEED)	4	4	3	2	2	2	2	2	2	2	2	2	2	2
M	12-13	Stainless steel (SUS 420, X40Cr13, 420)	SFM (Vc)	165	165	165	165	165	165	165	165	165	165	165	165	165	165
			IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002
			RPM	31800	26500	22710	20030	17660	15900	14460	13350	12240	11360	10600	10020	9940	9350
			IPM (FEED)	6	5	5	3	4	3	3	3	3	3	3	3	3	3
	14	Stainless steel (SUS 316, 316, X5CrNiMo 17 12 2, SUS 630, PH 15-5)	SFM (Vc)	220	220	220	220	220	220	220	220	220	220	220	220	220	220
			IPT (fz)	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003
			RPM	42400	35340	30290	26710	23550	21210	19270	17800	16310	15150	14130	13350	13250	12470
			IPM (FEED)	8	7	6	7	7	7	7	7	6	6	6	6	6	6
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	SFM (Vc)	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095
			IPT (fz)	.0003	.0003	.0004	.0004	.0005	.0005	.0006	.0007	.0006	.0007	.0007	.0008	.0008	.0008
			RPM	212000	176670	151430	133550	117780	106010	96370	89030	81550	75720	70670	66770	66250	62350
			IPM (FEED)	107	107	107	107	116	116	116	116	100	100	100	100	100	100
	26-28	Copper and Copper Alloys (Bronze / Brass)	SFM (Vc)	545	545	545	545	545	545	545	545	545	545	545	545	545	545
			IPT (fz)	.0002	.0003	.0003	.0004	.0004	.0004	.0005	.0005	.0005	.0005	.0006	.0006	.0006	.0007
			RPM	106010	88330	75720	66770	58890	53000	48180	44520	40770	37860	35340	33380	33130	31180
			IPM (FEED)	47	47	47	47	46	46	46	46	40	40	40	40	41	41

*** Reduce cutting speed -15% for uncoated tools**

NEXT PAGE ▶



Ae	Ap
1.0D	OD≤3/64 : 0.2D Ø 3/64<OD : 0.5D

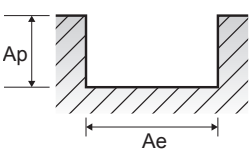
EMK70 SERIES — 2 FLUTE [AlTiN coated] - SLOTTING

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

ISO	VDI 3323	Parameter	Diameter (Ø)															
			1.8mm	1.9mm	5/64	2.1mm	2.2mm	2.3mm	3/32	2.4mm	2.5mm	2.6mm	2.7mm	7/64	2.8mm	2.9mm	3.0mm	1/8
P	1-5	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
		IPT (fz)	.0003	.0003	.0003	.0003	.0004	.0004	.0004	.0004	.0004	.0004	.0004	.0005	.0005	.0005	.0005	.0005
		RPM	35340	33480	32050	30290	28910	27660	26710	26500	25440	24460	23550	22900	22710	21930	21210	20030
		IPM (FEED)	21	20	21	21	21	21	21	21	21	21	21	21	21	21	21	21
	6-8	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
		IPT (fz)	.0003	.0003	.0003	.0003	.0004	.0004	.0004	.0004	.0004	.0004	.0004	.0005	.0005	.0005	.0005	.0005
		RPM	35340	33480	32050	30290	28910	27660	26710	26500	25440	24460	23550	22900	22710	21930	21210	20030
		IPM (FEED)	21	20	21	21	21	21	21	21	21	21	21	21	21	21	21	21
	9	SFM (Vc)	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110
		IPT (fz)	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002
		RPM	5890	5580	5350	5050	4820	4610	4450	4420	4240	4080	3920	3820	3780	3660	3530	3330
		IPM (FEED)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	10-11.1	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
		IPT (fz)	.0003	.0003	.0003	.0003	.0004	.0004	.0004	.0004	.0004	.0004	.0004	.0005	.0005	.0005	.0005	.0005
		RPM	35340	33480	32050	30290	28910	27660	26710	26500	25440	24460	23550	22900	22710	21930	21210	20030
		IPM (FEED)	21	20	21	21	21	21	21	21	21	21	21	21	21	21	21	21
	11.2	SFM (Vc)	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110
		IPT (fz)	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002
		RPM	5890	5580	5350	5050	4820	4610	4450	4420	4240	4080	3920	3820	3780	3660	3530	3330
		IPM (FEED)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
M	12-13	SFM (Vc)	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165
		IPT (fz)	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0003	.0003	.0003	.0003
		RPM	8830	8370	8020	7570	7220	6910	6680	6620	6360	6120	5890	5730	5680	5490	5300	5000
		IPM (FEED)	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	14	SFM (Vc)	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220
		IPT (fz)	.0003	.0003	.0003	.0003	.0003	.0003	.0004	.0004	.0004	.0004	.0004	.0004	.0004	.0004	.0005	.0005
		RPM	11780	11160	10680	10100	9640	9220	8900	8830	8480	8150	7850	7640	7570	7310	7070	6680
		IPM (FEED)	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
N	21-25	SFM (Vc)	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095
		IPT (fz)	.0009	.0009	.0009	.0010	.0010	.0011	.0011	.0011	.0012	.0012	.0013	.0013	.0013	.0014	.0014	.0015
		RPM	58890	55790	53420	50470	48180	46090	44520	44170	42400	40770	39260	38160	37860	36560	35340	33380
		IPM (FEED)	100	100	100	101	101	101	101	100	100	100	100	100	100	100	100	100
	26-28	SFM (Vc)	545	545	545	545	545	545	545	545	545	545	545	545	545	545	545	545
		IPT (fz)	.0007	.0007	.0008	.0008	.0008	.0009	.0009	.0009	.0009	.0010	.0010	.0010	.0011	.0011	.0011	.0012
		RPM	29440	27900	26710	25240	24090	23050	22250	22080	21210	20390	19630	19080	18930	18270	17660	16700
		IPM (FEED)	41	41	41	40	40	40	40	40	40	40	40	40	40	40	40	40

*** Reduce cutting speed -15% for uncoated tools**

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Ae	Ap
1.0D	OD≤3/64 : 0.2D Ø 3/64<OD : 0.5D

YG MINIATURE END MILLS

RECOMMENDED CUTTING CONDITIONS

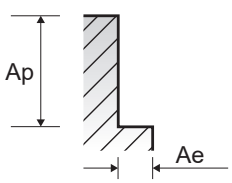
SFM(Vc) = ft./min.
IPT(fz) = in./tooth
RPM = rev./min.
IPM(Feed) = in./min.

EMK70 SERIES — 2 FLUTE [AlTiN coated] - SIDE CUTTING

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)													
				0.5mm	0.6mm	0.7mm	1/32	0.9mm	1.0mm	1.1mm	3/64	1.3mm	1.4mm	1.5mm	1/16	1.6mm	1.7mm
P	1-5	Non-alloy steel	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655
			IPT (fz)	.0001	.0001	.0002	.0002	.0002	.0002	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0004
			RPM	127200	106010	90860	80130	70670	63610	57820	53420	48920	45430	42400	40070	39760	37410
			IPM (FEED)	30	30	30	30	31	31	31	31	27	27	27	27	27	27
	6-8	Low alloy steel	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655
			IPT (fz)	.0001	.0001	.0002	.0002	.0002	.0002	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0004
			RPM	127200	106010	90860	80130	70670	63610	57820	53420	48920	45430	42400	40070	39760	37410
			IPM (FEED)	30	30	30	30	31	31	31	31	27	27	27	27	27	27
	9		SFM (Vc)	110	110	110	110	110	110	110	110	110	110	110	110	110	110
			IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002
			RPM	21210	17660	15150	13350	11780	10600	9640	8900	8150	7570	7070	6680	6620	6230
			IPM (FEED)	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	10-11.1	High alloyed steel, and tool steel	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655
			IPT (fz)	.0001	.0001	.0002	.0002	.0002	.0002	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0004
			RPM	127200	106010	90860	80130	70670	63610	57820	53420	48920	45430	42400	40070	39760	37410
			IPM (FEED)	30	30	30	30	31	31	31	31	27	27	27	27	27	27
	11.2		SFM (Vc)	110	110	110	110	110	110	110	110	110	110	110	110	110	110
			IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002
			RPM	21210	17660	15150	13350	11780	10600	9640	8900	8150	7570	7070	6680	6620	6230
			IPM (FEED)	2	2	2	2	2	2	2	2	2	2	2	2	2	2
M	12-13	Stainless steel (SUS 420, X40Cr13, 420)	SFM (Vc)	165	165	165	165	165	165	165	165	165	165	165	165	165	165
			IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002
			RPM	31800	26500	22710	20030	17660	15900	14460	13350	12240	11360	10600	10020	9940	9350
			IPM (FEED)	4	4	4	4	4	4	4	4	3	3	3	3	3	3
	14	Stainless steel (SUS 316, 316, X5CrNiMo 17 12 2, SUS 630, PH 15-5)	SFM (Vc)	220	220	220	220	220	220	220	220	220	220	220	220	220	220
			IPT (fz)	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0003	.0003	.0003	.0003	.0003
			RPM	42400	35340	30290	26710	23550	21210	19270	17800	16310	15150	14130	13350	13250	12470
			IPM (FEED)	10	10	10	10	10	10	10	10	8	8	8	8	8	8
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	SFM (Vc)	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095
			IPT (fz)	.0004	.0005	.0005	.0006	.0007	.0008	.0009	.0009	.0009	.0010	.0010	.0011	.0011	.0012
			RPM	212000	176670	151430	133550	117780	106010	96370	89030	81550	75720	70670	66770	66250	62350
			IPM (FEED)	166	166	166	166	167	167	167	167	144	144	144	144	145	145
	26-28	Copper and Copper Alloys (Bronze / Brass)	SFM (Vc)	545	545	545	545	545	545	545	545	545	545	545	545	545	545
			IPT (fz)	.0003	.0004	.0004	.0005	.0006	.0006	.0007	.0007	.0007	.0008	.0008	.0009	.0009	.0009
			RPM	106010	88330	75720	66770	58890	53000	48180	44520	40770	37860	35340	33380	33130	31180
			IPM (FEED)	67	67	67	67	67	67	67	67	57	57	57	57	58	58

*** Reduce cutting speed -15% for uncoated tools**

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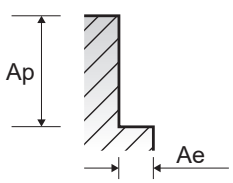
Ae	Ap
OD≤3/64 : 0.13D Ø 3/64<OD : 0.25D	1.0D

EMK70 SERIES — 2 FLUTE [AlTiN coated]- SIDE CUTTING

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

ISO	VDI 3323	Parameter	Diameter (Ø)															
			1.8mm	1.9mm	5/64	2.1mm	2.2mm	2.3mm	3/32	2.4mm	2.5mm	2.6mm	2.7mm	7/64	2.8mm	2.9mm	3.0mm	1/8
P	1-5	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
		IPT (fz)	.0004	.0004	.0004	.0004	.0005	.0005	.0005	.0005	.0005	.0006	.0006	.0006	.0006	.0006	.0006	.0007
		RPM	35340	33480	32050	30290	28910	27660	26710	26500	25440	24460	23550	22900	22710	21930	21210	20030
		IPM (FEED)	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
	6-8	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
		IPT (fz)	.0004	.0004	.0004	.0004	.0005	.0005	.0005	.0005	.0005	.0006	.0006	.0006	.0006	.0006	.0006	.0007
		RPM	35340	33480	32050	30290	28910	27660	26710	26500	25440	24460	23550	22900	22710	21930	21210	20030
		IPM (FEED)	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
	9	SFM (Vc)	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110
		IPT (fz)	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0003	.0003	.0003	.0003	.0003
		RPM	5890	5580	5350	5050	4820	4610	4450	4420	4240	4080	3920	3820	3780	3660	3530	3330
		IPM (FEED)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	10-11.1	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
		IPT (fz)	.0004	.0004	.0004	.0004	.0005	.0005	.0005	.0005	.0005	.0006	.0006	.0006	.0006	.0006	.0006	.0007
		RPM	35340	33480	32050	30290	28910	27660	26710	26500	25440	24460	23550	22900	22710	21930	21210	20030
		IPM (FEED)	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
	11.2	SFM (Vc)	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110
		IPT (fz)	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0003	.0003	.0003	.0003	.0003
		RPM	5890	5580	5350	5050	4820	4610	4450	4420	4240	4080	3920	3820	3780	3660	3530	3330
		IPM (FEED)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
M	12-13	SFM (Vc)	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165
		IPT (fz)	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0004	.0004	.0004	.0004	.0004	.0004	.0004	.0004
		RPM	8830	8370	8020	7570	7220	6910	6680	6620	6360	6120	5890	5730	5680	5490	5300	5000
		IPM (FEED)	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	14	SFM (Vc)	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220
		IPT (fz)	.0004	.0004	.0004	.0004	.0004	.0004	.0005	.0005	.0005	.0005	.0005	.0005	.0005	.0006	.0006	.0006
		RPM	11780	11160	10680	10100	9640	9220	8900	8830	8480	8150	7850	7640	7570	7310	7070	6680
		IPM (FEED)	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
N	21-25	SFM (Vc)	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095
		IPT (fz)	.0012	.0013	.0014	.0014	.0015	.0016	.0016	.0016	.0017	.0018	.0018	.0019	.0019	.0020	.0021	.0022
		RPM	58890	55790	53420	50470	48180	46090	44520	44170	42400	40770	39260	38160	37860	36560	35340	33380
		IPM (FEED)	145	145	145	144	144	144	144	145	145	145	145	145	145	145	145	145
	26-28	SFM (Vc)	545	545	545	545	545	545	545	545	545	545	545	545	545	545	545	545
		IPT (fz)	.0010	.0010	.0011	.0011	.0012	.0012	.0013	.0013	.0014	.0014	.0015	.0015	.0015	.0016	.0016	.0017
		RPM	29440	27900	26710	25240	24090	23050	22250	22080	21210	20390	19630	19080	18930	18270	17660	16700
		IPM (FEED)	58	58	58	57	57	57	57	58	58	58	58	58	58	58	58	58

*** Reduce cutting speed -15% for uncoated tools**



Ae	Ap
OD≤3/64 : 0.13D Ø 3/64<OD : 0.25D	1.0D

YG MINIATURE END MILLS

RECOMMENDED CUTTING CONDITIONS

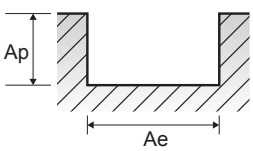
SFM(Vc) = ft./min.
IPT(fz) = in./tooth
RPM = rev./min.
IPM(Feed) = in./min.

EMK71 SERIES — 3 FLUTE [AlTiN coated] - SLOTTING

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)													
				0.5mm	0.6mm	0.7mm	1/32	0.9mm	1.0mm	1.1mm	3/64	1.3mm	1.4mm	1.5mm	1/16	1.6mm	1.7mm
P	1-5	Non-alloy steel	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655
			IPT (fz)	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002
			RPM	127200	106010	90860	80130	70670	63610	57820	53420	48920	45430	42400	40070	39760	37410
			IPM (FEED)	24	24	24	24	32	32	32	32	28	28	28	28	28	28
	6-8	Low alloy steel	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655
			IPT (fz)	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002
			RPM	127200	106010	90860	80130	70670	63610	57820	53420	48920	45430	42400	40070	39760	37410
			IPM (FEED)	24	24	24	24	32	32	32	32	28	28	28	28	28	28
	9		SFM (Vc)	110	110	110	110	110	110	110	110	110	110	110	110	110	110
			IPT (fz)	.00004	.00005	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001
			RPM	21210	17660	15150	13350	11780	10600	9640	8900	8150	7570	7070	6680	6620	6230
			IPM (FEED)	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	10-11.1	High alloyed steel, and tool steel	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655
			IPT (fz)	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002
			RPM	127200	106010	90860	80130	70670	63610	57820	53420	48920	45430	42400	40070	39760	37410
			IPM (FEED)	24	24	24	24	32	32	32	32	28	28	28	28	28	28
	11.2		SFM (Vc)	110	110	110	110	110	110	110	110	110	110	110	110	110	110
			IPT (fz)	.00004	.00005	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001
			RPM	21210	17660	15150	13350	11780	10600	9640	8900	8150	7570	7070	6680	6620	6230
			IPM (FEED)	2	2	2	2	2	2	2	2	2	2	2	2	2	2
M	12-13	Stainless steel (SUS 420, X40Cr13, 420)	SFM (Vc)	165	165	165	165	165	165	165	165	165	165	165	165	165	165
			IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001
			RPM	31800	26500	22710	20030	17660	15900	14460	13350	12240	11360	10600	10020	9940	9350
			IPM (FEED)	5	5	5	5	5	5	5	5	4	4	4	4	4	4
	14	Stainless steel (SUS 316, 316, X5CrNiMo 17 12 2, SUS 630, PH 15-5)	SFM (Vc)	220	220	220	220	220	220	220	220	220	220	220	220	220	220
			IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002
			RPM	42400	35340	30290	26710	23550	21210	19270	17800	16310	15150	14130	13350	13250	12470
			IPM (FEED)	10	10	10	10	10	10	10	10	8	8	8	8	9	9
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	SFM (Vc)	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095
			IPT (fz)	.0002	.0003	.0003	.0004	.0004	.0005	.0005	.0006	.0006	.0006	.0006	.0007	.0007	.0007
			RPM	212000	176670	151430	133550	117780	106010	96370	89030	81550	75720	70670	66770	66250	62350
			IPM (FEED)	156	156	156	156	158	158	158	158	136	136	136	136	136	136
	26-28	Copper and Copper Alloys (Bronze / Brass)	SFM (Vc)	545	545	545	545	545	545	545	545	545	545	545	545	545	545
			IPT (fz)	.0002	.0002	.0003	.0003	.0036	.0039	.0043	.0047	.0004	.0005	.0005	.0005	.0005	.0006
			RPM	106010	88330	75720	66770	58890	53000	48180	44520	40770	37860	35340	33380	33130	31180
			IPM (FEED)	62	62	62	62	628	628	628	628	54	54	54	54	54	54

NEXT PAGE ▶

*** Reduce cutting speed -15% for uncoated tools**



Ae	Ap
1.0D	OD≤3/64 : 0.2D Ø 3/64<OD : 0.5D

EMK71 SERIES

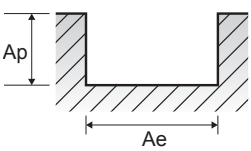
3 FLUTE [AlTiN coated] - SLOTTING

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

ISO	VDI 3323	Parameter	Diameter (Ø)															
			1.8mm	1.9mm	5/64	2.1mm	2.2mm	2.3mm	3/32	2.4mm	2.5mm	2.6mm	2.7mm	7/64	2.8mm	2.9mm	3.0mm	1/8
P	1-5	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
		IPT (fz)	.0003	.0003	.0003	.0003	.0003	.0003	.0004	.0004	.0004	.0004	.0004	.0004	.0004	.0004	.0004	.0005
		RPM	35340	33480	32050	30290	28910	27660	26710	26500	25440	24460	23550	22900	22710	21930	21210	20030
		IPM (FEED)	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
	6-8	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
		IPT (fz)	.0003	.0003	.0003	.0003	.0003	.0003	.0004	.0004	.0004	.0004	.0004	.0004	.0004	.0004	.0004	.0005
		RPM	35340	33480	32050	30290	28910	27660	26710	26500	25440	24460	23550	22900	22710	21930	21210	20030
		IPM (FEED)	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
	9	SFM (Vc)	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110
		IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002
		RPM	5890	5580	5350	5050	4820	4610	4450	4420	4240	4080	3920	3820	3780	3660	3530	3330
		IPM (FEED)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	10-11.1	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
		IPT (fz)	.0003	.0003	.0003	.0003	.0003	.0003	.0004	.0004	.0004	.0004	.0004	.0004	.0004	.0004	.0004	.0005
		RPM	35340	33480	32050	30290	28910	27660	26710	26500	25440	24460	23550	22900	22710	21930	21210	20030
		IPM (FEED)	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
	11.2	SFM (Vc)	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110
		IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002
		RPM	5890	5580	5350	5050	4820	4610	4450	4420	4240	4080	3920	3820	3780	3660	3530	3330
		IPM (FEED)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
M	12-13	SFM (Vc)	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165
		IPT (fz)	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0003
		RPM	8830	8370	8020	7570	7220	6910	6680	6620	6360	6120	5890	5730	5680	5490	5300	5000
		IPM (FEED)	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	14	SFM (Vc)	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220
		IPT (fz)	.0002	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0004	.0004	.0004	.0004	.0004	.0004	.0004
		RPM	11780	11160	10680	10100	9640	9220	8900	8830	8480	8150	7850	7640	7570	7310	7070	6680
		IPM (FEED)	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
N	21-25	SFM (Vc)	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095
		IPT (fz)	.0008	.0008	.0009	.0009	.0009	.0010	.0010	.0010	.0011	.0011	.0012	.0012	.0012	.0012	.0013	.0014
		RPM	58890	55790	53420	50470	48180	46090	44520	44170	42400	40770	39260	38160	37860	36560	35340	33380
		IPM (FEED)	136	136	136	135	135	135	135	136	136	136	136	136	136	136	136	136
	26-28	SFM (Vc)	545	545	545	545	545	545	545	545	545	545	545	545	545	545	545	545
		IPT (fz)	.0006	.0007	.0007	.0007	.0007	.0008	.0008	.0008	.0009	.0009	.0009	.0010	.0010	.0010	.0010	.0011
		RPM	29440	27900	26710	25240	24090	23050	22250	22080	21210	20390	19630	19080	18930	18270	17660	16700
		IPM (FEED)	54	54	54	54	54	54	54	55	55	55	55	55	55	55	55	55

*** Reduce cutting speed -15% for uncoated tools**

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Ae	Ap
1.0D	OD≤3/64 : 0.2D Ø 3/64<OD : 0.5D

YG MINIATURE END MILLS

RECOMMENDED CUTTING CONDITIONS

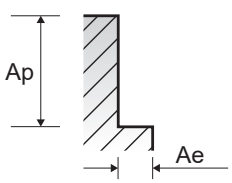
EMK71 SERIES — 3 FLUTE [AlTiN coated] - SIDE CUTTING

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

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)													
				0.5mm	0.6mm	0.7mm	1/32	0.9mm	1.0mm	1.1mm	3/64	1.3mm	1.4mm	1.5mm	1/16	1.6mm	1.7mm
P	1-5	Non-alloy steel	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655
			IPT (fz)	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0003	.0002	.0003	.0003	.0003	.0003	.0003
			RPM	127200	106010	90860	80130	70670	63610	57820	53420	48920	45430	42400	40070	39760	37410
			IPM (FEED)	41	41	41	41	42	42	42	42	36	36	36	36	37	37
	6-8	Low alloy steel	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655
			IPT (fz)	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0003	.0002	.0003	.0003	.0003	.0003	.0003
			RPM	127200	106010	90860	80130	70670	63610	57820	53420	48920	45430	42400	40070	39760	37410
			IPM (FEED)	41	41	41	41	42	42	42	42	36	36	36	36	37	37
	9		SFM (Vc)	110	110	110	110	110	110	110	110	110	110	110	110	110	110
			IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002
			RPM	21210	17660	15150	13350	11780	10600	9640	8900	8150	7570	7070	6680	6620	6230
			IPM (FEED)	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	10-11.1	High alloyed steel, and tool steel	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655
			IPT (fz)	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0003	.0002	.0003	.0003	.0003	.0003	.0003
			RPM	127200	106010	90860	80130	70670	63610	57820	53420	48920	45430	42400	40070	39760	37410
			IPM (FEED)	41	41	41	41	42	42	42	42	36	36	36	36	37	37
	11.2		SFM (Vc)	110	110	110	110	110	110	110	110	110	110	110	110	110	110
			IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002
			RPM	21210	17660	15150	13350	11780	10600	9640	8900	8150	7570	7070	6680	6620	6230
			IPM (FEED)	3	3	3	3	3	3	3	3	3	3	3	3	3	3
M	12-13	Stainless steel (SUS 420, X40Cr13, 420)	SFM (Vc)	165	165	165	165	165	165	165	165	165	165	165	165	165	165
			IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0001	.0001	.0002	.0002	.0002	.0002
			RPM	31800	26500	22710	20030	17660	15900	14460	13350	12240	11360	10600	10020	9940	9350
			IPM (FEED)	6	6	6	6	6	6	6	6	5	5	5	5	5	5
	14	Stainless steel (SUS 316, 316, X5CrNiMo 17 12 2, SUS 630, PH 15-5)	SFM (Vc)	220	220	220	220	220	220	220	220	220	220	220	220	220	220
			IPT (fz)	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0003	.0003
			RPM	42400	35340	30290	26710	23550	21210	19270	17800	16310	15150	14130	13350	13250	12470
			IPM (FEED)	13	13	13	13	13	13	13	13	11	11	11	11	11	11
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	SFM (Vc)	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095
			IPT (fz)	.0004	.0004	.0005	.0006	.0006	.0007	.0008	.0009	.0008	.0009	.0009	.0010	.0010	.0010
			RPM	212000	176670	151430	133550	117780	106010	96370	89030	81550	75720	70670	66770	66250	62350
			IPM (FEED)	224	224	224	224	227	227	227	227	194	194	194	194	196	196
	26-28	Copper and Copper Alloys (Bronze / Brass)	SFM (Vc)	545	545	545	545	545	545	545	545	545	545	545	545	545	545
			IPT (fz)	.0003	.0003	.0004	.0005	.0005	.0006	.0006	.0007	.0006	.0007	.0007	.0008	.0008	.0008
			RPM	106010	88330	75720	66770	58890	53000	48180	44520	40770	37860	35340	33380	33130	31180
			IPM (FEED)	90	90	90	90	91	91	91	91	78	78	78	78	79	79

*** Reduce cutting speed -15% for uncoated tools**

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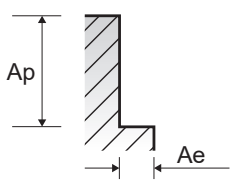
Ae	Ap
OD≤3/64 : 0.13D Ø 3/64<OD : 0.25D	1.0D

EMK71 SERIES — 3 FLUTE [AlTiN coated]- SIDE CUTTING

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

ISO	VDI 3323	Parameter	Diameter (Ø)															
			1.8mm	1.9mm	5/64	2.1mm	2.2mm	2.3mm	3/32	2.4mm	2.5mm	2.6mm	2.7mm	7/64	2.8mm	2.9mm	3.0mm	1/8
P	1-5	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
		IPT (fz)	.0003	.0004	.0004	.0004	.0004	.0004	.0005	.0005	.0005	.0005	.0005	.0005	.0005	.0006	.0006	.0006
		RPM	35340	33480	32050	30290	28910	27660	26710	26500	25440	24460	23550	22900	22710	21930	21210	20030
		IPM (FEED)	37	37	37	36	36	36	36	37	37	37	37	37	37	37	37	37
	6-8	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
		IPT (fz)	.0003	.0004	.0004	.0004	.0004	.0004	.0005	.0005	.0005	.0005	.0005	.0005	.0005	.0006	.0006	.0006
		RPM	35340	33480	32050	30290	28910	27660	26710	26500	25440	24460	23550	22900	22710	21930	21210	20030
		IPM (FEED)	37	37	37	36	36	36	36	37	37	37	37	37	37	37	37	37
	9	SFM (Vc)	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110
		IPT (fz)	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0003
		RPM	5890	5580	5350	5050	4820	4610	4450	4420	4240	4080	3920	3820	3780	3660	3530	3330
		IPM (FEED)	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	10-11.1	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
		IPT (fz)	.0003	.0004	.0004	.0004	.0004	.0004	.0005	.0005	.0005	.0005	.0005	.0005	.0005	.0006	.0006	.0006
		RPM	35340	33480	32050	30290	28910	27660	26710	26500	25440	24460	23550	22900	22710	21930	21210	20030
		IPM (FEED)	37	37	37	36	36	36	36	37	37	37	37	37	37	37	37	37
	11.2	SFM (Vc)	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110
		IPT (fz)	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0003
		RPM	5890	5580	5350	5050	4820	4610	4450	4420	4240	4080	3920	3820	3780	3660	3530	3330
		IPM (FEED)	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
M	12-13	SFM (Vc)	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165
		IPT (fz)	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0004
		RPM	8830	8370	8020	7570	7220	6910	6680	6620	6360	6120	5890	5730	5680	5490	5300	5000
		IPM (FEED)	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	14	SFM (Vc)	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220
		IPT (fz)	.0003	.0003	.0004	.0004	.0004	.0004	.0004	.0004	.0004	.0005	.0005	.0005	.0005	.0005	.0005	.0006
		RPM	11780	11160	10680	10100	9640	9220	8900	8830	8480	8150	7850	7640	7570	7310	7070	6680
		IPM (FEED)	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
N	21-25	SFM (Vc)	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095
		IPT (fz)	.0011	.0012	.0012	.0013	.0013	.0014	.0015	.0015	.0015	.0016	.0017	.0017	.0017	.0018	.0019	.0020
		RPM	58890	55790	53420	50470	48180	46090	44520	44170	42400	40770	39260	38160	37860	36560	35340	33380
		IPM (FEED)	196	196	196	194	194	194	194	196	196	196	196	196	196	196	196	196
	26-28	SFM (Vc)	545	545	545	545	545	545	545	545	545	545	545	545	545	545	545	545
		IPT (fz)	.0009	.0009	.0010	.0010	.0011	.0011	.0012	.0012	.0012	.0013	.0013	.0014	.0014	.0014	.0015	.0016
		RPM	29440	27900	26710	25240	24090	23050	22250	22080	21210	20390	19630	19080	18930	18270	17660	16700
		IPM (FEED)	79	79	79	77	77	77	77	78	78	78	78	78	78	78	78	78

*** Reduce cutting speed -15% for uncoated tools**



Ae	Ap
OD≤3/64 : 0.13D Ø 3/64<OD : 0.25D	1.0D

YG MINIATURE END MILLS

RECOMMENDED CUTTING CONDITIONS

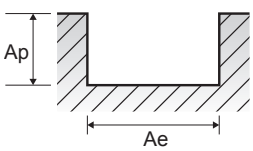
SFM(Vc) = ft./min.
IPT(fz) = in./tooth
RPM = rev./min.
IPM(Feed) = in./min.

EMK72 SERIES — 4 FLUTE [AlTiN coated] - SLOTTING

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)													
				0.5mm	0.6mm	0.7mm	1/32	0.9mm	1.0mm	1.1mm	3/64	1.3mm	1.4mm	1.5mm	1/16	1.6mm	1.7mm
P	1-5	Non-alloy steel	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655
			IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002
			RPM	127200	106010	90860	80130	70670	63610	57820	53420	48920	45430	42400	40070	39760	37410
			IPM (FEED)	38	38	38	38	38	38	38	38	34	34	34	34	33	33
	6-8	Low alloy steel	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655
			IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002
			RPM	127200	106010	90860	80130	70670	63610	57820	53420	48920	45430	42400	40070	39760	37410
			IPM (FEED)	38	38	38	38	38	38	38	38	34	34	34	34	33	33
	9		SFM (Vc)	110	110	110	110	110	110	110	110	110	110	110	110	110	110
			IPT (fz)	.00003	.00004	.00004	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001
			RPM	21210	17660	15150	13350	11780	10600	9640	8900	8150	7570	7070	6680	6620	6230
			IPM (FEED)	3	3	3	3	3	3	3	3	2	2	2	2	3	3
	10-11.1	High alloyed steel, and tool steel	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655
			IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002
			RPM	127200	106010	90860	80130	70670	63610	57820	53420	48920	45430	42400	40070	39760	37410
			IPM (FEED)	38	38	38	38	38	38	38	38	34	34	34	34	33	33
	11.2		SFM (Vc)	110	110	110	110	110	110	110	110	110	110	110	110	110	110
			IPT (fz)	.00003	.00004	.00004	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001
			RPM	21210	17660	15150	13350	11780	10600	9640	8900	8150	7570	7070	6680	6620	6230
			IPM (FEED)	3	3	3	3	3	3	3	3	2	2	2	2	3	3
M	12-13	Stainless steel (SUS 420, X40Cr13, 420)	SFM (Vc)	165	165	165	165	165	165	165	165	165	165	165	165	165	165
			IPT (fz)	.00004	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001
			RPM	31800	26500	22710	20030	17660	15900	14460	13350	12240	11360	10600	10020	9940	9350
			IPM (FEED)	6	6	6	6	5	5	5	5	5	5	5	5	5	5
	14	Stainless steel (SUS 316, 316, X5CrNiMo 17 12 2, SUS 630, PH 15-5)	SFM (Vc)	220	220	220	220	220	220	220	220	220	220	220	220	220	220
			IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002
			RPM	42400	35340	30290	26710	23550	21210	19270	17800	16310	15150	14130	13350	13250	12470
			IPM (FEED)	12	12	12	12	11	11	11	11	10	10	10	10	10	10
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	SFM (Vc)	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095
			IPT (fz)	.0002	.0003	.0003	.0004	.0004	.0004	.0005	.0005	.0005	.0005	.0006	.0006	.0006	.0007
			RPM	212000	176670	151430	133550	117780	106010	96370	89030	81550	75720	70670	66770	66250	62350
			IPM (FEED)	187	187	187	187	185	185	185	185	160	160	160	160	162	162
	26-28	Copper and Copper Alloys (Bronze / Brass)	SFM (Vc)	545	545	545	545	545	545	545	545	545	545	545	545	545	545
			IPT (fz)	.0002	.0002	.0002	.0003	.0003	.0004	.0004	.0004	.0004	.0004	.0005	.0005	.0005	.0005
			RPM	106010	88330	75720	66770	58890	53000	48180	44520	40770	37860	35340	33380	33130	31180
			IPM (FEED)	75	75	75	75	75	75	75	75	64	64	64	64	64	64

NEXT PAGE ▶

*** Reduce cutting speed -15% for uncoated tools**



Ae	Ap
1.0D	OD≤3/64 : 0.2D Ø 3/64<OD : 0.5D

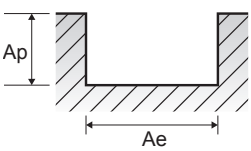
EMK72 SERIES — 4 FLUTE [AlTiN coated] - SLOTTING

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

ISO	VDI 3323	Parameter	Diameter (Ø)															
			1.8mm	1.9mm	5/64	2.1mm	2.2mm	2.3mm	3/32	2.4mm	2.5mm	2.6mm	2.7mm	7/64	2.8mm	2.9mm	3.0mm	1/8
P	1-5	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
		IPT (fz)	.0002	.0002	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0004	.0004	.0004	.0004	.0004	.0004
		RPM	35340	33480	32050	30290	28910	27660	26710	26500	25440	24460	23550	22900	22710	21930	21210	20030
		IPM (FEED)	33	33	33	33	33	33	33	34	34	34	34	34	34	34	34	34
	6-8	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
		IPT (fz)	.0002	.0002	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0004	.0004	.0004	.0004	.0004	.0004
		RPM	35340	33480	32050	30290	28910	27660	26710	26500	25440	24460	23550	22900	22710	21930	21210	20030
		IPM (FEED)	33	33	33	33	33	33	33	34	34	34	34	34	34	34	34	34
	9	SFM (Vc)	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110
		IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002
		RPM	5890	5580	5350	5050	4820	4610	4450	4420	4240	4080	3920	3820	3780	3660	3530	3330
		IPM (FEED)	3	3	3	2	2	2	2	3	3	3	3	3	3	3	3	3
	10-11.1	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
		IPT (fz)	.0002	.0002	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0004	.0004	.0004	.0004	.0004	.0004
		RPM	35340	33480	32050	30290	28910	27660	26710	26500	25440	24460	23550	22900	22710	21930	21210	20030
		IPM (FEED)	33	33	33	33	33	33	33	34	34	34	34	34	34	34	34	34
	11.2	SFM (Vc)	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110
		IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002
		RPM	5890	5580	5350	5050	4820	4610	4450	4420	4240	4080	3920	3820	3780	3660	3530	3330
		IPM (FEED)	3	3	3	2	2	2	2	3	3	3	3	3	3	3	3	3
M	12-13	SFM (Vc)	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165
		IPT (fz)	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002
		RPM	8830	8370	8020	7570	7220	6910	6680	6620	6360	6120	5890	5730	5680	5490	5300	5000
		IPM (FEED)	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	14	SFM (Vc)	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220
		IPT (fz)	.0002	.0002	.0002	.0002	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0004	.0004
		RPM	11780	11160	10680	10100	9640	9220	8900	8830	8480	8150	7850	7640	7570	7310	7070	6680
		IPM (FEED)	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
N	21-25	SFM (Vc)	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095
		IPT (fz)	.0007	.0007	.0008	.0008	.0008	.0009	.0009	.0009	.0009	.0010	.0010	.0011	.0011	.0011	.0011	.0012
		RPM	58890	55790	53420	50470	48180	46090	44520	44170	42400	40770	39260	38160	37860	36560	35340	33380
		IPM (FEED)	162	162	162	160	160	160	160	160	160	160	160	160	160	160	160	160
	26-28	SFM (Vc)	545	545	545	545	545	545	545	545	545	545	545	545	545	545	545	545
		IPT (fz)	.0005	.0006	.0006	.0006	.0007	.0007	.0007	.0007	.0008	.0008	.0008	.0008	.0009	.0009	.0009	.0010
		RPM	29440	27900	26710	25240	24090	23050	22250	22080	21210	20390	19630	19080	18930	18270	17660	16700
		IPM (FEED)	64	64	64	64	64	64	64	65	65	65	65	65	65	65	65	65

*** Reduce cutting speed -15% for uncoated tools**

NEXT PAGE ▶



Ae	Ap
1.0D	OD≤3/64 : 0.2D Ø 3/64<OD : 0.5D

YG MINIATURE END MILLS

RECOMMENDED CUTTING CONDITIONS

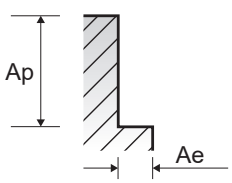
EMK72 SERIES — 4 FLUTE [AlTiN coated] - SIDE CUTTING

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

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)													
				0.5mm	0.6mm	0.7mm	1/32	0.9mm	1.0mm	1.1mm	3/64	1.3mm	1.4mm	1.5mm	1/16	1.6mm	1.7mm
P	1-5	Non-alloy steel	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655
			IPT (fz)	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0003	.0003
			RPM	127200	106010	90860	80130	70670	63610	57820	53420	48920	45430	42400	40070	39760	37410
			IPM (FEED)	48	48	48	48	49	49	49	49	43	43	43	43	44	44
	6-8	Low alloy steel	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655
			IPT (fz)	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0003	.0003
			RPM	127200	106010	90860	80130	70670	63610	57820	53420	48920	45430	42400	40070	39760	37410
			IPM (FEED)	48	48	48	48	49	49	49	49	43	43	43	43	44	44
	9		SFM (Vc)	110	110	110	110	110	110	110	110	110	110	110	110	110	110
			IPT (fz)	.00004	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001
			RPM	21210	17660	15150	13350	11780	10600	9640	8900	8150	7570	7070	6680	6620	6230
			IPM (FEED)	4	4	4	4	4	4	4	4	3	3	3	3	3	3
	10-11.1	High alloyed steel, and tool steel	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655
			IPT (fz)	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0003	.0003
			RPM	127200	106010	90860	80130	70670	63610	57820	53420	48920	45430	42400	40070	39760	37410
			IPM (FEED)	48	48	48	48	49	49	49	49	43	43	43	43	44	44
	11.2		SFM (Vc)	110	110	110	110	110	110	110	110	110	110	110	110	110	110
			IPT (fz)	.00004	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001
			RPM	21210	17660	15150	13350	11780	10600	9640	8900	8150	7570	7070	6680	6620	6230
			IPM (FEED)	4	4	4	4	4	4	4	4	3	3	3	3	3	3
M	12-13	Stainless steel (SUS 420, X40Cr13, 420)	SFM (Vc)	165	165	165	165	165	165	165	165	165	165	165	165	165	165
			IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002
			RPM	31800	26500	22710	20030	17660	15900	14460	13350	12240	11360	10600	10020	9940	9350
			IPM (FEED)	7	7	7	7	7	7	7	7	6	6	6	6	6	6
	14	Stainless steel (SUS 316, 316, X5CrNiMo 17 12 2, SUS 630, PH 15-5)	SFM (Vc)	220	220	220	220	220	220	220	220	220	220	220	220	220	220
			IPT (fz)	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0002	.0003
			RPM	42400	35340	30290	26710	23550	21210	19270	17800	16310	15150	14130	13350	13250	12470
			IPM (FEED)	15	15	15	15	15	15	15	15	13	13	13	13	13	13
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	SFM (Vc)	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095
			IPT (fz)	.0003	.0004	.0004	.0005	.0006	.0006	.0007	.0008	.0007	.0008	.0008	.0009	.0009	.0009
			RPM	212000	176670	151430	133550	117780	106010	96370	89030	81550	75720	70670	66770	66250	62350
			IPM (FEED)	267	267	267	267	267	267	267	267	230	230	230	230	231	231
	26-28	Copper and Copper Alloys (Bronze / Brass)	SFM (Vc)	545	545	545	545	545	545	545	545	545	545	545	545	545	545
			IPT (fz)	.0003	.0003	.0004	.0004	.0005	.0005	.0006	.0006	.0006	.0006	.0007	.0007	.0007	.0007
			RPM	106010	88330	75720	66770	58890	53000	48180	44520	40770	37860	35340	33380	33130	31180
			IPM (FEED)	107	107	107	107	107	107	107	107	92	92	92	92	93	93

*** Reduce cutting speed -15% for uncoated tools**

NEXT PAGE ▶



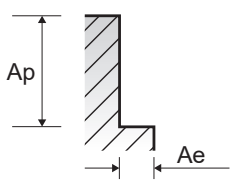
Ae	Ap
OD≤3/64 : 0.13D Ø 3/64<OD : 0.25D	1.0D

EMK72 SERIES — 4 FLUTE [AlTiN coated]- SIDE CUTTING

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

ISO	VDI 3323	Parameter	Diameter (Ø)															
			1.8mm	1.9mm	5/64	2.1mm	2.2mm	2.3mm	3/32	2.4mm	2.5mm	2.6mm	2.7mm	7/64	2.8mm	2.9mm	3.0mm	1/8
P	1-5	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
		IPT (fz)	.0003	.0003	.0003	.0004	.0004	.0004	.0004	.0004	.0004	.0004	.0005	.0005	.0005	.0005	.0005	.0005
		RPM	35340	33480	32050	30290	28910	27660	26710	26500	25440	24460	23550	22900	22710	21930	21210	20030
		IPM (FEED)	44	44	44	43	43	43	43	43	43	43	43	43	43	43	43	43
	6-8	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
		IPT (fz)	.0003	.0003	.0003	.0004	.0004	.0004	.0004	.0004	.0004	.0004	.0005	.0005	.0005	.0005	.0005	.0005
		RPM	35340	33480	32050	30290	28910	27660	26710	26500	25440	24460	23550	22900	22710	21930	21210	20030
		IPM (FEED)	44	44	44	43	43	43	43	43	43	43	43	43	43	43	43	43
	9	SFM (Vc)	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110
		IPT (fz)	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003
		RPM	5890	5580	5350	5050	4820	4610	4450	4420	4240	4080	3920	3820	3780	3660	3530	3330
		IPM (FEED)	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	10-11.1	SFM (Vc)	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655	655
		IPT (fz)	.0003	.0003	.0003	.0004	.0004	.0004	.0004	.0004	.0004	.0004	.0005	.0005	.0005	.0005	.0005	.0005
		RPM	35340	33480	32050	30290	28910	27660	26710	26500	25440	24460	23550	22900	22710	21930	21210	20030
		IPM (FEED)	44	44	44	43	43	43	43	43	43	43	43	43	43	43	43	43
	11.2	SFM (Vc)	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110
		IPT (fz)	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003
		RPM	5890	5580	5350	5050	4820	4610	4450	4420	4240	4080	3920	3820	3780	3660	3530	3330
		IPM (FEED)	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
M	12-13	SFM (Vc)	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165
		IPT (fz)	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0003	.0003	.0003	.0003	.0003
		RPM	8830	8370	8020	7570	7220	6910	6680	6620	6360	6120	5890	5730	5680	5490	5300	5000
		IPM (FEED)	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	14	SFM (Vc)	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220
		IPT (fz)	.0003	.0003	.0003	.0003	.0003	.0004	.0004	.0004	.0004	.0004	.0004	.0004	.0004	.0005	.0005	.0005
		RPM	11780	11160	10680	10100	9640	9220	8900	8830	8480	8150	7850	7640	7570	7310	7070	6680
		IPM (FEED)	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
N	21-25	SFM (Vc)	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095	1095
		IPT (fz)	.0010	.0010	.0011	.0011	.0012	.0012	.0013	.0013	.0014	.0014	.0015	.0015	.0015	.0016	.0016	.0017
		RPM	58890	55790	53420	50470	48180	46090	44520	44170	42400	40770	39260	38160	37860	36560	35340	33380
		IPM (FEED)	231	231	231	230	230	230	230	232	232	232	232	232	232	232	232	232
	26-28	SFM (Vc)	545	545	545	545	545	545	545	545	545	545	545	545	545	545	545	545
		IPT (fz)	.0008	.0008	.0009	.0009	.0010	.0010	.0010	.0011	.0011	.0011	.0012	.0012	.0012	.0013	.0013	.0014
		RPM	29440	27900	26710	25240	24090	23050	22250	22080	21210	20390	19630	19080	18930	18270	17660	16700
		IPM (FEED)	93	93	93	92	92	92	92	93	93	93	93	93	93	93	93	93

*** Reduce cutting speed -15% for uncoated tools**



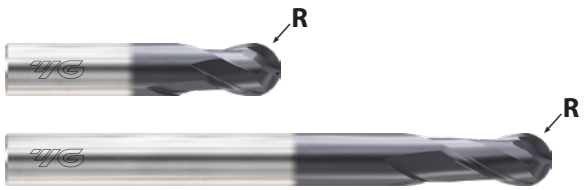
Ae	Ap
OD≤3/64 : 0.13D Ø 3/64<OD : 0.25D	1.0D

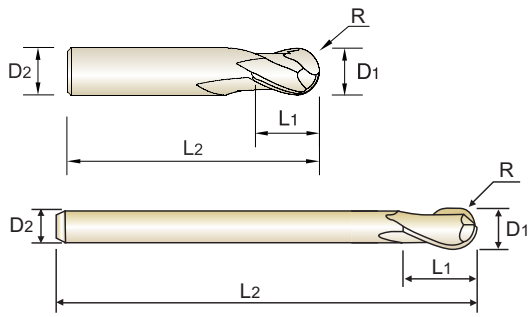
EV MILL END MILLS

Plain Shank **GMK53 SERIES**

CARBIDE, 2 FLUTE BALL NOSE

▶Ensures smooth chip evacuation and enhanced cutting performance at the ball tip





CARBIDE | 2 | 30° | R ±.0002 | R ±.0004 | PLAIN | Y Coating

p.A45

R1/32~R1/8 R5/32~R1/4

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D1	D2	L1	L2
GMK53004	R1/32	1/16	1/4	1/16	2-1/2
GMK53902	R1/16	1/8	1/4	3/16	1-1/2
GMK53901	R1/16	1/8	1/8	5/16	2-3/8
GMK53008	R1/16	1/8	1/4	5/16	2-3/4
GMK53010	R5/64	5/32	1/4	1/4	1-1/2
GMK53012	R3/32	3/16	3/16	3/8	3-1/8
GMK53903	R3/32	3/16	1/4	5/16	1-1/2
GMK53904	R1/8	1/4	1/4	3/8	1-1/2
GMK53016	R1/8	1/4	1/4	1/2	3-1/2
GMK53020	R5/32	5/16	3/8	7/16	2
GMK53905	R3/16	3/8	3/8	1/2	2
GMK53024	R3/16	3/8	3/8	3/4	4
GMK53028	R7/32	7/16	1/2	9/16	2-3/8
GMK53906	R1/4	1/2	1/2	5/8	2-3/8
GMK53032	R1/4	1/2	1/2	7/8	4-1/4

Size	Ball Radius Tolerance	Mill Dia. Tolerance	Shank Dia. Tolerance
Up to Ø1/4	±.0002	0 ~ -.0005	h5
Over Ø1/4	±.0004	0 ~ -.0006	

◎ : Excellent ○ : Good

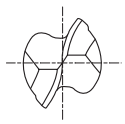
ISO	P											M				K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel			Stainless steel				Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	14.2	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎					○	○	○	○	○	○

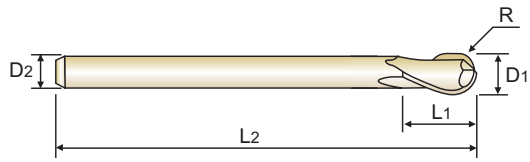
ISO	N											S							H						
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials				Heat Resistant Super Alloys						Titanium Alloys		Hardened steel					Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29.1	29.2	29.3	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc													15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100					200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended																				○					○	

CARBIDE, 2 FLUTE BALL NOSE

▶Ensures smooth chip evacuation and enhanced cutting performance at the ball tip







CARBIDE | 2 | 30° | R ±0.005 | R ±0.010 | PLAIN | Y Coating | p.A46

R1.0~R3.0 R4.0~R8.0

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D_1	D_2	L_1	L_2
GMK31020	R1.0	**2.0**	6	5	50
GMK31030	R1.5	**3.0**	6	6	60
GMK31040	R2.0	**4.0**	6	8	70
GMK31050	R2.5	**5.0**	6	10	80
GMK31060060	R3.0	**6.0**	6	9	60
GMK31060	R3.0	**6.0**	6	12	90
GMK31080060	R4.0	**8.0**	8	12	60
GMK31100	R5.0	**10.0**	10	18	100
GMK31120	R6.0	**12.0**	12	22	110
GMK31160	R8.0	**16.0**	16	30	150

Size	Ball Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
Up to Ø6	±0.005	0 ~ -0.012	h5
Over Ø6	±0.010	0 ~ -0.015	

◎ : 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	14.2	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎					○	○	○	○	○	○

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	29.1	29.2	29.3	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc													15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100					200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended																				○					○	

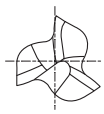
EV MILL END MILLS

Plain Shank **GMK88 SERIES**

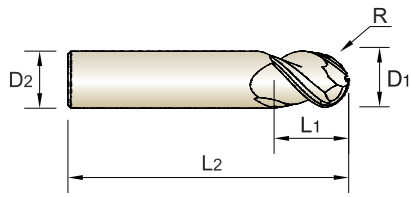
CARBIDE, 3 FLUTE BALL NOSE

- For roughing and semi-finishing applications having one edge to center
- Smooth cutting action, unequal flute geometry and multiple helix eliminate vibrations
- Short overhang for applications on Mill-Turn machines or Lathes with driven tooling





Unequal Index



CARBIDE | 3 | 43°/45°/47° | R ±.0008 | PLAIN | Y Coating | p.A47

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D_1	D_2	L_1	L_2
GMK88008	R1/16	**1/8**	1/4	3/16	1-1/2
GMK88010	R5/64	**5/32**	1/4	1/4	1-1/2
GMK88012	R3/32	**3/16**	1/4	5/16	1-1/2
GMK88016	R1/8	**1/4**	1/4	3/8	1-1/2
GMK88020	R5/32	**5/16**	3/8	7/16	2
GMK88024	R3/16	**3/8**	3/8	1/2	2
GMK88028	R7/32	**7/16**	1/2	9/16	2-3/8
GMK88032	R1/4	**1/2**	1/2	5/8	2-3/8

Ball Radius Tolerance	Mill Dia. Tolerance	Shank Dia. Tolerance
±.0008	0 ~ -.0008	h5

◎ : Excellent ○ : Good

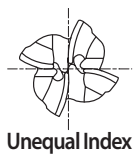
ISO	P												M				K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel			Stainless steel				Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	14.2	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎		○	○	○	○	○	○	○	○	○	○

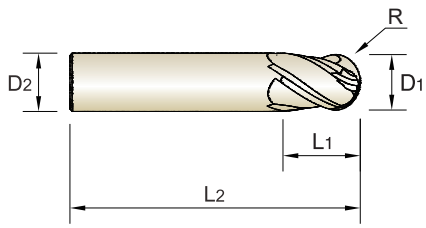
ISO	N												S							H						
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials				Heat Resistant Super Alloys					Titanium Alloys		Hardened steel					Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29.1	29.2	29.3	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc													15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100					200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended													○	○	○	○	○	○	○							

CARBIDE, 4 FLUTE BALL NOSE

- For roughing and finishing applications having two edges to center
- Unequal flute geometry and multiple helix eliminate vibrations
- Excellent performance in Steels under HRc40 and other materials
- Short overhang for applications on Mill-Turn machines or Lathes with driven tooling







CARBIDE | 4 | 35°/37° | R ±.0008 | PLAIN | Y Coating

p.A48

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D_1	D_2	L_1	L_2
GMK90008	R1/16	**1/8**	1/4	3/16	1-1/2
GMK90010	R5/64	**5/32**	1/4	1/4	1-1/2
GMK90012	R3/32	**3/16**	1/4	5/16	1-1/2
GMK90016	R1/8	**1/4**	1/4	3/8	1-1/2
GMK90020	R5/32	**5/16**	3/8	7/16	2
GMK90024	R3/16	**3/8**	3/8	1/2	2
GMK90028	R7/32	**7/16**	1/2	9/16	2-3/8
GMK90032	R1/4	**1/2**	1/2	5/8	2-3/8

Ball Radius Tolerance	Mill Dia. Tolerance	Shank Dia. Tolerance
±.0008	0 ~ -.0008	h5

◎ : 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	14.2	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎		○	○	○	○	○	○	○	○	○	○

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	29.1	29.2	29.3	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc													15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100					200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended													○	○	○	○	○	○	○							

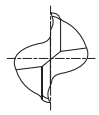
EV MILL END MILLS

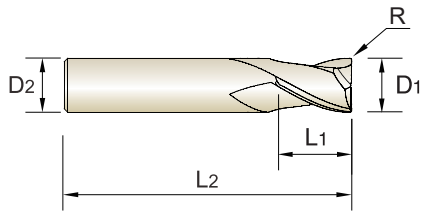
Plain Shank **GMK86 SERIES**

CARBIDE, 2 FLUTE CORNER RADIUS

▶ Strengthens the cutting edge by incorporating bottom land touch for improved durability
▶ Short overhang for applications on Mill-Turn machines or Lathes with driven tooling







CARBIDE | 2 | 30° | R ±.0004 | R ±.0006 | PLAIN | Y Coating

p.A49

Ø1/8~Ø1/4 Ø5/16~Ø1/2 — Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D1	D2	L1	L2
GMK86008	R.005	**1/8**	1/4	3/16	1-1/2
GMK86901	R.010	**1/8**	1/4	3/16	1-1/2
GMK86909	R.015	**1/8**	1/4	3/16	1-1/2
GMK86917	R.020	**1/8**	1/4	3/16	1-1/2
GMK86925	R.030	**1/8**	1/4	3/16	1-1/2
GMK86010	R.005	**5/32**	1/4	1/4	1-1/2
GMK86902	R.010	**5/32**	1/4	1/4	1-1/2
GMK86910	R.015	**5/32**	1/4	1/4	1-1/2
GMK86918	R.020	**5/32**	1/4	1/4	1-1/2
GMK86926	R.030	**5/32**	1/4	1/4	1-1/2
GMK86012	R.005	**3/16**	1/4	5/16	1-1/2
GMK86903	R.010	**3/16**	1/4	5/16	1-1/2
GMK86911	R.015	**3/16**	1/4	5/16	1-1/2
GMK86919	R.020	**3/16**	1/4	5/16	1-1/2
GMK86927	R.030	**3/16**	1/4	5/16	1-1/2
GMK86016	R.005	**1/4**	1/4	3/8	1-1/2
GMK86904	R.010	**1/4**	1/4	3/8	1-1/2
GMK86912	R.015	**1/4**	1/4	3/8	1-1/2
GMK86920	R.020	**1/4**	1/4	3/8	1-1/2
GMK86928	R.030	**1/4**	1/4	3/8	1-1/2

Size	Corner Radius Tolerance	Mill Dia. Tolerance	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					
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	14.2	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎					○	○	○	○	○	○

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	29.1	29.2	29.3	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc													15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100					200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended						○	○	○	○											○					○	

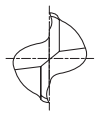
EV MILL END MILLS

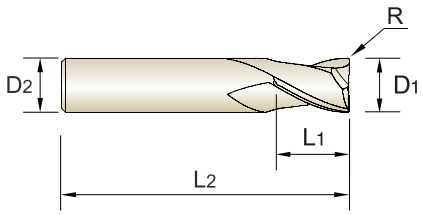
Plain Shank **GMK86 SERIES**

CARBIDE, 2 FLUTE CORNER RADIUS

▶ Strengthens the cutting edge by incorporating bottom land touch for improved durability
▶ Short overhang for applications on Mill-Turn machines or Lathes with driven tooling







CARBIDE | 2 | 30° | R ±.0004 | R ±.0006 | PLAIN | Y Coating

p.A49

Ø1/8~Ø1/4 Ø5/16~Ø1/2 Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D_1	D_2	L_1	L_2
GMK86020	R.005	**5/16**	3/8	7/16	2
GMK86905	R.010	**5/16**	3/8	7/16	2
GMK86913	R.015	**5/16**	3/8	7/16	2
GMK86921	R.020	**5/16**	3/8	7/16	2
GMK86929	R.030	**5/16**	3/8	7/16	2
GMK86024	R.005	**3/8**	3/8	1/2	2
GMK86906	R.010	**3/8**	3/8	1/2	2
GMK86914	R.015	**3/8**	3/8	1/2	2
GMK86922	R.020	**3/8**	3/8	1/2	2
GMK86930	R.030	**3/8**	3/8	1/2	2
GMK86028	R.005	**7/16**	1/2	9/16	2-3/8
GMK86907	R.010	**7/16**	1/2	9/16	2-3/8
GMK86915	R.015	**7/16**	1/2	9/16	2-3/8
GMK86923	R.020	**7/16**	1/2	9/16	2-3/8
GMK86931	R.030	**7/16**	1/2	9/16	2-3/8
GMK86032	R.005	**1/2**	1/2	5/8	2-3/8
GMK86908	R.010	**1/2**	1/2	5/8	2-3/8
GMK86916	R.015	**1/2**	1/2	5/8	2-3/8
GMK86924	R.020	**1/2**	1/2	5/8	2-3/8
GMK86932	R.030	**1/2**	1/2	5/8	2-3/8

Size	Corner Radius Tolerance	Mill Dia. Tolerance	Shank Dia. Tolerance
Up to Ø1/4	±.0004	0 ~ -.0005	h5
Over Ø1/4	±.0006	0 ~ -.0006	

◎ : 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	14.2	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎					○	○	○	○	○	○

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	29.1	29.2	29.3	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc													15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100					200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended						○	○	○	○											○					○	

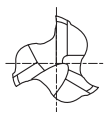
EV MILL END MILLS

Plain Shank **GMK89 SERIES**

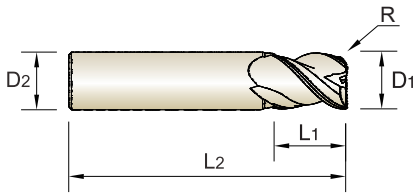
CARBIDE, 3 FLUTE CORNER RADIUS

▶Smooth cutting action, unequal flute geometry and multiple helix eliminate vibrations
▶Short overhang for applications on Mill-Turn machines or Lathes with driven tooling





Unequal Index



CARBIDE | 3 | 43°/45°/47° | R ±.0008 | PLAIN | Y Coating

p.A50-A51

Unit : Inch

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GMK89008	R.005	**1/8**	1/4	3/16	1-1/2
GMK89901	R.010	**1/8**	1/4	3/16	1-1/2
GMK89909	R.015	**1/8**	1/4	3/16	1-1/2
GMK89917	R.020	**1/8**	1/4	3/16	1-1/2
GMK89925	R.030	**1/8**	1/4	3/16	1-1/2
GMK89010	R.005	**5/32**	1/4	1/4	1-1/2
GMK89902	R.010	**5/32**	1/4	1/4	1-1/2
GMK89910	R.015	**5/32**	1/4	1/4	1-1/2
GMK89918	R.020	**5/32**	1/4	1/4	1-1/2
GMK89926	R.030	**5/32**	1/4	1/4	1-1/2
GMK89012	R.005	**3/16**	1/4	5/16	1-1/2
GMK89903	R.010	**3/16**	1/4	5/16	1-1/2
GMK89911	R.015	**3/16**	1/4	5/16	1-1/2
GMK89919	R.020	**3/16**	1/4	5/16	1-1/2
GMK89927	R.030	**3/16**	1/4	5/16	1-1/2
GMK89016	R.005	**1/4**	1/4	3/8	1-1/2
GMK89904	R.010	**1/4**	1/4	3/8	1-1/2
GMK89912	R.015	**1/4**	1/4	3/8	1-1/2
GMK89920	R.020	**1/4**	1/4	3/8	1-1/2
GMK89928	R.030	**1/4**	1/4	3/8	1-1/2

NEXT PAGE ▶

Corner Radius Tolerance	Mill Dia. Tolerance	Shank Dia. Tolerance
±.0008	0 ~ -.0008	h5

◎ : 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	14.2	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎		○	○	○	○	○	○	○	○	○	○

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	29.1	29.2	29.3	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc													15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100					200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended													○	○	○	○	○	○	○							

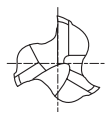
EV MILL END MILLS

Plain Shank **GMK89 SERIES**

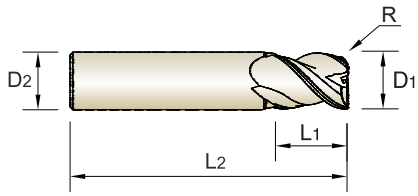
CARBIDE, 3 FLUTE CORNER RADIUS

▶Smooth cutting action, unequal flute geometry and multiple helix eliminate vibrations
▶Short overhang for applications on Mill-Turn machines or Lathes with driven tooling





Unequal Index



CARBIDE | 3 | 43°/45°/47° | R ±.0008 | PLAIN | Y Coating

p.A50-A51

Unit : Inch

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GMK89020	R.005	**5/16**	3/8	7/16	2
GMK89905	R.010	**5/16**	3/8	7/16	2
GMK89913	R.015	**5/16**	3/8	7/16	2
GMK89921	R.020	**5/16**	3/8	7/16	2
GMK89929	R.030	**5/16**	3/8	7/16	2
GMK89024	R.005	**3/8**	3/8	1/2	2
GMK89906	R.010	**3/8**	3/8	1/2	2
GMK89914	R.015	**3/8**	3/8	1/2	2
GMK89922	R.020	**3/8**	3/8	1/2	2
GMK89930	R.030	**3/8**	3/8	1/2	2
GMK89028	R.005	**7/16**	1/2	9/16	2-3/8
GMK89907	R.010	**7/16**	1/2	9/16	2-3/8
GMK89915	R.015	**7/16**	1/2	9/16	2-3/8
GMK89923	R.020	**7/16**	1/2	9/16	2-3/8
GMK89931	R.030	**7/16**	1/2	9/16	2-3/8
GMK89032	R.005	**1/2**	1/2	5/8	2-3/8
GMK89908	R.010	**1/2**	1/2	5/8	2-3/8
GMK89916	R.015	**1/2**	1/2	5/8	2-3/8
GMK89924	R.020	**1/2**	1/2	5/8	2-3/8
GMK89932	R.030	**1/2**	1/2	5/8	2-3/8

Corner Radius Tolerance	Mill Dia. Tolerance	Shank Dia. Tolerance
±.0008	0 ~ -.0008	h5

◎ : 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	14.2	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎		○	○	○	○	○	○	○	○	○	○

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	29.1	29.2	29.3	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc													15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100					200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended													○	○	○	○	○	○	○							

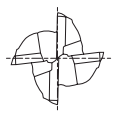
EV MILL END MILLS

Plain Shank **GMK91 SERIES**

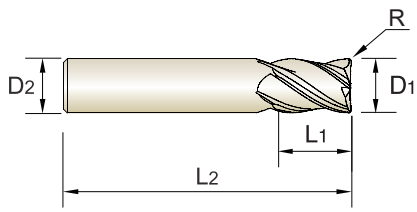
CARBIDE, 4 FLUTE CORNER RADIUS

▶Strengthens the cutting edge by incorporating bottom land touch for improved durability
▶Short overhang for applications on Mill-Turn machines or Lathes with driven tooling





Unequal Index



CARBIDE | 4 | 35°/38° | R ±.0008 | PLAIN | Y Coating

p.A52

Unit : Inch

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GMK91008	R.005	**1/8**	1/4	3/16	1-1/2
GMK91901	R.010	**1/8**	1/4	3/16	1-1/2
GMK91909	R.015	**1/8**	1/4	3/16	1-1/2
GMK91917	R.020	**1/8**	1/4	3/16	1-1/2
GMK91925	R.030	**1/8**	1/4	3/16	1-1/2
GMK91010	R.005	**5/32**	1/4	1/4	1-1/2
GMK91902	R.010	**5/32**	1/4	1/4	1-1/2
GMK91910	R.015	**5/32**	1/4	1/4	1-1/2
GMK91918	R.020	**5/32**	1/4	1/4	1-1/2
GMK91926	R.030	**5/32**	1/4	1/4	1-1/2
GMK91012	R.005	**3/16**	1/4	5/16	1-1/2
GMK91903	R.010	**3/16**	1/4	5/16	1-1/2
GMK91911	R.015	**3/16**	1/4	5/16	1-1/2
GMK91919	R.020	**3/16**	1/4	5/16	1-1/2
GMK91927	R.030	**3/16**	1/4	5/16	1-1/2
GMK91016	R.005	**1/4**	1/4	3/8	1-1/2
GMK91904	R.010	**1/4**	1/4	3/8	1-1/2
GMK91912	R.015	**1/4**	1/4	3/8	1-1/2
GMK91920	R.020	**1/4**	1/4	3/8	1-1/2
GMK91928	R.030	**1/4**	1/4	3/8	1-1/2

NEXT PAGE ▶

Corner Radius Tolerance	Mill Dia. Tolerance	Shank Dia. Tolerance
±.0008	0 ~ -.0008	h5

◎ : 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	14.2	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○	○

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	29.1	29.2	29.3	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc													15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100					200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended						○	○	○	○				○	○	○	○	○	○	○	○					○	

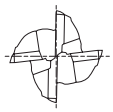
EV MILL END MILLS

Plain Shank **GMK91 SERIES**

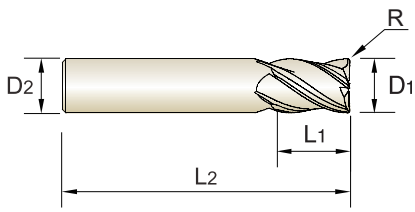
CARBIDE, 4 FLUTE CORNER RADIUS

▶Strengthens the cutting edge by incorporating bottom land touch for improved durability
▶Short overhang for applications on Mill-Turn machines or Lathes with driven tooling





Unequal Index



CARBIDE | 4 | 35°/38° | R ±.0008 | PLAIN | Y Coating | p.A52

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D_1	D_2	L_1	L_2
GMK91020	R.005	**5/16**	3/8	7/16	2
GMK91905	R.010	**5/16**	3/8	7/16	2
GMK91913	R.015	**5/16**	3/8	7/16	2
GMK91921	R.020	**5/16**	3/8	7/16	2
GMK91929	R.030	**5/16**	3/8	7/16	2
GMK91024	R.005	**3/8**	3/8	1/2	2
GMK91906	R.010	**3/8**	3/8	1/2	2
GMK91914	R.015	**3/8**	3/8	1/2	2
GMK91922	R.020	**3/8**	3/8	1/2	2
GMK91930	R.030	**3/8**	3/8	1/2	2
GMK91028	R.005	**7/16**	1/2	9/16	2-3/8
GMK91907	R.010	**7/16**	1/2	9/16	2-3/8
GMK91915	R.015	**7/16**	1/2	9/16	2-3/8
GMK91923	R.020	**7/16**	1/2	9/16	2-3/8
GMK91931	R.030	**7/16**	1/2	9/16	2-3/8
GMK91032	R.005	**1/2**	1/2	5/8	2-3/8
GMK91908	R.010	**1/2**	1/2	5/8	2-3/8
GMK91916	R.015	**1/2**	1/2	5/8	2-3/8
GMK91924	R.020	**1/2**	1/2	5/8	2-3/8
GMK91932	R.030	**1/2**	1/2	5/8	2-3/8

Corner Radius Tolerance	Mill Dia. Tolerance	Shank Dia. Tolerance
±.0008	0 ~ -.0008	h5

◎ : 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	14.2	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○	○

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	29.1	29.2	29.3	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc													15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100					200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended						○	○	○	○				○	○	○	○	○	○	○	○					○	

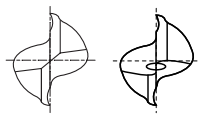
EV MILL END MILLS

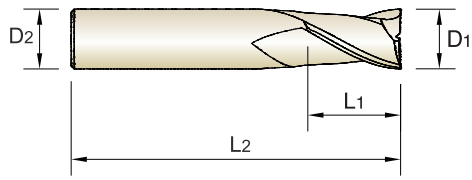
Plain Shank **GMK85 SERIES**

CARBIDE, 2 FLUTE SQUARE

▶Wide flutes allow for smooth chip evacuation with difficult to machine materials
▶Short overhang for applications on Mill-Turn machines or Lathes with driven tooling







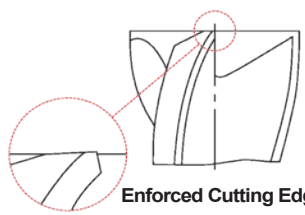
CARBIDE | 2 | 30° | PLAIN | Y Coating

p.A53

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D_1	D_2	L_1	L_2
GMK85008	**1/8**	1/4	3/16	1-1/2
GMK85010	**5/32**	1/4	1/4	1-1/2
GMK85012	**3/16**	1/4	5/16	1-1/2
GMK85016	**1/4**	1/4	3/8	1-1/2
GMK85020	**5/16**	3/8	7/16	2
GMK85024	**3/8**	3/8	1/2	2
GMK85028	**7/16**	1/2	9/16	2-3/8
GMK85032	**1/2**	1/2	5/8	2-3/8

Size	Mill Dia. Tolerance	Shank Dia. Tolerance
Up to Ø1/4	0 ~ -.0005	h5
Over Ø1/4	0 ~ -.0006	



Enforced Cutting Edge

◎ : 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	14.2	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎			○		○	○	○	○	○	○

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	29.1	29.2	29.3	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc													15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100					200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended						○	○	○	○											○					○	

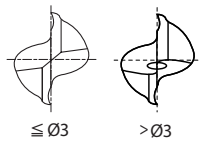
EV MILL END MILLS

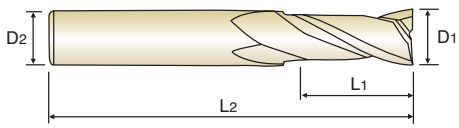
Plain Shank **GMK32 SERIES**

CARBIDE, 2 FLUTE SQUARE

▶Strengthens the cutting edge by incorporating bottom land touch for improved durability







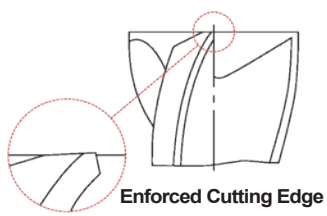
CARBIDE | 2 | 30° | PLAIN | Y Coating

p.A54

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D_1	D_2	L_1	L_2
GMK320104S	**1.0**	4	2.5	50
GMK32010	**1.0**	6	2.5	50
GMK32020	**2.0**	6	6	50
GMK32035	**3.5**	6	10	50
GMK32040	**4.0**	6	10	50
GMK32050	**5.0**	6	15	60
GMK32060	**6.0**	6	15	60
GMK32070	**7.0**	8	20	60
GMK32080	**8.0**	8	20	70
GMK32090	**9.0**	10	22	70
GMK32100	**10.0**	10	25	75

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



◎ : 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	14.2	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎			○		○	○	○	○	○	○

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	29.1	29.2	29.3	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc													15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100					200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended						○	○	○	○											○					○	

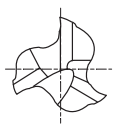
EV MILL END MILLS

Plain Shank **GMK87 SERIES**

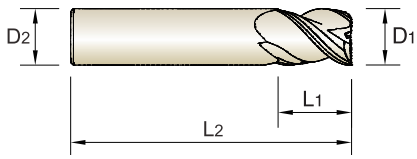
CARBIDE, 3 FLUTE SQUARE

▶For roughing and finishing applications having one edge to center
▶Unequal flute geometry and multiple helix eliminate vibrations
▶Excellent performance in Steels under HRc40 and other materials
▶Short overhang for applications on Mill-Turn machines or Lathes with driven tooling





Unequal Index



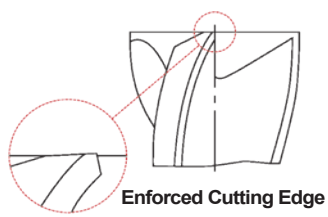
CARBIDE | 3 | 43°/45°/47° | PLAIN | Y Coating

p.A55-A56

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D_1	D_2	L_1	L_2
GMK87008	**1/8**	1/4	3/16	1-1/2
GMK87010	**5/32**	1/4	1/4	1-1/2
GMK87012	**3/16**	1/4	5/16	1-1/2
GMK87016	**1/4**	1/4	3/8	1-1/2
GMK87020	**5/16**	3/8	7/16	2
GMK87024	**3/8**	3/8	1/2	2
GMK87028	**7/16**	1/2	9/16	2-3/8
GMK87032	**1/2**	1/2	5/8	2-3/8

Mill Dia. Tolerance	Shank Dia. Tolerance
0 ~ -.0008	h5



Enforced Cutting Edge

◎ : 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	14.2	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎		○	○	○	○	○	○	○	○	○	○

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	29.1	29.2	29.3	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc													15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100					200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended													○	○	○	○	○	○	○							

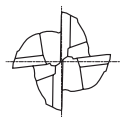
EV MILL END MILLS

Plain Shank **GMK54 SERIES**

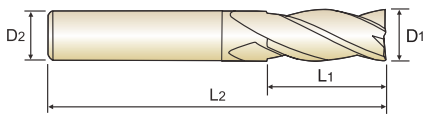
CARBIDE, 4 FLUTE SQUARE

▶Strengthens the cutting edge by incorporating bottom land touch for improved durability





Unequal Index

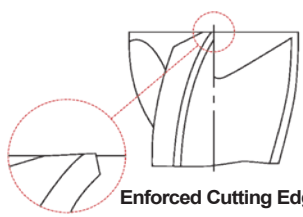


CARBIDE | 4 | 35°/38° | PLAIN | Y Coating | p.A57

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D_1	D_2	L_1	L_2
GMK54008	**1/8**	1/4	3/16	1-1/2
GMK54010	**5/32**	1/4	1/4	1-1/2
GMK54012	**3/16**	1/4	5/16	1-1/2
GMK54902	**1/4**	1/4	3/8	1-1/2
GMK54016	**1/4**	1/4	3/4	2-1/2
GMK54903	**5/16**	3/8	7/16	2
GMK54020	**5/16**	5/16	13/16	2-1/2
GMK54904	**3/8**	3/8	1/2	2
GMK54024	**3/8**	3/8	1	2-1/2
GMK54028	**7/16**	1/2	9/16	2-3/8
GMK54905	**1/2**	1/2	5/8	2-3/8
GMK54032	**1/2**	1/2	1	3
GMK54040	**5/8**	5/8	1-1/4	3-1/2

Mill Dia. Tolerance	Shank Dia. Tolerance
0 ~ -.0008	h5



Enforced Cutting Edge

◎ : 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	14.2	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○	○

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	29.1	29.2	29.3	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc													15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100					200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended						○	○	○	○				○	○	○	○	○	○	○	○					○	

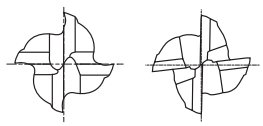
EV MILL END MILLS

Plain Shank **GMK33 SERIES**

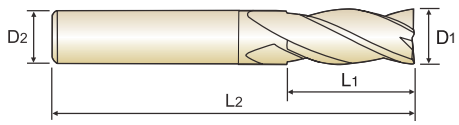
CARBIDE, 4 FLUTE SQUARE

▶Strengthens the cutting edge by incorporating bottom land touch for improved durability





Unequal Index



CARBIDE | 4 | 37° | 35°/38° | PLAIN | Y Coating

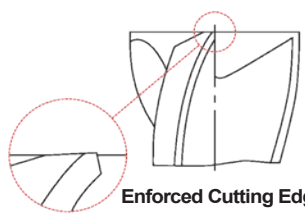
D1<Ø3 D1≥Ø3

p.A58

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
GMK33020	**2.0**	6	6	50
GMK33030	**3.0**	6	8	50
GMK33040	**4.0**	6	10	50
GMK33045	**4.5**	6	14	50
GMK33060	**6.0**	6	15	60
GMK33080	**8.0**	8	20	70
GMK33100	**10.0**	10	25	75
GMK33120	**12.0**	12	30	80

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0 ~ -0.020	h5



Enforced Cutting Edge

◎ : 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	14.2	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○	○

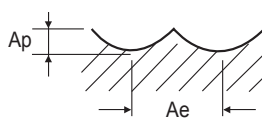
ISO	N												S							H						
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials				Heat Resistant Super Alloys					Titanium Alloys		Hardened steel					Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29.1	29.2	29.3	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc													15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100					200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended						○	○	○	○				○	○	○	○	○	○	○	○					○	

GMK53 SERIES

2 FLUTE BALL NOSE

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

ISO	VDI 3323	Material Description	Ae	Ap	Para-meter	Diameter (Ø)								
						1/16	1/8	5/32	3/16	1/4	5/16	3/8	7/16	1/2
P	1-4	Non-alloy steel	0.2D	0.1D	SFM	235	390	420	460	510	575	635	670	700
					IPT	.0004	.0011	.0014	.0017	.0025	.0035	.0045	.0055	.0062
					RPM	14360	11920	10270	9370	7790	7030	6470	5850	5350
					IPM	12	25	29	32	40	49	58	64	67
	5		0.2D	0.1D	SFM	180	300	340	365	415	460	510	535	560
					IPT	.0004	.0011	.0014	.0017	.0025	.0035	.0045	.0055	.0062
					RPM	11000	9170	8310	7440	6340	5620	5200	4670	4280
					IPM	9	19	23	26	32	39	47	51	53
	6-7	Low alloy steel	0.2D	0.1D	SFM	235	390	420	460	510	575	635	670	700
					IPT	.0004	.0011	.0014	.0017	.0025	.0035	.0045	.0055	.0062
					RPM	14360	11920	10270	9370	7790	7030	6470	5850	5350
					IPM	12	25	29	32	40	49	58	64	67
	8-9		0.2D	0.1D	SFM	180	300	340	365	415	460	510	535	560
					IPT	.0004	.0011	.0014	.0017	.0025	.0035	.0045	.0055	.0062
					RPM	11000	9170	8310	7440	6340	5620	5200	4670	4280
					IPM	9	19	23	26	32	39	47	51	53
	10	High alloyed steel, and tool steel	0.2D	0.1D	SFM	235	390	420	460	510	575	635	670	700
					IPT	.0004	.0011	.0014	.0017	.0025	.0035	.0045	.0055	.0062
					RPM	14360	11920	10270	9370	7790	7030	6470	5850	5350
					IPM	12	25	29	32	40	49	58	64	67
	11.1		0.2D	0.1D	SFM	180	300	340	365	415	460	510	535	560
					IPT	.0004	.0011	.0014	.0017	.0025	.0035	.0045	.0055	.0062
					RPM	11000	9170	8310	7440	6340	5620	5200	4670	4280
					IPM	9	19	23	26	32	39	47	51	53
	11.2		0.1D	0.1D	SFM	80	140	170	185	190	200	205	210	210
					IPT	.0005	.0011	.0014	.0017	.0025	.0035	.0045	.0055	.0063
					RPM	4890	4280	4160	3770	2900	2440	2090	1830	1600
					IPM	4	9	12	13	15	17	19	20	20



EV MILL END MILLS

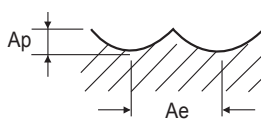
RECOMMENDED CUTTING CONDITIONS

GMK31 SERIES

2 FLUTE BALL NOSE

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

ISO	VDI 3323	Material Description	Ae	Ap	Para-meter	Diameter (Ø)								
						2	3	4	5	6	8	10	12	16
P	1-4	Non-alloy steel	0.2D	0.1D	SFM	285	390	420	460	510	575	635	700	765
					IPT	.0010	.0010	.0014	.0018	.0024	.0035	.0047	.0059	.0071
					RPM	13850	12630	10190	8910	8220	6960	6180	5650	4640
					IPM	28	26	28	31	39	49	58	67	66
	5		0.2D	0.1D	SFM	215	300	340	365	415	465	510	560	605
					IPT	.0010	.0010	.0014	.0018	.0024	.0035	.0047	.0059	.0071
					RPM	10350	9660	8200	7130	6680	5610	4930	4510	3660
					IPM	21	20	22	25	31	40	46	53	52
	6-7	Low alloy steel	0.2D	0.1D	SFM	285	390	420	460	510	575	635	700	765
					IPT	.0010	.0010	.0014	.0018	.0024	.0035	.0047	.0059	.0071
					RPM	13850	12630	10190	8910	8220	6960	6180	5650	4640
					IPM	28	26	28	31	39	49	58	67	66
	8-9		0.2D	0.1D	SFM	215	300	340	365	415	465	510	560	605
					IPT	.0010	.0010	.0014	.0018	.0024	.0035	.0047	.0059	.0071
					RPM	10350	9660	8200	7130	6680	5610	4930	4510	3660
					IPM	21	20	22	25	31	40	46	53	52
	10	High alloyed steel, and tool steel	0.2D	0.1D	SFM	285	390	420	460	510	575	635	700	765
					IPT	.0010	.0010	.0014	.0018	.0024	.0035	.0047	.0059	.0071
					RPM	13850	12630	10190	8910	8220	6960	6180	5650	4640
					IPM	28	26	28	31	39	49	58	67	66
	11.1		0.2D	0.1D	SFM	215	300	340	365	415	465	510	560	605
					IPT	.0010	.0010	.0014	.0018	.0024	.0035	.0047	.0059	.0071
					RPM	10350	9660	8200	7130	6680	5610	4930	4510	3660
					IPM	21	20	22	25	31	40	46	53	52
	11.2		0.1D	0.1D	SFM	90	140	165	185	190	195	205	210	215
					IPT	.0010	.0010	.0014	.0018	.0024	.0035	.0047	.0059	.0071
					RPM	4460	4460	4060	3570	3080	2390	1970	1700	1310
					IPM	9	9	11	13	15	17	19	20	19

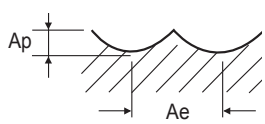


GMK88 SERIES

3 FLUTE BALL NOSE

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

ISO	VDI 3323	Material Description	Ae	Ap	Para-meter	Diameter (Ø)							
						1/8	5/32	3/16	1/4	5/16	3/8	7/16	1/2
P	1-4	Non-alloy steel	0.5D	0.8D	SFM	530	530	530	530	530	530	530	530
					IPT	.0010	.0011	.0012	.0016	.0024	.0026	.0027	.0028
					RPM	16200	12960	10800	8100	6480	5400	4630	4050
					IPM	49	43	39	39	47	42	38	34
	5		0.5D	0.8D	SFM	370	370	370	370	370	370	370	370
					IPT	.0010	.0011	.0012	.0016	.0024	.0026	.0027	.0028
					RPM	11310	9050	7540	5650	4520	3770	3230	2830
					IPM	34	30	27	27	33	29	26	24
	6-7	Low alloy steel	0.5D	0.8D	SFM	530	530	530	530	530	530	530	530
					IPT	.0010	.0011	.0012	.0016	.0024	.0026	.0027	.0028
					RPM	16200	12960	10800	8100	6480	5400	4630	4050
					IPM	49	43	39	39	47	42	38	34
	8-9		0.5D	0.8D	SFM	370	370	370	370	370	370	370	370
					IPT	.0010	.0011	.0012	.0016	.0024	.0026	.0027	.0028
					RPM	11310	9050	7540	5650	4520	3770	3230	2830
					IPM	34	30	27	27	33	29	26	24
	10 - 11.1	High alloyed steel, and tool steel	0.5D	0.8D	SFM	225	225	225	225	225	225	225	225
					IPT	.0007	.0007	.0008	.0011	.0017	.0018	.0019	.0020
					RPM	6880	5500	4580	3440	2750	2290	1960	1720
					IPM	14	12	11	11	14	12	11	10
M	12 - 13	Stainless steel	0.5D	0.8D	SFM	255	255	255	255	255	255	255	255
					IPT	.0006	.0006	.0010	.0012	.0016	.0018	.0019	.0020
					RPM	7790	6230	5200	3900	3120	2600	2230	1950
					IPM	14	11	16	14	15	14	13	12
	14.1		0.5D	0.8D	SFM	280	280	280	280	280	280	280	280
					IPT	.0008	.0008	.0010	.0016	.0018	.0020	.0021	.0022
					RPM	8560	6850	5700	4280	3420	2850	2440	2140
					IPM	21	16	17	21	18	17	15	14
	14.2		0.5D	0.8D	SFM	255	255	255	255	255	255	255	255
					IPT	.0006	.0006	.0010	.0012	.0016	.0018	.0019	.0020
					RPM	7790	6230	5200	3900	3120	2600	2230	1950
					IPM	14	11	16	14	15	14	13	12
K	15 - 20	Grey cast iron Nodular cast iron Malleable cast iron	0.5D	0.8D	SFM	390	390	390	390	390	390	390	390
					IPT	.0012	.0013	.0015	.0020	.0029	.0032	.0033	.0034
					RPM	11920	9530	7950	5960	4770	3970	3410	2980
					IPM	43	37	36	36	41	38	34	30
S	31 - 35	Heat Resistant Super Alloys	0.2D	0.3D	SFM	70	70	70	70	70	70	70	70
					IPT	.0006	.0006	.0007	.0011	.0012	.0014	.0015	.0016
					RPM	2140	1710	1430	1070	860	710	610	530
					IPM	4	3	3	4	3	3	3	3
	36 - 37	Titanium Alloys	0.5D	0.3D	SFM	155	155	155	155	155	155	155	155
					IPT	.0007	.0007	.0009	.0015	.0016	.0018	.0019	.0020
					RPM	4740	3790	3160	2370	1890	1580	1350	1180
					IPM	10	8	9	11	9	9	8	7



EV MILL END MILLS

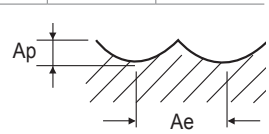
RECOMMENDED CUTTING CONDITIONS

GMK90 SERIES

4 FLUTE BALL NOSE

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

ISO	VDI 3323	Material Description	Ae	Ap	Para-meter	Diameter (Ø)							
						1/8	5/32	3/16	1/4	5/16	3/8	7/16	1/2
P	1-4	Non-alloy steel	0.5D	0.8D	SFM	530	530	530	530	530	530	530	530
					IPT	.0010	.0011	.0012	.0016	.0024	.0026	.0027	.0028
					RPM	16200	12960	10800	8100	6480	5400	4630	4050
					IPM	65	57	52	52	62	56	50	45
	5		0.5D	0.8D	SFM	370	370	370	370	370	370	370	370
					IPT	.0010	.0011	.0012	.0016	.0024	.0026	.0027	.0028
					RPM	11310	9050	7540	5650	4520	3770	3230	2830
					IPM	45	40	36	36	43	39	35	32
	6-7	Low alloy steel	0.5D	0.8D	SFM	530	530	530	530	530	530	530	530
					IPT	.0010	.0011	.0012	.0016	.0024	.0026	.0027	.0028
					RPM	16200	12960	10800	8100	6480	5400	4630	4050
					IPM	65	57	52	52	62	56	50	45
	8-9		0.5D	0.8D	SFM	370	370	370	370	370	370	370	370
					IPT	.0010	.0011	.0012	.0016	.0024	.0026	.0027	.0028
					RPM	11310	9050	7540	5650	4520	3770	3230	2830
					IPM	45	40	36	36	43	39	35	32
	10 - 11.1	High alloyed steel, and tool steel	0.5D	0.8D	SFM	225	225	225	225	225	225	225	225
					IPT	.0007	.0007	.0008	.0011	.0017	.0018	.0019	.0020
					RPM	6880	5500	4580	3440	2750	2290	1960	1720
					IPM	19	15	15	15	19	16	15	14
M	12 - 13	Stainless steel	0.5D	0.8D	SFM	255	255	255	255	255	255	255	255
					IPT	.0006	.0006	.0010	.0012	.0016	.0018	.0019	.0020
					RPM	7790	6230	5200	3900	3120	2600	2230	1950
					IPM	19	15	21	19	20	19	17	16
	14.1		0.5D	0.8D	SFM	280	280	280	280	280	280	280	280
					IPT	.0008	.0008	.0010	.0016	.0018	.0020	.0021	.0022
					RPM	8560	6850	5700	4280	3420	2850	2440	2140
					IPM	27	22	23	27	25	23	20	19
	14.2		0.5D	0.8D	SFM	255	255	255	255	255	255	255	255
					IPT	.0006	.0006	.0010	.0012	.0016	.0018	.0019	.0020
					RPM	7790	6230	5200	3900	3120	2600	2230	1950
					IPM	19	15	21	19	20	19	17	16
K	15 - 20	Grey cast iron Nodular cast iron Malleable cast iron	0.5D	0.8D	SFM	390	390	390	390	390	390	390	390
					IPT	.0012	.0013	.0015	.0020	.0029	.0032	.0033	.0034
					RPM	11920	9530	7950	5960	4770	3970	3410	2980
					IPM	57	50	48	48	55	51	45	41
S	31 - 35	Heat Resistant Super Alloys	0.2D	0.3D	SFM	70	70	70	70	70	70	70	70
					IPT	.0006	.0006	.0007	.0011	.0012	.0014	.0015	.0016
					RPM	2140	1710	1430	1070	860	710	610	530
					IPM	5	4	4	5	4	4	4	3
	36 - 37	Titanium Alloys	0.5D	0.3D	SFM	155	155	155	155	155	155	155	155
					IPT	.0007	.0007	.0009	.0015	.0016	.0018	.0019	.0020
					RPM	4740	3790	3160	2370	1890	1580	1350	1180
					IPM	13	11	11	14	12	11	10	9

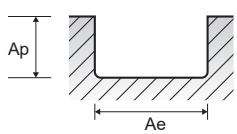


GMK86 SERIES

2 FLUTE CORNER RADIUS - SLOTTING

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

ISO	VDI 3323	Material Description	Ae	Ap	Para-meter	Diameter (Ø)							
						1/8	5/32	3/16	1/4	5/16	3/8	7/16	1/2
P	1-4	Non-alloy steel	1.0D	0.2D	SFM	370	400	425	440	445	465	460	460
					IPT	.0004	.0006	.0009	.0012	.0018	.0020	.0020	.0020
					RPM	11310	9780	8660	6720	5440	4740	4020	3510
					IPM	9	12	16	16	20	19	16	14
	5		1.0D	0.05D	SFM	240	255	270	280	280	300	310	310
					IPT	.0003	.0005	.0007	.0010	.0013	.0015	.0016	.0016
					RPM	7330	6230	5500	4280	3420	3060	2710	2370
					IPM	4	6	8	9	9	9	9	8
	6-7	Low alloy steel	1.0D	0.2D	SFM	370	400	425	440	445	465	460	460
					IPT	.0004	.0006	.0009	.0012	.0018	.0020	.0020	.0020
					RPM	11310	9780	8660	6720	5440	4740	4020	3510
					IPM	9	12	16	16	20	19	16	14
	8-9		1.0D	0.05D	SFM	240	255	270	280	280	300	310	310
					IPT	.0003	.0005	.0007	.0010	.0013	.0015	.0016	.0016
					RPM	7330	6230	5500	4280	3420	3060	2710	2370
					IPM	4	6	8	9	9	9	9	8
	10	High alloyed steel, and tool steel	1.0D	0.2D	SFM	370	400	425	440	445	465	460	460
					IPT	.0004	.0006	.0009	.0012	.0018	.0020	.0020	.0020
					RPM	11310	9780	8660	6720	5440	4740	4020	3510
					IPM	9	12	16	16	20	19	16	14
	11.1 - 11.2		1.0D	0.05D	SFM	240	255	270	280	280	300	310	310
					IPT	.0003	.0005	.0007	.0010	.0013	.0015	.0016	.0016
					RPM	7330	6230	5500	4280	3420	3060	2710	2370
					IPM	4	6	8	9	9	9	9	8
K	15 - 20	Grey cast iron Nodular cast iron Malleable cast iron	1.0D	0.05D	SFM	370	400	425	440	445	465	460	460
					IPT	.0004	.0006	.0009	.0012	.0018	.0020	.0020	.0020
					RPM	11310	9780	8660	6720	5440	4740	4020	3510
					IPM	9	12	16	16	20	19	16	14
N	26 - 28	Copper and Copper Alloys (Bronze / Brass)	1.0D	0.5D	SFM	415	435	415	415	435	415	415	415
					IPT	.0006	.0007	.0010	.0013	.0017	.0022	.0024	.0026
					RPM	12680	10630	8450	6340	5320	4230	3620	3170
					IPM	15	15	17	16	18	19	17	16
	29.1	Non Metallic Materials	1.0D	0.5D	SFM	415	435	415	415	435	415	415	415
					IPT	.0006	.0007	.0010	.0013	.0017	.0022	.0024	.0026
					RPM	12680	10630	8450	6340	5320	4230	3620	3170
					IPM	15	15	17	16	18	19	17	16



EV MILL END MILLS

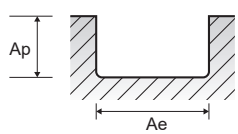
RECOMMENDED CUTTING CONDITIONS

GMK89 SERIES

3 FLUTE CORNER RADIUS - SLOTTING

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

ISO	VDI 3323	Material Description	Ae	Ap	Para-meter	Diameter (Ø)							
						1/8	5/32	3/16	1/4	5/16	3/8	7/16	1/2
P	1-4	Non-alloy steel	1.0D	0.8D	SFM	500	500	500	500	500	550	550	550
					IPT	.0002	.0003	.0004	.0006	.0011	.0015	.0017	.0018
					RPM	15280	12220	10190	7640	6110	5600	4800	4200
					IPM	9	11	12	14	20	25	24	23
	5		1.0D	0.8D	SFM	350	350	350	350	350	385	385	385
					IPT	.0002	.0003	.0004	.0006	.0011	.0015	.0017	.0019
					RPM	10700	8560	7130	5350	4280	3920	3360	2940
					IPM	6	8	9	10	14	18	17	17
	6-7	Low alloy steel	1.0D	0.8D	SFM	500	500	500	500	500	550	550	550
					IPT	.0002	.0003	.0004	.0006	.0011	.0015	.0017	.0018
					RPM	15280	12220	10190	7640	6110	5600	4800	4200
					IPM	9	11	12	14	20	25	24	23
	8-9		1.0D	0.8D	SFM	350	350	350	350	350	385	385	385
					IPT	.0002	.0003	.0004	.0006	.0011	.0015	.0017	.0019
					RPM	10700	8560	7130	5350	4280	3920	3360	2940
					IPM	6	8	9	10	14	18	17	17
	10 - 11.1	High alloyed steel, and tool steel	1.0D	0.8D	SFM	210	210	210	210	210	230	230	230
					IPT	.0001	.0002	.0003	.0004	.0007	.0011	.0012	.0013
					RPM	6420	5130	4280	3210	2570	2340	2010	1760
					IPM	2	3	4	4	5	8	7	7
M	12 - 13	Stainless steel	1.0D	0.8D	SFM	485	485	485	485	485	485	485	485
					IPT	.0002	.0002	.0004	.0004	.0005	.0009	.0013	.0016
					RPM	14820	11860	9880	7410	5930	4940	4230	3710
					IPM	9	7	12	9	9	13	16	18
	14.1		1.0D	0.8D	SFM	350	350	350	350	350	350	350	350
					IPT	.0002	.0003	.0005	.0007	.0011	.0018	.0020	.0022
					RPM	10700	8560	7130	5350	4280	3570	3060	2670
					IPM	6	8	11	11	14	19	18	18
	14.2		1.0D	0.8D	SFM	310	310	310	310	310	310	310	310
					IPT	.0002	.0003	.0005	.0007	.0011	.0018	.0020	.0022
					RPM	9470	7580	6320	4740	3790	3160	2710	2370
					IPM	6	7	9	10	13	17	16	16
K	15 - 20	Grey cast iron Nodular cast iron Malleable cast iron	1.0D	0.8D	SFM	365	365	365	365	365	405	405	405
					IPT	.0002	.0004	.0006	.0008	.0013	.0018	.0020	.0022
					RPM	11150	8920	7440	5580	4460	4130	3540	3090
					IPM	7	11	13	13	17	22	21	20
S	31 - 35	Heat Resistant Super Alloys	1.0D	0.5D	SFM	85	85	85	85	85	85	85	85
					IPT	.0002	.0003	.0003	.0005	.0007	.0012	.0014	.0016
					RPM	2600	2080	1730	1300	1040	870	740	650
					IPM	2	2	2	2	2	3	3	3
	36 - 37	Titanium Alloys	1.0D	0.5D	SFM	190	190	190	190	190	190	190	190
					IPT	.0002	.0003	.0004	.0006	.0010	.0016	.0019	.0021
					RPM	5810	4650	3870	2900	2320	1940	1660	1450
					IPM	3	4	5	5	7	9	9	9

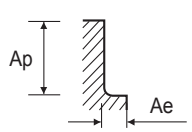


GMK89 SERIES

3 FLUTE CORNER RADIUS - SIDE CUTTING

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

ISO	VDI 3323	Material Description	Ae	Ap	Para-meter	Diameter (Ø)							
						1/8	5/32	3/16	1/4	5/16	3/8	7/16	1/2
P	1-4	Non-alloy steel	0.5D	1.0D	SFM	500	500	500	500	500	550	550	550
					IPT	.0002	.0003	.0004	.0006	.0011	.0015	.0017	.0018
					RPM	15280	12220	10190	7640	6110	5600	4800	4200
					IPM	9	11	12	14	20	25	24	23
	5		0.5D	1.0D	SFM	350	350	350	350	350	385	385	385
					IPT	.0002	.0003	.0004	.0006	.0011	.0015	.0017	.0019
					RPM	10700	8560	7130	5350	4280	3920	3360	2940
					IPM	6	8	9	10	14	18	17	17
	6-7	Low alloy steel	0.5D	1.0D	SFM	500	500	500	500	500	550	550	550
					IPT	.0002	.0003	.0004	.0006	.0011	.0015	.0017	.0018
					RPM	15280	12220	10190	7640	6110	5600	4800	4200
					IPM	9	11	12	14	20	25	24	23
	8-9		0.5D	1.0D	SFM	350	350	350	350	350	385	385	385
					IPT	.0002	.0003	.0004	.0006	.0011	.0015	.0017	.0019
					RPM	10700	8560	7130	5350	4280	3920	3360	2940
					IPM	6	8	9	10	14	18	17	17
	10 - 11.1	High alloyed steel, and tool steel	0.5D	1.0D	SFM	210	210	210	210	210	230	230	230
					IPT	.0001	.0002	.0003	.0004	.0007	.0011	.0012	.0013
					RPM	6420	5130	4280	3210	2570	2340	2010	1760
					IPM	2	3	4	4	5	8	7	7
M	12 - 13	Stainless steel	0.5D	1.0D	SFM	485	485	485	485	485	485	485	485
					IPT	.0002	.0002	.0004	.0004	.0005	.0009	.0013	.0016
					RPM	14820	11860	9880	7410	5930	4940	4230	3710
					IPM	9	7	12	9	9	13	16	18
	14.1		0.5D	1.0D	SFM	350	350	350	350	350	350	350	350
					IPT	.0002	.0003	.0005	.0007	.0011	.0018	.0020	.0022
					RPM	10700	8560	7130	5350	4280	3570	3060	2670
					IPM	6	8	11	11	14	19	18	18
	14.2		0.5D	1.0D	SFM	310	310	310	310	310	310	310	310
					IPT	.0002	.0003	.0005	.0007	.0011	.0018	.0020	.0022
					RPM	9470	7580	6320	4740	3790	3160	2710	2370
					IPM	6	7	9	10	13	17	16	16
K	15 - 20	Grey cast iron Nodular cast iron Malleable cast iron	0.5D	1.0D	SFM	365	365	365	365	365	405	405	405
					IPT	.0002	.0004	.0006	.0008	.0013	.0018	.0020	.0022
					RPM	11150	8920	7440	5580	4460	4130	3540	3090
					IPM	7	11	13	13	17	22	21	20
S	31 - 35	Heat Resistant Super Alloys	0.25D	1.0D	SFM	85	85	85	85	85	85	85	85
					IPT	.0002	.0003	.0003	.0005	.0007	.0012	.0014	.0016
					RPM	2600	2080	1730	1300	1040	870	740	650
					IPM	2	2	2	2	2	3	3	3
	36 - 37	Titanium Alloys	0.35D	1.0D	SFM	190	190	190	190	190	190	190	190
					IPT	.0002	.0003	.0004	.0006	.0010	.0016	.0019	.0021
					RPM	5810	4650	3870	2900	2320	1940	1660	1450
					IPM	3	4	5	5	7	9	9	9

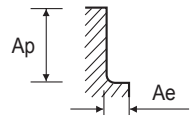


EV MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

GMK91 SERIES

4 FLUTE CORNER RADIUS - SIDE CUTTING



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

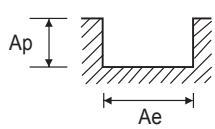
ISO	VDI 3323	Material Description	Ae	Ap	Para-meter	Diameter (Ø) 1/8	5/32	3/16	1/4	5/16	3/8	7/16	1/2
P	1-4	Non-alloy steel	0.3D	1.5D	SFM	400	400	400	400	400	440	440	440
					IPT	.0002	.0003	.0004	.0006	.0011	.0015	.0017	.0019
					RPM	12220	9780	8150	6110	4890	4480	3840	3360
					IPM	10	12	13	15	22	27	26	26
	5		0.3D	1.5D	SFM	280	280	280	280	280	310	310	310
					IPT	.0002	.0003	.0004	.0006	.0011	.0015	.0017	.0019
					RPM	8560	6850	5700	4280	3420	3160	2710	2370
					IPM	7	8	9	10	15	19	18	18
	6-7	Low alloy steel	0.3D	1.5D	SFM	400	400	400	400	400	440	440	440
					IPT	.0002	.0003	.0004	.0006	.0011	.0015	.0017	.0019
					RPM	12220	9780	8150	6110	4890	4480	3840	3360
					IPM	10	12	13	15	22	27	26	26
	8-9		0.3D	1.5D	SFM	280	280	280	280	280	310	310	310
					IPT	.0002	.0003	.0004	.0006	.0011	.0015	.0017	.0019
					RPM	8560	6850	5700	4280	3420	3160	2710	2370
					IPM	7	8	9	10	15	19	18	18
	10	High alloyed steel, and tool steel	0.3D	1.5D	SFM	400	400	400	400	400	440	440	440
					IPT	.0002	.0003	.0004	.0006	.0011	.0015	.0017	.0019
					RPM	12220	9780	8150	6110	4890	4480	3840	3360
					IPM	10	12	13	15	22	27	26	26
	11.1		0.3D	1.5D	SFM	280	280	280	280	280	310	310	310
					IPT	.0002	.0003	.0004	.0006	.0011	.0015	.0017	.0019
					RPM	8560	6850	5700	4280	3420	3160	2710	2370
					IPM	7	8	9	10	15	19	18	18
	11.2		0.3D	1.5D	SFM	165	165	165	165	165	185	185	185
					IPT	.0001	.0002	.0003	.0004	.0007	.0011	.0012	.0013
					RPM	5040	4030	3360	2520	2020	1890	1620	1410
					IPM	2	3	4	4	6	8	8	7
M	12 - 13	Stainless steel	0.3D	1.5D	SFM	425	425	425	425	425	425	425	425
					IPT	.0002	.0002	.0004	.0005	.0009	.0013	.0015	.0016
					RPM	12990	10390	8660	6490	5200	4330	3710	3250
					IPM	10	8	14	13	19	23	22	21
	14.1		0.3D	1.5D	SFM	300	300	300	300	300	300	300	300
					IPT	.0002	.0003	.0005	.0007	.0011	.0019	.0021	.0022
					RPM	9170	7330	6110	4580	3670	3060	2620	2290
					IPM	7	9	12	13	16	23	22	20
	14.2		0.3D	1.5D	SFM	270	270	270	270	270	270	270	270
					IPT	.0002	.0003	.0005	.0007	.0011	.0019	.0021	.0022
					RPM	8250	6600	5500	4130	3300	2750	2360	2060
					IPM	7	8	11	12	15	21	20	18
K	15 - 20	Grey cast iron Nodular cast iron Malleable cast iron	0.3D	1.5D	SFM	295	295	295	295	295	320	320	320
					IPT	.0002	.0004	.0006	.0008	.0013	.0019	.0021	.0023
					RPM	9020	7210	6010	4510	3610	3260	2790	2440
					IPM	7	12	14	14	19	25	23	22
N	26 - 28	Copper and Copper Alloys (Bronze / Brass)	0.1D	1.5D	SFM	415	435	415	415	435	415	415	415
					IPT	.0010	.0011	.0014	.0019	.0025	.0032	.0035	.0038
					RPM	12680	10630	8450	6340	5320	4230	3620	3170
					IPM	51	47	47	48	53	54	51	48
	29.1	Non Metallic Materials	0.1D	1.5D	SFM	415	435	415	415	435	415	415	415
					IPT	.0010	.0011	.0014	.0019	.0025	.0032	.0035	.0038
					RPM	12680	10630	8450	6340	5320	4230	3620	3170
					IPM	51	47	47	48	53	54	51	48
S	31 - 35	Heat Resistant Super Alloys	0.2D	1.0D	SFM	80	80	80	80	80	80	80	80
					IPT	.0002	.0003	.0005	.0007	.0012	.0018	.0020	.0022
					RPM	2440	1960	1630	1220	980	810	700	610
					IPM	2	2	3	3	5	6	6	5
	36 - 37	Titanium Alloys	0.3D	1.0D	SFM	215	215	215	215	215	215	215	215
					IPT	.0002	.0003	.0004	.0006	.0010	.0017	.0019	.0020
					RPM	6570	5260	4380	3290	2630	2190	1880	1640
					IPM	5	6	7	8	11	15	14	13

GMK85 SERIES

2 FLUTE SQUARE - SLOTTING

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

ISO	VDI 3323	Material Description	Ae	Ap	Para-meter	Diameter (Ø)							
						1/8	5/32	3/16	1/4	5/16	3/8	7/16	1/2
P	1-4	Non-alloy steel	1.0D	D=Ø1/8 : 0.2D D>Ø1/8 : 0.5D	SFM	265	300	315	335	340	325	325	330
					IPT	.0005	.0008	.0010	.0012	.0018	.0020	.0020	.0020
					RPM	8100	7330	6420	5120	4160	3310	2840	2520
					IPM	8	12	13	12	15	13	11	10
	5		1.0D	D=Ø1/8 : 0.2D D>Ø1/8 : 0.5D	SFM	165	185	185	200	200	200	200	200
					IPT	.0005	.0008	.0010	.0013	.0015	.0016	.0016	.0016
					RPM	5040	4520	3770	3060	2440	2040	1750	1530
					IPM	5	7	8	8	7	7	6	5
	6-7	Low alloy steel	1.0D	D=Ø1/8 : 0.2D D>Ø1/8 : 0.5D	SFM	265	300	315	335	340	325	325	330
					IPT	.0005	.0008	.0010	.0012	.0018	.0020	.0020	.0020
					RPM	8100	7330	6420	5120	4160	3310	2840	2520
					IPM	8	12	13	12	15	13	11	10
	8-9		1.0D	D=Ø1/8 : 0.2D D>Ø1/8 : 0.5D	SFM	165	185	185	200	200	200	200	200
					IPT	.0005	.0008	.0010	.0013	.0015	.0016	.0016	.0016
					RPM	5040	4520	3770	3060	2440	2040	1750	1530
					IPM	5	7	8	8	7	7	6	5
	10	High alloyed steel, and tool steel	1.0D	D=Ø1/8 : 0.2D D>Ø1/8 : 0.5D	SFM	265	300	315	335	340	325	325	330
					IPT	.0005	.0008	.0010	.0012	.0018	.0020	.0020	.0020
					RPM	8100	7330	6420	5120	4160	3310	2840	2520
					IPM	8	12	13	12	15	13	11	10
	11.1 - 11.2		1.0D	D=Ø1/8 : 0.2D D>Ø1/8 : 0.5D	SFM	165	185	185	200	200	200	200	200
					IPT	.0005	.0008	.0010	.0013	.0015	.0016	.0016	.0016
					RPM	5040	4520	3770	3060	2440	2040	1750	1530
					IPM	5	7	8	8	7	7	6	5
M	14.1	Stainless steel	1.0D	D=Ø1/8 : 0.2D D>Ø1/8 : 0.5D	SFM	140	155	160	170	165	165	160	160
					IPT	.0005	.0008	.0010	.0013	.0016	.0018	.0018	.0018
					RPM	4280	3790	3260	2600	2020	1680	1400	1220
					IPM	4	6	7	7	6	6	5	4
K	15 - 20	Grey cast iron Nodular cast iron Malleable cast iron	1.0D	D=Ø1/8 : 0.2D D>Ø1/8 : 0.5D	SFM	265	300	315	335	340	325	325	330
					IPT	.0005	.0008	.0010	.0012	.0018	.0020	.0020	.0020
					RPM	8100	7330	6420	5120	4160	3310	2840	2520
					IPM	8	12	13	12	15	13	11	10
N	26 - 28	Copper and Copper Alloys (Bronze / Brass)	1.0D	0.5D	SFM	415	435	415	415	435	415	415	415
					IPT	.0006	.0007	.0010	.0013	.0017	.0022	.0024	.0026
					RPM	12680	10630	8450	6340	5320	4230	3620	3170
					IPM	15	15	17	16	18	19	17	16
	29.1	Non Metallic Materials	1.0D	0.5D	SFM	415	435	415	415	435	415	415	415
					IPT	.0006	.0007	.0010	.0013	.0017	.0022	.0024	.0026
					RPM	12680	10630	8450	6340	5320	4230	3620	3170
					IPM	15	15	17	16	18	19	17	16



EV MILL END MILLS

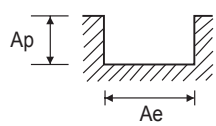
RECOMMENDED CUTTING CONDITIONS

GMK32 SERIES

2 FLUTE SQUARE - SLOTTING

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

ISO	VDI 3323	Material Description	Ae	Ap	Para-meter	Diameter (Ø)									
						1	2	3.5	4	5	6	7	8	9	10
P	1-4	Non-alloy steel	1.0D	D=1 : 0.15D 1<D≤3 : 0.2D D>3 : 0.5D	SFM	215	235	265	300	315	335	340	340	325	325
					IPT	.0002	.0003	.0006	.0008	.0010	.0012	.0015	.0018	.0019	.0020
					RPM	21010	11300	7350	7320	6110	5410	4710	4100	3500	3150
					IPM	7	7	8	11	12	13	14	15	13	13
	5		1.0D	D=1 : 0.15D 1<D≤3 : 0.2D D>3 : 0.5D	SFM	130	155	190	185	185	200	200	200	200	200
					IPT	.0002	.0005	.0007	.0008	.0010	.0013	.0014	.0015	.0015	.0016
					RPM	12730	7480	5270	4460	3630	3240	2770	2430	2160	1940
					IPM	4	7	7	7	7	8	8	7	7	6
	6-7	Low alloy steel	1.0D	D=1 : 0.15D 1<D≤3 : 0.2D D>3 : 0.5D	SFM	215	235	265	300	315	335	340	340	325	325
					IPT	.0002	.0003	.0006	.0008	.0010	.0012	.0015	.0018	.0019	.0020
					RPM	21010	11300	7350	7320	6110	5410	4710	4100	3500	3150
					IPM	7	7	8	11	12	13	14	15	13	13
	8-9		1.0D	D=1 : 0.15D 1<D≤3 : 0.2D D>3 : 0.5D	SFM	130	155	190	185	185	200	200	200	200	200
					IPT	.0002	.0005	.0007	.0008	.0010	.0013	.0014	.0015	.0015	.0016
					RPM	12730	7480	5270	4460	3630	3240	2770	2430	2160	1940
					IPM	4	7	7	7	7	8	8	7	7	6
	10	High alloyed steel, and tool steel	1.0D	D=1 : 0.15D 1<D≤3 : 0.2D D>3 : 0.5D	SFM	215	235	265	300	315	335	340	340	325	325
					IPT	.0002	.0003	.0006	.0008	.0010	.0012	.0015	.0018	.0019	.0020
					RPM	21010	11300	7350	7320	6110	5410	4710	4100	3500	3150
					IPM	7	7	8	11	12	13	14	15	13	13
	11.1 - 11.2		1.0D	D=1 : 0.15D 1<D≤3 : 0.2D D>3 : 0.5D	SFM	130	155	190	185	185	200	200	200	200	200
					IPT	.0002	.0005	.0007	.0008	.0010	.0013	.0014	.0015	.0015	.0016
					RPM	12730	7480	5270	4460	3630	3240	2770	2430	2160	1940
					IPM	4	7	7	7	7	8	8	7	7	6
M	14.1	Stainless steel	1.0D	D=1 : 0.15D 1<D≤3 : 0.2D D>3 : 0.5D	SFM	110	130	140	155	160	170	170	165	165	165
					IPT	.0001	.0003	.0006	.0008	.0010	.0013	.0015	.0016	.0017	.0019
					RPM	10500	6210	3880	3820	3120	2760	2360	2030	1780	1620
					IPM	3	4	5	6	6	7	7	7	6	6
K	15 - 20	Grey cast iron Nodular cast iron Malleable cast iron	1.0D	D=1 : 0.15D 1<D≤3 : 0.2D D>3 : 0.5D	SFM	215	235	265	300	315	335	340	340	325	325
					IPT	.0002	.0003	.0006	.0008	.0010	.0012	.0015	.0018	.0019	.0020
					RPM	21010	11300	7350	7320	6110	5410	4710	4100	3500	3150
					IPM	7	7	8	11	12	13	14	15	13	13
N	26 - 28	Copper and Copper Alloys (Bronze / Brass)	1.0D	0.5D	SFM	315	415	435	435	415	415	415	435	415	415
					IPT	.0002	.0004	.0007	.0007	.0010	.0013	.0015	.0017	.0019	.0022
					RPM	30560	20050	12060	10500	8020	6680	5750	5250	4470	4010
					IPM	9	16	16	16	16	17	17	18	17	17
	29.1	Non Metallic Materials	1.0D	0.5D	SFM	315	415	435	435	415	415	415	435	415	415
					IPT	.0002	.0004	.0007	.0007	.0010	.0013	.0015	.0017	.0019	.0022
					RPM	30560	20050	12060	10500	8020	6680	5750	5250	4470	4010
					IPM	9	16	16	16	16	17	17	18	17	17

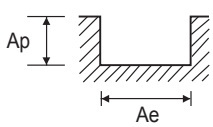


GMK87 SERIES

3 FLUTE SQUARE - SLOTTING

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

ISO	VDI 3323	Material Description	Ae	Ap	Para-meter	Diameter (Ø)							
						1/8	5/32	3/16	1/4	5/16	3/8	7/16	1/2
P	1-4	Non-alloy steel	1.0D	0.8D	SFM	500	500	500	500	500	550	550	550
					IPT	.0002	.0003	.0004	.0006	.0011	.0015	.0017	.0018
					RPM	15280	12220	10190	7640	6110	5600	4800	4200
					IPM	9	11	12	14	20	25	24	23
	5		1.0D	0.8D	SFM	350	350	350	350	350	385	385	385
					IPT	.0002	.0003	.0004	.0006	.0011	.0015	.0017	.0019
					RPM	10700	8560	7130	5350	4280	3920	3360	2940
					IPM	6	8	9	10	14	18	17	17
	6-7	Low alloy steel	1.0D	0.8D	SFM	500	500	500	500	500	550	550	550
					IPT	.0002	.0003	.0004	.0006	.0011	.0015	.0017	.0018
					RPM	15280	12220	10190	7640	6110	5600	4800	4200
					IPM	9	11	12	14	20	25	24	23
	8-9		1.0D	0.8D	SFM	350	350	350	350	350	385	385	385
					IPT	.0002	.0003	.0004	.0006	.0011	.0015	.0017	.0019
					RPM	10700	8560	7130	5350	4280	3920	3360	2940
					IPM	6	8	9	10	14	18	17	17
	10 - 11.1	High alloyed steel, and tool steel	1.0D	0.8D	SFM	210	210	210	210	210	230	230	230
					IPT	.0001	.0002	.0003	.0004	.0007	.0011	.0012	.0013
					RPM	6420	5130	4280	3210	2570	2340	2010	1760
					IPM	2	3	4	4	5	8	7	7
M	12 - 13	Stainless steel	1.0D	0.8D	SFM	485	485	485	485	485	485	485	485
					IPT	.0002	.0002	.0004	.0004	.0005	.0009	.0013	.0016
					RPM	14820	11860	9880	7410	5930	4940	4230	3710
					IPM	9	7	12	9	9	13	16	18
	14.1		1.0D	0.8D	SFM	350	350	350	350	350	350	350	350
					IPT	.0002	.0003	.0005	.0007	.0011	.0018	.0020	.0022
					RPM	10700	8560	7130	5350	4280	3570	3060	2670
					IPM	6	8	11	11	14	19	18	18
	14.2		1.0D	0.8D	SFM	310	310	310	310	310	310	310	310
					IPT	.0002	.0003	.0005	.0007	.0011	.0018	.0020	.0022
					RPM	9470	7580	6320	4740	3790	3160	2710	2370
					IPM	6	7	9	10	13	17	16	16
K	15 - 20	Grey cast iron Nodular cast iron Malleable cast iron	1.0D	0.8D	SFM	365	365	365	365	365	405	405	405
					IPT	.0002	.0004	.0006	.0008	.0013	.0018	.0020	.0022
					RPM	11150	8920	7440	5580	4460	4130	3540	3090
					IPM	7	11	13	13	17	22	21	20
S	31 - 35	Heat Resistant Super Alloys	1.0D	0.5D	SFM	85	85	85	85	85	85	85	85
					IPT	.0002	.0003	.0003	.0005	.0007	.0012	.0014	.0016
					RPM	2600	2080	1730	1300	1040	870	740	650
					IPM	2	2	2	2	2	3	3	3
	36 - 37	Titanium Alloys	1.0D	0.5D	SFM	190	190	190	190	190	190	190	190
					IPT	.0002	.0003	.0004	.0006	.0010	.0016	.0019	.0021
					RPM	5810	4650	3870	2900	2320	1940	1660	1450
					IPM	3	4	5	5	7	9	9	9



EV MILL END MILLS

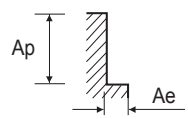
RECOMMENDED CUTTING CONDITIONS

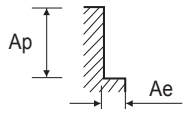
GMK87 SERIES

3 FLUTE SQUARE - SIDE CUTTING

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

ISO	VDI 3323	Material Description	Ae	Ap	Para-meter	Diameter (Ø)							
						1/8	5/32	3/16	1/4	5/16	3/8	7/16	1/2
P	1-4	Non-alloy steel	0.5D	1.0D	SFM	500	500	500	500	500	550	550	550
					IPT	.0002	.0003	.0004	.0006	.0011	.0015	.0017	.0018
					RPM	15280	12220	10190	7640	6110	5600	4800	4200
					IPM	9	11	12	14	20	25	24	23
	5		0.5D	1.0D	SFM	350	350	350	350	350	385	385	385
					IPT	.0002	.0003	.0004	.0006	.0011	.0015	.0017	.0019
					RPM	10700	8560	7130	5350	4280	3920	3360	2940
					IPM	6	8	9	10	14	18	17	17
	6-7	Low alloy steel	0.5D	1.0D	SFM	500	500	500	500	500	550	550	550
					IPT	.0002	.0003	.0004	.0006	.0011	.0015	.0017	.0018
					RPM	15280	12220	10190	7640	6110	5600	4800	4200
					IPM	9	11	12	14	20	25	24	23
	8-9		0.5D	1.0D	SFM	350	350	350	350	350	385	385	385
					IPT	.0002	.0003	.0004	.0006	.0011	.0015	.0017	.0019
					RPM	10700	8560	7130	5350	4280	3920	3360	2940
					IPM	6	8	9	10	14	18	17	17
	10 - 11.1	High alloyed steel, and tool steel	0.5D	1.0D	SFM	210	210	210	210	210	230	230	230
					IPT	.0001	.0002	.0003	.0004	.0007	.0011	.0012	.0013
					RPM	6420	5130	4280	3210	2570	2340	2010	1760
					IPM	2	3	4	4	5	8	7	7
M	12 - 13	Stainless steel	0.5D	1.0D	SFM	485	485	485	485	485	485	485	485
					IPT	.0002	.0002	.0004	.0004	.0005	.0009	.0013	.0016
					RPM	14820	11860	9880	7410	5930	4940	4230	3710
					IPM	9	7	12	9	9	13	16	18
	14.1		0.5D	1.0D	SFM	350	350	350	350	350	350	350	350
					IPT	.0002	.0003	.0005	.0007	.0011	.0018	.0020	.0022
					RPM	10700	8560	7130	5350	4280	3570	3060	2670
					IPM	6	8	11	11	14	19	18	18
	14.2		0.5D	1.0D	SFM	310	310	310	310	310	310	310	310
					IPT	.0002	.0003	.0005	.0007	.0011	.0018	.0020	.0022
					RPM	9470	7580	6320	4740	3790	3160	2710	2370
					IPM	6	7	9	10	13	17	16	16
K	15 - 20	Grey cast iron Nodular cast iron Malleable cast iron	0.5D	1.0D	SFM	365	365	365	365	365	405	405	405
					IPT	.0002	.0004	.0006	.0008	.0013	.0018	.0020	.0022
					RPM	11150	8920	7440	5580	4460	4130	3540	3090
					IPM	7	11	13	13	17	22	21	20
S	31 - 35	Heat Resistant Super Alloys	0.25D	1.0D	SFM	85	85	85	85	85	85	85	85
					IPT	.0002	.0003	.0003	.0005	.0007	.0012	.0014	.0016
					RPM	2600	2080	1730	1300	1040	870	740	650
					IPM	2	2	2	2	2	3	3	3
	36 - 37	Titanium Alloys	0.35D	1.0D	SFM	190	190	190	190	190	190	190	190
					IPT	.0002	.0003	.0004	.0006	.0010	.0016	.0019	.0021
					RPM	5810	4650	3870	2900	2320	1940	1660	1450
					IPM	3	4	5	5	7	9	9	9





GMK54 SERIES

4 FLUTE SQUARE - SIDE CUTTING

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

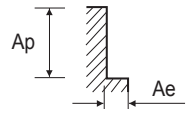
ISO	VDI 3323	Material Description	Ae	Ap	Para-meter	Diameter (Ø)								
						1/8	5/32	3/16	1/4	5/16	3/8	7/16	1/2	5/8
P	1-4	Non-alloy steel	0.3D	1.5D	SFM	400	400	400	400	400	440	440	440	440
					IPT	.0002	.0003	.0004	.0006	.0011	.0015	.0017	.0019	.0021
					RPM	12220	9780	8150	6110	4890	4480	3840	3360	2690
					IPM	10	12	13	15	22	27	26	26	23
	5		0.3D	1.5D	SFM	280	280	280	280	280	310	310	310	310
					IPT	.0002	.0003	.0004	.0006	.0011	.0015	.0017	.0019	.0021
					RPM	8560	6850	5700	4280	3420	3160	2710	2370	1900
					IPM	7	8	9	10	15	19	18	18	16
	6-7	Low alloy steel	0.3D	1.5D	SFM	400	400	400	400	400	440	440	440	440
					IPT	.0002	.0003	.0004	.0006	.0011	.0015	.0017	.0019	.0021
					RPM	12220	9780	8150	6110	4890	4480	3840	3360	2690
					IPM	10	12	13	15	22	27	26	26	23
	8-9		0.3D	1.5D	SFM	280	280	280	280	280	310	310	310	310
					IPT	.0002	.0003	.0004	.0006	.0011	.0015	.0017	.0019	.0021
					RPM	8560	6850	5700	4280	3420	3160	2710	2370	1900
					IPM	7	8	9	10	15	19	18	18	16
	10	High alloyed steel, and tool steel	0.3D	1.5D	SFM	400	400	400	400	400	440	440	440	440
					IPT	.0002	.0003	.0004	.0006	.0011	.0015	.0017	.0019	.0021
					RPM	12220	9780	8150	6110	4890	4480	3840	3360	2690
					IPM	10	12	13	15	22	27	26	26	23
	11.1		0.3D	1.5D	SFM	280	280	280	280	280	310	310	310	310
					IPT	.0002	.0003	.0004	.0006	.0011	.0015	.0017	.0019	.0021
					RPM	8560	6850	5700	4280	3420	3160	2710	2370	1900
					IPM	7	8	9	10	15	19	18	18	16
	11.2		0.3D	1.5D	SFM	165	165	165	165	165	185	185	185	185
					IPT	.0001	.0002	.0003	.0004	.0007	.0011	.0012	.0013	.0015
					RPM	5040	4030	3360	2520	2020	1890	1620	1410	1130
					IPM	2	3	4	4	6	8	8	7	7
M	12 - 13	Stainless steel	0.3D	1.5D	SFM	425	425	425	425	425	425	425	425	425
					IPT	.0002	.0002	.0004	.0005	.0009	.0013	.0015	.0016	.0018
					RPM	12990	10390	8660	6490	5200	4330	3710	3250	2600
					IPM	10	8	14	13	19	23	22	21	19
	14.1		0.3D	1.5D	SFM	300	300	300	300	300	300	300	300	300
					IPT	.0002	.0003	.0005	.0007	.0011	.0019	.0021	.0022	.0025
					RPM	9170	7330	6110	4580	3670	3060	2620	2290	1830
					IPM	7	9	12	13	16	23	22	20	18
	14.2		0.3D	1.5D	SFM	270	270	270	270	270	270	270	270	270
					IPT	.0002	.0003	.0005	.0007	.0011	.0019	.0021	.0022	.0024
					RPM	8250	6600	5500	4130	3300	2750	2360	2060	1650
					IPM	7	8	11	12	15	21	20	18	16
K	15 - 20	Grey cast iron Nodular cast iron Malleable cast iron	0.3D	1.5D	SFM	295	295	295	295	295	320	320	320	320
					IPT	.0002	.0004	.0006	.0008	.0013	.0019	.0021	.0023	.0026
					RPM	9020	7210	6010	4510	3610	3260	2790	2440	1960
					IPM	7	12	14	14	19	25	23	22	20
N	26 - 28	Copper and Copper Alloys (Bronze / Brass)	0.1D	1.5D	SFM	415	435	415	415	435	415	415	415	415
					IPT	.0010	.0011	.0014	.0019	.0025	.0032	.0035	.0038	.0049
					RPM	12680	10630	8450	6340	5320	4230	3620	3170	2540
					IPM	51	47	47	48	53	54	51	48	50
	29.1	Non Metallic Materials	0.1D	1.5D	SFM	415	435	415	415	435	415	415	415	415
					IPT	.0010	.0011	.0014	.0019	.0025	.0032	.0035	.0038	.0049
					RPM	12680	10630	8450	6340	5320	4230	3620	3170	2540
					IPM	51	47	47	48	53	54	51	48	50
S	31 - 35	Heat Resistant Super Alloys	0.2D	1.0D	SFM	80	80	80	80	80	80	80	80	80
					IPT	.0002	.0003	.0005	.0007	.0012	.0018	.0020	.0022	.0025
					RPM	2440	1960	1630	1220	980	810	700	610	490
					IPM	2	2	3	3	5	6	6	5	5
	36 - 37	Titanium Alloys	0.3D	1.0D	SFM	215	215	215	215	215	215	215	215	215
					IPT	.0002	.0003	.0004	.0006	.0010	.0017	.0019	.0020	.0022
					RPM	6570	5260	4380	3290	2630	2190	1880	1640	1310
					IPM	5	6	7	8	11	15	14	13	12

EV MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

GMK33 SERIES

4 FLUTE SQUARE - SIDE CUTTING



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

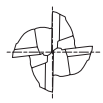
ISO	VDI 3323	Material Description	Ae	Ap	Para-meter	Diameter (Ø) 2	3	4	4.5	6	8	10	12
P	1-4	Non-alloy steel	D<3 : 0.1D D≥3 : 0.3D	D<3 : 1.0D D≥3 : 1.5D	SFM	400	400	400	400	400	400	440	440
					IPT	.0001	.0002	.0003	.0004	.0006	.0011	.0015	.0019
					RPM	19420	12950	9710	8630	6470	4850	4270	3550
					IPM	9	10	12	14	16	21	26	26
	5		D<3 : 0.1D D≥3 : 0.3D	D<3 : 1.0D D≥3 : 1.5D	SFM	280	280	280	280	280	280	310	310
					IPT	.0001	.0002	.0003	.0004	.0006	.0011	.0015	.0019
					RPM	13690	9130	6840	6040	4560	3420	2990	2490
					IPM	6	7	9	10	11	15	18	18
	6-7	Low alloy steel	D<3 : 0.1D D≥3 : 0.3D	D<3 : 1.0D D≥3 : 1.5D	SFM	400	400	400	400	400	400	440	440
					IPT	.0001	.0002	.0003	.0004	.0006	.0011	.0015	.0019
					RPM	19420	12950	9710	8630	6470	4850	4270	3550
					IPM	9	10	12	14	16	21	26	26
	8-9		D<3 : 0.1D D≥3 : 0.3D	D<3 : 1.0D D≥3 : 1.5D	SFM	280	280	280	280	280	280	310	310
					IPT	.0001	.0002	.0003	.0004	.0006	.0011	.0015	.0019
					RPM	13690	9130	6840	6040	4560	3420	2990	2490
					IPM	6	7	9	10	11	15	18	18
	10	High alloyed steel, and tool steel	D<3 : 0.1D D≥3 : 0.3D	D<3 : 1.0D D≥3 : 1.5D	SFM	400	400	400	400	400	400	440	440
					IPT	.0001	.0002	.0003	.0004	.0006	.0011	.0015	.0019
					RPM	19420	12950	9710	8630	6470	4850	4270	3550
					IPM	9	10	12	14	16	21	26	26
	11.1		D<3 : 0.1D D≥3 : 0.3D	D<3 : 1.0D D≥3 : 1.5D	SFM	280	280	280	280	280	280	310	310
					IPT	.0001	.0002	.0003	.0004	.0006	.0011	.0015	.0019
					RPM	13690	9130	6840	6040	4560	3420	2990	2490
					IPM	6	7	9	10	11	15	18	18
	11.2		D<3 : 0.1D D≥3 : 0.3D	D<3 : 1.0D D≥3 : 1.5D	SFM	165	165	165	165	165	165	185	185
					IPT	.0001	.0001	.0002	.0003	.0004	.0007	.0011	.0013
					RPM	8120	5410	4060	3560	2710	2030	1780	1490
					IPM	3	3	4	4	5	6	8	7
M	12 - 13	Stainless steel	D<3 : 0.1D D≥3 : 0.3D	D<3 : 1.0D D≥3 : 1.5D	SFM	425	425	425	425	425	425	425	425
					IPT	.0001	.0002	.0002	.0003	.0005	.0009	.0013	.0016
					RPM	20530	13690	10270	9160	6840	5130	4110	3420
					IPM	8	9	10	11	14	18	22	22
	14.1		D<3 : 0.1D D≥3 : 0.3D	D<3 : 1.0D D≥3 : 1.5D	SFM	300	300	300	300	300	300	300	300
					IPT	.0001	.0002	.0003	.0004	.0007	.0011	.0019	.0022
					RPM	14640	9760	7320	6470	4880	3660	2930	2440
					IPM	7	8	9	10	14	16	22	22
	14.2		D<3 : 0.1D D≥3 : 0.3D	D<3 : 1.0D D≥3 : 1.5D	SFM	270	270	270	270	270	270	270	270
					IPT	.0001	.0002	.0003	.0004	.0007	.0011	.0019	.0022
					RPM	13210	8810	6610	5820	4400	3300	2640	2200
					IPM	6	7	8	9	12	15	20	19
K	15 - 20	Grey cast iron Nodular cast iron Malleable cast iron	D<3 : 0.1D D≥3 : 0.3D	D<3 : 1.0D D≥3 : 1.5D	SFM	295	295	295	295	295	295	320	320
					IPT	.0002	.0002	.0004	.0005	.0008	.0013	.0019	.0023
					RPM	14320	9550	7160	6360	4780	3580	3120	2600
					IPM	9	9	11	13	15	19	24	24
N	26 - 28	Copper and Copper Alloys (Bronze / Brass)	0.1D	1.5D	SFM	415	415	435	415	415	435	415	415
					IPT	.0006	.0009	.0011	.0014	.0019	.0025	.0032	.0038
					RPM	20050	13370	10500	8950	6690	5250	4010	3340
					IPM	51	51	48	50	51	52	51	51
	29.1	Non Metallic Materials	0.1D	1.5D	SFM	415	415	435	415	415	435	415	415
					IPT	.0006	.0009	.0011	.0014	.0019	.0025	.0032	.0038
					RPM	20050	13370	10500	8950	6690	5250	4010	3340
					IPM	51	51	48	50	51	52	51	51
S	31 - 35	Heat Resistant Super Alloys	D<3 : 0.1D D≥3 : 0.2D	1.0D	SFM	80	80	80	80	80	80	80	80
					IPT	.0001	.0002	.0003	.0004	.0007	.0012	.0018	.0022
					RPM	3980	2650	1990	1730	1330	1000	800	660
					IPM	2	2	2	3	4	5	6	6
	36 - 37	Titanium Alloys	D<3 : 0.1D D≥3 : 0.3D	1.0D	SFM	215	215	215	215	215	215	215	215
					IPT	.0001	.0002	.0003	.0004	.0006	.0010	.0017	.0020
					RPM	10350	6900	5170	4640	3450	2590	2070	1720
					IPM	3	4	6	7	9	10	14	14

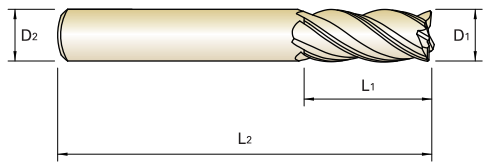
YGBasiX END MILLS

Plain Shank **G9J48 SERIES**

CARBIDE, 4 FLUTE SQUARE







CARBIDE | 4 | 35°/37° | PLAIN

p.A71-A72

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D_1	D_2	L_1	L_2
G9J48008N	**1/8**	1/8	1/4	1-1/2
G9J48901N	**1/8**	1/8	1/2	2
G9J48012N	**3/16**	3/16	3/8	2
G9J48902N	**3/16**	3/16	5/8	2-1/4
G9J48016N	**1/4**	1/4	3/8	2
G9J48903N	**1/4**	1/4	3/4	2-1/2
G9J48904N	**1/4**	1/4	1-1/4	3
G9J48020N	**5/16**	5/16	1/2	2
G9J48905N	**5/16**	5/16	13/16	2-1/2
G9J48906N	**5/16**	5/16	1-1/4	3

▶ Length of cut in excess of 3×D on 37° single-helix

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0 ~ -.0012	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	11.1	11.2	12	13	14.1	14.2	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

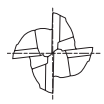
ISO	N											S							H						
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials				Heat Resistant Super Alloys					Titanium Alloys		Hardened steel					Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29.1	29.2	29.3	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc													15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100					200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended																										

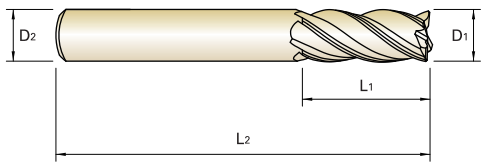
YGBasiX END MILLS

Flat Shank **G9J49 SERIES**

CARBIDE, 4 FLUTE SQUARE







CARBIDE | 4 | 35°/37° | FLAT

p.A71-A72

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D_1	D_2	L_1	L_2
G9J49024N	**3/8**	3/8	1/2	2-1/4
G9J49901N	**3/8**	3/8	1	2-3/4
G9J49902N	**3/8**	3/8	1-1/2	3-1/4
G9J49028N	**7/16**	7/16	5/8	2-1/2
G9J49903N	**7/16**	7/16	1	3
G9J49032N	**1/2**	1/2	5/8	2-3/4
G9J49904N	**1/2**	1/2	1-1/4	3-1/4
G9J49912N	**1/2**	1/2	1-5/8	3-7/8
G9J49905N	**1/2**	1/2	2	4
G9J49040N	**5/8**	5/8	3/4	3-1/4
G9J49906N	**5/8**	5/8	1-5/8	3-7/8
G9J49907N	**5/8**	5/8	2-1/4	4-1/2

▶ Length of cut in excess of 3×D on 37° single-helix

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0 ~ -.0012	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	11.1	11.2	12	13	14.1	14.2	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

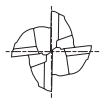
ISO	N										S							H						
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials				Heat Resistant Super Alloys					Titanium Alloys		Hardened steel					Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29.1	29.2	29.3	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc													15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100					200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended																										

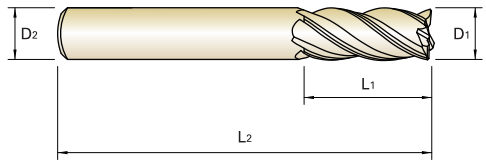
YGBasiX END MILLS

Plain Shank **G9J52 SERIES**

CARBIDE, 4 FLUTE CORNER RADIUS







CARBIDE | 4 | 35°/37° | PLAIN

p.A71-A72

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0 ~ -.0012	h6

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D_1	D_2	L_1	L_2
G9J52008N	R.010	**1/8**	1/8	1/4	1-1/2
G9J52901N	R.010	**1/8**	1/8	1/2	2
G9J52915N	R.020	**1/8**	1/8	1/4	1-1/2
G9J52916N	R.020	**1/8**	1/8	1/2	2
G9J52012N	R.010	**3/16**	3/16	3/8	2
G9J52902N	R.010	**3/16**	3/16	5/8	2-1/4
G9J52917N	R.020	**3/16**	3/16	3/8	2
G9J52918N	R.020	**3/16**	3/16	5/8	2-1/4
G9J52903N	R.030	**3/16**	3/16	3/8	2
G9J52904N	R.030	**3/16**	3/16	5/8	2-1/4
G9J52016N	R.015	**1/4**	1/4	3/8	2
G9J52905N	R.015	**1/4**	1/4	3/4	2-1/2
G9J52906N	R.015	**1/4**	1/4	1-1/4	3
G9J52919N	R.020	**1/4**	1/4	3/8	2
G9J52920N	R.020	**1/4**	1/4	3/4	2-1/2
G9J52921N	R.020	**1/4**	1/4	1-1/4	3
G9J52907N	R.030	**1/4**	1/4	3/8	2
G9J52908N	R.030	**1/4**	1/4	3/4	2-1/2
G9J52909N	R.030	**1/4**	1/4	1-1/4	3
G9J52020N	R.015	**5/16**	5/16	1/2	2
G9J52910N	R.015	**5/16**	5/16	13/16	2-1/2
G9J52911N	R.015	**5/16**	5/16	1-1/4	3
G9J52922N	R.020	**5/16**	5/16	1/2	2
G9J52923N	R.020	**5/16**	5/16	13/16	2-1/2
G9J52924N	R.020	**5/16**	5/16	1-1/4	3
G9J52912N	R.030	**5/16**	5/16	1/2	2
G9J52913N	R.030	**5/16**	5/16	13/16	2-1/2
G9J52914N	R.030	**5/16**	5/16	1-1/4	3

▶ Length of cut in excess of 3×D on 37° single-helix

◎ : 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	14.2	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

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	29.1	29.2	29.3	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc													15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100					200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended																										

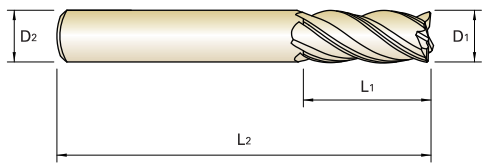
YGBasiX END MILLS

Flat Shank **G9J53 SERIES**

CARBIDE, 4 FLUTE CORNER RADIUS







CARBIDE | 4 | 35°/37° | FLAT

p.A71-A72

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D1	D2	L1	L2
G9J53024N	R.015	**3/8**	3/8	1/2	2-1/4
G9J53901N	R.015	**3/8**	3/8	1	2-3/4
G9J53902N	R.015	**3/8**	3/8	1-1/2	3-1/4
G9J53938N	R.020	**3/8**	3/8	1/2	2-1/4
G9J53939N	R.020	**3/8**	3/8	1	2-3/4
G9J53940N	R.020	**3/8**	3/8	1-1/2	3-1/4
G9J53903N	R.030	**3/8**	3/8	1/2	2-1/4
G9J53904N	R.030	**3/8**	3/8	1	2-3/4
G9J53905N	R.030	**3/8**	3/8	1-1/2	3-1/4
G9J53906N	R.060	**3/8**	3/8	1/2	2-1/4
G9J53907N	R.060	**3/8**	3/8	1	2-3/4
G9J53908N	R.060	**3/8**	3/8	1-1/2	3-1/4
G9J53028N	R.030	**7/16**	7/16	5/8	2-1/2
G9J53909N	R.030	**7/16**	7/16	1	3
G9J53910N	R.060	**7/16**	7/16	5/8	2-1/2
G9J53911N	R.060	**7/16**	7/16	1	3
G9J53032N	R.015	**1/2**	1/2	5/8	2-3/4
G9J53912N	R.015	**1/2**	1/2	1-1/4	3-1/4
G9J53943N	R.015	**1/2**	1/2	1-5/8	3-7/8
G9J53913N	R.015	**1/2**	1/2	2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0 ~ -.0012	h6

▶ Length of cut in excess of 3×D on 37° single-helix

◎ : 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	14.2	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

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	29.1	29.2	29.3	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc													15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100					200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended																										

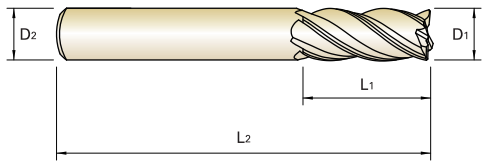
YGBasiX END MILLS

Flat Shank **G9J53 SERIES**

CARBIDE, 4 FLUTE CORNER RADIUS







CARBIDE | 4 | 35°/37° | FLAT

p.A71-A72

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D_1	D_2	L_1	L_2
G9J53941N	R.020	**1/2**	1/2	5/8	2-3/4
G9J53942N	R.020	**1/2**	1/2	1-1/4	3-1/4
G9J53944N	R.020	**1/2**	1/2	1-5/8	3-7/8
G9J53947N	R.020	**1/2**	1/2	2	4
G9J53914N	R.030	**1/2**	1/2	5/8	2-3/4
G9J53915N	R.030	**1/2**	1/2	1-1/4	3-1/4
G9J53945N	R.030	**1/2**	1/2	1-5/8	3-7/8
G9J53916N	R.030	**1/2**	1/2	2	4
G9J53917N	R.060	**1/2**	1/2	5/8	2-3/4
G9J53918N	R.060	**1/2**	1/2	1-1/4	3-1/4
G9J53946N	R.060	**1/2**	1/2	1-5/8	3-7/8
G9J53919N	R.060	**1/2**	1/2	2	4
G9J53040N	R.030	**5/8**	5/8	3/4	3-1/4
G9J53920N	R.030	**5/8**	5/8	1-5/8	3-7/8
G9J53921N	R.030	**5/8**	5/8	2-1/4	4-1/2
G9J53922N	R.060	**5/8**	5/8	3/4	3-1/4
G9J53923N	R.060	**5/8**	5/8	1-5/8	3-7/8
G9J53924N	R.060	**5/8**	5/8	2-1/4	4-1/2
G9J53925N	R.125	**5/8**	5/8	1-5/8	3-7/8

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0 ~ -.0012	h6

▶ Length of cut in excess of 3×D on 37° single-helix

◎ : 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	14.2	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

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	29.1	29.2	29.3	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc													15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100					200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended																										

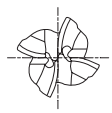
Plain Shank **G9J50** SERIES

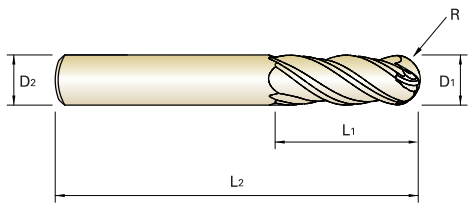
Flat Shank **G9J51** SERIES

YGBasiX END MILLS

CARBIDE, 4 FLUTE BALL NOSE







CARBIDE | 4 | 35°/37° | PLAIN | FLAT | X Coating

p.A70

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D_1	D_2	L_1	L_2
G9J50008N	R1/16	**1/8**	1/8	1/2	2
G9J50012N	R3/32	**3/16**	3/16	5/8	2-1/4
G9J50016N	R1/8	**1/4**	1/4	3/4	2-1/2
G9J50901N	R1/8	**1/4**	1/4	1-1/4	3
G9J50020N	R5/32	**5/16**	5/16	13/16	2-1/2
G9J50902N	R5/32	**5/16**	5/16	1-1/4	3

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D_1	D_2	L_1	L_2
G9J51024N	R3/16	**3/8**	3/8	1	2-3/4
G9J51901N	R3/16	**3/8**	3/8	1-1/2	3-1/4
G9J51028N	R7/32	**7/16**	7/16	1	3
G9J51032N	R1/4	**1/2**	1/2	1-1/4	3-1/4
G9J51906N	R1/4	**1/2**	1/2	1-5/8	3-7/8
G9J51902N	R1/4	**1/2**	1/2	2	4
G9J51040N	R5/16	**5/8**	5/8	1-5/8	3-7/8
G9J51903N	R5/16	**5/8**	5/8	2-1/4	4-1/2

▶ Length of cut in excess of 3×D on 37° single-helix

Ball Radius Tolerance	Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
±.0008	0 ~ -.0012	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	11.1	11.2	12	13	14.1	14.2	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

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	29.1	29.2	29.3	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc													15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100					200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended																										

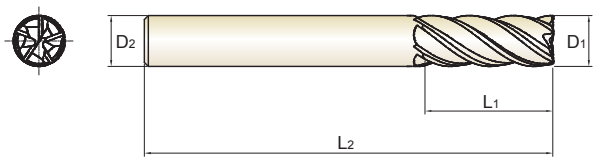
YGBasiX END MILLS

G9K79 SERIES

CARBIDE, 5 FLUTE 38° HELIX SQUARE

- Unequal Index for smooth, chatter-free machining in a wide range of materials
- Eccentric relief grind and our proprietary X-coating for long tool life





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Unit : Inch

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Shank
G9K79008N	1/8	1/8	1/4	1-1/2	Plain
G9K79901N			1/2	2	
G9K79012N	3/16	3/16	3/8	2	Plain
G9K79902N			5/8	2-1/4	
G9K79016N	1/4	1/4	3/8	2	Plain
G9K79903N			3/4	2-1/2	
G9K79904N			1-1/4	3	
G9K79020N	5/16	5/16	1/2	2	Plain
G9K79905N			13/16	2-1/2	
G9K79906N			1-1/4	3	
G9K79024N	3/8	3/8	1/2	2-1/4	Flat
G9K79908N			1/2	1-1/2	
G9K79907N			1	2-3/4	
G9K79008N			1-1/2	3-1/4	
G9K79032N	1/2	1/2	5/8	2-3/4	Flat
G9K79909N			1-1/4	3-1/4	
G9K79910N			1-5/8	3-7/8	
G9K79911N			2	4	
G9K79040N	5/8	5/8	3/4	3-1/4	Flat
G9K79912N			1-5/8	3-7/8	
G9K79913N			2-1/4	4-1/2	

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0 ~ -.0012	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	11.1	11.2	12	13	14.1	14.2	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	180	260	160	250	130	230
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	◎		◎	◎	○	○	○	○	○	○

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	29.1	29.2	29.3	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc													15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100					200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended																										

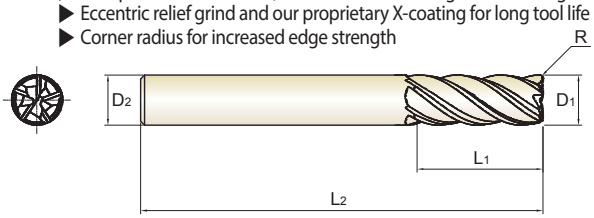
YGBasiX END MILLS

G9K80 SERIES

CARBIDE, 5 FLUTE 38° HELIX CORNER RADIUS



- Unequal helix for smooth, chatter-free machining in a wide range of materials
- Eccentric relief grind and our proprietary X-coating for long tool life
- Corner radius for increased edge strength



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p.A73

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0 ~ -.0012	h6

Unit : Inch

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Shank
G9K80008N	R.010	1/8	1/8	1/4	1-1/2	Plain
G9K80902N	R.015			1/4	1-1/2	
G9K80904N	R.020			1/4	1-1/2	
G9K80901N	R.010			1/2	2	
G9K80903N	R.015			1/2	2	
G9K80905N	R.020			1/2	2	
G9K80012N	R.010	3/16	3/16	3/8	2	Plain
G9K80907N	R.015			3/8	2	
G9K80910N	R.020			3/8	2	
G9K80912N	R.030			3/8	2	
G9K80906N	R.010			5/8	2-1/4	
G9K80908N	R.015			5/8	2-1/4	
G9K80911N	R.020			5/8	2-1/4	
G9K80913N	R.030			5/8	2-1/4	
G9K80016N	R.010	1/4	1/4	3/8	2	Plain
G9K80915N	R.015			3/8	2	
G9K80918N	R.020			3/8	2	
G9K80921N	R.030			3/8	2	
G9K80914N	R.010			3/4	2-1/2	
G9K80916N	R.015			3/4	2-1/2	
G9K80919N	R.020			3/4	2-1/2	
G9K80922N	R.030			3/4	2-1/2	
G9K80924N	R.060			3/4	2-1/2	
G9K80917N	R.015			1-1/4	3	
G9K80920N	R.020			1-1/4	3	
G9K80923N	R.030			1-1/4	3	

NEXT PAGE ▶

◎ : Excellent ○ : Good

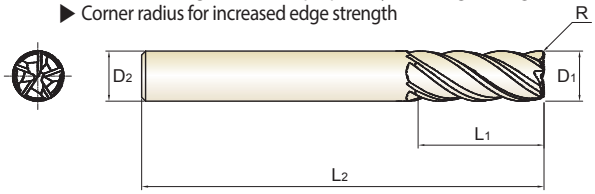
ISO	P												M				K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel			Stainless steel				Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	14.2	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	180	260	160	250	130	230
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	◎		◎	◎	○	○	○	○	○	○

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	29.1	29.2	29.3	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc													15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100					200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended																										

CARBIDE, 5 FLUTE 38° HELIX CORNER RADIUS



- Unequal helix for smooth, chatter-free machining in a wide range of materials
- Eccentric relief grind and our proprietary X-coating for long tool life
- Corner radius for increased edge strength



CARBIDE | 5 | 38° | PLAIN | FLAT | X Coating

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Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0 ~ -.0012	h6

Unit : Inch

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Shank
G9K80020N	R.010	5/16	5/16	1/2	2	Plain
G9K80926N	R.015			1/2	2	
G9K80929N	R.020			1/2	2	
G9K80932N	R.030			1/2	2	
G9K80925N	R.010			13/16	2-1/2	
G9K80927N	R.015			13/16	2-1/2	
G9K80930N	R.020			13/16	2-1/2	
G9K80933N	R.030			13/16	2-1/2	
G9K80935N	R.060			13/16	2-1/2	
G9K80928N	R.015			1-1/4	3	
G9K80931N	R.020			1-1/4	3	
G9K80934N	R.030			1-1/4	3	
G9K80024N	R.010	3/8	3/8	1/2	2-1/4	Flat
G9K80937N	R.015			1/2	2-1/4	
G9K80940N	R.020			1/2	2-1/4	
G9K80943N	R.030			1/2	2-1/4	
G9K80946N	R.060			1/2	2-1/4	
G9K80936N	R.010			1	2-3/4	
G9K80938N	R.015			1	2-3/4	
G9K80941N	R.020			1	2-3/4	
G9K80944N	R.030			1	2-3/4	
G9K80947N	R.060			1	2-3/4	
G9K80939N	R.015			1-1/2	3-1/4	
G9K80942N	R.020			1-1/2	3-1/4	
G9K80945N	R.030			1-1/2	3-1/4	
G9K80948N	R.060			1-1/2	3-1/4	

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	11.1	11.2	12	13	14.1	14.2	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	180	260	160	250	130	230
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	◎		◎	◎	○	○	○	○	○	○

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	29.1	29.2	29.3	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc													15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100					200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended																										

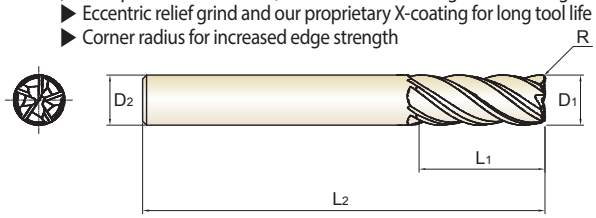
YGBasiX END MILLS

G9K80 SERIES

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- Corner radius for increased edge strength



CARBIDE | 5 | 38° | PLAIN | FLAT | X Coating

p.A73

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0 ~ -.0012	h6

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Shank
	R	D_1	D_2	L_1	L_2	
G9K80032N	R.010			5/8	2-3/4	
G9K80950N	R.015			5/8	2-3/4	
G9K80954N	R.020			5/8	2-3/4	
G9K80958N	R.030			5/8	2-3/4	
G9K80962N	R.060			5/8	2-3/4	
G9K80949N	R.010			1-1/4	3-1/4	
G9K80951N	R.015			1-1/4	3-1/4	
G9K80955N	R.020			1-1/4	3-1/4	
G9K80959N	R.030			1-1/4	3-1/4	
G9K80963N	R.060	**1/2**	**1/2**	1-1/4	3-1/4	Flat
G9K80966N	R.125			1-1/4	3-1/4	
G9K80952N	R.015			1-5/8	3-7/8	
G9K80956N	R.020			1-5/8	3-7/8	
G9K80960N	R.030			1-5/8	3-7/8	
G9K80964N	R.060			1-5/8	3-7/8	
G9K80953N	R.015			2	4	
G9K80957N	R.020			2	4	
G9K80961N	R.030			2	4	
G9K80965N	R.060			2	4	

NEXT PAGE ▶

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0 ~ -.0012	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	11.1	11.2	12	13	14.1	14.2	15	16	17	18	19	20	
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	10	26	3	25		21	
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

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	29.1	29.2	29.3	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc													15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100					200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended																										

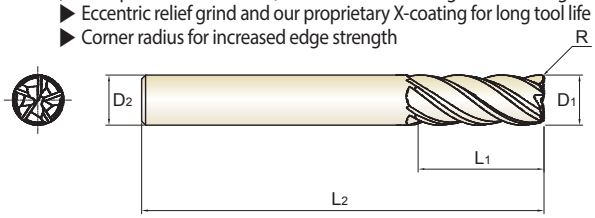
YGBasiX END MILLS

G9K80 SERIES

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CARBIDE | 5 | 38° | PLAIN | FLAT | X Coating

p.A73

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0 ~ -.0012	h6

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Shank
	R	D_1	D_2	L_1	L_2	
G9K80040N	R.015			3/4	3-1/4	
G9K80969N	R.020			3/4	3-1/4	
G9K80972N	R.030			3/4	3-1/4	
G9K80975N	R.060			3/4	3-1/4	
G9K80967N	R.015			1-5/8	3-7/8	
G9K80970N	R.020			1-5/8	3-7/8	
G9K80973N	R.030	**5/8**	**5/8**	1-5/8	3-7/8	Flat
G9K80976N	R.060			1-5/8	3-7/8	
G9K80978N	R.125			1-5/8	3-7/8	
G9K80968N	R.015			2-1/4	4-1/2	
G9K80971N	R.020			2-1/4	1-1/2	
G9K80974N	R.030			2-1/4	4-1/2	
G9K80977N	R.060			2-1/4	1-1/2	

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0 ~ -.0012	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	11.1	11.2	12	13	14.1	14.2	15	16	17	18	19	20	
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	10	26	3	25		21	
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

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	29.1	29.2	29.3	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc													15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100					200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended																										

YGBasiX END MILLS

RECOMMENDED CUTTING CONDITIONS

G9J50, G9J51 SERIES

4 FLUTE BALL NOSE - PLANE

SFM = ft./min.
IPT = In./tooth
RPM = rev./min.
IPM = 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
P	1-4	Non-alloy steel	0.3D	1.0D	SFM	370	370	370	370	370	370	370	370
					IPT	.0010	.0011	.0016	.0024	.0026	.0027	.0028	.0029
					RPM	11360	7570	5680	4540	3790	3240	2840	2280
					IPM	45	32	36	43	39	35	31	27
	5		0.3D	1.0D	SFM	260	260	260	260	260	255	255	255
					IPT	.0010	.0011	.0016	.0024	.0026	.0027	.0028	.0029
					RPM	7940	5290	3970	3180	2650	2260	1980	1580
					IPM	31	22	25	30	27	25	22	19
	6-7	Low alloy steel	0.3D	1.0D	SFM	370	370	370	370	370	370	370	370
					IPT	.0010	.0011	.0016	.0024	.0026	.0027	.0028	.0029
					RPM	11360	7570	5680	4540	3790	3240	2840	2280
					IPM	45	32	36	43	39	35	31	27
	8-9		0.3D	1.0D	SFM	260	260	260	260	260	255	255	255
					IPT	.0010	.0011	.0016	.0024	.0026	.0027	.0028	.0029
					RPM	7940	5290	3970	3180	2650	2260	1980	1580
					IPM	31	22	25	30	27	25	22	19
	10-11.1	High alloyed steel, and tool steel	0.3D	1.0D	SFM	155	155	155	155	155	155	155	155
					IPT	.0007	.0007	.0011	.0017	.0018	.0019	.0019	.0021
					RPM	4770	3180	2390	1910	1590	1380	1190	950
					IPM	13	10	11	13	11	11	9	8
M	12-13	Stainless steel	0.3D	1.0D	SFM	175	175	175	175	175	175	175	175
					IPT	.0006	.0006	.0012	.0016	.0018	.0019	.0020	.0021
					RPM	5410	3600	2710	2160	1810	1560	1350	1090
					IPM	13	9	13	14	13	12	11	9
	14.1		0.3D	1.0D	SFM	195	195	195	195	195	195	195	195
					IPT	.0008	.0008	.0016	.0018	.0020	.0021	.0022	.0023
					RPM	5970	3980	2980	2390	1990	1710	1490	1200
					IPM	19	13	19	17	16	15	13	11
	14.2		0.3D	1.0D	SFM	175	175	175	175	175	175	175	175
					IPT	.0008	.0008	.0016	.0018	.0020	.0021	.0022	.0023
					RPM	5410	3600	2710	2160	1810	1560	1350	1090
					IPM	17	11	17	15	14	13	12	10
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.3D	1.0D	SFM	270	270	270	270	270	270	270	270
					IPT	.0012	.0013	.0020	.0029	.0032	.0033	.0034	.0037
					RPM	8340	5570	4170	3340	2780	2380	2090	1670
					IPM	41	29	33	39	35	32	29	24

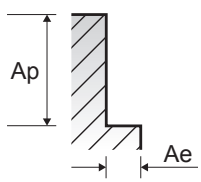
G9J48, G9J49, G9J52, G9J53 SERIES

4 FLUTE - SIDE CUTTING

SFM = ft./min.
IPT = In./tooth
RPM = rev./min.
IPM = 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
P	1-4	Non-alloy steel	0.3D	1.5D (1.2D)	SFM	345	345	345	345	385	385	385	385
					IPT	.0002	.0004	.0006	.0011	.0015	.0017	.0018	.0021
					RPM	10680	7120	5340	4270	3930	3370	2950	2360
					IPM	8	12	13	18	24	23	22	20
	5		0.3D	1.5D (1.2D)	SFM	245	245	245	245	265	265	265	270
					IPT	.0002	.0004	.0006	.0011	.0015	.0017	.0019	.0021
					RPM	7510	5010	3750	3000	2740	2350	2050	1650
					IPM	6	9	9	13	16	16	15	14
	6-7	Low alloy steel	0.3D	1.5D (1.2D)	SFM	345	345	345	345	385	385	385	385
					IPT	.0002	.0004	.0006	.0011	.0015	.0017	.0018	.0021
					RPM	10680	7120	5340	4270	3930	3370	2950	2360
					IPM	8	12	13	18	24	23	22	20
	8-9		0.3D	1.5D (1.2D)	SFM	245	245	245	245	265	265	265	270
					IPT	.0002	.0004	.0006	.0011	.0015	.0017	.0019	.0021
					RPM	7510	5010	3750	3000	2740	2350	2050	1650
					IPM	6	9	9	13	16	16	15	14
	10-11.1	High alloyed steel, and tool steel	0.3D	1.5D (1.2D)	SFM	145	145	145	145	160	160	160	160
					IPT	.0001	.0003	.0004	.0007	.0011	.0012	.0013	.0014
					RPM	4490	3000	2250	1800	1640	1410	1230	990
					IPM	2	4	4	5	7	7	6	6
M	12-13	Stainless steel	0.3D	1.5D (1.2D)	SFM	345	345	345	345	385	385	385	385
					IPT	.0002	.0004	.0006	.0011	.0015	.0017	.0018	.0021
					RPM	10680	7120	5340	4270	3930	3370	2950	2360
					IPM	8	12	13	18	24	23	22	20
	14.1		0.3D	1.5D (1.2D)	SFM	245	245	245	245	265	265	265	270
					IPT	.0002	.0004	.0006	.0011	.0015	.0017	.0019	.0021
					RPM	7510	5010	3750	3000	2740	2350	2050	1650
					IPM	6	9	9	13	16	16	15	14
	14.2		0.3D	1.5D (1.2D)	SFM	215	215	215	215	215	215	215	220
					IPT	.0002	.0005	.0007	.0011	.0019	.0020	.0022	.0024
					RPM	6680	4450	3340	2670	2230	1900	1670	1340
					IPM	5	9	9	12	17	15	14	13
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.3D	1.5D (1.2D)	SFM	255	255	255	255	280	280	280	280
					IPT	.0002	.0006	.0008	.0013	.0019	.0021	.0023	.0026
					RPM	7850	5240	3930	3140	2880	2470	2160	1730
					IPM	7	12	12	17	22	21	20	18

SFM = ft./min.
IPT = In./tooth
RPM = rev./min.
IPM = In./min.



YGBasiX END MILLS

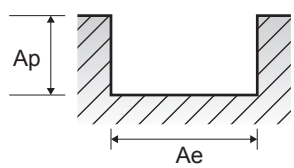
RECOMMENDED CUTTING CONDITIONS

G9J48, G9J49, G9J52, G9J53 SERIES

4 FLUTE - SLOTTING

SFM = ft./min.
IPT = In./tooth
RPM = rev./min.
IPM = 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
P	1-4	Non-alloy steel	1.0D	0.8D	SFM	345	345	345	345	385	385	385	385
					IPT	.0002	.0004	.0006	.0011	.0015	.0017	.0018	.0021
					RPM	10680	7120	5340	4270	3930	3370	2950	2360
					IPM	8	12	13	18	24	23	22	20
	5		1.0D	0.8D	SFM	245	245	245	245	265	265	265	270
					IPT	.0002	.0004	.0006	.0011	.0015	.0017	.0019	.0021
					RPM	7510	5010	3750	3000	2740	2350	2050	1650
					IPM	6	9	9	13	16	16	15	14
	6-7	Low alloy steel	1.0D	0.8D	SFM	345	345	345	345	385	385	385	385
					IPT	.0002	.0004	.0006	.0011	.0015	.0017	.0018	.0021
					RPM	10680	7120	5340	4270	3930	3370	2950	2360
					IPM	8	12	13	18	24	23	22	20
	8-9		1.0D	0.8D	SFM	245	245	245	245	265	265	265	270
					IPT	.0002	.0004	.0006	.0011	.0015	.0017	.0019	.0021
					RPM	7510	5010	3750	3000	2740	2350	2050	1650
					IPM	6	9	9	13	16	16	15	14
	10-11.1	High alloyed steel, and tool steel	1.0D	0.8D	SFM	145	145	145	145	160	160	160	160
					IPT	.0001	.0003	.0004	.0007	.0011	.0012	.0013	.0014
					RPM	4490	3000	2250	1800	1640	1410	1230	990
					IPM	2	4	4	5	7	7	6	6
M	12-13	Stainless steel	1.0D	0.8D	SFM	340	340	340	340	340	340	340	340
					IPT	.0002	.0004	.0005	.0009	.0013	.0014	.0015	.0018
					RPM	10400	6930	5200	4160	3470	2970	2600	2080
					IPM	7	10	11	14	19	17	16	15
	14.1		1.0D	0.8D	SFM	245	245	245	245	265	265	265	270
					IPT	.0002	.0004	.0006	.0011	.0015	.0017	.0019	.0021
					RPM	7510	5010	3750	3000	2740	2350	2050	1650
					IPM	6	9	9	13	16	16	15	14
	14.2		1.0D	0.8D	SFM	215	215	215	215	215	215	215	220
					IPT	.0002	.0005	.0007	.0011	.0019	.0020	.0022	.0024
					RPM	6680	4450	3340	2670	2230	1900	1670	1340
					IPM	5	9	9	12	17	15	14	13
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1.0D	0.8D	SFM	255	255	255	255	280	280	280	280
					IPT	.0002	.0006	.0008	.0013	.0019	.0021	.0023	.0026
					RPM	7850	5240	3930	3140	2880	2470	2160	1730
					IPM	7	12	12	17	22	21	20	18

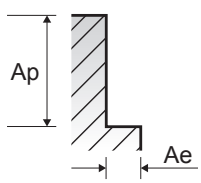


G9K79, G9K80 SERIES

5 FLUTE - SIDE CUTTING

SFM = ft./min.
IPT = In./tooth
RPM = rev./min.
IPM = 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
P	1-5	Non-alloy steel	0.3D	1.5D	SFM	375	375	375	375	375	375	375
					IPT	.0003	.0005	.0010	.0011	.0015	.0019	.0023
					RPM	11460	7640	5730	4580	3820	2870	2290
					IPM	17	20	28	26	29	27	26
	6-8	Low alloy steel	0.3D	1.5D	SFM	375	375	375	375	375	375	375
					IPT	.0003	.0005	.0010	.0011	.0015	.0019	.0023
					RPM	11460	7640	5730	4580	3820	2870	2290
					IPM	17	20	28	26	29	27	26
	9		0.3D	1.5D	SFM	265	265	265	265	265	265	265
					IPT	.0003	.0005	.0010	.0011	.0015	.0019	.0023
					RPM	8100	5400	4050	3240	2700	2020	1620
					IPM	12	14	20	18	20	19	18
	10	High alloyed steel, and tool steel	0.3D	1.5D	SFM	375	375	375	375	375	375	375
					IPT	.0003	.0005	.0010	.0011	.0015	.0019	.0023
					RPM	11460	7640	5730	4580	3820	2870	2290
					IPM	17	20	28	26	29	27	26
	11.1		0.3D	1.5D	SFM	265	265	265	265	265	265	265
					IPT	.0003	.0005	.0010	.0011	.0015	.0019	.0023
					RPM	8100	5400	4050	3240	2700	2020	1620
					IPM	12	14	20	18	20	19	18
M	12	Stainless steel	0.3D	1.5D	SFM	310	310	310	310	310	310	310
					IPT	.0002	.0003	.0007	.0008	.0009	.0014	.0016
					RPM	9470	6320	4740	3790	3160	2370	1890
					IPM	11	9	16	14	14	16	15
	14.1		0.3D	1.5D	SFM	215	215	215	215	215	215	215
					IPT	.0003	.0004	.0009	.0010	.0011	.0019	.0020
					RPM	6570	4380	3290	2630	2190	1640	1310
					IPM	10	8	15	13	12	15	13
	14.2		0.3D	1.5D	SFM	155	155	155	155	155	155	155
					IPT	.0003	.0004	.0009	.0010	.0011	.0019	.0020
					RPM	4740	3160	2370	1890	1580	1180	950
					IPM	7	6	11	9	9	11	10
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.3D	1.5D	SFM	280	280	280	280	280	280	280
					IPT	.0005	.0006	.0013	.0014	.0019	.0023	.0029
					RPM	8560	5700	4280	3420	2850	2140	1710
					IPM	19	17	27	24	27	25	24



V7 PLUS A END MILLS

SQUARE **UGMF68** | CORNER RADIUS **UGMF70** | BALL NOSE **UGMG53** SERIES

CARBIDE, 4 FLUTE MULTIPLE LENGTH

- 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

Square



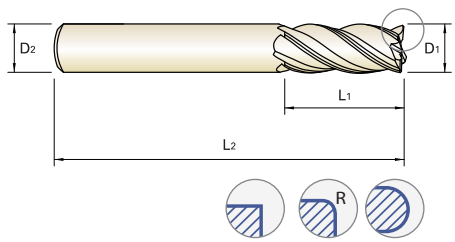
Corner Radius



Ball Nose

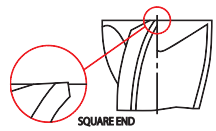






See Ball Nose Key on Page A77

Reinforced cutting edge



CARBIDE | 4 | 35°/37° | R ±.0008 | PLAIN | Y Coating

p.A82-A83, A84

Unit : Inch

OD (D_1)	SD (D_2)	LOC (L_1)	OAL (L_2)	Square End	Corner Radius						Ball Nose
					.010	.015	.030	.060	.090	.125	
				EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
1/8	1/8	1/8	1-1/2	UGMF68008	UGMF70008	-	UGMF70955	-	-	-	UGMG53901
		3/8	1-1/2	UGMF68901	UGMF70901	-	UGMF70902	-	-	-	UGMG53008
		1/2	2-1/2	UGMF68S915	UGMF70S956	-	UGMF70S957	-	-	-	UGMG53S902
5/32	3/16	3/16	2	UGMF68010	UGMF70010	-	-	-	-	-	UGMG53903
		7/16	2	UGMF68902	UGMF70958	-	-	-	-	-	UGMG53010
3/16	3/16	3/16	2	UGMF68012	UGMF70012	-	-	-	-	-	UGMG53904
		5/16	2	UGMF68916	UGMF70959	-	UGMF70960	-	-	-	UGMG53905
		7/16	2	UGMF68903	UGMF70903	-	UGMF70904	-	-	-	UGMG53012
		5/8	2-1/2	UGMF68S917	UGMF70S961	-	UGMF70S962	-	-	-	UGMG53S906
7/32	1/4	1/4	2	UGMF68014	UGMF70014	-	-	-	-	-	UGMG53907
		7/16	2-1/2	UGMF68904	UGMF70963	-	-	-	-	-	UGMG53014
1/4	1/4	3/8	2	UGMF68016	UGMF70016	-	UGMF70905	UGMF70906	-	-	UGMG53908
		1/2	2-1/2	UGMF68918	-	UGMF70964	UGMF70965	UGMF70966	-	-	UGMG53016
		3/4	2-1/2	UGMF68905	UGMF70907	UGMF70908	UGMF70909	UGMF70967	-	-	UGMG53909
		1	3	UGMF68S919	-	UGMF70S968	UGMF70S969	UGMF70S970	-	-	UGMG53S910
9/32	5/16	5/8	2-1/2	UGMF68018	-	UGMF70018	UGMF70971	UGMF70972	-	-	UGMG53018
		1	3	UGMF68S920	-	UGMF70S973	UGMF70S974		-	-	UGMG53S911
5/16	5/16	7/16	2	UGMF68020	-	-	UGMF70020		-	-	UGMG53912
		13/16	2-1/2	UGMF68906	UGMF70910	-	UGMF70911	UGMF70912	-	-	UGMG53020
		1-1/4	3	UGMF68S921	-	UGMF70S975	UGMF70S976	UGMF70S977	-	-	UGMG53S913
11/32	3/8	1/2	2-1/2	UGMF68022	-	-	UGMF70022		-	-	UGMG53914
		13/16	2-1/2	UGMF68922	-	-	UGMF70978		-	-	UGMG53022

Mill Dia. Tolerance (inch)	Shank Dia.Tolerance
0 ~ -.0012	h5 (≥ Ø1/2" : h6)

▶ Length of cut in excess of 3xD on 37° single-helix requires feed reduction of approximately 50%

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	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			
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
Recommended											○	○	○	○	○	○	○				

V7 PLUS A END MILLS

CARBIDE, 4 FLUTE MULTIPLE LENGTH

- 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

Square





Corner Radius

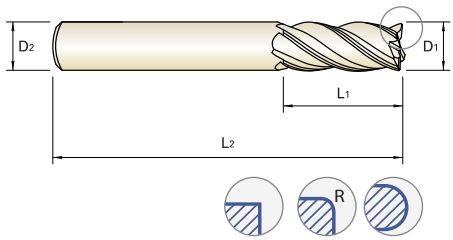




Ball Nose

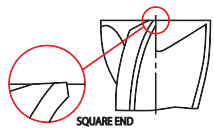






See Ball Nose Key on Page A77

Reinforced cutting edge



CARBIDE | 4 | 35°/37° | R ±.0008 | PLAIN | Y Coating

p.A82-A83, A84

Unit : Inch

OD (D_1)	SD (D_2)	LOC (L_1)	OAL (L_2)	Square End	Corner Radius .010	Corner Radius .015	Corner Radius .030	Corner Radius .060	Corner Radius .090	Corner Radius .125	Ball Nose
				EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
3/8	3/8	1/2	2-1/2	UGMF68024	UGMF70024	-	UGMF70913	UGMF70914	UGMF70979	-	UGMG53915
		7/8	2-1/2	UGMF68907	UGMF70915	-	UGMF70916	UGMF70917	UGMF70980	-	UGMG53024
		1	3	UGMF68923	UGMF70981	-	UGMF70982	UGMF70983	UGMF70984	-	UGMG53916
		1-1/4	3	UGMF68S924	UGMF70S985	-	UGMF70S986	UGMF70S987	UGMF70S988	-	UGMG53S917
13/32	7/16	1/2	2-3/4	UGMF68026	-	-	UGMF70026	-	-	-	UGMG53026
		15/16	2-3/4	UGMF68925	-	-	UGMF70989	-	-	-	UGMG53918
7/16	7/16	5/8	2-1/2	UGMF68028	-	UGMF70028	UGMF70918	UGMF70990	UGMF70991	-	UGMG53919
		7/8	2-3/4	UGMF68926	-	UGMF70992	UGMF70993	UGMF70994	UGMF70995	-	UGMG53920
		1	2-3/4	UGMF68908	UGMF70919	-	UGMF70920	UGMF70921	-	-	UGMG53028
15/32	1/2	5/8	2-1/2	UGMF68030	-	-	UGMF70030	-	-	-	UGMG53030
		1	3	UGMF68927	-	-	UGMF70996	-	-	-	UGMG53921
		1-1/4	3-1/2	UGMF68928	-	-	UGMF70997	-	-	-	UGMG53922
1/2	1/2	5/8	2-1/2	UGMF68032	UGMF70032	UGMF70922	UGMF70923	UGMF70924	UGMF70998	UGMF70999	UGMG53923
		1	3	UGMF68909	UGMF70925	UGMF70801	UGMF70926	UGMF70927	UGMF70802	UGMF70928	UGMG53032
		1 1/4	3	UGMF68941	UGMF70899	UGMF70701	UGMF70702	UGMF70703	UGMF70704	UGMF70705	UGMG53941
		1-1/4	3-1/2	UGMF68910	UGMF70929	UGMF70930	UGMF70931	UGMF70932	UGMF70803	UGMF70933	UGMG53924
		1-5/8	4	UGMF68S929	-	UGMF70S804	UGMF70S805	UGMF70S806	UGMF70S807	UGMF70S808	UGMG53S925
		2	4	UGMF68S939	-	UGMF70S889	UGMF70S890	UGMF70S891	UGMF70S892	UGMF70S893	UGMG53S939
5/8	5/8	3/4	3	UGMF68040	UGMF70040	UGMF70809	UGMF70934	UGMF70935	UGMF70810	UGMF70811	UGMG53926
		1-1/4	3-1/2	UGMF68911	UGMF70936	UGMF70937	UGMF70938	UGMF70939	UGMF70812	UGMF70940	UGMG53040
		1-5/8	4	UGMF68930	-	UGMF70813	UGMF70814	UGMF70815	UGMF70816	UGMF70817	UGMG53927
		2	4	UGMF68S931	-	UGMF70S818	UGMF70S819	UGMF70S820	UGMF70S821	UGMF70S822	UGMG53S928

Mill Dia. Tolerance (inch)	Shank Dia.Tolerance
0 ~ -.0012	h5 (≥ Ø1/2" : h6)

- Length of cut in excess of 3xD on 37° single-helix requires feed reduction of approximately 50%

◎ : 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	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			
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
Recommended											○	○	○	○	○	○	○				

V7 PLUS A END MILLS

SQUARE **UGMF72** | CORNER RADIUS **UGMF74** | BALL NOSE **UGMH10** SERIES

CARBIDE, 4 FLUTE EXTENDED REACH

- ▶ 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

Square

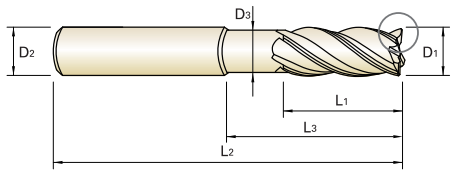


Corner Radius



Ball Nose





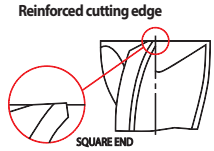


See Ball Nose Key on Page A77

CARBIDE | 4 | 35°/37° | R ±.0008 | PLAIN | Y Coating

p.A82-A83, A84

Reinforced cutting edge



Unit : Inch

OD (D_1)	SD (D_2)	LOC (L_1)	LBS (L_3)	OAL (L_2)	Neck Dia (D_3)	Square End	Corner Radius					Ball Nose
							.010	.015	.030	.060	.090	.125	
						EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
1/8	1/8	5/32	3/8	3	.113	UGMF72008	UGMF74008	-	UGMF74913	-	-	-	UGMH10008
		5/32	1/2	3	.113	UGMF72913	UGMF74914	-	UGMF74915	-	-	-	UGMH10901
		5/32	5/8	3	.113	UGMF72914	UGMF74916	-	UGMF74917	-	-	-	UGMH10902
3/16	3/16	7/32	1/2	3	.176	UGMF72012	UGMF74012	-	UGMF74918	-	-	-	UGMH10012
		7/32	3/4	3	.176	UGMF72915	UGMF74919	-	UGMF74920	-	-	-	UGMH10903
		7/32	1	3	.176	UGMF72916	UGMF74921	-	UGMF74922	-	-	-	UGMH10904
1/4	1/4	3/8	3/4	4	.230	UGMF72016	-	UGMF74016	UGMF74923	UGMF74924	-	-	UGMH10016
		3/8	1-1/8	4	.230	UGMF72901	-	UGMF74901	UGMF74925	UGMF74926	-	-	UGMH10905
		3/8	2-1/8	4	.230	UGMF72902	-	UGMF74902	UGMF74927	UGMF74928	-	-	UGMH10906
3/8	3/8	1/2	1-1/8	4	.344	UGMF72024	-	UGMF74929	UGMF74024	UGMF74930	UGMF74931	-	UGMH10024
		1/2	2-1/8	4	.344	UGMF72903	-	UGMF74932	UGMF74903	UGMF74933	UGMF74934	-	UGMH10907
1/2	1/2	5/8	1-1/2	4	.461	UGMF72032	-	UGMF74942	UGMF74032	UGMF74943	UGMF74944	UGMF74945	UGMH10032
		5/8	2-1/4	4	.461	UGMF72905	-	UGMF74946	UGMF74905	UGMF74947	UGMF74948	UGMF74949	UGMH10910
5/8	5/8	3/4	1-5/8	4	.586	UGMF72040	-	-	UGMF74040	UGMF74959	UGMF74960	UGMF74961	UGMH10040
		3/4	2-3/8	5	.586	UGMF72924	-	-	UGMF74824	UGMF74825	UGMF74826	UGMF74827	UGMH10924

Mill Dia. Tolerance (inch)	Shank Dia.Tolerance
0 ~ -.0012	h5 (≥ Ø1/2" : h6)

▶ Length of cut in excess of 3xD on 37° single-helix requires feed reduction of approximately 50%

◎ : 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	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			
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
Recommended											○	○	○	○	○	○	○				

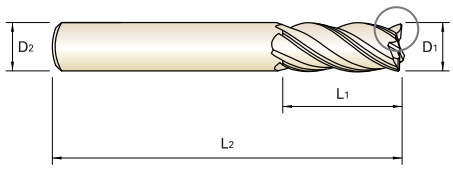
V7 PLUS A END MILLS

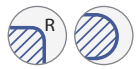
CORNER RADIUS **GMF54 / GMF58** BALL NOSE SERIES **GMG55**

CARBIDE, 4 FLUTE MULTIPLE LENGTH

- 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







See Ball Nose Key on Page A77

CARBIDE | 4 | 35°/37° | PLAIN | Y Coating

p.A82-A83, A84

Unit : mm

OD (D_1)		SD (D_2)	LOC (L_1)	OAL (L_2)	Corner Radius					Ball Nose	BALL NOSE KEY	
					0.30	0.50	1.00	2.00	3.00		Mill Diameter	Radius of Ball
Metric	Inch				EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.		
3.0	.1181	6	7	54	GMF54030	GMF54901	-	-	-	-	1/8	1/16
		6	8	57	GMF58030	GMF58901	-	-	-	GMG55030	5/32	5/64
4.0	.1575	6	8	54	GMF54040	GMF54902	-	-	-	-	3/16	3/32
		6	11	57	GMF58040	GMF58902	-	-	-	GMG55040	7/32	7/64
5.0	.1969	6	10	54	GMF54050	GMF54903	-	-	-	-	1/4	1/8
		6	13	57	GMF58050	GMF58903	-	-	-	GMG55050	9/32	9/64
6.0	.2362	6	10	54	GMF54060	GMF54904	GMF54905	-	-	-	5/16	5/32
		6	13	57	GMF58060	GMF58904	GMF58905	-	-	GMG55060	11/32	11/64
8.0	.3150	8	12	58	-	GMF54080	GMF54906	-	-	-	3/8	3/16
		8	19	63	-	GMF58080	GMF58906	-	-	GMG55080	7/16	7/32
10.0	.3937	10	14	66	-	GMF54100	GMF54907	-	-	-	1/2	1/4
		10	22	72	-	GMF58100	GMF58907	-	-	GMG55100	5/8	5/16
12.0	.4724	12	16	73	-	GMF54120	GMF54908	GMF54909	-	-		
		12	26	83	-	GMF58120	GMF58908	GMF58909	-	GMG55120		
14.0	.5512	14	18	75	-	GMF54140	GMF54910	GMF54911	-	-		
		14	26	83	-	GMF58140	GMF58910	GMF58911	-	-		
16.0	.6299	16	22	82	-	-	GMF54160	GMF54912	GMF54913	-		
		16	32	92	-	-	GMF58160	GMF58912	GMF58913	GMG55160		

Mill Dia. Tolerance (mm)		Shank Dia. Tolerance
Up to Ø12	0 ~ -0.02	h5 (≥ Ø12 : h6)
Over Ø12	0 ~ -0.03	

◎ : 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	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			
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
Recommended											○	○	○	○	○	○	○				

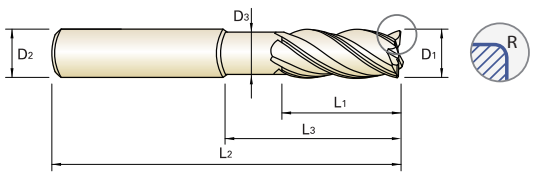
V7 PLUS A END MILLS

CORNER RADIUS **GMF62 SERIES**

CARBIDE, 4 FLUTE EXTENDED REACH

- 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 | Y Coating

p.A86-A87

Unit : mm

OD (D_1)		SD (D_2)	LOC (L_1)	LBS (L_3)	OAL (L_2)	Neck Dia (D_3)	Corner Radius				
							0.30	0.50	1.00	2.00	3.00
Metric	Inch						EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
3.0	.1181	6	7	12	54	2.7	GMF62030	GMF62901	-	-	-
		6	7	17	57	2.7	GMF62902	GMF62903	-	-	-
		6	8	14	57	2.7	-	-	-	-	-
4.0	.1575	6	8	15	57	3.7	GMF62040	GMF62904	-	-	-
		6	8	22	63	3.7	GMF62905	GMF62906	-	-	-
		6	11	16	57	3.7	-	-	-	-	-
5.0	.1969	6	10	17	57	4.7	GMF62050	GMF62907	-	-	-
		6	10	27	67	4.7	GMF62908	GMF62909	-	-	-
		6	13	18	57	4.7	-	-	-	-	-
6.0	.2362	6	10	15	57	5.5	GMF62060	GMF62910	GMF62911	-	-
		6	10	20	62	5.5	GMF62912	GMF62913	GMF62914	-	-
		6	10	32	74	5.5	GMF62915	GMF62916	GMF62917	-	-
		6	13	21	57	5.5	-	-	-	-	-
8.0	.3150	8	12	20	63	7.5	-	GMF62080	GMF62918	-	-
		8	12	30	73	7.5	-	GMF62919	GMF62920	-	-
		8	12	46	90	7.5	-	GMF62921	GMF62922	-	-
		8	19	27	63	7.5	-	-	-	-	-
10.0	.3937	10	14	25	72	9.2	-	GMF62100	GMF62923	-	-
		10	14	35	82	9.2	-	GMF62924	GMF62925	-	-
		10	14	55	102	9.2	-	GMF62926	GMF62927	-	-
		10	22	32	72	9.2	-	-	-	-	-
12.0	.4724	12	16	30	83	11.0	-	GMF62120	GMF62928	GMF62929	-
		12	16	40	93	11.0	-	GMF62930	GMF62931	GMF62932	-
		12	16	64	117	11.0	-	-	-	-	-
		12	26	38	83	11.0	-	-	-	-	-
16.0	.6299	16	22	38	92	15.0	-	-	GMF62160	GMF62936	GMF62937
		16	22	55	109	15.0	-	-	GMF62938	GMF62939	GMF62940

Mill Dia. Tolerance (mm)		Shank Dia. Tolerance
Up to Ø12	0 ~ -0.02	h5 (≥ Ø12 : h6)
Over Ø12	0 ~ -0.03	

◎ : 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	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			
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
Recommended											○	○	○	○	○	○	○				

V7 PLUS A END MILLS

CARBIDE, 6 FLUTE MULTIPLE LENGTH

▶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

Square

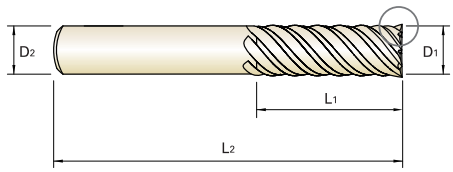


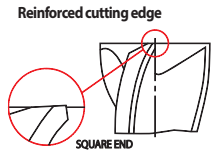


Corner Radius









CARBIDE | 6 | 45° | PLAIN | Y Coating

p.A89

Unit : Inch

OD (D_1)	SD (D_2)	LOC (L_1)	OAL (L_2)	Square End	Corner Radius					
					.015	.030	.060	.090	.120	.125
				EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
1/4	1/4	1/2	2-1/2	UGMG20914	UGMG22956	UGMG22957	UGMG22958	-	-	-
		3/4	2-1/2	UGMG20016	UGMG22016	UGMG22959	UGMG22960	-	-	-
		1-1/8	3	UGMG20901	UGMG22901	UGMG22902	UGMG22961	-	-	-
		1-1/2	4	UGMG20902	UGMG22903	UGMG22904	UGMG22962	-	-	-
5/16	5/16	3/4	2-1/2	UGMG20020	UGMG22020	-	-	-	-	-
		1-1/4	3	UGMG20903	UGMG22905	UGMG22906	-	-	-	-
		1-5/8	4	UGMG20904	UGMG22907	UGMG22908	-	-	-	-
3/8	3/8	5/8	2-1/2	UGMG20915	UGMG22963	UGMG22964	UGMG22965	UGMG22966	-	-
		1	3	UGMG20024	UGMG22024	UGMG22909	UGMG22910	UGMG22967	-	-
		1-1/2	4	UGMG20905	UGMG22911	UGMG22912	UGMG22913	UGMG22968	-	-
		2	4	UGMG20906	UGMG22914	UGMG22915	UGMG22916	UGMG22969	-	-
1/2	1/2	5/8	3	UGMG20916	UGMG22970	UGMG22971	UGMG22972	UGMG22973	-	UGMG22974
		1	3	UGMG20917	UGMG22032	UGMG22917	UGMG22918	UGMG22975	-	UGMG22976
		1	3-1/4	UGMG20032	-	-	-	-	-	-
		1-1/4	3	UGMG20930	UGMG22880	UGMG22881	UGMG22882	UGMG22883	UGMG22884	UGMG22885
		1-5/8	4	UGMG20918	UGMG22979	UGMG22980	UGMG22981	UGMG22982	-	UGMG22983
		2	4	UGMG20908	UGMG22984	UGMG22923	UGMG22924	UGMG22925	UGMG22926	UGMG22985
5/8	5/8	3/4	3	UGMG20920	UGMG22993	UGMG22994	UGMG22995	UGMG22996	-	UGMG22997
		1-1/4	3-1/2	UGMG20040	UGMG22998	UGMG22040	UGMG22931	UGMG22932	UGMG22933	UGMG22999
		1-7/8	4	UGMG20921	UGMG22801	UGMG22802	UGMG22803	UGMG22804	-	UGMG22805
		2	4	UGMG20910	UGMG22806	UGMG22934	UGMG22935	UGMG22936	UGMG22937	UGMG22807

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-.0012	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	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			
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
Recommended											○	○	○	○	○	○	○				

SQUARE **UGMH08 SERIES**
CORNER RADIUS **UGMH09 SERIES**

V7 PLUS A END MILLS

CARBIDE, 6 FLUTE EXTENDED REACH

▶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

Square

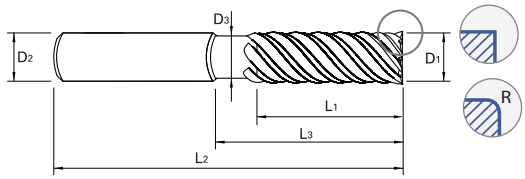


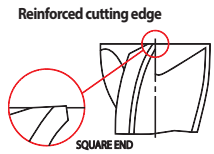


Corner Radius









CARBIDE | 6 | 45° | PLAIN | Y Coating

p.A89

Unit : Inch

OD (D_1)	SD (D_2)	LOC (L_1)	LBS (L_3)	OAL (L_2)	Neck Dia (D_3)	Square End	Corner Radius			
							.030	.060	.090	.125
						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	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	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

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-.0012	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	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			
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
Recommended											○	○	○	○	○	○	○				

V7 PLUS A END MILLS

CARBIDE, 6 FLUTE MULTIPLE LENGTH

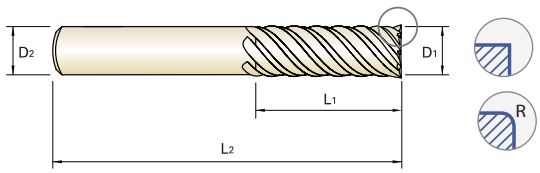
▶The unique geometry of the variable pitch provides the best chatter free tool for high speed and trochoidal milling
▶Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40

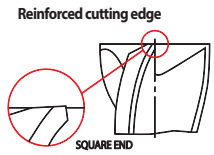
Square



Corner Radius







CARBIDE | 6 | 45° | PLAIN | Y Coating

p.C85

Unit : mm

OD (D_1)		SD (D_2)	LOC (L_1)	OAL (L_2)	Square End	Corner Radius				
						0.50	1.00	1.50	2.00	3.00
Metric	Inch				EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
6.0	.2362	6	13	57	GMG12060	GMG16060	GMG16901	-	-	-
		6	24	75	GMG14060	GMG18060	GMG18901	-	-	-
8.0	.3150	8	19	63	GMG12080	GMG16080	GMG16902	-	-	-
		8	32	75	GMG14080	GMG18080	GMG18902	-	GMG18903	-
10.0	.3937	10	22	72	GMG12100	GMG16100	GMG16903	GMG16904	GMG16905	-
		10	40	100	GMG14100	GMG18100	GMG18904	GMG18905	GMG18906	-
12.0	.4724	12	26	83	GMG12120	GMG16120	GMG16906	GMG16907	GMG16908	GMG16909
		12	48	120	GMG14120	GMG18120	GMG18907	GMG18908	GMG18909	GMG18910
16.0	.6299	16	32	92	GMG12160	-	GMG16160	GMG16910	GMG16911	GMG16912

Mill Dia. Tolerance (mm)			Shank Dia. Tolerance
Up to 3xD		Over 3xD	
Up to Ø12	0 ~ -0.02	0 ~ -0.03	h5 (≥ Ø12 : h6)
Over Ø12	0 ~ -0.03		

◎ : 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	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			
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
Recommended											○	○	○	○	○	○	○				

V7 PLUS A END MILLS

RECOMMENDED CUTTING CONDITIONS

UGMF68, UGMF70, UGMF72, UGMF74 SERIES

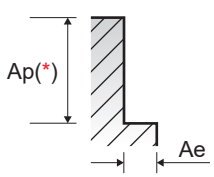
4 FLUTE - SIDE CUTTING

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)											
						1/8	5/32	3/16	7/32	1/4	9/32	5/16	11/32	3/8	7/16	1/2	5/8
P	1-4	Non-alloy steel	0.5D	1.5D (1.2D)	SFM(Vc)	500	500	500	500	500	500	500	525	550	550	550	550
					IPT(fz)	.0002	.0003	.0004	.0005	.0006	.0008	.0011	.0013	.0015	.0017	.0019	.0021
					RPM	15250	12200	10170	8710	7630	6780	6100	5830	5620	4810	4210	3370
					IPM(FEED)	12	15	18	19	19	23	26	30	34	32	31	28
	5	Low alloy steel	0.5D	1.5D (1.2D)	SFM(Vc)	350	350	350	350	350	350	350	370	385	385	385	385
					IPT(fz)	.0002	.0003	.0004	.0005	.0006	.0008	.0011	.0013	.0015	.0017	.0018	.0021
					RPM	10730	8580	7150	6130	5360	4770	4290	4090	3910	3350	2930	2350
					IPM(FEED)	8	11	12	13	14	16	18	21	23	22	22	20
	6-7		0.5D	1.5D (1.2D)	SFM(Vc)	500	500	500	500	500	500	500	525	550	550	550	550
					IPT(fz)	.0002	.0003	.0004	.0005	.0006	.0008	.0011	.0013	.0015	.0017	.0019	.0021
					RPM	15250	12200	10170	8710	7630	6780	6100	5830	5620	4810	4210	3370
					IPM(FEED)	12	15	18	19	19	23	26	30	34	32	31	28
	8-9		0.5D	1.5D (1.2D)	SFM(Vc)	350	350	350	350	350	350	350	370	385	385	385	385
					IPT(fz)	.0002	.0003	.0004	.0005	.0006	.0008	.0011	.0013	.0015	.0017	.0018	.0021
					RPM	10730	8580	7150	6130	5360	4770	4290	4090	3910	3350	2930	2350
					IPM(FEED)	8	11	12	13	14	16	18	21	23	22	22	20
	10-11.1	High alloyed steel, and tool steel	0.5D	1.5D (1.2D)	SFM(Vc)	210	210	210	210	210	210	210	220	230	230	230	230
					IPT(fz)	.0001	.0002	.0003	.0004	.0004	.0006	.0007	.0009	.0011	.0012	.0013	.0015
					RPM	6420	5130	4280	3670	3210	2850	2570	2450	2340	2010	1760	1410
					IPM(FEED)	3	5	5	5	6	7	8	9	10	9	9	8
M	12-13	Stainless steel	0.5D	1.5D (1.2D)	SFM(Vc)	500	500	500	500	500	500	500	525	550	550	550	550
					IPT(fz)	.0002	.0003	.0004	.0005	.0006	.0008	.0011	.0013	.0015	.0017	.0019	.0021
					RPM	15250	12200	10170	8710	7630	6780	6100	5830	5620	4810	4210	3370
					IPM(FEED)	12	15	18	19	19	23	26	30	34	32	31	28
	14.1		0.5D	1.5D (1.2D)	SFM(Vc)	350	350	350	350	350	350	350	370	385	385	385	385
					IPT(fz)	.0002	.0003	.0004	.0005	.0006	.0008	.0011	.0013	.0015	.0017	.0018	.0021
					RPM	10730	8580	7150	6130	5360	4770	4290	4090	3910	3350	2930	2350
					IPM(FEED)	8	11	12	13	14	16	18	21	23	22	22	20
	14.2		0.5D	1.5D (1.2D)	SFM(Vc)	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
					RPM	9540	7630	6360	5450	4770	4240	3810	3470	3180	2720	2380	1910
					IPM(FEED)	8	10	13	13	14	15	17	21	24	22	21	19
K	15-20	Grey cast iron	0.5D	1.5D (1.2D)	SFM(Vc)	365	365	365	365	365	365	365	385	405	405	405	405
					IPT(fz)	.0002	.0004	.0006	.0007	.0008	.0011	.0013	.0016	.0019	.0021	.0023	.0026
					RPM	11220	8970	7480	6410	5610	4990	4490	4290	4120	3530	3090	2470
					IPM(FEED)	11	14	16	17	18	21	24	28	31	29	28	25
S	31-35	Heat Resistant Super Alloys	0.25D	1.0D	SFM(Vc)	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
					RPM	2600	2080	1730	1480	1300	1150	1040	950	870	740	650	520
					IPM(FEED)	2	2	2	2	2	3	3	4	5	4	4	4
	36-37	Titanium Alloys	0.35D	1.0D	SFM(Vc)	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
					RPM	5810	4650	3870	3320	2900	2580	2320	2110	1940	1660	1450	1160
					IPM(FEED)	4	5	7	7	7	8	9	11	13	12	11	10

*( ) : Short length & Neck type

NEXT PAGE ▶



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 that 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

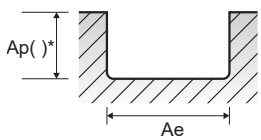
UGMF68, UGMF70, UGMF72, UGMF74 SERIES

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)											
						1/8	5/32	3/16	7/32	1/4	9/32	5/16	11/32	3/8	7/16	1/2	5/8
P	1-4	Non-alloy steel	1.0D	1.0D (0.8D)	SFM(Vc)	500	500	500	500	500	500	500	525	550	550	550	550
					IPT(fz)	.0002	.0003	.0004	.0005	.0006	.0008	.0011	.0013	.0015	.0017	.0019	.0021
					RPM	15250	12200	10170	8710	7630	6780	6100	5830	5620	4810	4210	3370
					IPM(FEED)	12	15	18	19	19	23	26	30	34	32	31	28
	5	Low alloy steel	1.0D	1.0D (0.8D)	SFM(Vc)	350	350	350	350	350	350	350	370	385	385	385	385
					IPT(fz)	.0002	.0003	.0004	.0005	.0006	.0008	.0011	.0013	.0015	.0017	.0018	.0021
					RPM	10730	8580	7150	6130	5360	4770	4290	4090	3910	3350	2930	2350
					IPM(FEED)	8	11	12	13	14	16	18	21	23	22	22	20
	6-7		1.0D	1.0D (0.8D)	SFM(Vc)	500	500	500	500	500	500	500	525	550	550	550	550
					IPT(fz)	.0002	.0003	.0004	.0005	.0006	.0008	.0011	.0013	.0015	.0017	.0019	.0021
					RPM	15250	12200	10170	8710	7630	6780	6100	5830	5620	4810	4210	3370
					IPM(FEED)	12	15	18	19	19	23	26	30	34	32	31	28
	8-9		1.0D	1.0D (0.8D)	SFM(Vc)	350	350	350	350	350	350	350	370	385	385	385	385
					IPT(fz)	.0002	.0003	.0004	.0005	.0006	.0008	.0011	.0013	.0015	.0017	.0018	.0021
					RPM	10730	8580	7150	6130	5360	4770	4290	4090	3910	3350	2930	2350
					IPM(FEED)	8	11	12	13	14	16	18	21	23	22	22	20
	10-11.1	High alloyed steel, and tool steel	1.0D	1.0D (0.8D)	SFM(Vc)	210	210	210	210	210	210	210	220	230	230	230	230
					IPT(fz)	.0001	.0002	.0003	.0004	.0004	.0006	.0007	.0009	.0011	.0012	.0013	.0015
					RPM	6420	5130	4280	3670	3210	2850	2570	2450	2340	2010	1760	1410
					IPM(FEED)	3	5	5	5	6	7	8	9	10	9	9	8
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
					RPM	14852	11882	9901	8487	7426	6601	5941	5401	4951	4243	3713	2970
					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
	14.1		1.0D	1.0D (0.8D)	SFM(Vc)	350	350	350	350	350	350	350	370	385	385	385	385
					IPT(fz)	.0002	.0003	.0004	.0005	.0006	.0008	.0011	.0013	.0015	.0017	.0018	.0021
					RPM	10730	8580	7150	6130	5360	4770	4290	4090	3910	3350	2930	2350
					IPM(FEED)	8	11	12	13	14	16	18	21	23	22	22	20
	14.2		1.0D	1.0D (0.8D)	SFM(Vc)	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
					RPM	9540	7630	6360	5450	4770	4240	3810	3470	3180	2720	2380	1910
					IPM(FEED)	8	10	13	13	14	15	17	21	24	22	21	19
K	15-20	Grey cast iron	1.0D	1.0D (0.8D)	SFM(Vc)	365	365	365	365	365	365	365	385	405	405	405	405
					IPT(fz)	.0002	.0004	.0006	.0007	.0008	.0011	.0013	.0016	.0019	.0021	.0023	.0026
					RPM	11220	8970	7480	6410	5610	4990	4490	4290	4120	3530	3090	2470
					IPM(FEED)	11	14	16	17	18	21	24	28	31	29	28	25
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
					IPT(fz)	.0002	.0003	.0003	.0004	.0005	.0006	.0007	.0010	.0013	.0014	.0015	.0017
					RPM	2600	2080	1730	1480	1300	1150	1040	950	870	740	650	520
					IPM(FEED)	2	2	2	2	2	3	3	4	5	4	4	4
	36-37	Titanium Alloys	1.0D	0.5D	SFM(Vc)	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
					RPM	5810	4650	3870	3320	2900	2580	2320	2110	1940	1660	1450	1160
					IPM(FEED)	4	5	7	7	7	8	9	11	13	12	11	10

*( ) : 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 that 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

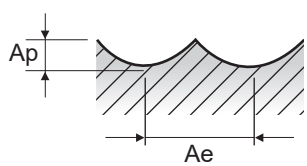
V7 PLUS A END MILLS

RECOMMENDED CUTTING CONDITIONS

UGMG53, UGMH10 SERIES — 4 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)							
						1/8	3/16	13/64	1/4	5/16	3/8	1/2	5/8
P	1-4	Non-alloy steel	0.5D	1.0D	SFM(Vc)	530	530	530	530	530	530	530	530
					IPT(fz)	.0010	.0011	.0012	.0016	.0024	.0026	.0028	.0030
					RPM	16230	10820	9990	8110	6490	5410	4060	3250
					IPM(FEED)	64	46	47	51	61	55	45	38
	5	Low alloy steel	0.5D	1.0D	SFM(Vc)	370	370	370	370	370	370	370	370
					IPT(fz)	.0010	.0011	.0012	.0016	.0024	.0026	.0028	.0029
					RPM	11340	7560	6980	5670	4540	3780	2830	2260
					IPM(FEED)	45	32	33	36	43	39	31	26
	6-7		0.5D	1.0D	SFM(Vc)	530	530	530	530	530	530	530	530
					IPT(fz)	.0010	.0011	.0012	.0016	.0024	.0026	.0028	.0030
					RPM	16230	10820	9990	8110	6490	5410	4060	3250
					IPM(FEED)	64	46	47	51	61	55	45	38
	8-9		0.5D	1.0D	SFM(Vc)	370	370	370	370	370	370	370	370
					IPT(fz)	.0010	.0011	.0012	.0016	.0024	.0026	.0028	.0029
					RPM	11340	7560	6980	5670	4540	3780	2830	2260
					IPM(FEED)	45	32	33	36	43	39	31	26
	10-11.1	High alloyed steel, and tool steel	0.5D	1.0D	SFM(Vc)	225	225	225	225	225	225	225	225
					IPT(fz)	.0007	.0007	.0008	.0011	.0017	.0018	.0019	.0020
					RPM	6820	4540	4190	3410	2730	2270	1700	1360
					IPM(FEED)	18	14	14	15	18	16	13	11
M	12-13	Stainless steel	0.5D	1.0D	SFM(Vc)	255	255	255	255	255	255	255	255
					IPT(fz)	.0006	.0006	.0010	.0012	.0016	.0018	.0020	.0021
					RPM	7730	5150	4760	3870	3090	2580	1930	1550
					IPM(FEED)	18	12	19	18	19	18	15	13
	14.1		0.5D	1.0D	SFM(Vc)	280	280	280	280	280	280	280	280
					IPT(fz)	.0008	.0008	.0010	.0016	.0018	.0020	.0022	.0024
					RPM	8530	5680	5250	4260	3410	2840	2130	1710
					IPM(FEED)	27	18	21	28	24	22	18	16
	14.2		0.5D	1.0D	SFM(Vc)	255	255	255	255	255	255	255	255
					IPT(fz)	.0008	.0008	.0010	.0016	.0018	.0020	.0022	.0024
					RPM	7730	5150	4760	3870	3090	2580	1930	1550
					IPM(FEED)	24	16	19	25	22	20	17	15
K	15-20	Grey cast iron	0.5D	1.0D	SFM(Vc)	390	390	390	390	390	390	390	390
					IPT(fz)	.0012	.0013	.0015	.0020	.0029	.0032	.0034	.0037
					RPM	11920	7950	7330	5960	4770	3970	2980	2380
					IPM(FEED)	58	41	43	47	56	51	41	35
S	31-35	Heat Resistant Super Alloys	0.2D	0.3D	SFM(Vc)	70	70	70	70	70	70	70	70
					IPT(fz)	.0006	.0006	.0007	.0011	.0012	.0014	.0015	.0017
					RPM	2110	1410	1300	1050	840	700	530	420
					IPM(FEED)	5	3	3	5	4	4	3	3
	36-37	Titanium Alloys	0.5D	0.3D	SFM(Vc)	155	155	155	155	155	155	155	155
					IPT(fz)	.0007	.0007	.0009	.0015	.0016	.0018	.0019	.0021
					RPM	4710	3140	2900	2350	1880	1570	1180	940
					IPM(FEED)	13	9	10	14	12	11	9	8

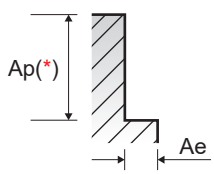


UGMG20, UGMG22, UGMH08, UGMH09 SERIES

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)				
						1/4	5/16	3/8	1/2	5/8
P	1-4	Non-alloy steel	0.05D	2.0D	SFM(Vc)	985	985	985	985	985
					IPT(fz)	.0027	.0046	.0057	.0068	.0080
					RPM	15040	12030	10020	7520	6010
					IPM(FEED)	242	330	341	307	287
	5	Low alloy steel	0.05D	2.0D	SFM(Vc)	665	665	665	665	665
					IPT(fz)	.0020	.0034	.0042	.0050	.0059
					RPM	10180	8140	6780	5090	4070
					IPM(FEED)	120	163	170	154	143
	6-7		0.05D	2.0D	SFM(Vc)	985	985	985	985	985
					IPT(fz)	.0027	.0046	.0057	.0068	.0080
					RPM	15040	12030	10020	7520	6010
					IPM(FEED)	242	330	341	307	287
	8-9		0.05D	2.0D	SFM(Vc)	665	665	665	665	665
					IPT(fz)	.0020	.0034	.0042	.0050	.0059
					RPM	10180	8140	6780	5090	4070
					IPM(FEED)	120	163	170	154	143
	10-11.1	High alloyed steel, and tool steel	0.05D	2.0D	SFM(Vc)	330	330	330	330	330
					IPT(fz)	.0016	.0028	.0035	.0041	.0048
					RPM	5010	4010	3340	2510	2010
					IPM(FEED)	49	67	69	62	58
M	12-13	Stainless steel	0.05D	2.0D	SFM(Vc)	700	700	700	700	700
					IPT(fz)	.0019	.0033	.0041	.0049	.0058
					RPM	10680	8550	7120	5340	4270
					IPM(FEED)	124	170	175	158	147
	14.1		0.05D	2.0D	SFM(Vc)	480	480	480	480	480
					IPT(fz)	.0016	.0028	.0035	.0041	.0048
					RPM	7370	5890	4910	3680	2950
					IPM(FEED)	71	99	102	91	86
	14.2		0.05D	2.0D	SFM(Vc)	440	440	440	440	440
					IPT(fz)	.0016	.0028	.0035	.0041	.0048
					RPM	6720	5380	4480	3360	2690
					IPM(FEED)	65	90	93	83	78
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.05D	2.0D	SFM(Vc)	740	740	740	740	740
					IPT(fz)	.0032	.0055	.0068	.0082	.0095
					RPM	11310	9050	7540	5650	4520
					IPM(FEED)	218	297	308	277	259
S	31-35	Heat Resistant Super Alloys	0.05D	2.0D	SFM(Vc)	110	110	110	110	110
					IPT(fz)	.0013	.0022	.0028	.0032	.0038
					RPM	1650	1320	1100	830	660
					IPM(FEED)	13	17	18	16	15
	36-37	Titanium Alloys	0.05D	2.0D	SFM(Vc)	380	380	380	380	380
					IPT(fz)	.0013	.0022	.0028	.0033	.0038
					RPM	5820	4660	3880	2910	2330
					IPM(FEED)	45	61	64	57	53



(*) : If product's Length of Cut(L.O.C) is below 2D, it must be applied L.O.C x 90%

V7 PLUS A END MILLS

RECOMMENDED CUTTING CONDITIONS

GMF54, GMF55, GMF58, GMF62 SERIES

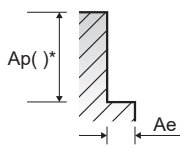
4 FLUTE - SIDE CUTTING

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)								
						3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0	16.0
P	1-4	Non-alloy steel	0.5D	1.5D (1.2D)	SFM(Vc)	500	500	500	500	500	550	550	550	550
					IPT(fz)	.0002	.0003	.0004	.0006	.0011	.0015	.0019	.0019	.0021
					RPM	16130	12100	9680	8060	6050	5350	4460	3820	3340
					IPM(FEED)	13	15	17	20	26	32	33	29	28
	5	Low alloy steel	0.5D	1.5D (1.2D)	SFM(Vc)	350	350	350	350	350	385	385	385	385
					IPT(fz)	.0002	.0003	.0004	.0006	.0011	.0015	.0018	.0019	.0021
					RPM	11350	8520	6810	5680	4260	3720	3100	2660	2330
					IPM(FEED)	9	11	12	14	18	22	23	21	19
	6-7		0.5D	1.5D (1.2D)	SFM(Vc)	500	500	500	500	500	550	550	550	550
					IPT(fz)	.0002	.0003	.0004	.0006	.0011	.0015	.0019	.0019	.0021
					RPM	16130	12100	9680	8060	6050	5350	4460	3820	3340
					IPM(FEED)	13	15	17	20	26	32	33	29	28
	8-9		0.5D	1.5D (1.2D)	SFM(Vc)	350	350	350	350	350	385	385	385	385
					IPT(fz)	.0002	.0003	.0004	.0006	.0011	.0015	.0018	.0019	.0021
					RPM	11350	8520	6810	5680	4260	3720	3100	2660	2330
					IPM(FEED)	9	11	12	14	18	22	23	21	19
	10-11.1	High alloyed steel, and tool steel	0.5D	1.5D (1.2D)	SFM(Vc)	210	210	210	210	210	230	230	230	230
					IPT(fz)	.0001	.0002	.0003	.0004	.0008	.0011	.0013	.0013	.0015
					RPM	6790	5090	4070	3400	2550	2230	1860	1590	1390
					IPM(FEED)	3	5	5	6	8	9	9	9	8
M	12-13	Stainless steel	0.5D	1.5D (1.2D)	SFM(Vc)	485	485	485	485	485	485	485	485	485
					IPT(fz)	.0002	.0002	.0004	.0005	.0009	.0013	.0015	.0017	.0018
					RPM	15700	11780	9420	7850	5890	4710	3930	3370	2940
					IPM(FEED)	10	11	13	16	20	25	24	22	21
	14.1		0.5D	1.5D (1.2D)	SFM(Vc)	350	350	350	350	350	350	350	350	350
					IPT(fz)	.0002	.0003	.0005	.0007	.0011	.0019	.0022	.0023	.0024
					RPM	11250	8440	6750	5620	4220	3370	2810	2410	2110
					IPM(FEED)	9	11	14	16	19	26	24	22	21
	14.2		0.5D	1.5D (1.2D)	SFM(Vc)	310	310	310	310	310	310	310	310	310
					IPT(fz)	.0002	.0003	.0005	.0007	.0011	.0019	.0022	.0023	.0024
					RPM	10080	7560	6050	5040	3780	3020	2520	2160	1890
					IPM(FEED)	8	10	12	14	17	23	22	20	18
K	15-20	Grey cast iron	0.5D	1.5D (1.2D)	SFM(Vc)	365	365	365	365	365	405	405	405	405
					IPT(fz)	.0002	.0004	.0006	.0008	.0013	.0019	.0023	.0024	.0026
					RPM	11880	8910	7130	5940	4460	3920	3260	2800	2450
					IPM(FEED)	11	14	16	19	24	30	30	27	25
S	31-35	Heat Resistant Super Alloys	0.25D	1.0D	SFM(Vc)	85	85	85	85	85	85	85	85	85
					IPT(fz)	.0002	.0003	.0003	.0005	.0008	.0013	.0015	.0016	.0017
					RPM	2760	2070	1660	1380	1040	830	690	590	520
					IPM(FEED)	2	2	2	3	3	4	4	4	4
	36-37	Titanium Alloys	0.35D	1.0D	SFM(Vc)	190	190	190	190	190	190	190	190	190
					IPT(fz)	.0002	.0003	.0004	.0006	.0010	.0017	.0020	.0021	.0022
					RPM	6150	4620	3690	3080	2310	1850	1540	1320	1150
					IPM(FEED)	4	5	6	8	9	12	12	11	10

*( ) : Short length & Neck type

NEXT PAGE ▶



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 that 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

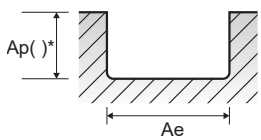
GMF54, GMF55, GMF58, GMF62 SERIES

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)								
						3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0	16.0
P	1-4	Non-alloy steel	1.0D	1.0D (0.8D)	SFM(Vc)	500	500	500	500	500	550	550	550	550
					IPT(fz)	.0002	.0003	.0004	.0006	.0011	.0015	.0019	.0019	.0021
					RPM	16130	12100	9680	8060	6050	5350	4460	3820	3340
					IPM(FEED)	13	15	17	20	26	32	33	29	28
	5	Low alloy steel	1.0D	1.0D (0.8D)	SFM(Vc)	350	350	350	350	350	385	385	385	385
					IPT(fz)	.0002	.0003	.0004	.0006	.0011	.0015	.0018	.0019	.0021
					RPM	11350	8520	6810	5680	4260	3720	3100	2660	2330
					IPM(FEED)	9	11	12	14	18	22	23	21	19
	6-7		1.0D	1.0D (0.8D)	SFM(Vc)	500	500	500	500	500	550	550	550	550
					IPT(fz)	.0002	.0003	.0004	.0006	.0011	.0015	.0019	.0019	.0021
					RPM	16130	12100	9680	8060	6050	5350	4460	3820	3340
					IPM(FEED)	13	15	17	20	26	32	33	29	28
	8-9		1.0D	1.0D (0.8D)	SFM(Vc)	350	350	350	350	350	385	385	385	385
					IPT(fz)	.0002	.0003	.0004	.0006	.0011	.0015	.0018	.0019	.0021
					RPM	11350	8520	6810	5680	4260	3720	3100	2660	2330
					IPM(FEED)	9	11	12	14	18	22	23	21	19
	10-11.1	High alloyed steel, and tool steel	1.0D	1.0D (0.8D)	SFM(Vc)	210	210	210	210	210	230	230	230	230
					IPT(fz)	.0001	.0002	.0003	.0004	.0008	.0011	.0013	.0013	.0015
					RPM	6790	5090	4070	3400	2550	2230	1860	1590	1390
					IPM(FEED)	3	5	5	6	8	9	9	9	8
M	12-13	Stainless steel	1.0D	1.0D (0.8D)	SFM(Vc)	485	485	485	485	485	485	485	485	485
					IPT(fz)	.0002	.0002	.0004	.0005	.0009	.0013	.0015	.0017	.0018
					RPM	15700	11780	9420	7850	5890	4710	3930	3370	2940
					IPM(FEED)	10	11	13	16	20	25	24	22	21
	14.1		1.0D	1.0D (0.8D)	SFM(Vc)	350	350	350	350	350	350	350	350	350
					IPT(fz)	.0002	.0003	.0005	.0007	.0011	.0019	.0022	.0023	.0024
					RPM	11250	8440	6750	5620	4220	3370	2810	2410	2110
					IPM(FEED)	9	11	14	16	19	26	24	22	21
	14.2		1.0D	1.0D (0.8D)	SFM(Vc)	310	310	310	310	310	310	310	310	310
					IPT(fz)	.0002	.0003	.0005	.0007	.0011	.0019	.0022	.0023	.0024
					RPM	10080	7560	6050	5040	3780	3020	2520	2160	1890
					IPM(FEED)	8	10	12	14	17	23	22	20	18
K	15-20	Grey cast iron	1.0D	1.0D (0.8D)	SFM(Vc)	365	365	365	365	365	405	405	405	405
					IPT(fz)	.0002	.0004	.0006	.0008	.0013	.0019	.0023	.0024	.0026
					RPM	11880	8910	7130	5940	4460	3920	3260	2800	2450
					IPM(FEED)	11	14	16	19	24	30	30	27	25
S	31-35	Heat Resistant Super Alloys	1.0D	0.5D	SFM(Vc)	85	85	85	85	85	85	85	85	85
					IPT(fz)	.0002	.0003	.0003	.0005	.0008	.0013	.0015	.0016	.0017
					RPM	2760	2070	1660	1380	1040	830	690	590	520
					IPM(FEED)	2	2	2	3	3	4	4	4	4
	36-37	Titanium Alloys	1.0D	0.5D	SFM(Vc)	190	190	190	190	190	190	190	190	190
					IPT(fz)	.0002	.0003	.0004	.0006	.0010	.0017	.0020	.0021	.0022
					RPM	6150	4620	3690	3080	2310	1850	1540	1320	1150
					IPM(FEED)	4	5	6	8	9	12	12	11	10

*( ) : 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 that 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

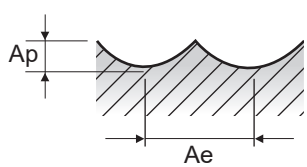
V7 PLUS A END MILLS

RECOMMENDED CUTTING CONDITIONS

GMG55 SERIES — **4 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) 3.0	4.0	5.0	6.0	8.0	10.0	12.0	16.0
P	1-4	Non-alloy steel	0.5D	1.0D	SFM(Vc)	530	530	530	530	530	530	530	530
					IPT(fz)	.0010	.0011	.0012	.0016	.0024	.0026	.0028	.0030
					RPM	17190	12890	10310	8590	6450	5160	4300	3220
					IPM(FEED)	68	55	49	54	61	53	47	38
	5	Low alloy steel	0.5D	1.0D	SFM(Vc)	370	370	370	370	370	370	370	370
					IPT(fz)	.0010	.0011	.0012	.0016	.0024	.0026	.0028	.0029
					RPM	11990	8990	7190	6000	4500	3600	3000	2250
					IPM(FEED)	47	38	34	38	42	37	33	26
	6-7		0.5D	1.0D	SFM(Vc)	530	530	530	530	530	530	530	530
					IPT(fz)	.0010	.0011	.0012	.0016	.0024	.0026	.0028	.0030
					RPM	17190	12890	10310	8590	6450	5160	4300	3220
					IPM(FEED)	68	55	49	54	61	53	47	38
	8-9		0.5D	1.0D	SFM(Vc)	370	370	370	370	370	370	370	370
					IPT(fz)	.0010	.0011	.0012	.0016	.0024	.0026	.0028	.0029
					RPM	11990	8990	7190	6000	4500	3600	3000	2250
					IPM(FEED)	47	38	34	38	42	37	33	26
	10-11.1	High alloyed steel, and tool steel	0.5D	1.0D	SFM(Vc)	225	225	225	225	225	225	225	225
					IPT(fz)	.0007	.0007	.0008	.0011	.0017	.0018	.0019	.0020
					RPM	7220	5410	4330	3610	2710	2170	1800	1350
					IPM(FEED)	19	16	14	16	18	15	14	11
M	12-13	Stainless steel	0.5D	1.0D	SFM(Vc)	255	255	255	255	255	255	255	255
					IPT(fz)	.0006	.0006	.0010	.0012	.0016	.0018	.0020	.0021
					RPM	8170	6130	4900	4090	3060	2450	2040	1530
					IPM(FEED)	19	14	19	19	19	17	16	13
	14.1		0.5D	1.0D	SFM(Vc)	280	280	280	280	280	280	280	280
					IPT(fz)	.0008	.0008	.0010	.0016	.0018	.0020	.0022	.0024
					RPM	9020	6760	5410	4510	3380	2710	2260	1690
					IPM(FEED)	28	21	21	29	24	21	20	16
	14.2		0.5D	1.0D	SFM(Vc)	255	255	255	255	255	255	255	255
					IPT(fz)	.0008	.0008	.0010	.0016	.0018	.0020	.0022	.0024
					RPM	8170	6130	4900	4090	3060	2450	2040	1530
					IPM(FEED)	26	19	19	26	22	19	18	14
K	15-20	Grey cast iron	0.5D	1.0D	SFM(Vc)	390	390	390	390	390	390	390	390
					IPT(fz)	.0012	.0013	.0015	.0020	.0029	.0032	.0034	.0037
					RPM	12630	9470	7580	6310	4740	3790	3160	2370
					IPM(FEED)	62	49	44	50	55	48	43	35
S	31-35	Heat Resistant Super Alloys	0.2D	0.3D	SFM(Vc)	70	70	70	70	70	70	70	70
					IPT(fz)	.0006	.0006	.0007	.0011	.0012	.0014	.0015	.0017
					RPM	2230	1670	1340	1110	840	670	560	420
					IPM(FEED)	5	4	4	5	4	4	3	3
	36-37	Titanium Alloys	0.5D	0.3D	SFM(Vc)	155	155	155	155	155	155	155	155
					IPT(fz)	.0007	.0007	.0009	.0015	.0016	.0018	.0019	.0021
					RPM	4990	3740	2990	2490	1870	1500	1250	940
					IPM(FEED)	14	11	10	15	12	11	10	8

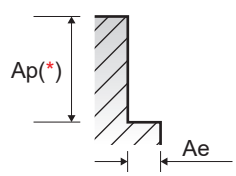


GMG12, GMG14, GMG16, GMG18 SERIES

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

6 FLUTE - SIDE CUTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)				
						6.0	8.0	10.0	12.0	16.0
P	1-4	Non-alloy steel	0.05D	2.0D	SFM(Vc)	985	985	985	985	985
					IPT(fz)	.0027	.0046	.0057	.0068	.0080
					RPM	15920	11940	9550	7960	5970
					IPM(FEED)	256	327	325	325	285
	5	Low alloy steel	0.05D	2.0D	SFM(Vc)	665	665	665	665	665
					IPT(fz)	.0020	.0034	.0042	.0050	.0059
					RPM	10770	8080	6460	5390	4040
					IPM(FEED)	127	162	162	163	142
	6-7		0.05D	2.0D	SFM(Vc)	985	985	985	985	985
					IPT(fz)	.0027	.0046	.0057	.0068	.0080
					RPM	15920	11940	9550	7960	5970
					IPM(FEED)	256	327	325	325	285
	8-9		0.05D	2.0D	SFM(Vc)	665	665	665	665	665
					IPT(fz)	.0020	.0034	.0042	.0050	.0059
					RPM	10770	8080	6460	5390	4040
					IPM(FEED)	127	162	162	163	142
	10-11.1	High alloyed steel, and tool steel	0.05D	2.0D	SFM(Vc)	330	330	330	330	330
					IPT(fz)	.0016	.0028	.0035	.0041	.0048
					RPM	5310	3980	3180	2650	1990
					IPM(FEED)	51	67	66	66	58
M	12-13	Stainless steel	0.05D	2.0D	SFM(Vc)	700	700	700	700	700
					IPT(fz)	.0019	.0033	.0041	.0049	.0058
					RPM	11300	8480	6780	5650	4240
					IPM(FEED)	131	168	167	167	146
	14.1		0.05D	2.0D	SFM(Vc)	480	480	480	480	480
					IPT(fz)	.0016	.0028	.0035	.0041	.0048
					RPM	7800	5850	4680	3900	2920
					IPM(FEED)	76	98	97	97	85
	14.2		0.05D	2.0D	SFM(Vc)	440	440	440	440	440
					IPT(fz)	.0016	.0028	.0035	.0041	.0048
					RPM	7110	5330	4270	3550	2670
					IPM(FEED)	69	89	89	88	77
K	15-20	Grey cast iron	0.05D	2.0D	SFM(Vc)	740	740	740	740	740
					IPT(fz)	.0032	.0055	.0068	.0082	.0095
					RPM	11940	8950	7160	5970	4480
					IPM(FEED)	230	294	292	293	256
S	31-35	Heat Resistant Super Alloys	0.05D	2.0D	SFM(Vc)	110	110	110	110	110
					IPT(fz)	.0013	.0022	.0028	.0032	.0038
					RPM	1750	1310	1050	880	660
					IPM(FEED)	14	17	17	17	15
	36-37	Titanium Alloys	0.05D	2.0D	SFM(Vc)	380	380	380	380	380
					IPT(fz)	.0013	.0022	.0028	.0033	.0038
					RPM	6150	4620	3690	3080	2310
					IPM(FEED)	48	60	61	60	53



(*) : If product's Length of Cut(L.O.C) is below 2D, it must be applied L.O.C x 90%

Square **EMI42** SERIES
Corner Radius **EMI43** SERIES

TitaNox-Power HPC END MILLS

CARBIDE, 5 FLUTE STANDARD LENGTH

- 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

Square

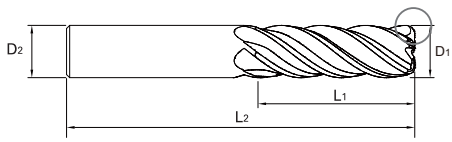




Corner Radius









CARBIDE | 5 | 38° | PLAIN | AlTiN

p.A96-B98

Unit : INCH

OD (D_1)	SD (D_2)	LOC (L_1)	OAL (L_2)	Square	Corner Radius								
					.010	.015	.020	.030	.060	.090	.125	.190	.250
				EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
1/8	1/8	1/4	1-1/2	EMI42008	EMI43008	EMI43803	EMI43804	EMI43805	-	-	-	-	-
		3/8	2	EMI42919	EMI43806	EMI43807	EMI43808	EMI43809	-	-	-	-	-
		1/2	2-1/2	EMI42920	EMI43810	EMI43811	EMI43812	EMI43813	-	-	-	-	-
		5/8	2-1/2	EMI42925	EMI43814	EMI43815	EMI43816	EMI43817	-	-	-	-	-
		3/4	2-1/2	EMI42926	EMI43818	EMI43819	-	EMI43820	-	-	-	-	-
		7/8	2-1/2	EMI42927	EMI43821	-	-	EMI43822	-	-	-	-	-
		1	2-1/2	EMI42928	-	-	-	-	-	-	-	-	-
5/32	3/16	5/16	2	EMI42010	EMI43010	-	-	EMI43823	-	-	-	-	-
		7/16	2	EMI42929	EMI43824	-	-	EMI43825	-	-	-	-	-
		9/16	2-1/2	EMI42930	EMI43826	-	-	EMI43827	-	-	-	-	-
		3/4	2-1/2	EMI42931	EMI43828	-	-	EMI43829	-	-	-	-	-
		1	2-1/2	EMI42932	-	-	-	-	-	-	-	-	-
3/16	3/16	5/16	2	EMI42012	EMI43012	EMI43830	-	EMI43831	-	-	-	-	-
		7/16	2	EMI42933	EMI43832	EMI43833	-	EMI43834	-	-	-	-	-
		9/16	2-1/2	EMI42934	EMI43835	EMI43836	-	EMI43837	-	-	-	-	-
		3/4	2-1/2	EMI42935	EMI43838	EMI43839	-	EMI43840	-	-	-	-	-
		1	2-1/2	EMI42936	EMI43841	EMI43842	-	EMI43843	-	-	-	-	-
		1-3/16	3	EMI42937	-	-	-	-	-	-	-	-	-
7/32	1/4	3/8	2	EMI42014	-	-	-	-	-	-	-	-	-
		3/4	2-1/2	EMI42938	-	-	-	-	-	-	-	-	-

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

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	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			
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
Recommended											◎	◎	◎	◎	◎	◎	◎				

TitaNox-Power HPC END MILLS

CARBIDE, 5 FLUTE STANDARD LENGTH

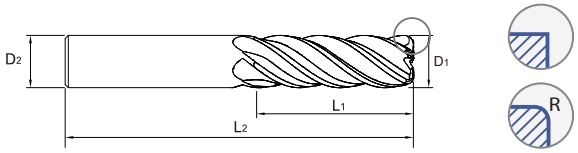
- New design enhances chip space in heavy cuts, while still maintaining rigidity in peel milling.
- Unequal index design for Chatter-Free cutting
- High performance milling of Stainless Steel, Titanium, and Heat-Resistant Super Alloys

Square



Corner Radius





CARBIDE | 5 | 38° | PLAIN | AlTiN

p.A96-B98

Unit : INCH

OD (D_1)	SD (D_2)	LOC (L_1)	OAL (L_2)	Square	Corner Radius								
					.010	.015	.020	.030	.060	.090	.125	.190	.250
				EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
1/4	1/4	3/8	2	EMI42016	EMI43844	EMI43016	EMI43845	EMI43901	EMI43902	-	-	-	-
		1/2	2-1/2	EMI42901	EMI43846	EMI43903	EMI43847	EMI43904	EMI43905	-	-	-	-
		3/4	2-1/2	EMI42902	EMI43848	EMI43906	EMI43849	EMI43907	EMI43908	-	-	-	-
		1	3	EMI42939	EMI43850	EMI43851	EMI43852	EMI43853	EMI43854	-	-	-	-
		1-1/4	3	EMI42940	EMI43855	EMI43856	EMI43857	EMI43858	EMI43859	-	-	-	-
		1-1/2	3	EMI42941	-	-	-	-	-	-	-	-	-
		1-3/4	4	EMI42942	-	-	-	-	-	-	-	-	-
5/16	5/16	7/16	2	EMI42020	EMI43860	EMI43020	EMI43861	EMI43909	EMI43862	-	-	-	-
		13/16	2-1/2	EMI42903	EMI43863	EMI43910	EMI43864	EMI43911	EMI43865	-	-	-	-
		1	3	EMI42943	EMI43866	EMI43867	EMI43868	EMI43869	EMI43870	-	-	-	-
		1-1/4	3	EMI42944	-	-	-	-	-	-	-	-	-
3/8	3/8	1/2	2	EMI42024	EMI43871	EMI43024	EMI43872	EMI43912	EMI43913	EMI43914	EMI43873	-	-
		3/4	2-1/2	EMI42945	EMI43874	EMI43875	EMI43876	EMI43877	EMI43878	EMI43879	EMI43880	-	-
		1	3	EMI42904	EMI43881	EMI43915	EMI43882	EMI43916	EMI43917	EMI43918	EMI43883	-	-
		1-1/4	3	EMI42905	EMI43884	EMI43919	EMI43885	EMI43920	EMI43921	EMI43922	EMI43886	-	-
		1-1/2	3-1/2	EMI42946	EMI43887	-	EMI43888	EMI43889	EMI43890	-	-	-	-
		2	4	EMI42947	-	-	-	EMI43891	-	-	-	-	-
7/16	7/16	5/8	2-1/2	EMI42028	-	-	-	-	-	-	-	-	-
		1	2-3/4	EMI42948	-	-	-	-	-	-	-	-	-
		1-5/16	3-1/2	EMI42949	-	-	-	-	-	-	-	-	-

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

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	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				
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
Recommended											◎	◎	◎	◎	◎	◎	◎				

Square **EMI42** SERIES
Corner Radius **EMI43** SERIES

TitaNox-Power HPC END MILLS

CARBIDE, 5 FLUTE STANDARD LENGTH

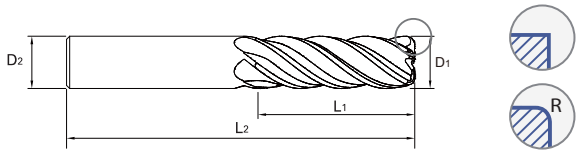
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Square



Corner Radius





CARBIDE | 5 | 38° | PLAIN | AlTiN

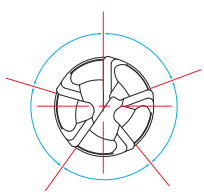
p.A96-B98

Unit : INCH

OD (D_1)	SD (D_2)	LOC (L_1)	OAL (L_2)	Square	Corner Radius							
					.010	.015	.020	.030	.060	.090	.125	.190	.250
				EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
1/2	1/2	5/8	2-1/2	EMI42032	EMI43892	EMI43032	EMI43893	EMI43923	EMI43924	EMI43925	EMI43926	-	-
		1	3	EMI42906	EMI43894	EMI43927	EMI43895	EMI43928	EMI43929	EMI43930	EMI43931	-	-
		1-1/4	3	EMI42907	EMI43896	EMI43932	EMI43897	EMI43933	EMI43934	EMI43935	EMI43936	-	-
		1-5/8	4	EMI42908	EMI43898	EMI43937	EMI43899	EMI43938	EMI43939	EMI43940	EMI43941	-	-
		2	4	EMI42950	EMI43701	EMI43702	EMI43703	EMI43704	EMI43705	EMI43706	EMI43707	-	-
5/8	5/8	3/4	3	EMI42040	-	EMI43710	-	EMI43040	EMI43942	EMI43943	EMI43944	-	-
		1-1/4	3-1/2	EMI42909	-	EMI43945	-	EMI43946	EMI43947	EMI43948	EMI43949	-	-
		1-5/8	3-1/2	EMI42910	-	EMI43711	-	EMI43950	EMI43951	EMI43952	EMI43953	-	-
		2-1/8	4	EMI42911	-	EMI43712	-	EMI43954	EMI43955	EMI43956	EMI43957	-	-

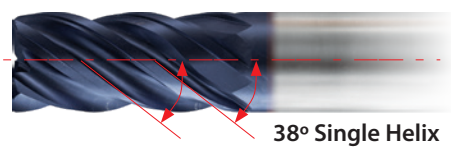
Mill Dia.Tolerance (in)	Shank Dia.Tolerance
0 ~ - .0012	h5 * Shank Dia.≥Ø1/2 : h6

Feed to be reduced by approximately 50% if L.O.C. (Length Of Cut) is over 3xD



Unequal Index

Exclusively Designed Unique Geometry applied to Reduce Vibration and also to achieve Excellent surface finish



38° Single Helix

Core Design

YG-1's High Performance Core Geometries is designed for superior chip evacuation. It's excellent at Slotting & Heavy Profiling.

◎ : Excellent ○ : Good

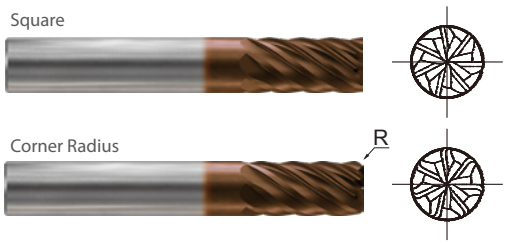
ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	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	○	○	○	○	○	○	○	○	○	○	○	◎	◎	◎	○	○	○	○	○	○

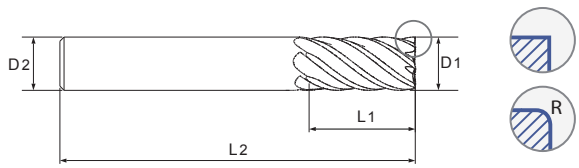
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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
Recommended											◎	◎	◎	◎	◎	◎	◎				

TitaNox-Power HPC END MILLS

CARBIDE, 7 FLUTE STANDARD LENGTH

- 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 | 7 | 38° | PLAIN | C Coating

p.A99

Unit : INCH

OD (D_1)	SD (D_2)	LOC (L_1)	OAL (L_2)	Square	Corner Radius				
					.010	.020	.030	.060	.125
				EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
1/8	1/8	1/4	1-1/2	HHK82008	HHK83008	-	-	-	-
		3/8	2	HHK82901	HHK83901	-	-	-	-
		1/2	2-1/2	HHK82902	HHK83902	-	-	-	-
		5/8	2-1/2	HHK82903	HHK83903	-	-	-	-
3/16	3/16	5/16	2	HHK82012	HHK83012	-	-	-	-
		7/16	2	HHK82904	HHK83904	-	-	-	-
		9/16	2-1/2	HHK82905	HHK83905	-	-	-	-
		3/4	2-1/2	HHK82906	HHK83906	-	-	-	-
1/4	1/4	3/8	2	HHK82016	HHK83016	HHK83907	HHK83908	-	-
		1/2	2	HHK82907	HHK83909	HHK83910	HHK83911	-	-
		3/4	2-1/2	HHK82908	HHK83912	HHK83913	HHK83914	-	-
		1	3	HHK82909	HHK83915	HHK83916	HHK83917	-	-
		1-1/4	3	HHK82910	HHK83918	HHK83919	HHK83920	-	-
5/16	5/16	7/16	2	HHK82020	-	-	-	-	-
		3/4	2-1/2	HHK82911	-	-	-	-	-
		1	3	HHK82912	-	-	-	-	-
		1-1/4	3	HHK82913	-	-	-	-	-

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
- If product's Length of Cut(L.O.C) is below 2D, it must be applied L.O.C x 90%

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	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				
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
Recommended											◎	◎	◎	◎	◎	◎	◎				

Square **HHK82** SERIES
Corner Radius **HHK83** SERIES

TitaNox-Power HPC END MILLS

CARBIDE, 7 FLUTE STANDARD LENGTH

- 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

Square

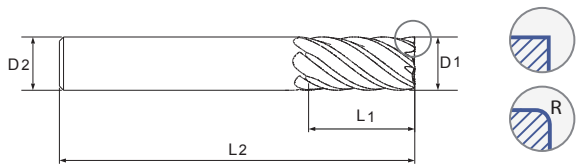




Corner Radius







CARBIDE | 7 | 38° | PLAIN | C Coating

p.A99

Unit : INCH

OD (D_1)	SD (D_2)	LOC (L_1)	OAL (L_2)	Square	Corner Radius				
					.010	.020	.030	.060	.125
				EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
3/8	3/8	1/2	2	HHK82024	HHK83024	HHK83921	HHK83922	HHK83923	HHK83924
		3/4	2-1/2	HHK82914	HHK83925	HHK83926	HHK83927	HHK83928	HHK83929
		1	2-1/2	HHK82915	HHK83930	HHK83931	HHK83932	HHK83933	HHK83934
		1-1/4	3	HHK82916	HHK83935	HHK83936	HHK83937	HHK83938	HHK83939
		1-1/2	3-1/2	HHK82917	HHK83940	HHK83941	HHK83942	HHK83943	HHK83944
		2	4	HHK82918	-	HHK83945	-	-	-
1/2	1/2	5/8	2-1/2	HHK82032	HHK83032	HHK83946	HHK83947	HHK83948	HHK83949
		1	3	HHK82919	HHK83950	HHK83951	HHK83952	HHK83953	HHK83954
		1-1/4	3	HHK82920	HHK83955	HHK83956	HHK83957	HHK83958	HHK83959
		1-5/8	4	HHK82921	HHK83960	HHK83961	HHK83962	HHK83963	HHK83964
		2	4	HHK82922	HHK83965	HHK83966	HHK83967	HHK83968	HHK83969
5/8	5/8	3/4	3	HHK82040	-	-	HHK83040	HHK83971	-
		1-1/4	3-1/2	HHK82925	-	-	HHK83972	HHK83973	-
		1-5/8	4	HHK82926	-	-	HHK83974	HHK83975	-
		2-1/8	4	HHK82927	-	-	HHK83976	HHK83977	-

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
- If product's Length of Cut(L.O.C) is below 2D, it must be applied L.O.C x 90%

◎ : 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	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			
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
Recommended											◎	◎	◎	◎	◎	◎	◎				

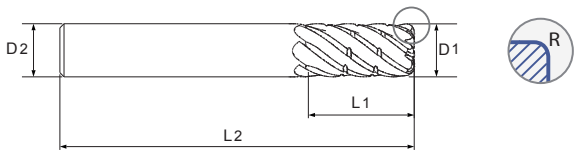
TitaNox-Power HPC END MILLS

Corner Radius **HHK84 SERIES**

CARBIDE, 7 FLUTE CORNER RADIUS - CHIP BREAKER

- 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 | 7 | 38° | PLAIN | C Coating

p.A99

Unit : INCH

OD (D_1)	SD (D_2)	LOC (L_1)	OAL (L_2)	Corner Radius .010 EDP No.	Corner Radius .020 EDP No.	Corner Radius .030 EDP No.	Corner Radius .060 EDP No.
1/4	1/4	3/8	2	-	HHK84016	HHK84901	-
		1/2	2	-	HHK84902	HHK84903	-
		3/4	2-1/2	-	HHK84904	HHK84905	-
		1	3	-	HHK84906	-	-
		1-1/4	3	-	HHK84907	-	-
5/16	5/16	7/16	2	-	HHK84020	-	-
		3/4	2-1/2	-	HHK84908	-	-
		1	3	-	HHK84909	-	-
3/8	3/8	1/2	2	-	HHK84024	HHK84910	HHK84911
		3/4	2-1/2	-	HHK84912	HHK84913	HHK84914
		1	2-1/2	-	HHK84915	HHK84916	HHK84917
		1-1/2	3-1/2	-	HHK84918	-	-
1/2	1/2	5/8	2-1/2	HHK84032	HHK84919	HHK84920	HHK84921
		1	3	HHK84922	HHK84923	HHK84924	HHK84925
		1-1/4	3	HHK84926	HHK84927	HHK84928	HHK84929
		1-5/8	4	HHK84930	HHK84931	HHK84932	HHK84933
		2	4	HHK84934	HHK84935	HHK84936	HHK84937
5/8	5/8	1-1/4	3-1/2	-	-	HHK84040	HHK84940
		1-5/8	4	-	-	HHK84941	HHK84942
		2-1/8	4	-	-	HHK84943	HHK84944

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
- If product's Length of Cut(L.O.C) is below 2D, it must be applied L.O.C x 90%

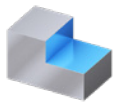
◎ : Excellent ○ : Good

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	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			
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
Recommended											◎	◎	◎	◎	◎	◎	◎				

TitaNox-Power HPC END MILLS RECOMMENDED CUTTING CONDITIONS

EMI42, EMI43 SERIES

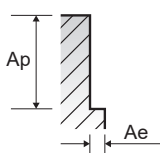


5 FLUTES (TitaNox-Power HPC) - Heavy Side Cutting

RPM = rev./min. Feed = in./min.
Vc = ft./min. fz = in./tooth

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø) 1/8	5/32	3/16	7/32	1/4	5/16	3/8	7/16	1/2	5/8
P	1-5	Non-alloy steel	0.5D	1.5D	SFM (Vc)	500	500	500	500	500	500	500	500	500	500
					IPT (fz)	.0009	.0011	.0013	.0014	.0016	.0018	.0022	.0027	.0031	.0037
					RPM	15280	12220	10190	8730	7640	6110	5090	4370	3820	3060
					IPM (FEED)	66	66	66	61	61	55	56	59	59	57
	6-8	Low alloy steel	0.5D	1.5D	SFM (Vc)	500	500	500	500	500	500	500	500	500	500
					IPT (fz)	.0009	.0011	.0013	.0014	.0016	.0018	.0022	.0027	.0031	.0037
					RPM	15280	12220	10190	8730	7640	6110	5090	4370	3820	3060
					IPM (FEED)	66	66	66	61	61	55	56	59	59	57
	9		0.5D	1.5D	SFM (Vc)	400	400	400	400	400	400	400	400	400	400
					IPT (fz)	.0005	.0007	.0008	.0011	.0012	.0014	.0017	.0021	.0024	.0028
					RPM	12220	9780	8150	6990	6110	4890	4070	3490	3060	2440
					IPM (FEED)	33	33	33	37	37	34	35	37	37	34
	10	High alloyed steel, and tool steel	0.5D	1.5D	SFM (Vc)	450	450	450	450	450	450	450	450	450	450
					IPT (fz)	.0009	.0011	.0013	.0014	.0016	.0018	.0022	.0027	.0031	.0037
					RPM	13750	11000	9170	7860	6880	5500	4580	3930	3440	2750
					IPM (FEED)	60	60	60	55	55	50	50	53	53	51
	11.1		0.5D	1.5D	SFM (Vc)	400	400	400	400	400	400	400	400	400	400
					IPT (fz)	.0005	.0007	.0008	.0011	.0012	.0014	.0017	.0021	.0024	.0028
					RPM	12220	9780	8150	6990	6110	4890	4070	3490	3060	2440
					IPM (FEED)	33	33	33	37	37	34	35	37	37	34
M	12-13	Stainless steel (SUS 420, X40Cr13, 420)	0.5D	1.5D	SFM (Vc)	250	250	250	250	250	250	250	250	250	250
					IPT (fz)	.0005	.0006	.0007	.0009	.0010	.0012	.0015	.0018	.0021	.0024
					RPM	7640	6110	5090	4370	3820	3060	2550	2180	1910	1530
					IPM (FEED)	18	18	18	19	19	18	19	20	20	18
	14.1	Stainless steel (SUS 316, 316, X5CrNiMo 17 12 2)	0.5D	1.5D	SFM (Vc)	300	300	300	300	300	300	300	300	300	300
					IPT (fz)	.0005	.0007	.0008	.0011	.0013	.0014	.0018	.0023	.0026	.0028
					RPM	9170	7330	6110	5240	4580	3670	3060	2620	2290	1830
					IPM (FEED)	24	24	24	30	30	26	28	30	30	26
	14.2	Stainless steel (SUS 630, PH 15-5)	0.5D	1.5D	SFM (Vc)	200	200	200	200	200	200	200	200	200	200
					IPT (fz)	.0005	.0006	.0007	.0009	.0010	.0011	.0014	.0018	.0021	.0022
					RPM	6110	4890	4070	3490	3060	2440	2040	1750	1530	1220
					IPM (FEED)	14	14	14	15	15	13	14	16	16	13
K	15-20	Grey cast iron	0.5D	1.5D	SFM (Vc)	370	370	370	370	370	370	370	370	370	370
					IPT (fz)	.0007	.0008	.0010	.0012	.0014	.0016	.0019	.0023	.0026	.0032
					RPM	11310	9050	7540	6460	5650	4520	3770	3230	2830	2260
					IPM (FEED)	38	38	38	40	40	36	36	37	37	36
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	90
					IPT (fz)	.0004	.0005	.0006	.0009	.0010	.0012	.0014	.0017	.0019	.0021
					RPM	2750	2200	1830	1570	1380	1100	920	790	690	550
					IPM (FEED)	6	6	5	7	7	7	6	7	7	6
	36-37	Titanium Alloys (HB 400 Rm, HB 1050Rm TiAl6V4, 3.7165)	0.5D	1.5D	SFM (Vc)	160	160	160	160	160	160	160	160	160	160
					IPT (fz)	.0004	.0005	.0006	.0009	.0010	.0012	.0014	.0017	.0019	.0021
					RPM	4890	3910	3260	2790	2440	1960	1630	1400	1220	980
					IPM (FEED)	10	10	10	12	12	12	11	12	12	10

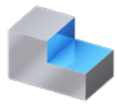
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NOTES:
- Maximum recommended depth shown
- Finish cuts typically require reduced feed rates and/or higher spindle speed, with radial width of 2% x D1 or less
- Feed to be reduced by approximately 50% if L.O.C.(length of cut) is over 3xD
- Reduce speed 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

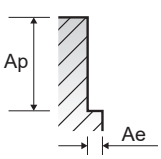
EMI42, EMI43 SERIES

5 FLUTES (TitaNox-Power HPC) - Side Cutting (Peel Milling)



RPM = rev./min. Feed = in./min.
Vc = ft./min. fz = in./tooth

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø) 1/8	5/32	3/16	7/32	1/4	5/16	3/8	7/16	1/2	5/8
P	1-5	Non-alloy steel	0.08D	2.0D	SFM (Vc)	650	650	650	650	650	650	650	650	650	650
					IPT (fz)	.0012	.0015	.0018	.0019	.0022	.0026	.0031	.0038	.0043	.0051
					RPM	19860	15890	13240	11350	9930	7950	6620	5680	4970	3970
					IPM (FEED)	119	119	119	109	109	103	103	107	107	101
	6-8	Low alloy steel	0.08D	2.0D	SFM (Vc)	650	650	650	650	650	650	650	650	650	650
					IPT (fz)	.0012	.0015	.0018	.0019	.0022	.0026	.0031	.0038	.0043	.0051
					RPM	19860	15890	13240	11350	9930	7950	6620	5680	4970	3970
					IPM (FEED)	119	119	119	109	109	103	103	107	107	101
	9		0.08D	2.0D	SFM (Vc)	650	650	650	650	650	650	650	650	650	650
					IPT (fz)	.0007	.0009	.0011	.0015	.0017	.0020	.0024	.0029	.0033	.0040
					RPM	19860	15890	13240	11350	9930	7950	6620	5680	4970	3970
					IPM (FEED)	73	73	73	84	84	80	79	82	82	79
	10	High alloyed steel, and tool steel	0.08D	2.0D	SFM (Vc)	580	580	580	580	580	580	580	580	580	580
					IPT (fz)	.0012	.0015	.0018	.0019	.0022	.0026	.0031	.0038	.0043	.0051
					RPM	17720	14180	11820	10130	8860	7090	5910	5060	4430	3540
					IPM (FEED)	106	106	106	98	97	92	92	95	95	90
	11.1		0.08D	2.0D	SFM (Vc)	550	550	550	550	550	550	550	550	550	550
					IPT (fz)	.0007	.0009	.0011	.0015	.0017	.0020	.0024	.0029	.0033	.0040
					RPM	16810	13450	11200	9600	8400	6720	5600	4800	4200	3360
					IPM (FEED)	62	62	62	71	71	67	67	69	69	67
M	12-13	Stainless steel (SUS 420, X40Cr13, 420)	0.06D	2.0D	SFM (Vc)	350	350	350	350	350	350	350	350	350	350
					IPT (fz)	.0007	.0008	.0010	.0013	.0015	.0016	.0021	.0025	.0029	.0034
					RPM	10700	8560	7130	6110	5350	4280	3570	3060	2670	2140
					IPM (FEED)	36	36	36	40	40	34	37	39	39	36
	14.1	Stainless steel (SUS 316, 316, X5CrNiMo 17 12 2)	0.06D	2.0D	SFM (Vc)	425	425	425	425	425	425	425	425	425	425
					IPT (fz)	.0007	.0009	.0011	.0016	.0018	.0019	.0025	.0032	.0036	.0039
					RPM	12990	10390	8660	7420	6490	5190	4330	3710	3250	2600
					IPM (FEED)	48	48	48	58	58	49	54	58	59	51
	14.2	Stainless steel (SUS 630, PH 15-5)	0.06D	2.0D	SFM (Vc)	300	300	300	300	300	300	300	300	300	300
					IPT (fz)	.0007	.0008	.0010	.0012	.0014	.0015	.0020	.0025	.0029	.0031
					RPM	9170	7330	6110	5240	4580	3670	3060	2620	2290	1830
					IPM (FEED)	31	31	31	32	32	28	31	33	33	28
K	15-20	Grey cast iron	0.07D	2.0D	SFM (Vc)	550	550	550	550	550	550	550	550	550	550
					IPT (fz)	.0009	.0012	.0014	.0018	.0020	.0022	.0027	.0032	.0037	.0045
					RPM	16810	13450	11200	9600	8400	6720	5600	4800	4200	3360
					IPM (FEED)	78	78	78	84	84	74	76	78	78	76
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)	0.04D	2.0D	SFM (Vc)	120	120	120	120	120	120	120	120	120	120
					IPT (fz)	.0004	.0005	.0006	.0009	.0010	.0012	.0014	.0017	.0019	.0021
					RPM	3670	2930	2440	2100	1830	1470	1220	1050	920	730
					IPM (FEED)	7	7	7	9	9	9	9	9	9	8
	36-37	Titanium Alloys (HB 400 Rm, HB 1050Rm TiAl6V4, 3.7165)	0.05D	2.0D	SFM (Vc)	300	300	300	300	300	300	300	300	300	300
					IPT (fz)	.0004	.0005	.0006	.0009	.0010	.0012	.0014	.0017	.0019	.0021
					RPM	9170	7330	6110	5240	4580	3670	3060	2620	2290	1830
					IPM (FEED)	18	18	18	23	23	22	21	22	22	19

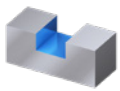


NOTES:
- Maximum recommended depth shown
- Finish cuts typically require reduced feed rates and/or higher spindle speed, with radial width of 2% x D1 or less
- Feed to be reduced by approximately 50% if L.O.C.(length of cut) is over 3xD
- Reduce speed and feed recommendations for materials harder than listed
- Recommendations above are based on ideal conditions. Adjust parameters accordingly for smaller taper machining centers or less rigid conditions

TitaNox-Power HPC END MILLS RECOMMENDED CUTTING CONDITIONS

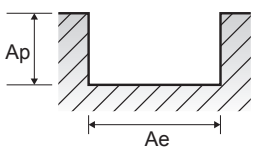
EMI42, EMI43 SERIES

5 FLUTES (TitaNox-Power HPC) - Slotting



RPM = rev./min. Feed = in./min.
Vc = ft./min. fz = in./tooth

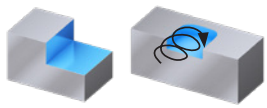
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø) 1/8	5/32	3/16	7/32	1/4	5/16	3/8	7/16	1/2	5/8
P	1-5	Non-alloy steel	1.0D	1.0D	SFM (Vc)	275	275	275	275	275	275	275	275	275	275
					IPT (fz)	.0007	.0008	.0010	.0011	.0013	.0015	.0018	.0021	.0024	.0029
					RPM	8400	6720	5600	4800	4200	3360	2800	2400	2100	1680
					IPM (FEED)	28	28	28	27	27	25	25	25	25	24
	6-8	Low alloy steel	1.0D	1.0D	SFM (Vc)	275	275	275	275	275	275	275	275	275	275
					IPT (fz)	.0007	.0008	.0010	.0011	.0013	.0015	.0018	.0021	.0024	.0029
					RPM	8400	6720	5600	4800	4200	3360	2800	2400	2100	1680
					IPM (FEED)	28	28	28	27	27	25	25	25	25	24
	9		1.0D	1.0D	SFM (Vc)	275	275	275	275	275	275	275	275	275	275
					IPT (fz)	.0004	.0005	.0006	.0009	.0010	.0011	.0014	.0017	.0019	.0023
					RPM	8400	6720	5600	4800	4200	3360	2800	2400	2100	1680
					IPM (FEED)	17	17	17	21	21	18	20	20	20	19
	10	High alloyed steel, and tool steel	1.0D	0.75D	SFM (Vc)	230	230	230	230	230	230	230	230	230	230
					IPT (fz)	.0007	.0008	.0010	.0011	.0013	.0015	.0018	.0021	.0024	.0029
					RPM	7030	5620	4690	4020	3510	2810	2340	2010	1760	1410
					IPM (FEED)	23	23	23	23	23	21	21	21	21	20
	11.1		1.0D	0.75D	SFM (Vc)	250	250	250	250	250	250	250	250	250	250
					IPT (fz)	.0004	.0005	.0006	.0009	.0010	.0011	.0014	.0017	.0019	.0023
					RPM	7640	6110	5090	4370	3820	3060	2550	2180	1910	1530
					IPM (FEED)	15	15	15	19	19	17	18	18	18	18
M	12-13	Stainless steel (SUS 420, X40Cr13, 420)	1.0D	0.5D	SFM (Vc)	225	225	225	225	225	225	225	225	225	225
					IPT (fz)	.0004	.0005	.0006	.0007	.0008	.0009	.0012	.0015	.0017	.0019
					RPM	6880	5500	4580	3930	3440	2750	2290	1960	1720	1380
					IPM (FEED)	14	14	14	14	14	12	14	15	15	13
	14.1	Stainless steel (SUS 316, 316, X5CrNiMo 17 12 2)	1.0D	0.5D	SFM (Vc)	250	250	250	250	250	250	250	250	250	250
					IPT (fz)	.0004	.0005	.0006	.0009	.0010	.0011	.0014	.0018	.0021	.0023
					RPM	7640	6110	5090	4370	3820	3060	2550	2180	1910	1530
					IPM (FEED)	15	15	15	19	19	17	18	20	20	18
	14.2	Stainless steel (SUS 630, PH 15-5)	1.0D	0.5D	SFM (Vc)	200	200	200	200	200	200	200	200	200	200
					IPT (fz)	.0004	.0005	.0006	.0007	.0008	.0009	.0011	.0015	.0017	.0018
					RPM	6110	4890	4070	3490	3060	2440	2040	1750	1530	1220
					IPM (FEED)	12	12	12	12	12	11	11	13	13	11
K	15-20	Grey cast iron	1.0D	1.0D	SFM (Vc)	260	260	260	260	260	260	260	260	260	260
					IPT (fz)	.0005	.0007	.0008	.0010	.0011	.0013	.0015	.0018	.0021	.0026
					RPM	7950	6360	5300	4540	3970	3180	2650	2270	1990	1590
					IPM (FEED)	21	21	21	22	22	21	20	21	21	21
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)	64	64	64	64	64	64	64	64	64	64
					IPT (fz)	.0003	.0004	.0005	.0007	.0008	.0010	.0011	.0013	.0015	.0017
					RPM	1960	1560	1300	1120	980	780	650	560	490	390
					IPM (FEED)	3	3	3	4	4	4	4	4	4	3
	36-37	Titanium Alloys (HB 400 Rm, HB 1050Rm TiAl6V4, 3.7165)	1.0D	0.5D	SFM (Vc)	160	160	160	160	160	160	160	160	160	160
					IPT (fz)	.0003	.0004	.0005	.0007	.0008	.0010	.0011	.0013	.0015	.0017
					RPM	4890	3910	3260	2790	2440	1960	1630	1400	1220	980
					IPM (FEED)	8	8	8	10	10	10	9	9	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

TitaNox-Power HPC END MILLS RECOMMENDED CUTTING CONDITIONS

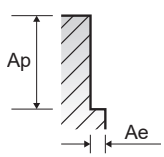
HHK82, HHK83, HHK84 SERIES



7 FLUTES (TitaNox-Power HPC) - Side Cutting & Trochoidal Milling

RPM = rev./min. Feed = in./min.
Vc = ft./min. fz = in./tooth

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø) 1/8	3/16	1/4	5/16	3/8	1/2	5/8
P	1-4	Non-alloy steel	0.05D	3D	SFM (Vc)	1050	1050	1050	1050	1050	1050	1050
					IPT (fz)	.0015	.0023	.0030	.0051	.0063	.0075	.0088
					RPM	32090	21390	16040	12840	10700	8020	6420
					IPM (FEED)	337	344	333	455	470	420	395
	5	Non-alloy steel	0.05D	3D	SFM (Vc)	710	710	710	710	710	710	710
					IPT (fz)	.0011	.0017	.0022	.0037	.0046	.0055	.0065
					RPM	21700	14470	10850	8680	7230	5420	4340
					IPM (FEED)	167	167	167	227	234	209	197
	6-7	Low alloy steel	0.05D	3D	SFM (Vc)	1050	1050	1050	1050	1050	1050	1050
					IPT (fz)	.0015	.0023	.0030	.0051	.0063	.0075	.0088
					RPM	32090	21390	16040	12840	10700	8020	6420
					IPM (FEED)	337	344	333	455	470	420	395
	8-9		0.05D	3D	SFM (Vc)	710	710	710	710	710	710	710
					IPT (fz)	.0011	.0017	.0022	.0037	.0046	.0055	.0065
					RPM	21700	14470	10850	8680	7230	5420	4340
					IPM (FEED)	167	167	167	227	234	209	197
	10-11	High alloyed steel, and tool steel	0.05D	3D	SFM (Vc)	350	350	350	350	350	350	350
					IPT (fz)	.0009	.0013	.0018	.0031	.0039	.0045	.0053
					RPM	10700	7130	5350	4280	3570	2670	2140
					IPM (FEED)	66	66	66	92	96	84	79
M	12-13	Stainless steel (SUS 420, X40Cr13, 420)	0.05D	3D	SFM (Vc)	750	750	750	750	750	750	750
					IPT (fz)	.0010	.0016	.0021	.0036	.0045	.0054	.0064
					RPM	22920	15280	11460	9170	7640	5730	4580
					IPM (FEED)	168	168	168	233	241	216	205
	14.1	Stainless steel (SUS 316, 316, X5CrNiMo 17 12 2)	0.05D	3D	SFM (Vc)	510	510	510	510	510	510	510
					IPT (fz)	.0009	.0013	.0018	.0003	.0039	.0045	.0053
					RPM	15590	10390	7790	6230	5200	3900	3120
					IPM (FEED)	96	96	96	13	140	123	115
	14.2	Stainless steel (SUS 630, PH 15-5)	0.05D	3D	SFM (Vc)	470	470	470	470	470	470	470
					IPT (fz)	.0009	.0013	.0018	.0031	.0039	.0045	.0053
					RPM	14360	9580	7180	5750	4790	3590	2870
					IPM (FEED)	88	89	88	124	129	113	106
K	15-20	Grey cast iron	0.05D	3D	SFM (Vc)	790	790	790	790	790	790	790
					IPT (fz)	.0018	.0026	.0035	.0061	.0075	.0090	.0105
					RPM	24140	16090	12070	9660	8050	6040	4830
					IPM (FEED)	297	297	297	409	421	381	353
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)	0.05D	3D	SFM (Vc)	120	120	120	120	120	120	120
					IPT (fz)	.0007	.0011	.0014	.0024	.0031	.0035	.0042
					RPM	3670	2440	1830	1470	1220	920	730
					IPM (FEED)	18	18	18	25	26	23	21
	36-37	Titanium Alloys (HB 400 Rm, HB 1050Rm TiAl6V4, 3.7165)	0.05D	3D	SFM (Vc)	410	410	410	410	410	410	410
					IPT (fz)	.0007	.0011	.0014	.0024	.0031	.0036	.0042
					RPM	12530	8350	6260	5010	4180	3130	2510
					IPM (FEED)	63	63	63	85	90	80	73



NOTES:
- Feed to be reduced by approximately 50% if L.O.C. (Length Of Cut) is over 3xD
- If product's Length of Cut(L.O.C) is below 2D, it must be applied L.O.C x 90%

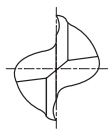
UNCOATED **E5254** SERIES
TiCN COATED **EG254** SERIES

ALU-POWER END MILLS

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 | TiCN | UNCOATED

p.A112

◆ U.S.A Stock

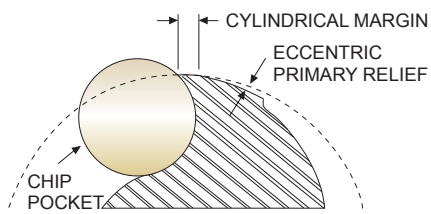
Unit : Inch

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

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

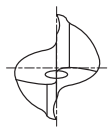
ISO	N									
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials	
VDI 3323	21	22	23	24	25	26	27	28	29	30
HRc										
HB	60	100	75	90	130	110	90	100		
Recommended	◎	◎	◎	◎	◎					

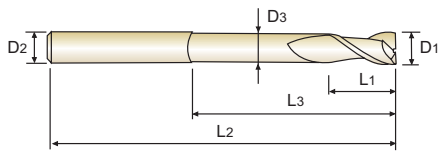
ALU-POWER END MILLS

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.







CARBIDE | 2 | 37° | PLAIN | TiCN | UNCOATED

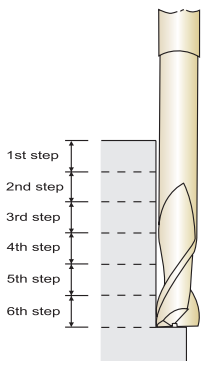
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◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
UNCOATED	TiCN COATED	D1	D2	L1	L3	L2	D3
39573	**39573TC**	**1/4**	1/4	3/8	2-1/4	4	.220
39584	**39584TC**	**3/8**	3/8	1/2	2-1/4	4	.345
39593	**39593TC**	**1/2**	1/2	5/8	2-1/4	5	.470
39595	**39595TC**	**5/8**	5/8	3/4	2-1/4	5	.585

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0005	0~-.0003



STEP MILLING

◎ : Excellent ○ : Good

ISO	N									
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials	
VDI 3323	21	22	23	24	25	26	27	28	29	30
HRc										
HB	60	100	75	90	130	110	90	100		
Recommended	◎	◎	◎	◎	◎					

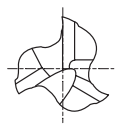
UNCOATED **E5980** SERIES
TiCN COATED **EG980** SERIES

ALU-POWER END MILLS

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.





CARBIDE | 3 | 45° | PLAIN | TiCN | UNCOATED

p.A113

◆ U.S.A Stock

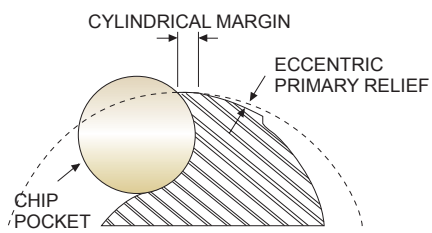
Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED				
25558	**25558TC**	**1/8**	1/8	1/4	1-1/2
25565	**25565TC**	**3/16**	3/16	5/16	2
25573	**25573TC**	**1/4**	1/4	3/8	2
25579	**25579TC**	**5/16**	5/16	7/16	2
25584	**25584TC**	**3/8**	3/8	1/2	2
25588	**25588TC**	**7/16**	7/16	9/16	2-1/2
25593	**25593TC**	**1/2**	1/2	5/8	2-1/2
25595	**25595TC**	**5/8**	5/8	3/4	3

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

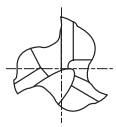
ISO	N									
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials	
VDI 3323	21	22	23	24	25	26	27	28	29	30
HRc										
HB	60	100	75	90	130	110	90	100		
Recommended	◎	◎	◎	◎	◎					

ALU-POWER END MILLS

CARBIDE, 3 FLUTE 45° HELIX REGULAR LENGTH

- ▶High velocity milling of aluminum & other non-ferrous materials.
- ▶3flute and 45° helix allow harmonic balance at high speed condition and smooth cutting.
- ▶Improved surface roughness-cylindrical margin which is controlled tightly
- ▶Maximum-metal removal rate.
- ▶Superior chip evacuation.
- ▶Mirror face-excellent surface finish.





CARBIDE | 3 | 45° | PLAIN | TiCN | UNCOATED

p.A113

◆ U.S.A Stock

■ SQUARE

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED				
28558	**28558TC**	**1/8**	1/8	3/8	1-1/2
28565	**28565TC**	**3/16**	3/16	9/16	2
28573	**28573TC**	**1/4**	1/4	5/8	2-1/2
28579	**28579TC**	**5/16**	5/16	5/8	2-1/2
28584	**28584TC**	**3/8**	3/8	1	2-1/2
28588	**28588TC**	**7/16**	7/16	1-1/4	2-3/4
28593	**28593TC**	**1/2**	1/2	1-1/4	3
28595	**28595TC**	**5/8**	5/8	1-5/8	3-1/2

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0005	0~-.0003

◎ : Excellent ○ : Good

ISO	N									
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials	
VDI 3323	21	22	23	24	25	26	27	28	29	30
HRc										
HB	60	100	75	90	130	110	90	100		
Recommended	◎	◎	◎	◎	◎					

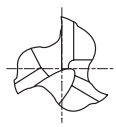
UNCOATED **E5982** SERIES
TiCN COATED **EG982** SERIES

ALU-POWER END MILLS

CARBIDE, 3 FLUTE 45° HELIX LONG LENGTH

- ▶ High velocity milling of aluminum & other non-ferrous materials.
- ▶ 3flute and 45° helix allow harmonic balance at high speed condition and smooth cutting.
- ▶ Improved surface roughness-cylindrical margin which is controlled tightly
- ▶ Maximum-metal removal rate.
- ▶ Superior chip evacuation.
- ▶ Mirror face-excellent surface finish.





CARBIDE | 3 | 45° | PLAIN | TiCN | UNCOATED

p.A113

◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED				
36573	**36573TC**	**1/4**	1/4	1-1/4	3-1/4
36579	**36579TC**	**5/16**	5/16	1-1/4	3-1/2
36584	**36584TC**	**3/8**	3/8	1-1/2	3-1/2
36588	**36588TC**	**7/16**	7/16	2	4
36593	**36593TC**	**1/2**	1/2	2	4
36595	**36595TC**	**5/8**	5/8	2-1/2	5

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0005	0~-.0003

◎ : Excellent ○ : Good

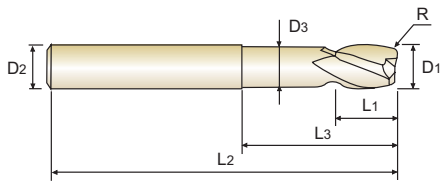
ISO	N									
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials	
VDI 3323	21	22	23	24	25	26	27	28	29	30
HRc										
HB	60	100	75	90	130	110	90	100		
Recommended	◎	◎	◎	◎	◎					

ALU-POWER END MILLS

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.





CARBIDE | 2 | 30° | R ±.001 | PLAIN | TiCN | UNCOATED

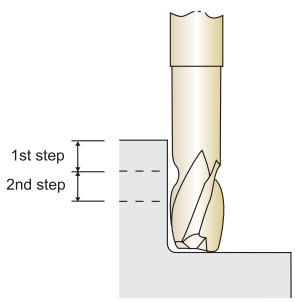
p.A114

◆ U.S.A Stock

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
UNCOATED	TiCN COATED	R	D1	D2	L1	L3	L2	D3
24562	**24562TC**	R.012	**5/32**	1/4	3/16	3/8	2	.140
24573	**24573TC**	R.020	**1/4**	1/4	5/16	3/4	2-3/8	.226
24579	**24579TC**	R.024	**5/16**	5/16	3/8	1-1/8	2-3/4	.282
24584	**24584TC**	R.031	**3/8**	3/8	1/2	1-1/2	3-1/8	.336
24593	**24593TC**	R.040	**1/2**	1/2	9/16	1-1/2	3-1/2	.460
24595	**24595TC**	R.051	**5/8**	5/8	3/4	1-3/4	4	.566

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0003



STEP MILLING

◎ : Excellent ○ : Good

ISO	N									
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials	
VDI 3323	21	22	23	24	25	26	27	28	29	30
HRc										
HB	60	100	75	90	130	110	90	100		
Recommended	◎	◎	◎	◎	◎					

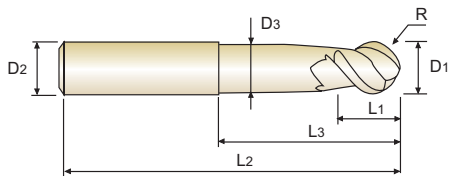
UNCOATED **E5974** SERIES
TiCN COATED **EG974** SERIES

ALU-POWER END MILLS

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.





CARBIDE | 2 | 50° | R ±.0005 | PLAIN | TiCN | UNCOATED

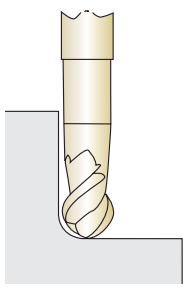
p.A115

◆ 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)	D_1	D_2	L_1	L_3	L_2	D_3
37573	**37573TC**	R1/8	**1/4**	1/4	7/32	1	2-1/4	.226
37579	**37579TC**	R5/32	**5/16**	5/16	9/32	1-1/8	2-1/2	.280
37584	**37584TC**	R3/16	**3/8**	3/8	11/32	1-3/8	3	.335
37593	**37593TC**	R1/4	**1/2**	1/2	13/32	1-1/2	3	.460
37595	**37595TC**	R5/16	**5/8**	5/8	9/16	2	3-1/2	.566

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0010	0~-.0003



◎ : Excellent ○ : Good

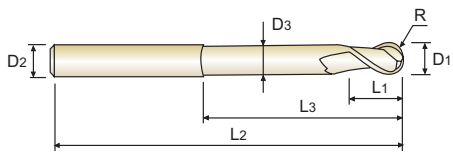
ISO	N									
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials	
VDI 3323	21	22	23	24	25	26	27	28	29	30
HRc										
HB	60	100	75	90	130	110	90	100		
Recommended	◎	◎	◎	◎	◎					

ALU-POWER END MILLS

CARBIDE, 2 FLUTE 37° HELIX LONG REACH BALL NOSE

- High velocity milling of aluminum & other non-ferrous materials.
- Extended neck design which is suitable for step milling.
- Improved surface roughness-cylinderical margin which is controlled tightly
- Maximum-metal removal rate.
- Superior chip evacuation.
- Mirror face-excellent surface finish.





CARBIDE | 2 | 37° | R ±.001 | PLAIN | TiCN | UNCOATED

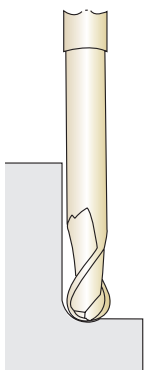
p.A115

◆ 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)	D_1	D_2	L_1	L_3	L_2	D_3
89573	**89573TC**	R1/8	**1/4**	1/4	3/8	2-1/4	4	.220
89584	**89584TC**	R3/16	**3/8**	3/8	1/2	2-1/4	4	.345
89593	**89593TC**	R1/4	**1/2**	1/2	5/8	2-1/4	5	.470
89595	**89595TC**	R5/16	**5/8**	5/8	3/4	2-1/4	5	.585

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0003



◎ : Excellent ○ : Good

ISO	N									
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials	
VDI 3323	21	22	23	24	25	26	27	28	29	30
HRc										
HB	60	100	75	90	130	110	90	100		
Recommended	◎	◎	◎	◎	◎					

UNCOATED **E5522** SERIES
TiCN COATED **EG522** SERIES

ALU-POWER END MILLS

CARBIDE, 2 FLUTE 45° HELIX LONG LENGTH

▶ Suitable for high speed machining in aluminum and other non-ferrous materials, excellent surface finishes, superior chip removal.
▶ Mirror face-excellent surface finish.



CARBIDE | 2 | 45° | PLAIN | TiCN | UNCOATED

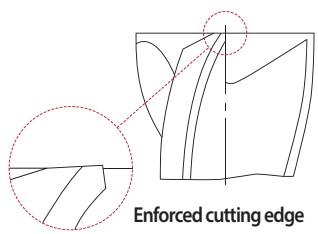
p.A116

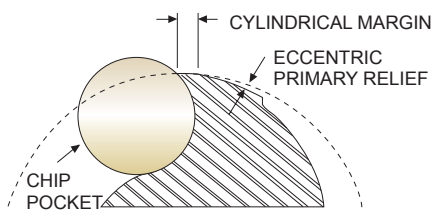
◇ Call for Availability

Unit : mm

EDP No.		Mill Diameter		Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED	Metric	Inch			
E5522030	EG522030	3.0	.1181	6	8	57
E5522040	EG522040	4.0	.1575	6	11	57
E5522050	EG522050	5.0	.1969	6	13	57
E5522060	EG522060	6.0	.2362	6	13	57
E5522080	EG522080	8.0	.3150	8	19	63
E5522100	EG522100	10.0	.3937	10	22	72
E5522120	EG522120	12.0	.4724	12	26	83
E5522140	EG522140	14.0	.5512	14	26	83
E5522160	EG522160	16.0	.6299	16	32	92

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	N									
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials	
VDI 3323	21	22	23	24	25	26	27	28	29	30
HRc										
HB	60	100	75	90	130	110	90	100		
Recommended	◎	◎	◎	◎	◎					

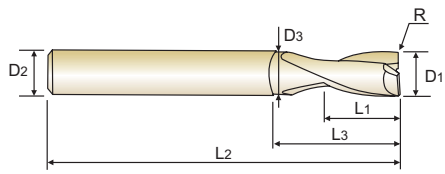
ALU-POWER END MILLS

PLAIN SHANK **EG930 SERIES**

CARBIDE, 2 FLUTE 25° HELIX STUB CUT LENGTH CORNER RADIUS

- 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.





CARBIDE | 2 | 25° | R ±0.025 | PLAIN | TiCN

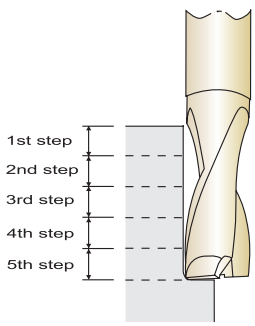
p.A116

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R (±0.025)	D_1		D_2	L_1	L_3	L_2	D_3
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

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-0.03	h6



STEP MILLING

◎ : Excellent ○ : Good

ISO	N									
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials	
VDI 3323	21	22	23	24	25	26	27	28	29	30
HRc										
HB	60	100	75	90	130	110	90	100		
Recommended	◎	◎	◎	◎	◎					

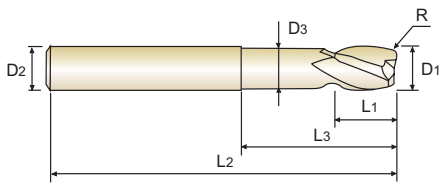
ALU-POWER END MILLS

PLAIN SHANK **EG909 SERIES**

CARBIDE, 2 FLUTE STUB CUT LENGTH CORNER RADIUS with NECK

- Excellent cutting qualities on stainless steel, Aluminum, copper.
- Increased tool life and higher cutting accuracy.
- Mirror face-excellent surface finish.





CARBIDE | 2 | 30° | R ±0.025 | PLAIN | TiCN

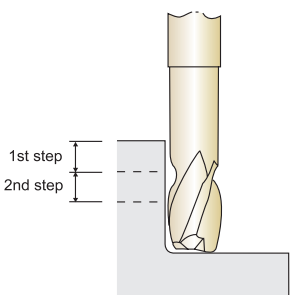
p.A117

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R (±0.025)	D_1		D_2	L_1	L_3	L_2	D_3
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

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-0.03	h6



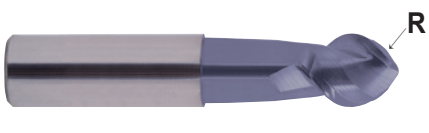
STEP MILLING

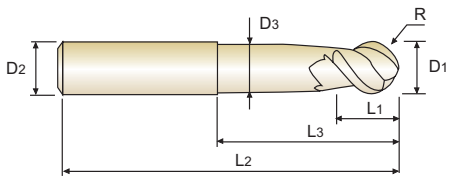
◎ : Excellent ○ : Good

ISO	N									
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials	
VDI 3323	21	22	23	24	25	26	27	28	29	30
HRc										
HB	60	100	75	90	130	110	90	100		
Recommended	◎	◎	◎	◎	◎					

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.





CARBIDE | 2 | 50° | R ±0.01 | PLAIN | TiCN

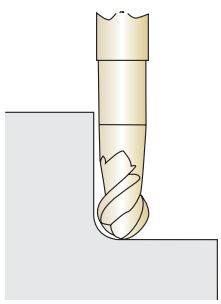
p.A117

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R (±0.01)	D_1		D_2	L_1	L_3	L_2	D_3
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

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
±0.02	h6



◎ : Excellent ○ : Good

ISO	N									
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials	
VDI 3323	21	22	23	24	25	26	27	28	29	30
HRc										
HB	60	100	75	90	130	110	90	100		
Recommended	◎	◎	◎	◎	◎					

ALU-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS

E5254 SERIES

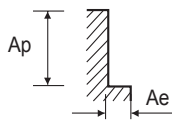
SFM(Vc) = ft./min.
IPT(fz) = in./tooth
RPM = rev./min.
IPM(Feed) = in./min.

2 FLUTE - SIDE CUTTING

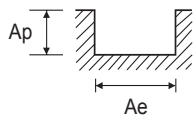
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø) 1/8	5/32	3/16	1/4	5/16	3/8	1/2	9/16	5/8
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	D1/8 ~ 3/8 : 0.25D D1/2 ~ D5/8 : 0.5D	1.0D	SFM(Vc)	325	410	490	655	655	785	1045	885	980
					IPT(fz)	.0018	.0022	.0026	.0030	.0044	.0052	.0064	.0073	.0079
					RPM	10000	10000	10000	10000	8000	8000	8000	6000	6000
					IPM(FEED)	35	43	51	59	71	83	102	87	95

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
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	1.0D	0.5D	SFM (Vc)	325	410	490	655	655	785	1045	885	980
					IPT (fz)	.0014	.0018	.0020	.0024	.0034	.0042	.0052	.0059	.0063
					RPM	10000	10000	10000	10000	8000	8000	8000	6000	6000
					IPM (FEED)	28	35	39	47	55	67	83	71	75



※ 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%.

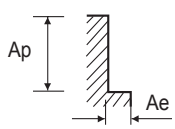
EG254 SERIES TiCN Coated

2 FLUTE - SIDE CUTTING

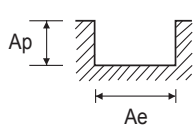
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø) 1/8	5/32	3/16	1/4	5/16	3/8	1/2	9/16	5/8
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	D1/8 ~ 3/8 : 0.25D D1/2 ~ D5/8 : 0.5D	1.0D	SFM(Vc)	395	490	590	785	785	940	1255	1060	1180
					IPT(fz)	.0024	.0028	.0033	.0040	.0057	.0067	.0084	.0092	.0102
					RPM	12000	12000	12000	12000	9600	9600	9600	7200	7200
					IPM(FEED)	57	66	80	95	109	128	161	132	147

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
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	1.0D	0.5D	SFM(Vc)	510	640	765	1020	980	1180	1570	1415	1570
					IPT(fz)	.0014	.0018	.0020	.0023	.0035	.0043	.0053	.0057	.0061
					RPM	15600	15600	15600	15600	12000	12000	12000	9600	9600
					IPM(FEED)	43	57	61	71	85	104	128	109	118



※ 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%.

E5980, E5981, E5982 SERIES

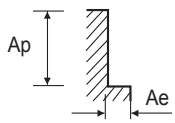
SFM(Vc) = ft./min.
IPT(fz) = in./tooth
RPM = rev./min.
IPM(Feed) = in./min.

3 FLUTE - SIDE CUTTING

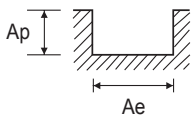
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø) 1/8	5/32	3/16	1/4	5/16	3/8	1/2	9/16	5/8
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	D1/8 ~ 3/8 : 0.25D D1/2 ~ D5/8 : 0.5D	1.0D	SFM(Vc)	325	410	490	655	655	785	1045	885	980
					IPT(fz)	.0014	.0017	.0020	.0024	.0035	.0041	.0051	.0058	.0063
					RPM	10000	10000	10000	10000	8000	8000	8000	6000	6000
					IPM(FEED)	43	52	61	71	85	99	123	104	113

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
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	1.0D	0.5D	SFM(Vc)	325	410	490	655	655	785	1045	885	980
					IPT(fz)	.0011	.0014	.0016	.0019	.0028	.0033	.0041	.0047	.0050
					RPM	10000	10000	10000	10000	8000	8000	8000	6000	6000
					IPM(FEED)	33	43	47	57	66	80	99	85	90



※ 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%.

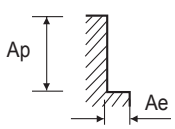
EG980, EG981, EG982 SERIES TiCN Coated

3 FLUTE - SIDE CUTTING

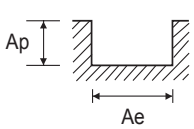
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø) 1/8	5/32	3/16	1/4	5/16	3/8	1/2	9/16	5/8
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	D1/8 ~ 3/8 : 0.25D D1/2 ~ D5/8 : 0.5D	1.0D	SFM(Vc)	395	490	590	785	785	940	1255	1060	1180
					IPT(fz)	.0015	.0019	.0022	.0026	.0039	.0045	.0056	.0063	.0068
					RPM	12000	12000	12000	12000	9600	9600	9600	7200	7200
					IPM(FEED)	55	68	80	92	111	129	160	135	147

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
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	1.0D	0.5D	SFM(Vc)	510	640	765	1020	980	1180	1570	1415	1570
					IPT(fz)	.0009	.0012	.0013	.0016	.0024	.0029	.0036	.0039	.0041
					RPM	15600	15600	15600	15600	12000	12000	12000	9600	9600
					IPM(FEED)	43	55	61	74	86	104	129	111	117



※ 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%.

ALU-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS

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

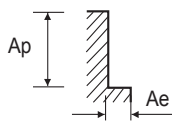
E5973 SERIES

2 FLUTE - SIDE CUTTING

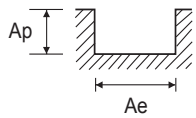
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø) 5/32	1/4	5/16	3/8	1/2	5/8
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	D5/32 ~ 3/8 : 0.25D D1/2 ~ D5/8: 0.5D	1.0D	SFM(Vc)	410	655	655	785	1045	980
					IPT(fz)	.0021	.0031	.0044	.0051	.0064	.0078
					RPM	10000	10000	8000	8000	8000	6000
					IPM(FEED)	42	61	70	82	103	94
	26-28	Copper and Copper Alloys (Bronze / Brass)	D5/32 ~ 3/8 : 0.25D D1/2 ~ D5/8 : 0.5D	1.0D	SFM(Vc)	125	195	190	225	300	295
					IPT(fz)	.0018	.0025	.0039	.0046	.0057	.0067
					RPM	3000	3000	2300	2300	2300	1800
					IPM(FEED)	11	15	18	21	26	24

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
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	1.0D	0.5D	SFM(Vc)	410	655	655	785	1045	980
					IPT(fz)	.0018	.0023	.0034	.0042	.0051	.0063
					RPM	10000	10000	8000	8000	8000	6000
					IPM(FEED)	36	45	55	67	82	76
	26-28	Copper and Copper Alloys (Bronze / Brass)	1.0D	0.5D	SFM(Vc)	125	195	190	225	300	295
					IPT(fz)	.0015	.0020	.0030	.0037	.0046	.0053
					RPM	3000	3000	2300	2300	2300	1800
					IPM(FEED)	9	12	14	17	21	19



※ 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%.

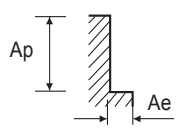
E5976 SERIES

2 FLUTE - SIDE CUTTING

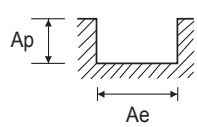
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø) 1/4	3/8	1/2	5/8
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	D1/4 ~ 3/8 : 0.25D D1/2 ~ D5/8 : 0.5D	1.0D	SFM(Vc)	525	630	840	785
					IPT(fz)	.0029	.0052	.0064	.0079
					RPM	8000	6400	6400	4800
					IPM(FEED)	47	66	82	76

2 FLUTE - SLOTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø) 1/4	3/8	1/2	5/8
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	1.0D	0.5D	SFM(Vc)	525	630	840	785
					IPT(fz)	.0024	.0042	.0052	.0063
					RPM	8000	6400	6400	4800
					IPM(FEED)	38	54	66	60



※ The Feed, in long & extra long types, should be reduced by around 50%.



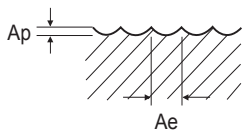
※ The Feed, in long & extra long types, should be reduced by around 50%.

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

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
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	0.5D	0.2D	SFM(Vc)	735	705	845	1125	1115
					IPT(fz)	.0025	.0037	.0043	.0055	.0063
					RPM	11200	8600	8600	8600	6800
					IPM(FEED)	55	63	74	95	85

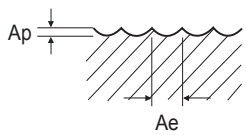


※ The Feed, in long & extra long types, should be reduced by around 50%.

EG978 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
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	0.5D	0.2D	SFM(Vc)	950	915	1100	1465	1440
					IPT(fz)	.0025	.0037	.0043	.0055	.0063
					RPM	14500	11200	11200	11200	8800
					IPM(FEED)	72	82	96	123	111

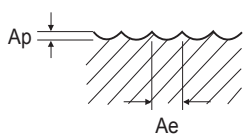


※ The Feed, in long & extra long types, should be reduced by around 50%.

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
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	0.5D	0.2D	SFM(Vc)	915	885	1060	1415	1390
					IPT(fz)	.0019	.0028	.0033	.0042	.0048
					RPM	14000	10800	10800	10800	8500
					IPM(FEED)	53	61	71	91	82
	26-28	Copper and Copper Alloys (Bronze / Brass)	0.5D	0.2D	SFM(Vc)	275	260	315	420	410
					IPT(fz)	.0015	.0023	.0028	.0036	.0040
					RPM	4200	3200	3200	3200	2500
					IPM(FEED)	13	15	18	23	20



※ The Feed, in long & extra long types, should be reduced by around 50%.

ALU-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS

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

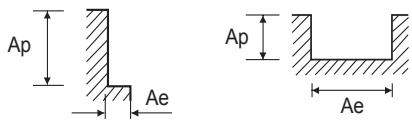
E5522 SERIES

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
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	D3 ~ 10 : 0.25D D12 ~ 16 : 0.5D	1.0D	SFM(Vc)	310	410	515	620	660	825	990	865	990
					IPT(fz)	.0018	.0022	.0026	.0030	.0044	.0052	.0064	.0073	.0079
					RPM	10000	10000	10000	10000	8000	8000	8000	6000	6000
					IPM(FEED)	35	43	51	59	71	83	102	87	95

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
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	1.0D	0.5D	SFM(Vc)	310	410	515	620	660	825	990	865	990
					IPT(fz)	.0014	.0018	.0020	.0024	.0034	.0042	.0052	.0059	.0063
					RPM	10000	10000	10000	10000	8000	8000	8000	6000	6000
					IPM(FEED)	28	35	39	47	55	67	83	71	75



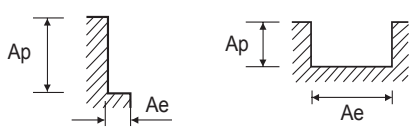
EG522, EG930 SERIES TiCN Coated

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
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	D3 ~ 10 : 0.25D D12 ~ 16 : 0.5D	1.0D	SFM(Vc)	400	535	670	805	825	1030	1235	1155	1320
					IPT(fz)	.0018	.0021	.0026	.0030	.0046	.0053	.0067	.0069	.0076
					RPM	13000	13000	13000	13000	10000	10000	10000	8000	8000
					IPM(FEED)	47	55	67	79	91	106	134	110	122

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
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	1.0D	0.5D	SFM(Vc)	400	535	670	805	825	1030	1235	1155	1320
					IPT(fz)	.0013	.0018	.0020	.0023	.0036	.0044	.0053	.0057	.0061
					RPM	13000	13000	13000	13000	10000	10000	10000	8000	8000
					IPM(FEED)	35	47	51	59	71	87	106	91	98



EG909 SERIES TiCN Coated

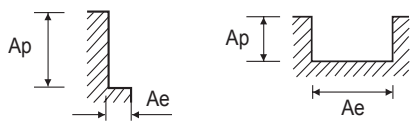
SFM(Vc) = ft./min.
IPT(fz) = in./tooth
RPM = rev./min.
IPM(Feed) = in./min.

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
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	~D10 : 0.25D D12 ~ 16 : 0.5D	1.0D	SFM(Vc)	535	805	825	1030	1235	1320
					IPT(fz)	.0021	.0030	.0046	.0053	.0067	.0076
					RPM	13000	13000	10000	10000	10000	8000
					IPM(FEED)	55	79	91	106	134	122
	26-28	Copper and Copper Alloys (Bronze / Brass)	~D10 : 0.25D D12 ~ 16 : 0.5D	1.0D	SFM(Vc)	160	240	245	310	370	395
					IPT(fz)	.001	.002	.003	.004	.005	.006
					RPM	3900	3900	3000	3000	3000	2400
					IPM(FEED)	14	20	23	27	34	31

2 FLUTE - SLOTTING

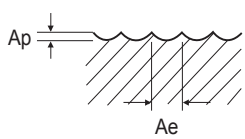
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø) 4.0	6.0	8.0	10.0	12.0	16.0
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	1.0D	0.5D	SFM(Vc)	535	805	825	1030	1235	1320
					IPT(fz)	.0018	.0023	.0036	.0044	.0053	.0061
					RPM	13000	13000	10000	10000	10000	8000
					IPM(FEED)	47	59	71	87	106	98
	26-28	Copper and Copper Alloys (Bronze / Brass)	1.0D	0.5D	SFM(Vc)	160	240	245	310	370	395
					IPT(fz)	.001	.001	.003	.003	.004	.005
					RPM	3900	3900	3000	3000	3000	2400
					IPM(FEED)	12	15	18	22	27	25



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
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	0.5D	0.2D	SFM(Vc)	1115	1155	1445	1730	1815
					IPT(fz)	.0019	.0028	.0033	.0042	.0048
					RPM	18000	14000	14000	14000	11000
					IPM(FEED)	69	79	93	118	106
	26-28	Copper and Copper Alloys (Bronze / Brass)	0.5D	0.2D	SFM(Vc)	340	345	435	520	545
					IPT(fz)	.001	.002	.002	.003	.003
					RPM	5500	4200	4200	4200	3300
					IPM(FEED)	17	20	23	30	26



SQUARE **JAG95 SERIES**
CORNER RADIUS **JAG97 SERIES**

ALU-POWER HPC END MILLS

CARBIDE, 3 FLUTE STANDARD LENGTH

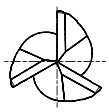
- Balanced cutting with less vibration
- Ability to run at higher speeds with less heat in aluminum
- More efficient chip evacuation
- Ability to counteract extreme radial forces
- DLC Coating provides edge strength and unsurpassed tool life

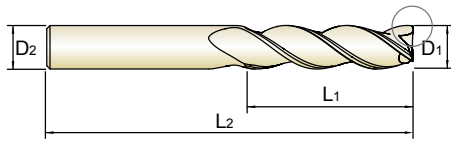
Square

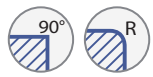


Corner Radius









CARBIDE | 3 | 37° | PLAIN | DLC

p.A127

Unit : INCH

OD (D_1)	SD (D_2)	LOC (L_1)	OAL (L_2)	Square End	Corner Radius						
					.010	.020	.030	.060	.090	.120	.190
				EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
1/8	1/8	1/4	1-1/2	JAG95008	JAG97008	JAG97899	JAG97901	-	-	-	-
		3/8	1-1/2	JAG95901	JAG97902	JAG97701	JAG97903	-	-	-	-
		1/2	2	JAG95931	JAG97702	JAG97703	JAG97704	-	-	-	-
		5/8	2-1/4	JAG95932	JAG97705	JAG97706	JAG97707	-	-	-	-
3/16	3/16	5/16	2	JAG95012	JAG97012	JAG97708	JAG97904	-	-	-	-
		9/16	2	JAG95902	JAG97905	JAG97709	JAG97906	-	-	-	-
		3/4	2-1/2	JAG95933	JAG97710	JAG97711	JAG97712	-	-	-	-
		1	2-1/2	JAG95934	JAG97713	JAG97714	JAG97715	-	-	-	-
1/4	1/4	3/8	2	JAG95016	JAG97016	JAG97716	JAG97907	JAG97908	-	-	-
		5/8	2-1/2	JAG95903	JAG97909	JAG97717	JAG97910	JAG97911	-	-	-
		7/8	3	JAG95929	JAG97892	JAG97718	JAG97893	JAG97894	-	-	-
		1-1/4	3-1/4	JAG95904	JAG97912	JAG97719	JAG97913	JAG97914	-	-	-
		1-1/2	3	JAG95935	JAG97720	JAG97721	JAG97722	JAG97723	-	-	-
5/16	5/16	7/16	2	JAG95020	JAG97020	JAG97724	JAG97915	JAG97916	JAG97917	-	-
		5/8	2-1/2	JAG95905	JAG97918	JAG97725	JAG97919	JAG97920	JAG97921	-	-
		13/16	3	JAG95930	JAG97895	-	JAG97896	JAG97897	JAG97898	-	-
		1	3	JAG95936	JAG97726	JAG97727	JAG97728	JAG97729	JAG97730	-	-
		1-1/4	3-1/2	JAG95906	JAG97922	JAG97731	JAG97923	JAG97924	JAG97925	-	-

NEXT PAGE ▶

Outside Diameter Tolerences (inch)		Shank Diameter Tolerance
Diameter	Tolerance	
1/8 – 3/16	+0/-.00032	h6
1/4 – 3/8	+0/-.00035	
1/2 – 5/8	+0/-.00043	

◎ : Excellent ○ : Good

ISO	N											
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials (Duroplastic)			
VDI 3323	21	22	23	24	25	26	27	28	29.1	29.2	29.3	30
HRc												
HB	60	100	75	90	130	110	90	100				
Recommended	◎	◎	◎	◎	○	○	○	○	○			

ALU-POWER HPC END MILLS

CARBIDE, 3 FLUTE STANDARD LENGTH

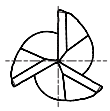
- Balanced cutting with less vibration
- Ability to run at higher speeds with less heat in aluminum
- More efficient chip evacuation
- Ability to counteract extreme radial forces
- DLC Coating provides edge strength and unsurpassed tool life

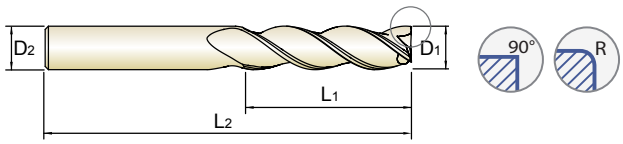
Square



Corner Radius







CARBIDE | 3 | 37° | PLAIN | DLC

p.A127

Unit : INCH

OD (D_1)	SD (D_2)	LOC (L_1)	OAL (L_2)	Square End	Corner Radius						
					.010	.020	.030	.060	.090	.120	.190
				EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
3/8	3/8	1/2	2	JAG95024	JAG97024	JAG97732	JAG97926	JAG97927	JAG97928	JAG97929	-
		1	2-1/2	JAG95907	JAG97930	JAG97733	JAG97931	JAG97932	JAG97933	JAG97934	-
		1-1/4	3	JAG95937	JAG97734	JAG97735	JAG97736	JAG97737	JAG97738	JAG97739	-
		1-1/2	3-1/2	JAG95908	JAG97935	JAG97740	JAG97936	JAG97937	JAG97938	JAG97939	-
		2	4	JAG95909	JAG97940	JAG97741	JAG97941	JAG97942	JAG97943	JAG97944	-
7/16	7/16	9/16	2-1/2	JAG95028	JAG97028	JAG97742	JAG97945	JAG97946	JAG97947	JAG97948	-
		1-1/4	2-3/4	JAG95910	JAG97949	JAG97743	JAG97950	JAG97951	JAG97952	JAG97953	-
		2	4	JAG95911	JAG97954	JAG97744	JAG97955	JAG97956	JAG97957	JAG97958	-
1/2	1/2	5/8	2-1/2	JAG95032	JAG97032	JAG97745	JAG97959	JAG97960	JAG97961	JAG97962	JAG97963
		1	3	JAG95927	JAG97879	JAG97746	JAG97880	JAG97881	JAG97882	JAG97883	JAG97884
		1-1/4	3	JAG95912	JAG97964	JAG97747	JAG97965	JAG97966	JAG97967	JAG97968	JAG97969
		1-5/8	4	JAG95913	JAG97970	JAG97748	JAG97971	JAG97972	JAG97973	JAG97974	JAG97975
		2	4	JAG95914	JAG97976	JAG97749	JAG97977	JAG97978	JAG97979	JAG97980	JAG97981
5/8	5/8	3/4	3	JAG95040	JAG97040	JAG97752	JAG97994	JAG97995	JAG97996	JAG97997	JAG97998
		1-1/4	3-1/4	JAG95938	JAG97753	JAG97754	JAG97755	JAG97756	JAG97757	JAG97758	JAG97759
		1-5/8	3-1/2	JAG95917	JAG97999	JAG97760	JAG97801	JAG97802	JAG97803	JAG97804	JAG97805
		2-1/8	4	JAG95939	JAG97761	JAG97762	JAG97763	JAG97764	JAG97765	JAG97766	JAG97767

Outside Diameter Tolerences (inch)		Shank Diameter Tolerance
Diameter	Tolerance	
1/8 – 3/16	+0/-.00032	h6
1/4 – 3/8	+0/-.00035	
1/2 – 5/8	+0/-.00043	

◎ : Excellent ○ : Good

ISO	N											
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials (Duroplastic)			
VDI 3323	21	22	23	24	25	26	27	28	29.1	29.2	29.3	30
HRc												
HB	60	100	75	90	130	110	90	100				
Recommended	◎	◎	◎	◎	○	○	○	○	○			

ALU-POWER HPC END MILLS

CARBIDE, 3 FLUTE STANDARD LENGTH

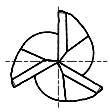
- Balanced cutting with less vibration
- Ability to run at higher speeds with less heat in aluminum
- More efficient chip evacuation
- Ability to counteract extreme radial forces

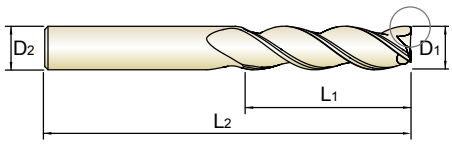
Square

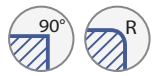


Corner Radius









CARBIDE | 3 | 37° | PLAIN | UNCOATED

p.A127

Unit : INCH

OD (D_1)	SD (D_2)	LOC (L_1)	OAL (L_2)	Square End	Corner Radius						
					.010	.020	.030	.060	.090	.120	.190
				EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
1/8	1/8	1/4	1-1/2	E5G95008	E5G97008	E5G97899	E5G97901	-	-	-	-
		3/8	1-1/2	E5G95901	E5G97902	E5G97701	E5G97903	-	-	-	-
		1/2	2	E5G95931	E5G97702	E5G97703	E5G97704	-	-	-	-
		5/8	2-1/4	E5G95932	E5G97705	E5G97706	E5G97707	-	-	-	-
3/16	3/16	5/16	2	E5G95012	E5G97012	E5G97708	E5G97904	-	-	-	-
		9/16	2	E5G95902	E5G97905	E5G97709	E5G97906	-	-	-	-
		3/4	2-1/2	E5G95933	E5G97710	E5G97711	E5G97712	-	-	-	-
		1	2-1/2	E5G95934	E5G97713	E5G97714	E5G97715	-	-	-	-
1/4	1/4	3/8	2	E5G95016	E5G97016	E5G97716	E5G97907	E5G97908	-	-	-
		5/8	2-1/2	E5G95903	E5G97909	E5G97717	E5G97910	E5G97911	-	-	-
		7/8	3	E5G95929	E5G97892	E5G97718	E5G97893	E5G97894	-	-	-
		1-1/4	3-1/4	E5G95904	E5G97912	E5G97719	E5G97913	E5G97914	-	-	-
		1-1/2	3	E5G95935	E5G97720	E5G97721	E5G97722	E5G97723	-	-	-
5/16	5/16	7/16	2	E5G95020	E5G97020	E5G97724	E5G97915	E5G97916	E5G97917	-	-
		5/8	2-1/2	E5G95905	E5G97918	E5G97725	E5G97919	E5G97920	E5G97921	-	-
		13/16	3	E5G95930	E5G97895	-	E5G97896	E5G97897	E5G97898	-	-
		1	3	E5G95936	E5G97726	E5G97727	E5G97728	E5G97729	E5G97730	-	-
		1-1/4	3-1/2	E5G95906	E5G97922	E5G97731	E5G97923	E5G97924	E5G97925	-	-

Outside Diameter Tolerences (inch)		Shank Diameter Tolerance
Diameter	Tolerance	
1/8 – 3/16	+0/-.00032	h6
1/4 – 3/8	+0/-.00035	
1/2 – 5/8	+0/-.00043	

NEXT PAGE ▶

◎ : Excellent ○ : Good

ISO	N											
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials (Duroplastic)			
VDI 3323	21	22	23	24	25	26	27	28	29.1	29.2	29.3	30
HRc												
HB	60	100	75	90	130	110	90	100				
Recommended	◎	◎	◎	◎	○	○	○	○	○			

ALU-POWER HPC END MILLS

CARBIDE, 3 FLUTE STANDARD LENGTH

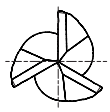
- Balanced cutting with less vibration
- Ability to run at higher speeds with less heat in aluminum
- More efficient chip evacuation
- Ability to counteract extreme radial forces

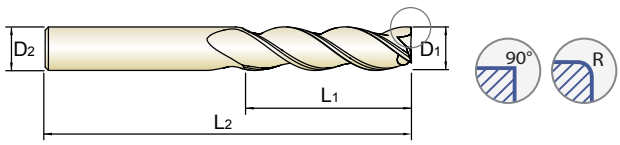
Square



Corner Radius







CARBIDE | 3 | 37° | PLAIN | UNCOATED

p.A127

Unit : INCH

OD (D_1)	SD (D_2)	LOC (L_1)	OAL (L_2)	Square End	Corner Radius						
					.010	.020	.030	.060	.090	.120	.190
				EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
3/8	3/8	1/2	2	E5G95024	E5G97024	E5G97732	E5G97926	E5G97927	E5G97928	E5G97929	-
		1	2-1/2	E5G95907	E5G97930	E5G97733	E5G97931	E5G97932	E5G97933	E5G97934	-
		1-1/4	3	E5G95937	E5G97734	E5G97735	E5G97736	E5G97737	E5G97738	E5G97739	-
		1-1/2	3-1/2	E5G95908	E5G97935	E5G97740	E5G97936	E5G97937	E5G97938	E5G97939	-
		2	4	E5G95909	E5G97940	E5G97741	E5G97941	E5G97942	E5G97943	E5G97944	-
7/16	7/16	9/16	2-1/2	E5G95028	E5G97028	E5G97742	E5G97945	E5G97946	E5G97947	E5G97948	-
		1-1/4	2-3/4	E5G95910	E5G97949	E5G97743	E5G97950	E5G97951	E5G97952	E5G97953	-
		2	4	E5G95911	E5G97954	E5G97744	E5G97955	E5G97956	E5G97957	E5G97958	-
1/2	1/2	5/8	2-1/2	E5G95032	E5G97032	E5G97745	E5G97959	E5G97960	E5G97961	E5G97962	E5G97963
		1	3	E5G95927	E5G97879	E5G97746	E5G97880	E5G97881	E5G97882	E5G97883	E5G97884
		1-1/4	3	E5G95912	E5G97964	E5G97747	E5G97965	E5G97966	E5G97967	E5G97968	E5G97969
		1-5/8	4	E5G95913	E5G97970	E5G97748	E5G97971	E5G97972	E5G97973	E5G97974	E5G97975
		2	4	E5G95914	E5G97976	E5G97749	E5G97977	E5G97978	E5G97979	E5G97980	E5G97981
5/8	5/8	3/4	3	E5G95040	E5G97040	E5G97752	E5G97994	E5G97995	E5G97996	E5G97997	E5G97998
		1-1/4	3-1/4	E5G95938	E5G97753	E5G97754	E5G97755	E5G97756	E5G97757	E5G97758	E5G97759
		1-5/8	3-1/2	E5G95917	E5G97999	E5G97760	E5G97801	E5G97802	E5G97803	E5G97804	E5G97805
		2-1/8	4	E5G95939	E5G97761	E5G97762	E5G97763	E5G97764	E5G97765	E5G97766	E5G97767

Outside Diameter Tolerences (inch)		Shank Diameter Tolerance
Diameter	Tolerance	
1/8 – 3/16	+0/-.00032	h6
1/4 – 3/8	+0/-.00035	
1/2 – 5/8	+0/-.00043	

◎ : Excellent ○ : Good

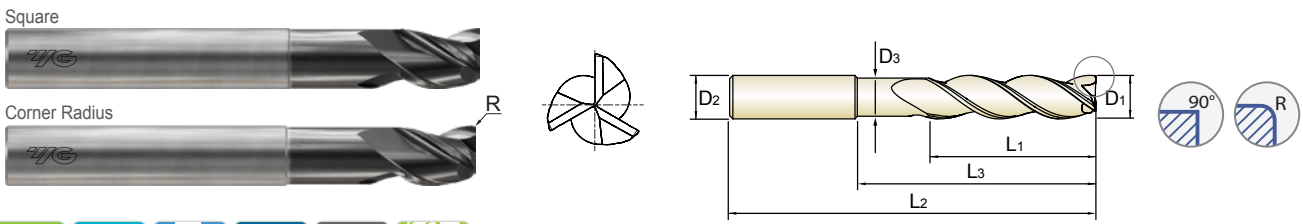
ISO	N											
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials (Duroplastic)			
VDI 3323	21	22	23	24	25	26	27	28	29.1	29.2	29.3	30
HRc												
HB	60	100	75	90	130	110	90	100				
Recommended	◎	◎	◎	◎	○	○	○	○	○			

SQUARE **JAG96 SERIES**
CORNER RADIUS **JAG98 SERIES**

ALU-POWER HPC END MILLS

CARBIDE, 3 FLUTE EXTENDED LENGTH

- 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



CARBIDE | 3 | 37° | PLAIN | DLC

p.A127

Unit : INCH

OD (D_1)	SD (D_2)	LOC (L_1)	LBS (L_3)	Neck Dia. (D_3)	OAL (L_2)	Square End	Corner Radius					
							.010	.030	.060	.090	.120	.190
						EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
1/8	1/8	5/32	1/2	-	2-1/2	JAG96912	JAG98996	JAG98997	-	-	-	-
			5/8	-	2-1/2	JAG96913	JAG98998	JAG98999	-	-	-	-
			3/4	-	3	JAG96914	JAG98801	JAG98802	-	-	-	-
			1	-	3	JAG96915	JAG98803	JAG98804	-	-	-	-
3/16	3/16	7/32	1/2	-	2-1/2	JAG96916	JAG98805	JAG98806	-	-	-	-
			5/8	-	2-1/2	JAG96917	JAG98807	JAG98808	-	-	-	-
			3/4	-	3	JAG96918	JAG98809	JAG98810	-	-	-	-
			1	-	3	JAG96919	JAG98811	JAG98812	-	-	-	-
1/4	1/4	3/8	3/4	.220	2-1/2	JAG96016	JAG98016	JAG98901	JAG98902	-	-	-
			1-1/8	.220	3	JAG96901	JAG98903	JAG98904	JAG98905	-	-	-
			1-5/8	.220	3-1/2	JAG96920	JAG98813	JAG98814	JAG98815	-	-	-
			2-1/8	.220	4	JAG96921	JAG98816	JAG98817	JAG98818	-	-	-
			2-1/2	.220	4	JAG96922	JAG98819	JAG98820	JAG98821	-	-	-
3/8	3/8	1/2	1-1/8	.345	3	JAG96024	JAG98024	JAG98906	JAG98907	JAG98908	JAG98909	-
			1-5/8	.345	3-1/2	JAG96923	JAG98822	JAG98823	JAG98824	JAG98825	JAG98826	-
			2-1/8	.345	4	JAG96902	JAG98910	JAG98911	JAG98912	JAG98913	JAG98914	-
1/2	1/2	5/8	1-3/8	.470	3	JAG96032	-	JAG98915	JAG98916	JAG98917	JAG98918	JAG98919
			1-3/4	.470	3-1/2	JAG96926	-	JAG98837	JAG98838	JAG98839	JAG98840	JAG98841
			2-1/4	.470	4	JAG96903	-	JAG98921	JAG98922	JAG98923	JAG98924	JAG98925
5/8	5/8	3/4	1-5/8	.585	4	JAG96040	-	JAG98938	JAG98939	JAG98940	JAG98941	JAG98942
			2-1/2	.585	5	JAG96928	-	JAG98847	JAG98848	JAG98849	JAG98850	JAG98851

Outside Diameter Tolerences (inch)		Shank Diameter Tolerance
Diameter	Tolerance	
1/8 – 3/16	+0/-.00032	h6
1/4 – 3/8	+0/-.00035	
1/2 – 5/8	+0/-.00043	

◎ : Excellent ○ : Good

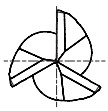
ISO	N											
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials (Duroplastic)			
VDI 3323	21	22	23	24	25	26	27	28	29.1	29.2	29.3	30
HRc												
HB	60	100	75	90	130	110	90	100				
Recommended	◎	◎	◎	◎	○	○	○	○	○			

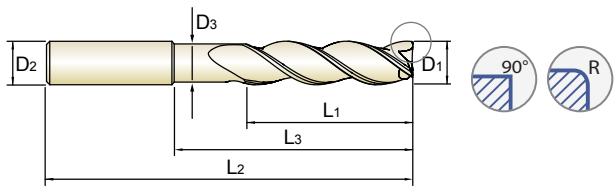
ALU-POWER HPC END MILLS

CARBIDE, 3 FLUTE EXTENDED LENGTH

- 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







CARBIDE | 3 | 37° | PLAIN | UNCOATED

p.A127

Unit : INCH

OD (D_1)	SD (D_2)	LOC (L_1)	LBS (L_3)	Neck Dia. (D_3)	OAL (L_2)	Square End	Corner Radius					
							.010	.030	.060	.090	.120	.190
						EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
1/8	1/8	5/32	1/2	.117	2-1/2	E5G96912	E5G98996	E5G98997	-	-	-	-
			5/8	.117	2-1/2	E5G96913	E5G98998	E5G98999	-	-	-	-
			3/4	.117	3	E5G96914	E5G98801	E5G98802	-	-	-	-
			1	.117	3	E5G96915	E5G98803	E5G98804	-	-	-	-
3/16	3/16	7/32	1/2	.172	2-1/2	E5G96916	E5G98805	E5G98806	-	-	-	-
			5/8	.172	2-1/2	E5G96917	E5G98807	E5G98808	-	-	-	-
			3/4	.172	3	E5G96918	E5G98809	E5G98810	-	-	-	-
			1	.172	3	E5G96919	E5G98811	E5G98812	-	-	-	-
1/4	1/4	3/8	3/4	.220	2-1/2	E5G96016	E5G98016	E5G98901	E5G98902	-	-	-
			1-1/8	.220	3	E5G96901	E5G98903	E5G98904	E5G98905	-	-	-
			1-5/8	.220	3-1/2	E5G96920	E5G98813	E5G98814	E5G98815	-	-	-
			2-1/8	.220	4	E5G96921	E5G98816	E5G98817	E5G98818	-	-	-
			2-1/2	.220	4	E5G96922	E5G98819	E5G98820	E5G98821	-	-	-
3/8	3/8	1/2	1-1/8	.345	3	E5G96024	E5G98024	E5G98906	E5G98907	E5G98908	E5G98909	-
			1-5/8	.345	3-1/2	E5G96923	E5G98822	E5G98823	E5G98824	E5G98825	E5G98826	-
			2-1/8	.345	4	E5G96902	E5G98910	E5G98911	E5G98912	E5G98913	E5G98914	-
1/2	1/2	5/8	1-3/8	.470	3	E5G96032	-	E5G98915	E5G98916	E5G98917	E5G98918	E5G98919
			1-3/4	.470	3-1/2	E5G96926	-	E5G98837	E5G98838	E5G98839	E5G98840	E5G98841
			2-1/4	.470	4	E5G96903	-	E5G98921	E5G98922	E5G98923	E5G98924	E5G98925
5/8	5/8	3/4	1-5/8	.585	4	E5G96040	-	E5G98938	E5G98939	E5G98940	E5G98941	E5G98942
			2-1/2	.585	5	E5G96928	-	E5G98847	E5G98848	E5G98849	E5G98850	E5G98851

Outside Diameter Tolerences (inch)		Shank Diameter Tolerance
Diameter	Tolerance	
1/8 – 3/16	+0/-.00032	h6
1/4 – 3/8	+0/-.00035	
1/2 – 5/8	+0/-.00043	

◎ : Excellent ○ : Good

ISO	N											
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials (Duroplastic)			
VDI 3323	21	22	23	24	25	26	27	28	29.1	29.2	29.3	30
HRc												
HB	60	100	75	90	130	110	90	100				
Recommended	◎	◎	◎	◎	○	○	○	○	○			

DLC **JAI58 SERIES**

UNCOATED **E5I58 SERIES**

ALU-POWER HPC END MILLS

CARBIDE, 3 FLUTE STANDARD LENGTH BALL NOSE

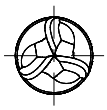
- Balanced cutting with less vibration
- Ability to run at higher speeds with less heat in aluminum
- More efficient chip evacuation
- Ability to counteract extreme radial forces
- DLC Coating provides edge strength and unsurpassed tool life

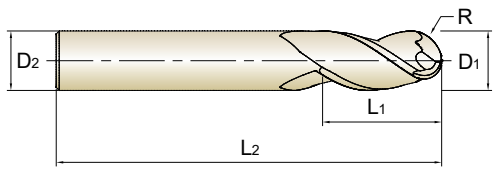
DLC



Uncoated







CARBIDE | 3 | 37° | R ±.0005 | PLAIN | DLC | UNCOATED

p.A128

Unit : INCH

OD (D_1)	Radius of Ball Nose R (±.0005)	SD (D_2)	LOC (L_1)	OAL (L_2)	Ball Nose	
					DLC	Uncoated
1/8	1/16	1/8	1/4	1-1/2	JAI58008	E5I58008
			3/8	1-1/2	JAI58901	E5I58901
			1/2	2	JAI58915	E5I58915
			5/8	2-1/4	JAI58916	E5I58916
3/16	3/32	3/16	5/16	2	JAI58012	E5I58012
			9/16	2	JAI58902	E5I58902
			3/4	2-1/2	JAI58917	E5I58917
1/4	1/8	1/4	3/8	2	JAI58016	E5I58016
			5/8	2-1/2	JAI58903	E5I58903
			7/8	3	JAI58918	E5I58918
			1-1/4	3-1/4	JAI58919	E5I58919
5/16	5/32	5/16	7/16	2	JAI58920	E5I58920
			5/8	2-1/2	JAI58020	E5I58020
			1	3	JAI58921	E5I58921
			1-1/4	3-1/2	JAI58904	E5I58904
3/8	3/16	3/8	1/2	2	JAI58024	E5I58024
			1	2-1/2	JAI58905	E5I58905
			1-1/4	3	JAI58922	E5I58922
			1-1/2	3-1/2	JAI58906	E5I58906

NEXT PAGE ▶

Outside Diameter Tolerences (inch)		Shank Diameter Tolerance
Diameter	Tolerance	
1/8 – 3/16	+0/-.00032	h6
1/4 – 3/8	+0/-.00035	
1/2 – 5/8	+0/-.00043	

◎ : Excellent ○ : Good

ISO	N											
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials (Duroplastic)			
VDI 3323	21	22	23	24	25	26	27	28	29.1	29.2	29.3	30
HRc												
HB	60	100	75	90	130	110	90	100				
Recommended	◎	◎	◎	◎	○	○	○	○	○			

ALU-POWER HPC END MILLS

CARBIDE, 3 FLUTE STANDARD LENGTH BALL NOSE

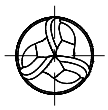
- Balanced cutting with less vibration
- Ability to run at higher speeds with less heat in aluminum
- More efficient chip evacuation
- Ability to counteract extreme radial forces
- DLC Coating provides edge strength and unsurpassed tool life

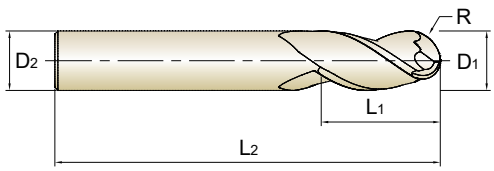
DLC



Uncoated







CARBIDE | 3 | 37° | R ±.0005 | PLAIN | DLC | UNCOATED

p.A128

Unit : INCH

OD (D_1)	Radius of Ball Nose R (±.0005)	SD (D_2)	LOC (L_1)	OAL (L_2)	Ball Nose	
					DLC	Uncoated
7/16	7/32	7/16	9/16	2-1/2	JAI58028	E5I58028
			1-1/4	2-3/4	JAI58907	E5I58907
1/2	1/4	1/2	5/8	2-1/2	JAI58032	E5I58032
			1	3	JAI58908	E5I58908
			1-1/4	3	JAI58923	E5I58923
			1-5/8	4	JAI58909	E5I58909
			2	4	JAI58910	E5I58910
5/8	5/16	5/8	3/4	3	JAI58040	E5I58040
			1-1/4	3-1/4	JAI58924	E5I58924
			1-5/8	3-1/2	JAI58911	E5I58911
			2-1/8	4	JAI58925	E5I58925

Outside Diameter Tolerences (inch)		Shank Diameter Tolerance
Diameter	Tolerance	
1/8 – 3/16	+0/-.00032	h6
1/4 – 3/8	+0/-.00035	
1/2 – 5/8	+0/-.00043	

◎ : Excellent ○ : Good

ISO	N											
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials (Duroplastic)			
VDI 3323	21	22	23	24	25	26	27	28	29.1	29.2	29.3	30
HRc												
HB	60	100	75	90	130	110	90	100				
Recommended	◎	◎	◎	◎	○	○	○	○	○			

DLC **JAI59 SERIES**
UNCOATED **E5I59 SERIES**

ALU-POWER HPC END MILLS

CARBIDE, 3 FLUTE EXTENTED LENGTH BALL NOSE

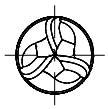
- Balanced cutting with less vibration
- Ability to run at higher speeds with less heat in aluminum
- More efficient chip evacuation
- Ability to counteract extreme radial forces
- DLC Coating provides edge strength and unsurpassed tool life

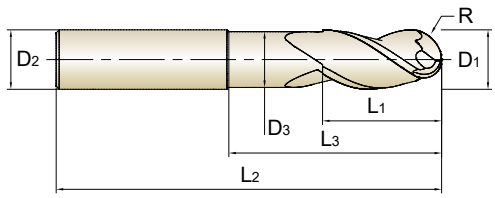
DLC



Uncoated







CARBIDE | 3 | 37° | R ±.0005 | PLAIN | DLC | UNCOATED

p.A128

Unit : INCH

OD (D_1)	Radius of Ball Nose R (±.0005)	SD (D_2)	LOC (L_1)	LBS (L_3)	Neck Dia. (D_3)	OAL (L_2)	Ball Nose	
							DLC	Uncoated
1/8	1/16	1/8	5/32	1/2	.117	2-1/2	JAI59906	E5I59906
				3/4	.117	3	JAI59907	E5I59907
				1	.117	3	JAI59908	E5I59908
				1-1/4	.117	3	JAI59909	E5I59909
				1-1/2	.117	3	JAI59910	E5I59910
3/16	3/32	3/16	7/32	1/2	.172	2-1/2	JAI59911	E5I59911
				3/4	.172	3	JAI59912	E5I59912
				1	.172	3	JAI59913	E5I59913
				1-5/16	.172	3	JAI59914	E5I59914
				1-1/2	.172	3	JAI59915	E5I59915
1/4	1/8	1/4	3/8	3/4	.220	2-1/2	JAI59916	E5I59916
				1-1/8	.220	3	JAI59917	E5I59917
				1-5/8	.220	3-1/2	JAI59918	E5I59918
				2-1/8	.220	4	JAI59919	E5I59919
				2-1/2	.220	4	JAI59920	E5I59920
				3	.220	4-1/2	JAI59921	E5I59921
5/16	5/32	5/16	7/16	1-1/8	.282	4	JAI59922	E5I59922
				1-3/4	.282	4	JAI59923	E5I59923
				2-1/8	.282	4	JAI59924	E5I59924
3/8	3/16	3/8	1/2	1-1/8	.345	3	JAI59925	E5I59925
				1-5/8	.345	3-1/2	JAI59926	E5I59926
				2-1/8	.345	4	JAI59024	E5I59024
1/2	1/4	1/2	5/8	1-3/8	.470	3	JAI59930	E5I59930
				1-3/4	.470	3-1/2	JAI59931	E5I59931
				2-1/4	.470	4	JAI59032	E5I59032
5/8	5/16	5/8	3/4	1-5/8	.585	4	JAI59937	E5I59937
				2-1/2	.585	5	JAI59938	E5I59938

Outside Diameter Tolerences (inch)		Shank Diameter Tolerance
Diameter	Tolerance	
1/8 – 3/16	+0/-.00032	h6
1/4 – 3/8	+0/-.00035	
1/2 – 5/8	+0/-.00043	

◎ : Excellent ○ : Good

ISO	N											
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials (Duroplastic)			
VDI 3323	21	22	23	24	25	26	27	28	29.1	29.2	29.3	30
HRc												
HB	60	100	75	90	130	110	90	100				
Recommended	◎	◎	◎	◎	○	○	○	○	○			

JAG95, JAG97, JAG96, JAG98 SERIES — DLC

E5G95, E5G97, E5G96, E5G98 SERIES — 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	3/16	1/4	5/16	3/8	1/2	5/8
N	21-22	Aluminum-wrought alloy	60 / 100	1.0D	1.0D	SFM (Vc)	2000	2000	2000	2000	2000	2000	2000
						IPT (fz)	.0010	.0015	.0030	.0038	.0045	.0060	.0066
						RPM	61100	40700	30500	24400	20400	15300	12200
						IPM (FEED)	183	183	275	278	275	275	242
	23-25	Aluminum-cast, alloyed	75 / 90 / 130	1.0D	1.0D	SFM (Vc)	600	600	600	600	600	600	600
						IPT (fz)	.0010	.0015	.0030	.0038	.0045	.0060	.0066
						RPM	18340	12220	9170	7330	6110	4580	3670
						IPM (FEED)	55	55	83	83	83	83	73
	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	.0012	.0020	.0025	.0040	.0050	.0055
						RPM	26890	17930	13450	10760	8960	6720	5380
						IPM (FEED)	65	65	81	81	108	101	89
	29.1	Non Metallic Materials (Duroplastic)	-	1.0D	1.0D	SFM (Vc)	1670	1670	1670	1670	1670	1670	1670
						IPT (fz)	.0015	.0023	.0040	.0050	.0075	.0100	.0110
						RPM	51040	34020	25520	20410	17010	12760	10210
						IPM (FEED)	230	235	306	306	383	383	337

3-FLUTE - SIDE CUTTING



ISO	VDI 3323	Material Description	Hardness (HB)	Ae	Ap	Parameter	Mill Diameter (Ø) 1/8	3/16	1/4	5/16	3/8	1/2	5/8
N	21-22	Aluminum-wrought alloy	60 / 100	0.5D	1.5D	SFM (Vc)	3000	3000	3000	3000	3000	3000	3000
						IPT (fz)	.0010	.0015	.0030	.0038	.0045	.0060	.0066
						RPM	91700	61100	45800	36700	30600	23000	18300
						IPM (FEED)	275	275	412	418	413	414	362
	23-25	Aluminum-cast, alloyed	75 / 130	0.5D	1.5D	SFM (Vc)	800	800	800	800	800	800	800
						IPT (fz)	.0010	.0015	.0030	.0038	.0045	.0060	.0066
						RPM	24450	16300	12220	9780	8150	6110	4890
						IPM (FEED)	73	73	110	111	110	110	97
	26-28	Copper and Copper Alloys (Bronze / Brass)	110 / 90 / 100	0.5D	1.5D	SFM (Vc)	1150	1150	1150	1150	1150	1150	1150
						IPT (fz)	.0008	.0012	.0020	.0025	.0040	.0050	.0055
						RPM	35140	23430	17570	14060	11720	8790	7030
						IPM (FEED)	84	84	105	105	141	132	116
	29.1	Non Metallic Materials (Duroplastic)	-	0.5D	1.5D	SFM (Vc)	2070	2070	2070	2070	2070	2070	2070
						IPT (fz)	.0015	.0023	.0040	.0050	.0075	.0100	.0110
						RPM	63260	42170	31630	25300	21090	15820	12650
						IPM (FEED)	230	290	306	380	383	383	337

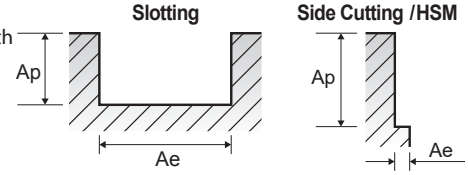
3-FLUTE - SIDE CUTTING HSM (Light)



ISO	VDI 3323	Material Description	Hardness (HB)	Ae	Ap	Parameter	Mill Diameter (Ø) 1/8	3/16	1/4	5/16	3/8	1/2	5/8
N	21-22	Aluminum-wrought alloy	60 / 100	0.05D	2.0D	SFM (Vc)	8000	8000	8000	8000	8000	8000	8000
						IPT (fz)	.0021	.0032	.0055	.0069	.0105	.0140	.0150
						RPM	244500	162900	122200	97800	81500	61100	48900
						IPM (FEED)	1540	1565	2016	2024	2567	2566	2201
	23-25	Aluminum-cast, alloyed	75 /130	0.05D	2.0D	SFM (Vc)	1200	1200	1200	1200	1200	1200	1200
						IPT (fz)	.0021	.0032	.0055	.0069	.0105	.0140	.0150
						RPM	36670	24450	18340	14670	12220	9170	7330
						IPM (FEED)	231	235	303	303	385	385	330
	26-28	Copper and Copper Alloys (Bronze / Brass)	110 / 90 / 100	0.05D	2.0D	SFM (Vc)	1850	1850	1850	1850	1850	1850	1850
						IPT (fz)	.0017	.0026	.0045	.0056	.0085	.0115	.0130
						RPM	56540	37690	28270	22610	18850	14130	11310
						IPM (FEED)	288	294	382	380	481	488	441
	29.1	Non Metallic Materials (Duroplastic)	-	0.05D	2.0D	SFM (Vc)	3350	3350	3350	3350	3350	3350	3350
						IPT (fz)	.0034	.0051	.0090	.0113	.0170	.0230	.0250
						RPM	102380	68250	51190	40950	34130	25590	20480
						IPM (FEED)	1044	1044	1382	1388	1740	1766	1536

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

JAI58, JAI59 SERIES DLC

E5I58, E5I59 SERIES Uncoated

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

3-FLUTE - PROFILING



ISO	VDI 3323	Material Description	Hardness (HB)	Ae	Ap	Parameter	Mill Diameter (Ø) 1/8	3/16	1/4	5/16	3/8	1/2	5/8
N	21-22	Aluminum-wrought alloy	60 / 100	0.2D	0.1D	SFM (Vc)	3690	3690	3690	3690	3690	3690	3690
						IPT (fz)	.0013	.0019	.0025	.0032	.0038	.0050	.0063
						RPM	112770	75180	56380	45110	37590	28190	22550
						IPM (FEED)	440	423	423	429	429	423	426
	23-25	Aluminum-cast, alloyed	75 / 90 / 130	0.2D	0.1D	SFM (Vc)	2950	2950	2950	2950	2950	2950	2950
						IPT (fz)	.0010	.0015	.0020	.0025	.0030	.0040	.0050
						RPM	90150	60100	45080	36060	30050	22540	18030
						IPM (FEED)	270	270	270	270	270	270	270
	26-28	Copper and Copper Alloys (Bronze / Brass)	110 / 90 / 100	0.2D	0.1D	SFM (Vc)	1700	1700	1700	1700	1700	1700	1700
						IPT (fz)	.0009	.0013	.0018	.0022	.0026	.0035	.0044
						RPM	51950	34630	25980	20780	17320	12990	10390
						IPM (FEED)	140	140	140	135	135	136	137
	29.1	Non Metallic Materials (Duroplastic)	-	0.2D	0.1D	SFM (Vc)	1840	1840	1840	1840	1840	1840	1840
						IPT (fz)	.0011	.0017	.0023	.0028	.0034	.0045	.0056
						RPM	56230	37490	28120	22490	18740	14060	11250
						IPM (FEED)	186	194	194	191	191	190	189

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

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:
(440 IPM /112770 RPM) X 15,000=58 IPM

CRX S END MILLS

PLAIN SHANK **SGED28 SERIES**

CARBIDE, 2 FLUTE BALL NOSE DLC COATING

▶ Designed for copper, copper alloys, soft graphite, reinforced plastics and materials affiliated with non-ferrous metals.
▶ Tight radius tolerance is applied (±0.005mm tolerance under R3).
▶ Excellent surface roughness from Mirror Face of cutting edges



CARBIDE | 2 | 30° | R ±0.005 | PLAIN | DLC

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Unit : mm

EDP No.	Radius of Ball Nose R(±0.005)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
SGED28010	R0.5	1.0	6	2.5	50
SGED28015	R0.75	1.5	6	4	50
SGED28020	R1.0	2.0	6	5	50
SGED28030	R1.5	3.0	6	8	60
SGED28040	R2.0	4.0	6	8	70
SGED28050	R2.5	5.0	6	12	90
SGED28060	R3.0	6.0	6	12	90
SGED28080	R4.0	8.0	8	16	100
SGED28100	R5.0	10.0	10	20	100
SGED28120	R6.0	12.0	12	25	110

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

◎ : Excellent ○ : Good

ISO	N									
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials	
VDI 3323	21	22	23	24	25	26	27	28	29	30
HRc										
HB	60	100	75	90	130	110	90	100		
Recommended	○	○				◎	◎	◎	○	

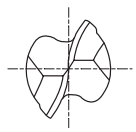
CRX S END MILLS

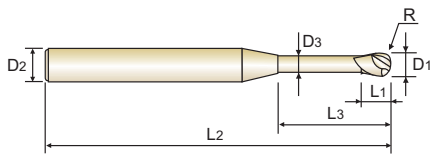
PLAIN SHANK **SGED27** SERIES

CARBIDE, 2 FLUTE BALL NOSE DLC COATING with EXTENDED NECK

- ▶ Designed for copper, copper alloys soft graphite, reinforced plastics and the materials affiliated with non-ferrous metals.
- ▶ Tight radius tolerance is applied (± 0.005mm tolerance under R3).
- ▶ Excellent surface roughness thanks to Mirror Face of cutting edges
- ▶ High strength and minimized vibration are available due to two step taper neck(under R0.5).







CARBIDE | 2 | 30° | R ±0.005 | R ±0.010 | PLAIN | DLC

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R0.25~R3 R4~R6

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
SGED2700502	R0.25	**0.5**	4	0.5	2	45	0.45
SGED2700504	R0.25	**0.5**	4	0.5	4	45	0.45
SGED2700506	R0.25	**0.5**	4	0.5	6	45	0.45
SGED2700508	R0.25	**0.5**	4	0.5	8	45	0.45
SGED2700510	R0.25	**0.5**	4	0.5	10	45	0.45
SGED2700602	R0.3	**0.6**	4	0.6	2	45	0.55
SGED2700604	R0.3	**0.6**	4	0.6	4	45	0.55
SGED2700606	R0.3	**0.6**	4	0.6	6	45	0.55
SGED2700608	R0.3	**0.6**	4	0.6	8	45	0.55
SGED2700610	R0.3	**0.6**	4	0.6	10	45	0.55
SGED2700804	R0.4	**0.8**	4	0.8	4	45	0.75
SGED2700806	R0.4	**0.8**	4	0.8	6	45	0.75
SGED2700808	R0.4	**0.8**	4	0.8	8	45	0.75
SGED2700810	R0.4	**0.8**	4	0.8	10	45	0.75
SGED2700812	R0.4	**0.8**	4	0.8	12	45	0.75
SGED2701004	R0.5	**1.0**	4	1	4	45	0.95
SGED2701006	R0.5	**1.0**	4	1	6	45	0.95
SGED2701008	R0.5	**1.0**	4	1	8	45	0.95
SGED2701010	R0.5	**1.0**	4	1	10	45	0.95
SGED2701012	R0.5	**1.0**	4	1	12	45	0.95
SGED2701506	R0.75	**1.5**	4	1.5	6	45	1.45
SGED2701508	R0.75	**1.5**	4	1.5	8	45	1.45
SGED2701510	R0.75	**1.5**	4	1.5	10	45	1.45
SGED2701512	R0.75	**1.5**	4	1.5	12	45	1.45

NEXT PAGE ▶

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	

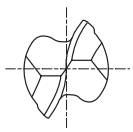
◎ : Excellent ○ : Good

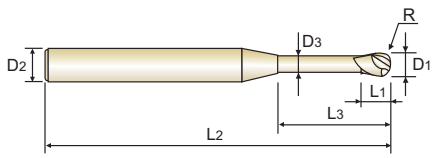
ISO	N									
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials	
VDI 3323	21	22	23	24	25	26	27	28	29	30
HRc										
HB	60	100	75	90	130	110	90	100		
Recommended	○	○				◎	◎	◎	○	

CARBIDE, 2 FLUTE BALL NOSE DLC COATING with EXTENDED NECK

- ▶ Designed to copper, copper alloys soft graphite, reinforced plastics and the materials affiliated with non-ferrous metals.
- ▶ Tight radius tolerance is applied (± 0.005mm tolerance under R3).
- ▶ Excellent surface roughness thanks to Mirror Face of cutting edges
- ▶ High strength and minimized vibration are available due to two step taper neck(under R0.5).









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R0.25~R3 R4~R6

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R	D_1	D_2	L_1	L_3	L_2	D_3
SGED2701516	R0.75	**1.5**	4	1.5	16	50	1.45
SGED2702006	R1.0	**2.0**	4	3	6	45	1.95
SGED2702008	R1.0	**2.0**	4	3	8	45	1.95
SGED2702010	R1.0	**2.0**	4	3	10	45	1.95
SGED2702012	R1.0	**2.0**	4	3	12	45	1.95
SGED2702016	R1.0	**2.0**	4	3	16	50	1.95
SGED2703010	R1.5	**3.0**	6	4	10	50	2.85
SGED2703012	R1.5	**3.0**	6	4	12	50	2.85
SGED2703016	R1.5	**3.0**	6	4	16	60	2.85
SGED2703020	R1.5	**3.0**	6	4	20	60	2.85
SGED2704010	R2.0	**4.0**	6	5	10	50	3.85
SGED2704012	R2.0	**4.0**	6	5	12	50	3.85
SGED2704016	R2.0	**4.0**	6	5	16	60	3.85
SGED2704020	R2.0	**4.0**	6	5	20	60	3.85
SGED2704025	R2.0	**4.0**	6	5	25	60	3.85
SGED2706020	R3.0	**6.0**	6	8	20	60	5.85
SGED2706030	R3.0	**6.0**	6	8	30	90	5.85
SGED2708020	R4.0	**8.0**	8	10	20	70	7.70
SGED2710025	R5.0	**10.0**	10	12	25	80	9.70
SGED2712025	R6.0	**12.0**	12	14	25	80	11.70

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	N									
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials	
VDI 3323	21	22	23	24	25	26	27	28	29	30
HRc										
HB	60	100	75	90	130	110	90	100		
Recommended	○	○				◎	◎	◎	○	

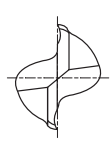
CRX S END MILLS

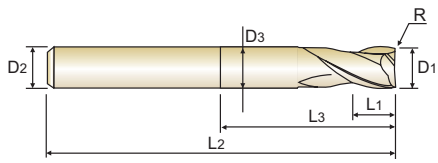
PLAIN SHANK **SGED29** SERIES

CARBIDE, 2 FLUTE CORNER RADIUS DLC COATING with EXTENDED NECK

▶ Designed for copper, copper alloys, soft graphite, reinforced plastics and materials affiliated with non-ferrous metals.
▶ Excellent surface roughness from Mirror Face of cutting edges







CARBIDE | 2 | 30° | R ±0.010 | R ±0.015 | PLAIN | DLC

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Ø1~Ø6 Ø8~Ø12

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
SGED290100104	R0.1	1.0	4	1.5	4	45	0.95
SGED290100106	R0.1	1.0	4	1.5	6	45	0.95
SGED290100108	R0.1	1.0	4	1.5	8	45	0.95
SGED290100204	R0.2	1.0	4	1.5	4	45	0.95
SGED290100206	R0.2	1.0	4	1.5	6	45	0.95
SGED290100208	R0.2	1.0	4	1.5	8	45	0.95
SGED290150106	R0.1	1.5	4	2.3	6	45	1.45
SGED290150108	R0.1	1.5	4	2.3	8	45	1.45
SGED290150110	R0.1	1.5	4	2.3	10	45	1.45
SGED290150206	R0.2	1.5	4	2.3	6	45	1.45
SGED290150208	R0.2	1.5	4	2.3	8	45	1.45
SGED290150210	R0.2	1.5	4	2.3	10	45	1.45
SGED290200208	R0.2	2.0	4	3	8	45	1.95
SGED290200210	R0.2	2.0	4	3	10	45	1.95
SGED290200212	R0.2	2.0	4	3	12	45	1.95
SGED290200508	R0.5	2.0	4	3	8	45	1.95
SGED290200510	R0.5	2.0	4	3	10	45	1.95
SGED290200512	R0.5	2.0	4	3	12	45	1.95
SGED290300210	R0.2	3.0	6	4.5	10	50	2.85
SGED290300212	R0.2	3.0	6	4.5	12	50	2.85
SGED290300216	R0.2	3.0	6	4.5	16	60	2.85
SGED290300310	R0.3	3.0	6	4.5	10	50	2.85
SGED290300312	R0.3	3.0	6	4.5	12	50	2.85
SGED290300316	R0.3	3.0	6	4.5	16	60	2.85

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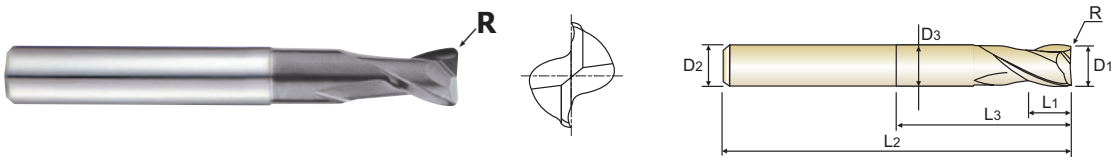
Size	Corner Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	±0.010	0 ~ -0.012	h5
over Ø6	±0.015	0 ~ -0.015	

◎ : Excellent ○ : Good

ISO	N									
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials	
VDI 3323	21	22	23	24	25	26	27	28	29	30
HRc										
HB	60	100	75	90	130	110	90	100		
Recommended	○	○				◎	◎	◎	○	

CARBIDE, 2 FLUTE CORNER RADIUS DLC COATING with EXTENDED NECK

▶ Designed for copper, copper alloys, soft graphite, reinforced plastics and materials affiliated with non-ferrous metals.
▶ Excellent surface roughness from Mirror Face of cutting edges



CARBIDE | 2 | 30° | R ±0.010 | R ±0.015 | PLAIN | DLC

p.A137

Ø1~Ø6 Ø8~Ø12

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
SGED290400212	R0.2	**4.0**	6	6	12	50	3.85
SGED290400216	R0.2	**4.0**	6	6	16	60	3.85
SGED290400220	R0.2	**4.0**	6	6	20	60	3.85
SGED290400512	R0.5	**4.0**	6	6	12	50	3.85
SGED290400516	R0.5	**4.0**	6	6	16	60	3.85
SGED290400520	R0.5	**4.0**	6	6	20	60	3.85
SGED290600320	R0.3	**6.0**	6	9	20	60	5.85
SGED290600520	R0.5	**6.0**	6	9	20	60	5.85
SGED290601020	R1.0	**6.0**	6	9	20	60	5.85
SGED290800325	R0.3	**8.0**	8	12	25	65	7.70
SGED290800525	R0.5	**8.0**	8	12	25	65	7.70
SGED290801025	R1.0	**8.0**	8	12	25	65	7.70
SGED291000530	R0.5	**10.0**	10	15	30	70	9.70
SGED291001030	R1.0	**10.0**	10	15	30	70	9.70
SGED291200532	R0.5	**12.0**	12	18	32	80	11.70
SGED291201032	R1.0	**12.0**	12	18	32	80	11.70

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	N									
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials	
VDI 3323	21	22	23	24	25	26	27	28	29	30
HRc										
HB	60	100	75	90	130	110	90	100		
Recommended	○	○				◎	◎	◎	○	

CRX S END MILLS

PLAIN SHANK **SGED31** SERIES

CARBIDE, 2 FLUTE DLC COATING

▶ Designed for copper, copper alloys, soft graphite, reinforced plastics and materials affiliated with non-ferrous metals.
▶ Excellent surface roughness from special flute geometry for removing burrs



CARBIDE | 2 | 30° | PLAIN | DLC

p.A138

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
SGED31010	1.0	6	2.5	50
SGED31015	1.5	6	4	50
SGED31020	2.0	6	6	50
SGED31025	2.5	6	8	50
SGED31030	3.0	6	10	50
SGED31040	4.0	6	12	50
SGED31050	5.0	6	15	60
SGED31060	6.0	6	15	60
SGED31080	8.0	8	20	65
SGED31100	10.0	10	25	70
SGED31120	12.0	12	30	80

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

◎ : Excellent ○ : Good

ISO	N									
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials	
VDI 3323	21	22	23	24	25	26	27	28	29	30
HRc										
HB	60	100	75	90	130	110	90	100		
Recommended	○	○				◎	◎	◎	○	

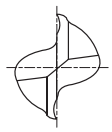
CRX S END MILLS

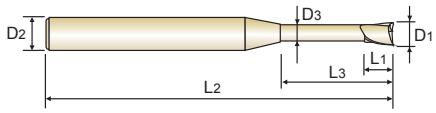
PLAIN SHANK **SGED30** SERIES

CARBIDE, 2 FLUTE DLC COATING with EXTENDED NECK

- ▶ Designed for copper, copper alloys, soft graphite, reinforced plastics and materials affiliated with non-ferrous metals.
- ▶ High toughness and minimized vibration applied from two step taper neck (under dia. 1.0mm)
- ▶ Excellent surface roughness from special flute geometry for removing burrs







CARBIDE | 2 | 30° | PLAIN | DLC

p.A138

Unit : mm

EDP No.	Mill Diameter D_1	Shank Diameter D_2	Length of Cut L_1	Length Below Shank L_3	Overall Length L_2	Neck Diameter D_3
SGED3000502	0.5	4	0.7	2	45	0.45
SGED3000504	0.5	4	0.7	4	45	0.45
SGED3000506	0.5	4	0.7	6	45	0.45
SGED3000508	0.5	4	0.7	8	45	0.45
SGED3000510	0.5	4	0.7	10	45	0.45
SGED3000602	0.6	4	0.9	2	45	0.55
SGED3000604	0.6	4	0.9	4	45	0.55
SGED3000606	0.6	4	0.9	6	45	0.55
SGED3000608	0.6	4	0.9	8	45	0.55
SGED3000610	0.6	4	0.9	10	45	0.55
SGED3000804	0.8	4	1.2	4	45	0.75
SGED3000806	0.8	4	1.2	6	45	0.75
SGED3000808	0.8	4	1.2	8	45	0.75
SGED3000810	0.8	4	1.2	10	45	0.75
SGED3000812	0.8	4	1.2	12	45	0.75
SGED3001004	1.0	4	1.5	4	45	0.95
SGED3001006	1.0	4	1.5	6	45	0.95
SGED3001008	1.0	4	1.5	8	45	0.95
SGED3001010	1.0	4	1.5	10	45	0.95
SGED3001012	1.0	4	1.5	12	45	0.95
SGED3001506	1.5	4	2.3	6	45	1.45
SGED3001508	1.5	4	2.3	8	45	1.45
SGED3001510	1.5	4	2.3	10	45	1.45
SGED3001512	1.5	4	2.3	12	45	1.45

NEXT PAGE ▶

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

◎ : Excellent ○ : Good

ISO	N									
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials	
VDI 3323	21	22	23	24	25	26	27	28	29	30
HRc										
HB	60	100	75	90	130	110	90	100		
Recommended	○	○				◎	◎	◎	○	

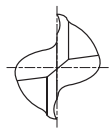
CRX S END MILLS

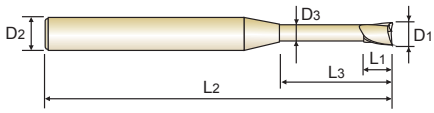
PLAIN SHANK **SGED30** SERIES

CARBIDE, 2 FLUTE DLC COATING with EXTENDED NECK

▶ Designed for copper, copper alloys, soft graphite, reinforced plastics and materials affiliated with non-ferrous metals.
▶ High toughness and minimized vibration applied from two step taper neck (under dia. 1.0mm)
▶ Excellent surface roughness from special flute geometry for removing burrs







CARBIDE | 2 | 30° | PLAIN | DLC

p.A138

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	D_1	D_2	L_1	L_3	L_2	D_3
SGED3001516	1.5	4	2.3	16	50	1.45
SGED3002008	2.0	4	3	8	45	1.95
SGED3002010	2.0	4	3	10	45	1.95
SGED3002012	2.0	4	3	12	45	1.95
SGED3002016	2.0	4	3	16	50	1.95
SGED3003008	3.0	6	4.5	8	50	2.85
SGED3003010	3.0	6	4.5	10	50	2.85
SGED3003012	3.0	6	4.5	12	50	2.85
SGED3003016	3.0	6	4.5	16	60	2.85
SGED3003020	3.0	6	4.5	20	60	2.85
SGED3004010	4.0	6	6	10	50	3.85
SGED3004012	4.0	6	6	12	50	3.85
SGED3004016	4.0	6	6	16	60	3.85
SGED3004020	4.0	6	6	20	60	3.85
SGED3004025	4.0	6	6	25	60	3.85
SGED3006020	6.0	6	8	20	60	5.85
SGED3006030	6.0	6	8	30	90	5.85
SGED3008020	8.0	8	12	20	70	7.70
SGED3010025	10.0	10	15	25	80	9.70

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

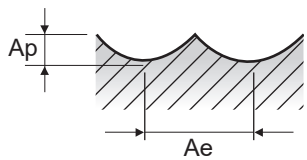
◎ : Excellent ○ : Good

ISO	N									
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials	
VDI 3323	21	22	23	24	25	26	27	28	29	30
HRc										
HB	60	100	75	90	130	110	90	100		
Recommended	○	○				◎	◎	◎	○	

SFM = ft./min.
IPT = In./tooth
RPM = rev./min.
IPM = In./min.

SGED28 SERIES 2 FLUTE BALL

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø) 1.0	2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0
N	21-22	Aluminum-wrought alloy	0.05D	0.02D	SFM	510	985	970	935	950	970	985	985	985
					IPT	.0004	.0009	.0012	.0017	.0021	.0024	.0031	.0040	.0047
					RPM	49340	47750	31300	22680	18460	15650	11940	9550	7960
					IPM	39	83	76	75	76	75	74	76	75
	26-28	Copper and Copper Alloys (Bronze / Brass)	0.05D	0.02D	SFM	425	490	490	475	475	475	490	495	490
					IPT	.0004	.0008	.0011	.0015	.0018	.0021	.0028	.0037	.0043
					RPM	41380	23870	15920	11540	9230	7690	5970	4780	3980
					IPM	36	38	35	35	34	33	34	35	34
	29.1	Duroplastic	0.05D	0.02D	SFM	510	1035	1460	1425	1445	1460	1475	1490	1475
					IPT	.0003	.0006	.0008	.0010	.0013	.0015	.0020	.0025	.0030
					RPM	49340	50130	47220	34620	28010	23610	17910	14480	11940
					IPM	31	59	71	71	73	71	70	72	71



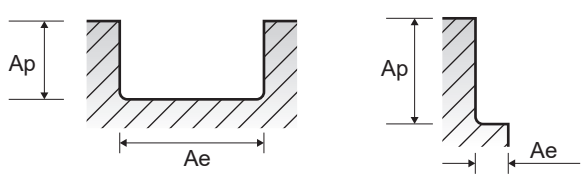
SGED29 SERIES

2 FLUTE CORNER RADIUS - SLOTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø) 1.0	2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0
N	21-22	Aluminum-wrought alloy	1.0D	0.5D	SFM	510	1035	1540	2065	2575	2755	2755	2755	2740
					IPT	.0004	.0007	.0010	.0015	.0017	.0020	.0027	.0035	.0041
					RPM	49340	50130	49870	50130	49980	44560	33420	26740	22150
					IPM	39	71	102	146	169	182	179	187	183
	26-28	Copper and Copper Alloys (Bronze / Brass)	1.0D	0.5D	SFM	510	1035	1380	1380	1395	1380	1380	1380	1380
					IPT	.0004	.0007	.0010	.0012	.0015	.0018	.0025	.0031	.0037
					RPM	49340	50130	44560	33420	27060	22280	16710	13370	11140
					IPM	39	67	91	82	83	82	83	83	83
	29.1	Duroplastic	1.0D	0.5D	SFM	510	1035	1540	2065	2575	3085	4120	4115	4150
					IPT	.0003	.0005	.0008	.0010	.0013	.0017	.0022	.0027	.0033
					RPM	49340	50130	49870	50130	49980	49870	49940	39950	33560
					IPM	27	55	82	103	134	165	224	217	222

2 FLUTE CORNER RADIUS - SIDE CUTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø) 1.0	2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0
N	21-22	Aluminum-wrought alloy	0.5D	1.0D	SFM	510	1035	1540	2065	2575	3085	3085	3085	3085
					IPT	.0005	.0011	.0017	.0021	.0026	.0031	.0041	.0052	.0062
					RPM	49340	50130	49870	50130	49980	49870	37400	29920	24930
					IPM	54	111	165	209	256	310	309	309	308
	26-28	Copper and Copper Alloys (Bronze / Brass)	0.5D	1.0D	SFM	510	1035	1540	2065	2065	2065	2065	2065	2065
					IPT	.0005	.0010	.0015	.0019	.0024	.0029	.0037	.0047	.0056
					RPM	49340	50130	49870	50130	40110	33420	25070	20050	16710
					IPM	47	99	145	186	189	192	186	189	186
	29.1	Duroplastic	0.5D	1.0D	SFM	510	1035	1540	2065	2575	3085	4120	4115	4150
					IPT	.0005	.0010	.0015	.0020	.0026	.0029	.0033	.0041	.0049
					RPM	49340	50130	49870	50130	49980	49870	49940	39950	33560
					IPM	47	99	145	197	256	294	330	330	330



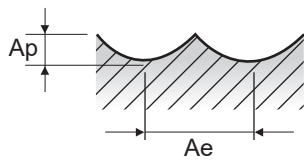
CRX S END MILLS

RECOMMENDED CUTTING CONDITIONS

SFM = ft./min.
IPT = In./tooth
RPM = rev./min.
IPM = In./min.

SGED27 SERIES — 2 FLUTE BALL

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø) 0.5	0.6	0.8	1.0	2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0
N	21	Aluminum-wrought alloy	0.05D	0.02D	SFM	260	310	410	510	820	805	785	785	805	820	820	820
					IPT	.0002	.0003	.0004	.0004	.0009	.0012	.0016	.0021	.0024	.0031	.0040	.0048
					RPM	50930	50400	49740	49340	39790	26000	19100	15280	13000	9950	7960	6630
					IPM	20	28	35	39	69	61	63	63	62	62	63	64
	26-28	Copper and Copper Alloys (Bronze / Brass)	0.05D	0.02D	SFM	260	310	360	360	410	410	395	395	410	410	410	410
					IPT	.0002	.0003	.0004	.0004	.0008	.0011	.0015	.0018	.0022	.0028	.0036	.0044
					RPM	50930	50400	43770	35010	19890	13260	9550	7640	6630	4970	3980	3320
					IPM	20	28	31	30	31	29	29	28	29	28	29	29
	29.1	Duroplastic	0.05D	0.02D	SFM	260	310	410	510	1035	1215	1180	1200	1215	1230	1230	1230
					IPT	.0002	.0002	.0002	.0002	.0005	.0008	.0011	.0013	.0015	.0020	.0025	.0030
					RPM	50930	50400	49740	49340	50130	39260	28650	23240	19630	14920	11940	9950
					IPM	16	20	24	23	51	59	61	60	60	59	60	60



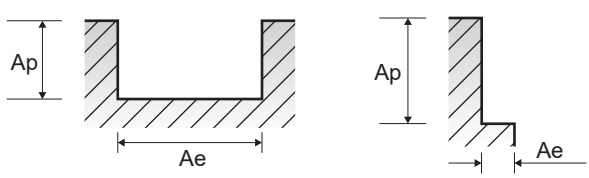
SGED30, SGED31 SERIES

2 FLUTE - SLOTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø) 0.5	0.6	0.8	1.0	2.0	3.0	4.0	6.0	8.0	10.0	12.0
N	21-22	Aluminum-wrought alloy	1.0D	0.5D	SFM	260	310	410	510	1035	1080	1065	1065	1085	1065	1080
					IPT	.0002	.0002	.0003	.0004	.0004	.0009	.0013	.0019	.0025	.0032	.0038
					RPM	50930	50400	49740	49340	50130	35010	25860	17240	13130	10350	8750
					IPM	20	24	31	39	39	63	65	65	66	66	67
	26-28	Copper and Copper Alloys (Bronze / Brass)	1.0D	0.5D	SFM	260	310	345	360	525	540	525	540	540	525	540
					IPT	.0002	.0002	.0003	.0004	.0004	.0009	.0013	.0019	.0025	.0031	.0038
					RPM	50930	50400	41780	35010	25470	17510	12730	8750	6570	5090	4380
					IPM	20	24	26	28	20	32	32	33	33	32	33
	29.1	Duroplastic	1.0D	0.5D	SFM	260	310	410	510	1035	1540	1605	1610	1640	1610	1625
					IPT	.0000	.0001	.0001	.0001	.0002	.0003	.0004	.0006	.0007	.0009	.0011
					RPM	50930	50400	49740	49340	50130	49870	38990	26000	19890	15600	13130
					IPM	4	8	8	12	16	27	28	29	28	28	29

2 FLUTE - SIDE CUTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø) 0.5	0.6	0.8	1.0	2.0	3.0	4.0	6.0	8.0	10.0	12.0
N	21-22	Aluminum-wrought alloy	0.5D	1.0D	SFM	260	310	410	425	855	855	870	885	870	870	885
					IPT	.0002	.0002	.0003	.0004	.0004	.0010	.0013	.0021	.0027	.0034	.0042
					RPM	50930	50400	49740	41380	41380	27590	21090	14320	10540	8440	7160
					IPM	20	24	31	33	36	54	56	60	57	57	60
	26-28	Copper and Copper Alloys (Bronze / Brass)	0.5D	1.0D	SFM	260	280	280	280	560	575	575	590	575	575	590
					IPT	.0002	.0002	.0003	.0004	.0004	.0009	.0013	.0020	.0025	.0031	.0040
					RPM	50930	45090	33820	27060	27060	18570	13930	9550	6960	5570	4780
					IPM	20	21	21	21	21	34	35	38	35	35	38
	29.1	Duroplastic	0.5D	1.0D	SFM	260	310	410	510	1035	1150	1150	1180	1150	1150	1180
					IPT	.0002	.0002	.0002	.0003	.0004	.0007	.0010	.0016	.0020	.0025	.0031
					RPM	50930	50400	49740	49340	50130	37140	27850	19100	13930	11140	9550
					IPM	16	20	24	31	36	53	57	60	56	56	60

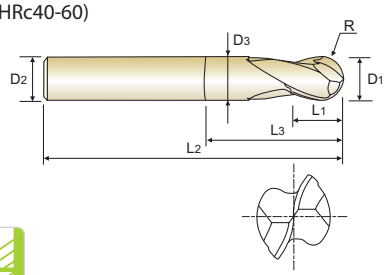


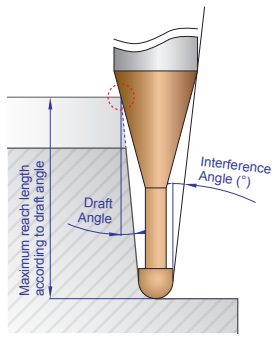
X1-EH END MILLS

CARBIDE, 2 FLUTE BALL NOSE with NECK

- Improvement of tool life by applying new coating
- Application of tight tolerances for precision machining
- Highly Accurate Fine-Finishing End Mill For High-Hardened Steel (HRc40-60)







CARBIDE | 2 | 30° | R +.00005" ~-.00020" | R +.00010" ~-.00030" | PLAIN | C Coating

p.A149

R1/64~R1/8 R5/32~R1/4

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Interference Angle (°)	Maximum reach lengths according to draft angle				
	R	D_1	D_2	L_1	L_3	L_2	D_3		0.5°	1°	1.5°	2°	3°
HPK48002	R1/64	**1/32**	1/4	1/32	1/16	2	.029	12.97	1.84	1.94	2.05	2.18	2.49
HPK48004	R1/32	**1/16**	1/4	1/16	1/8	2	.059	11.02	3.45	3.57	3.70	3.84	4.15
HPK48006	R3/64	**3/32**	1/4	3/32	3/16	2	.090	9.13	5.11	5.28	5.48	5.68	6.14
HPK48008	R1/16	**1/8**	1/4	1/8	1/4	2-1/2	.121	7.26	6.76	7.00	7.25	7.52	8.13
HPK48012	R3/32	**3/16**	1/4	3/16	3/8	3	.184	3.59	10.02	10.37	10.74	11.14	12.05
HPK48016	R1/8	**1/4**	1/4	1/4	1/2	3-1/2	.246	0.00	-	-	-	-	-
HPK48020	R5/32	**5/16**	5/16	5/16	5/8	4	.309	0.00	-	-	-	-	-
HPK48024	R3/16	**3/8**	3/8	3/8	3/4	4	.371	0.00	-	-	-	-	-
HPK48032	R1/4	**1/2**	1/2	1/2	1	4-1/2	.496	0.00	-	-	-	-	-

Size	Mill Dia. Tolerance (Inch)
up to Ø1/2	0~-.0004"

Size	Ball Radius Tolerance (Inch)	Shank Dia. Tolerance
up to Ø1/4	+.00005"~-.00020"	h4
over Ø1/4	+.00010"~-.00030"	* Shank Dia.>ø1/4 : h5

◎ : 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
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230
Recommended					○			○	◎		○	◎									

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	39.1	39.2	39.3	40	41
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended																		◎	◎				◎	◎

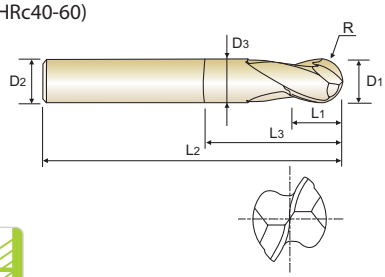
SERIES
HPK46

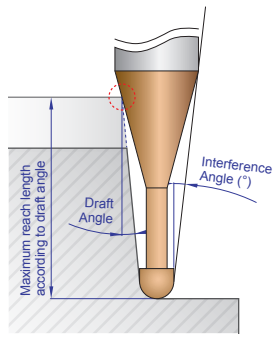
X1-EH END MILLS

CARBIDE, 2 FLUTE BALL NOSE with NECK

- Improvement of tool life by applying new coating
- Application of tight tolerances for precision machining
- Highly Accurate Fine-Finishing End Mill For High-Hardened Steel (HRc40-60)







CARBIDE | 2 | 30° | R +0.001 ~-0.005 | R +0.003 ~-0.007 | PLAIN | C Coating

p.A149

R0.5~R3 R3.5~R6

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Interference Angle (°)	Maximum reach lengths according to draft angle				
	R	D_1	D_2	L_1	L_3	L_2	D_3		0.5°	1°	1.5°	2°	3°
HPK46010	R0.5	**1.0**	4	1	2.5	45	0.95	10.38	2.78	2.93	3.10	3.29	3.76
HPK46015	R0.75	**1.5**	4	1.5	3.75	45	1.45	8.36	3.97	4.11	4.26	4.42	4.78
HPK46020	R1.0	**2.0**	6	2	5	45	1.95	9.05	5.26	5.45	5.64	5.86	6.33
HPK46025	R1.25	**2.5**	6	2.5	6.25	45	2.4	7.69	6.65	6.89	7.13	7.40	8.00
HPK46030	R1.5	**3.0**	6	3	7.5	45	2.85	6.40	8.04	8.32	8.62	8.95	9.67
HPK46035	R1.75	**3.5**	6	3.5	8.75	45	3.35	5.22	9.33	9.66	10.01	10.38	11.23
HPK46040	R2.0	**4.0**	6	4	10	45	3.85	4.08	10.63	11.00	11.39	11.82	12.78
HPK46050	R2.5	**5.0**	6	5	12.5	50	4.85	1.96	13.21	13.67	14.16	-	-
HPK46060	R3.0	**6.0**	6	6	15	50	5.85	0.00	-	-	-	-	-
HPK46080	R4.0	**8.0**	8	8	20	60	7.7	0.00	-	-	-	-	-
HPK46100	R5.0	**10.0**	10	10	25	70	9.7	0.00	-	-	-	-	-
HPK46120	R6.0	**12.0**	12	12	30	75	11.7	0.00	-	-	-	-	-

Size	Radius Tolerance (mm)
up to R3	+0.001~-0.005
over R3	+0.003~-0.007

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-0.010	h4 * Shank Dia.>ø6 : h5

◎ : 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
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230
Recommended					○			○	◎		○	◎									

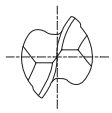
ISO	N										S							H						
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel					Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended																		◎	◎				◎	◎

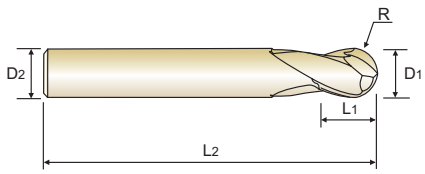
X1-EH END MILLS

CARBIDE, 2 FLUTE BALL NOSE

- Improvement of tool life by applying new coating
- Application of tight tolerances for precision machining
- Highly Accurate Fine-Finishing End Mill For High-Hardened Steel (HRc40-60)







CARBIDE | 2 | 30° | R +0.001 ~-0.005 | R +0.003 ~-0.007 | PLAIN | C Coating | p.A150

R0.05~R3 R3.5~R6.0

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D1	D2	L1	L2
HPK44001	R0.05	**0.1**	4	0.1	50
HPK440015	R0.075	**0.15**	4	0.15	50
HPK44002	R0.1	**0.2**	4	0.2	50
HPK44003	R0.15	**0.3**	4	0.3	50
HPK44004	R0.2	**0.4**	4	0.6	50
HPK44902	R0.2	**0.4**	6	0.4	50
HPK44005	R0.25	**0.5**	4	0.8	50
HPK44903	R0.25	**0.5**	6	0.5	50
HPK44006	R0.3	**0.6**	4	0.9	50
HPK44904	R0.3	**0.6**	6	0.6	50
HPK44008	R0.4	**0.8**	4	1.2	50
HPK44905	R0.4	**0.8**	6	0.8	50
HPK44010	R0.5	**1.0**	4	1.5	50
HPK44906	R0.5	**1.0**	6	1	50
HPK44012	R0.6	**1.2**	6	1.2	50
HPK44015	R0.75	**1.5**	4	2.3	50
HPK44907	R0.75	**1.5**	6	1.5	50
HPK44020	R1.0	**2.0**	4	3	60
HPK44908	R1.0	**2.0**	6	2	50
HPK44025	R1.25	**2.5**	6	3.8	60
HPK44030	R1.5	**3.0**	6	5	60
HPK44040	R2.0	**4.0**	4	6	70
HPK44901	R2.0	**4.0**	6	6	70
HPK44050	R2.5	**5.0**	6	8	70
HPK44060	R3.0	**6.0**	6	10	80
HPK44080	R4.0	**8.0**	8	12	100
HPK44100	R5.0	**10.0**	10	15	100
HPK44120	R6.0	**12.0**	12	18	110

Size	Radius Tolerance (mm)
up to R3	+0.001~-0.005
over R3	+0.003~-0.007

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-0.010	h4 * Shank Dia.>ø6 : h5

◎ : 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
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230
Recommended					○			○	◎		○	◎									

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	39.1	39.2	39.3	40	41
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended																		◎	◎				◎	◎

SERIES

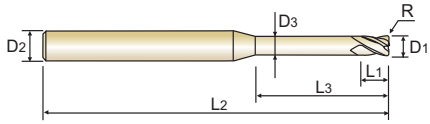
X1-EH END MILLS

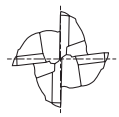
HPK26

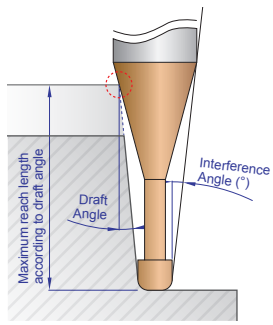
CARBIDE, 4 FLUTE CORNER RADIUS with NECK

- Improvement of tool life by applying new coating
- Application of tight tolerances for precision machining
- Highly Accurate Fine-Finishing End Mill For High-Hardened Steel (HRc50-70)









CARBIDE | 4 | 30° | 27°/30° | R ±.0002" | R ±.0003" | PLAIN | C Coating

p.A151

D1/16 | Over D1/8 | D1/16~D1/4 | D5/16~D1/2

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Interference Angle (°)	Maximum reach lengths according to draft angle				
	R	D_1	D_2	L_1	L_3	L_2	D_3		0.5°	1°	1.5°	2°	3°
HPK26004	R.004	**1/16**	1/8	3/32	5/32	1-1/2	.060	6.42	4.22	4.37	4.53	4.70	5.08
HPK26008	R.004	**1/8**	1/4	5/32	1/4	2	.119	7.20	6.86	7.10	7.35	7.63	8.25
HPK26012	R.004	**3/16**	1/4	1/4	3/8	2	.181	3.55	10.16	10.52	10.90	11.31	12.22
HPK26016	R.008	**1/4**	1/4	5/16	9/16	2	.238	0.00	-	-	-	-	-
HPK26020	R.008	**5/16**	5/16	3/8	3/4	2-1/2	.301	0.00	-	-	-	-	-
HPK26024	R.008	**3/8**	3/8	1/2	1	3	.363	0.00	-	-	-	-	-
HPK26032	R.012	**1/2**	1/2	5/8	1-3/16	3	.488	0.00	-	-	-	-	-

Mill Dia. Tolerance (Inch)
0~-.0004"

Size	Corner Radius Tolerance (Inch)	Shank Dia. Tolerance
up to Ø1/4	±.0002"	h4
over Ø1/4	±.0003"	* Shank Dia.>ø1/4 : h5

◎ : 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
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230
Recommended					○			○	○		○	○									

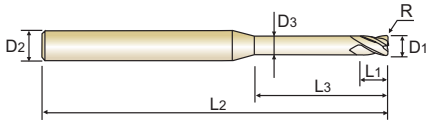
ISO	N										S							H						
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel					Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended																		◎	◎	◎	◎	◎	○	◎

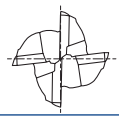
X1-EH END MILLS

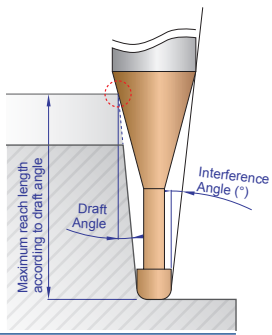
CARBIDE, 4 FLUTE CORNER RADIUS with NECK

- Improvement of tool life by applying new coating
- Application of tight tolerances for precision machining
- Highly Accurate Fine-Finishing End Mill For High-Hardened Steel (HRc50-70)









CARBIDE | 4 | 30° (up to Ø3) | 27°/30° (Over Ø3) | R ±0.005 (D1~D6) | R ±0.008 (D8~D12) | PLAIN | C Coating | p.A152

Unit : mm

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Interference Angle (°)	Maximum reach lengths according to draft angle				
	R	D_1	D_2	L_1	L_3	L_2	D_3		0.5°	1°	1.5°	2°	3°
HPK17010	R0.1	**1.0**	3	1.5	3	40	0.95	8.34	3.31	3.49	3.69	3.92	4.47
HPK17901	R0.1	**1.0**	6	1.5	3	40	0.95	11.38	3.31	3.49	3.69	3.92	4.47
HPK17015	R0.1	**1.5**	3	2.2	4	40	1.45	6.21	4.23	4.38	4.54	4.71	5.09
HPK17902	R0.1	**1.5**	6	2.2	4	40	1.45	10.21	4.23	4.38	4.54	4.71	5.09
HPK17020	R0.1	**2.0**	3	3	6	40	1.95	3.59	6.30	6.52	6.75	7.01	7.57
HPK17903	R0.1	**2.0**	6	3	6	40	1.95	8.39	6.30	6.52	6.75	7.01	7.57
HPK17025	R0.1	**2.5**	3	4	6	40	2.40	2.01	6.39	6.62	6.86	7.11	-
HPK17904	R0.1	**2.5**	6	4	6	40	2.40	7.83	6.39	6.62	6.86	7.11	7.69
HPK17030	R0.1	**3.0**	6	4	7	45	2.85	6.64	7.52	7.79	8.07	8.37	9.05
HPK17908	R0.5	**3.0**	6	4	10	55	2.85	5.40	10.63	11.00	11.39	11.82	12.78
HPK17905	R0.3	**3.0**	6	4	12	55	2.85	4.80	12.69	13.14	13.61	14.12	15.27
HPK17906	R0.3	**3.0**	6	4	16	55	2.85	3.92	16.83	17.41	18.04	18.72	20.24
HPK17909	R0.5	**3.0**	6	4	16	55	2.85	3.92	16.83	17.41	18.04	18.72	20.24
HPK17907	R0.3	**3.0**	6	4	20	55	2.85	3.32	20.96	21.69	22.48	23.32	25.21
HPK17910	R0.5	**3.0**	6	4	20	55	2.85	3.32	20.96	21.69	22.48	23.32	25.21
HPK17035	R0.1	**3.5**	6	5	9	45	3.35	5.12	9.59	9.93	10.29	10.67	11.54
HPK17040	R0.1	**4.0**	6	5	9	45	3.85	4.39	9.59	9.93	10.29	10.67	11.54
HPK17911	R0.3	**4.0**	6	5	12	55	3.85	3.57	12.69	13.14	13.61	14.12	15.27
HPK17914	R0.5	**4.0**	6	5	12	55	3.85	3.57	12.69	13.14	13.61	14.12	15.27
HPK17917	R1.0	**4.0**	6	5	12	55	3.85	3.57	12.69	13.14	13.61	14.12	15.27
HPK17912	R0.3	**4.0**	6	5	16	55	3.85	2.86	16.83	17.41	18.04	18.72	-
HPK17915	R0.5	**4.0**	6	5	16	55	3.85	2.86	16.83	17.41	18.04	18.72	-
HPK17913	R0.3	**4.0**	6	5	20	55	3.85	2.38	20.96	21.69	22.48	23.32	-
HPK17916	R0.5	**4.0**	6	5	20	55	3.85	2.38	20.96	21.69	22.48	23.32	-
HPK17045	R0.1	**4.5**	6	6	10	45	4.35	3.28	10.63	11.00	11.39	11.82	12.78
HPK17050	R0.2	**5.0**	6	6	11	50	4.85	2.18	11.66	12.07	12.50	12.97	-

NEXT PAGE ▶

Size	Corner Radius Tolerance (mm)
up to Ø6	±0.005
over Ø6	±0.008

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-0.010	h4 * Shank Dia.>ø6 : h5

◎ : 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
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230
Recommended					○			○	○		○	○									

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	39.1	39.2	39.3	40	41
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended																		◎	◎	◎	◎	◎	○	◎

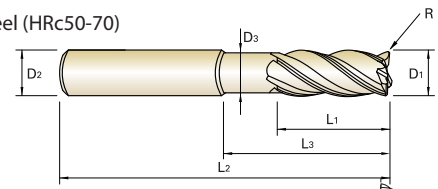
SERIES **HPK17**

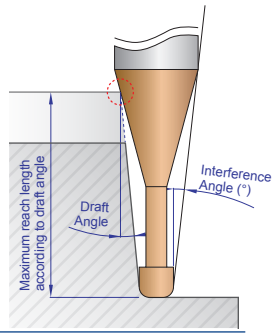
X1-EH END MILLS

CARBIDE, 4 FLUTE CORNER RADIUS with NECK

- Improvement of tool life by applying new coating
- Application of tight tolerances for precision machining
- Highly Accurate Fine-Finishing End Mill For High-Hardened Steel (HRc50-70)







CARBIDE | 4 | 30° (up to Ø3) | 27°/30° (Over Ø3) | R ±0.005 (D1~D6) | R ±0.008 (D8~D12) | PLAIN | C Coating

p.A152

Unit : mm

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Interference Angle (°)	Maximum reach lengths according to draft angle				
	R	D_1	D_2	L_1	L_3	L_2	D_3		0.5°	1°	1.5°	2°	3°
HPK17060	R0.2	**6.0**	6	7	14	50	5.85	0.00	-	-	-	-	-
HPK17918	R0.5	**6.0**	6	7	20	60	5.85	0.00	-	-	-	-	-
HPK17920	R1.0	**6.0**	6	7	20	60	5.85	0.00	-	-	-	-	-
HPK17922	R1.5	**6.0**	6	7	20	60	5.85	0.00	-	-	-	-	-
HPK17919	R0.5	**6.0**	6	9	20	90	5.85	0.00	-	-	-	-	-
HPK17921	R1.0	**6.0**	6	9	20	90	5.85	0.00	-	-	-	-	-
HPK17080	R0.2	**8.0**	8	9	18	60	7.70	0.00	-	-	-	-	-
HPK17923	R0.5	**8.0**	8	9	25	60	7.70	0.00	-	-	-	-	-
HPK17925	R1.0	**8.0**	8	9	25	60	7.70	0.00	-	-	-	-	-
HPK17927	R1.5	**8.0**	8	9	25	60	7.70	0.00	-	-	-	-	-
HPK17928	R2.0	**8.0**	8	9	25	60	7.70	0.00	-	-	-	-	-
HPK17924	R0.5	**8.0**	8	12	25	100	7.70	0.00	-	-	-	-	-
HPK17926	R1.0	**8.0**	8	12	25	100	7.70	0.00	-	-	-	-	-
HPK17929	R0.5	**10.0**	10	11	32	70	9.70	0.00	-	-	-	-	-
HPK17931	R1.0	**10.0**	10	11	32	70	9.70	0.00	-	-	-	-	-
HPK17933	R1.5	**10.0**	10	11	32	70	9.70	0.00	-	-	-	-	-
HPK17934	R2.0	**10.0**	10	11	32	70	9.70	0.00	-	-	-	-	-
HPK17100	R0.2	**10.0**	10	12	25	75	9.70	0.00	-	-	-	-	-
HPK17930	R0.5	**10.0**	10	15	32	100	9.70	0.00	-	-	-	-	-
HPK17932	R1.0	**10.0**	10	15	32	100	9.70	0.00	-	-	-	-	-
HPK17935	R2.0	**10.0**	10	15	32	100	9.70	0.00	-	-	-	-	-
HPK17936	R0.5	**12.0**	12	12	38	80	11.70	0.00	-	-	-	-	-
HPK17938	R1.0	**12.0**	12	12	38	80	11.70	0.00	-	-	-	-	-
HPK17940	R1.5	**12.0**	12	12	38	80	11.70	0.00	-	-	-	-	-
HPK17941	R2.0	**12.0**	12	12	38	80	11.70	0.00	-	-	-	-	-
HPK17120	R0.3	**12.0**	12	15	30	75	11.70	0.00	-	-	-	-	-
HPK17937	R0.5	**12.0**	12	18	38	110	11.70	0.00	-	-	-	-	-
HPK17939	R1.0	**12.0**	12	18	38	110	11.70	0.00	-	-	-	-	-
HPK17942	R2.0	**12.0**	12	18	38	110	11.70	0.00	-	-	-	-	-

Size	Corner Radius Tolerance (mm)
up to Ø6	±0.005
over Ø6	±0.008

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-0.010	h4 * Shank Dia.>ø6 : h5

◎ : 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
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230
Recommended					○			○	○		○	○									

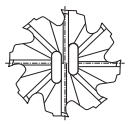
ISO	N										S							H						
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel					Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended																		◎	◎	◎	◎	◎	○	◎

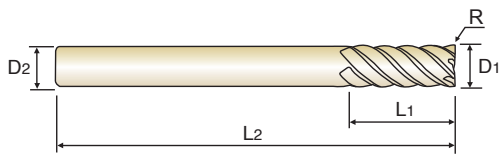
X1-EH END MILLS

CARBIDE, 6 FLUTE CORNER RADIUS

- Improvement of tool life by applying new coating
- Application of tight tolerances for precision machining
- Highly Accurate Fine-Finishing End Mill For High-Hardened Steel (HRc50-70)







CARBIDE | 6 | 45° | R ±.0003" | PLAIN | C Coating

p.A153

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D_1	D_2	L_1	L_2
HPK27016	R.02	**1/4**	1/4	1/2	2-1/4
HPK27020	R.02	**5/16**	5/16	3/4	2-1/2
HPK27024	R.03	**3/8**	3/8	7/8	2-7/8
HPK27032	R.03	**1/2**	1/2	1	3-1/4
HPK27040	R.03	**5/8**	5/8	1-1/4	3-5/8
HPK27901	R.06	**5/8**	5/8	1-1/4	3-5/8

Mill Dia. Tolerance (Inch)	Corner Radius Tolerance (Inch)	Shank Dia. Tolerance
0~-.0006"	±.0003"	h4 * Shank Dia.>ø1/4 : h5

◎ : 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
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230
Recommended					○			○	○		○	○									

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	39.1	39.2	39.3	40	41
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended																		◎	◎	◎	◎	◎	○	◎

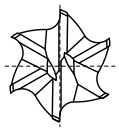
SERIES **HPK18**

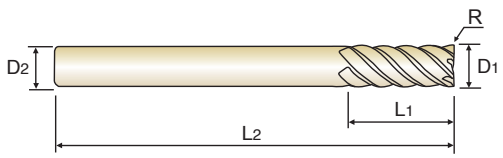
X1-EH END MILLS

CARBIDE, 6 FLUTE CORNER RADIUS

▶ Improvement of tool life by applying new coating
▶ Application of tight tolerances for precision machining
▶ Highly Accurate Fine-Finishing End Mill For High-Hardened Steel (HRc50-70)







CARBIDE | 6 | 45° | R ±0.008 | PLAIN | C Coating p.A153

Unit : mm

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D1	D2	L1	L2
HPK18060	R0.5	**6.0**	6	15	60
HPK18080	R0.5	**8.0**	8	20	75
HPK18100	R0.5	**10.0**	10	25	80
HPK18901	R1.0	**10.0**	10	25	80
HPK18120	R0.5	**12.0**	12	30	100
HPK18902	R1.0	**12.0**	12	30	100
HPK18160	R1.0	**16.0**	16	40	110

Corner Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
±0.008	0~-0.015	h4 * Shank Dia.>ø6 : h5

◎ : 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
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230
Recommended					○			○	○		○	○									

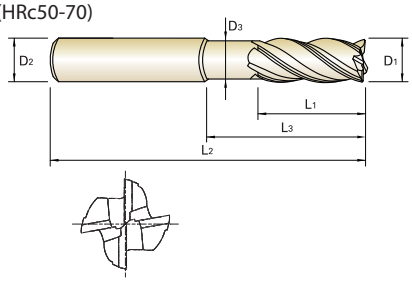
ISO	N										S							H						
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel					Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended																		◎	◎	◎	◎	◎	○	◎

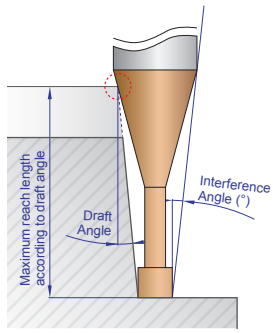
X1-EH END MILLS

CARBIDE, 4 FLUTE SQUARE with EXTENDED NECK

- ▶ Improvement of tool life by applying new coating
- ▶ Application of tight tolerances for precision machining
- ▶ Highly Accurate Fine-Finishing End Mill For High-Hardened Steel (HRc50-70)







CARBIDE | 4 | 30° | 27°/30° | PLAIN | C Coating

p.A154

up to Ø3 Over Ø3

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Interference Angle (°)	Maximum reach lengths according to draft angle				
	D_1	D_2	L_1	L_3	L_2	D_3		0.5°	1°	1.5°	2°	3°
HPK21010	**1.0**	6	1.5	3	50	0.95	11.38	3.31	3.49	3.69	3.92	4.47
HPK21020	**2.0**	6	2	5	50	1.95	9.05	5.26	5.45	5.64	5.86	6.33
HPK21030	**3.0**	6	3	8	55	2.85	6.17	8.56	8.86	9.18	9.52	10.29
HPK21040	**4.0**	6	4	10	55	3.85	4.08	10.63	11.00	11.39	11.82	12.78
HPK21050	**5.0**	6	5	13	55	4.85	1.89	13.73	14.21	14.72	-	-
HPK21060	**6.0**	6	6	15	55	5.85	0.00	-	-	-	-	-
HPK21080	**8.0**	8	8	20	65	7.70	0.00	-	-	-	-	-
HPK21100	**10.0**	10	10	25	75	9.70	0.00	-	-	-	-	-
HPK21120	**12.0**	12	12	28	85	11.70	0.00	-	-	-	-	-
HPK21160	**16.0**	16	16	32	90	15.70	0.00	-	-	-	-	-

Size	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø12	0~-0.010	h4
over Ø12	0~-0.012	* Shank Dia.>ø6 : h5

◎ : 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
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230
Recommended					○			○	○		○	○									

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	39.1	39.2	39.3	40	41
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended																		◎	◎	◎	◎	◎	○	◎

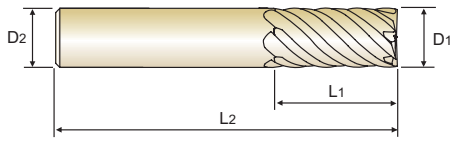
SERIES **HPK23**

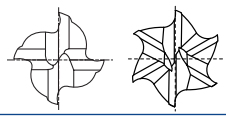
X1-EH END MILLS

CARBIDE, MULTI FLUTE SQUARE

- ▶ Improvement of tool life by applying new coating
- ▶ Application of tight tolerances for precision machining
- ▶ Highly Accurate Fine-Finishing End Mill For High-Hardened Steel (HRc50-70)







CARBIDE | 4&6 | 45° | PLAIN | C Coating

p.A155

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	No. of Flute
HPK23010	1.0	6	2	60	4
* HPK23901	1.0	6	3.5	60	4
HPK23020	2.0	6	4	60	4
* HPK23902	2.0	6	7	60	4
HPK23030	3.0	6	6	60	4
* HPK23903	3.0	6	10	60	4
* HPK23904	3.0	6	15	60	4
HPK23040	4.0	6	8	60	4
* HPK23905	4.0	6	12	60	4
* HPK23906	4.0	6	20	65	4
HPK23050	5.0	6	10	60	4
* HPK23907	5.0	6	15	60	4
* HPK23908	5.0	6	25	70	4
HPK23060	6.0	6	15	60	6
* HPK23909	6.0	6	24	70	6
HPK23080	8.0	8	20	75	6
* HPK23910	8.0	8	35	90	6
HPK23100	10.0	10	25	80	6
* HPK23911	10.0	10	45	100	6
HPK23120	12.0	12	30	100	6
* HPK23912	12.0	12	55	120	6

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-0.015	h4 * Shank Dia.>ø6 : h5

* Mill Dia. Tolerance(mm) for Long Type : 0~-0.02

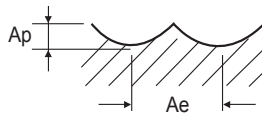
◎ : Excellent ○ : Good

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
HRc		13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	260	160	250	130	230
Recommended					○			○	○		○	○									

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	39.1	39.2	39.3	40	41
HRc											15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended																		◎	◎	◎	◎	◎	○	◎

HPK48 SERIES

2 FLUTE BALL NOSE - PLANE

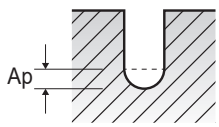


SFM = Surface Feet per Minute
IPM = Inches Per Minute
RPM = Revolutions Per Minute
Ap : Inch (Axial Depth of Cut)
IPT = Inches Per Tooth
Ae : Inch (Radial Depth of Cut)

ISO	VDI 3323	Material Description	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	0.08D	0.05D	RPM	31390	29200	25740	19330	12680	8120	6910	6040	4060
					IPM	97	125	149	138	136	111	103	95	68
	8	Low alloy steel	0.08D	0.05D	RPM	31390	29200	25740	19330	12680	8120	6910	6040	4060
					IPM	97	125	149	138	136	111	103	95	68
	9		0.08D	0.05D	RPM	31390	28030	24760	18570	12170	7830	6660	5780	3890
					IPM	81	103	129	122	117	95	85	79	58
	11.1	High alloyed steel, and tool steel	0.08D	0.05D	RPM	31390	29200	25740	19330	12680	8120	6910	6040	4060
					IPM	97	125	149	138	136	111	103	95	68
	11.2		0.08D	0.05D	RPM	31390	28030	24760	18570	12170	7830	6660	5780	3890
					IPM	81	103	129	122	117	95	85	79	58
H	38.1	Hardened steel	0.08D	0.05D	RPM	28250	25110	20760	15570	10220	6430	5600	4860	3270
					IPM	74	92	102	92	89	71	66	62	43
	38.2		0.08D	0.05D	RPM	28250	25110	20760	15570	10220	6430	5600	4860	3270
					IPM	74	92	102	92	89	71	66	62	43
	40	Chilled Cast Iron	0.08D	0.05D	RPM	31390	28030	24760	18570	12170	7830	6660	5780	3890
					IPM	81	103	129	122	117	95	85	79	58
	41	Hardened Cast Iron	0.08D	0.05D	RPM	28250	25110	20760	15570	10220	6430	5600	4860	3270
					IPM	74	92	102	92	89	71	66	62	43

HPK46 SERIES

2 FLUTE BALL NOSE for RIB PROCESSING



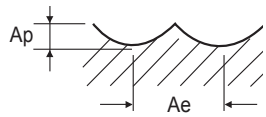
ISO	VDI 3323	Material Description	Parameter	Diameter (Ø) 1	1.5	2	2.5	3	3.5	4	5	6	8	10	12
			LBS	2.5	3.75	5	6.25	7.5	8.75	10	12.5	15	20	25	30
P	5	Non-alloy steel	RPM	31800	24700	18520	16260	14100	11800	10080	7930	6720	5000	3970	3310
			IPM	63	64	73	78	83	82	79	75	77	73	67	62
			8	.0035	.0053	.0071	.0089	.0106	.0124	.0142	.0177	.0213	.0283	.0354	.0425
	8	Low alloy steel	RPM	31800	24700	18520	16260	14100	11800	10080	7930	6720	5000	3970	3310
			9	63	64	73	78	83	82	79	75	77	73	67	62
			Ap	.0035	.0053	.0071	.0089	.0106	.0124	.0142	.0177	.0213	.0283	.0354	.0425
	9		RPM	30210	23460	17600	15450	13390	11210	9580	7540	6380	4750	3770	3140
			IPM	53	55	62	66	71	70	67	64	66	62	57	53
			11.2	.0028	.0041	.0055	.0069	.0083	.0097	.0111	.0138	.0166	.0221	.0276	.0332
	11.1	High alloyed steel, and tool steel	RPM	31800	24700	18520	16260	14100	11800	10080	7930	6720	5000	3970	3310
			38.1	63	64	73	78	83	82	79	75	77	73	67	62
			Ap	.0035	.0053	.0071	.0089	.0106	.0124	.0142	.0177	.0213	.0283	.0354	.0425
	11.2		RPM	30210	23460	17600	15450	13390	11210	9580	7540	6380	4750	3770	3140
			IPM	53	55	62	66	71	70	67	64	66	62	57	53
			40	.0028	.0041	.0055	.0069	.0083	.0097	.0111	.0138	.0166	.0221	.0276	.0332
H	38.1	Hardened steel	RPM	26400	20500	15370	13500	11700	9800	8370	6590	5580	4150	3290	2740
			41	44	45	51	55	58	57	56	52	54	51	47	43
			Ap	.0020	.0030	.0040	.0050	.0060	.0069	.0079	.0099	.0119	.0159	.0198	.0238
	38.2		RPM	26400	20500	15370	13500	11700	9800	8370	6590	5580	4150	3290	2740
			IPM	44	45	51	55	58	57	56	52	54	51	47	43
			Ap	.0020	.0030	.0040	.0050	.0060	.0069	.0079	.0099	.0119	.0159	.0198	.0238
	40	Chilled Cast Iron	RPM	30210	23460	17600	15450	13390	11210	9580	7540	6380	4750	3770	3140
			IPM	53	55	62	66	71	70	67	64	66	62	57	53
			Ap	.0028	.0041	.0055	.0069	.0083	.0097	.0111	.0138	.0166	.0221	.0276	.0332
	41	Hardened Cast Iron	RPM	26400	20500	15370	13500	11700	9800	8370	6590	5580	4150	3290	2740
			IPM	44	45	51	55	58	57	56	52	54	51	47	43
			Ap	.0020	.0030	.0040	.0050	.0060	.0069	.0079	.0099	.0119	.0159	.0198	.0238

X1-EH END MILLS

RECOMMENDED CUTTING CONDITIONS

HPK44 SERIES

2 FLUTE BALL NOSE - PLANE



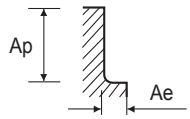
SFM = Surface Feet per Minute
IPM = Inches Per Minute
RPM = Revolutions Per Minute
Ap : Inch (Axial Depth of Cut)
IPT = Inches Per Tooth
Ae : Inch (Radial Depth of Cut)

ISO	VDI 3323	Material Description	Ae	Ap	Para-meter	Diameter (Ø)								
						0.2	0.3	0.4	0.5	0.6	0.8	1	1.2	1.5
P	5	Non-alloy steel	0.08D	0.05D	RPM	31150	30600	31150	30820	31150	30740	30820	30870	30820
					IPM	29	36	47	58	71	94	116	124	131
	8	Low alloy steel	0.08D	0.05D	RPM	31150	30600	31150	30820	31150	30740	30820	30870	30820
					IPM	29	36	47	58	71	94	116	124	131
	9		0.08D	0.05D	RPM	31150	30600	31150	30820	31150	30740	30820	29780	29730
					IPM	27	34	42	51	61	80	102	106	110
	11.1	High alloyed steel, and tool steel	0.08D	0.05D	RPM	31150	30600	31150	30820	31150	30740	30820	30870	30820
					IPM	29	36	47	58	71	94	116	124	131
	11.2		0.08D	0.05D	RPM	31150	30600	31150	30820	31150	30740	30820	29780	29730
					IPM	27	34	42	51	61	80	102	106	110
H	38.1	Hardened steel	0.08D	0.05D	RPM	27060	26530	27060	26740	27060	27060	27060	25730	25890
					IPM	23	27	36	44	51	70	89	91	96
	38.2		0.08D	0.05D	RPM	27060	26530	27060	26740	27060	27060	27060	25730	25890
					IPM	23	27	36	44	51	70	89	91	96
	40	Chilled Cast Iron	0.08D	0.05D	RPM	31150	30600	31150	30820	31150	30740	30820	29780	29730
					IPM	27	34	42	51	61	80	102	106	110
	41	Hardened Cast Iron	0.08D	0.05D	RPM	27060	26530	27060	26740	27060	27060	27060	25730	25890
					IPM	23	27	36	44	51	70	89	91	96

ISO	VDI 3323	Material Description	Ae	Ap	Para-meter	Diameter (Ø)								
						2	2.5	3	4	5	6	8	10	12
P	5	Non-alloy steel	0.08D	0.05D	RPM	30660	24520	20440	15330	11480	8580	6840	5740	4290
					IPM	138	143	146	146	141	118	102	90	72
	8	Low alloy steel	0.08D	0.05D	RPM	30660	24520	20440	15330	11480	8580	6840	5740	4290
					IPM	138	143	146	146	141	118	102	90	72
	9		0.08D	0.05D	RPM	29510	23610	19670	14750	11020	8310	6600	5510	4130
					IPM	116	123	129	129	120	100	85	75	61
	11.1	High alloyed steel, and tool steel	0.08D	0.05D	RPM	30660	24520	20440	15330	11480	8580	6840	5740	4290
					IPM	138	143	146	146	141	118	102	90	72
	11.2		0.08D	0.05D	RPM	29510	23610	19670	14750	11020	8310	6600	5510	4130
					IPM	116	123	129	129	120	100	85	75	61
H	38.1	Hardened steel	0.08D	0.05D	RPM	24030	19230	16020	12020	8980	6580	5410	4490	3370
					IPM	95	95	95	95	88	73	64	57	45
	38.2		0.08D	0.05D	RPM	24030	19230	16020	12020	8980	6580	5410	4490	3370
					IPM	95	95	95	95	88	73	64	57	45
	40	Chilled Cast Iron	0.08D	0.05D	RPM	29510	23610	19670	14750	11020	8310	6600	5510	4130
					IPM	116	123	129	129	120	100	85	75	61
	41	Hardened Cast Iron	0.08D	0.05D	RPM	24030	19230	16020	12020	8980	6580	5410	4490	3370
					IPM	95	95	95	95	88	73	64	57	45

HPK26 SERIES

4 FLUTE CORNER RADIUS - SIDE CUTTING



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

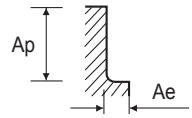
ISO	VDI 3323	Material Description	Side Cutting		Para-meter	Diameter (Ø)						
			Ae	Ap		1/16	1/8	3/16	1/4	5/16	3/8	1/2
P	5	Non-alloy steel	0.03D	0.8D	RPM	43210	21220	17000	12770	10250	8450	6490
					IPM	71	54	68	60	62	60	54
	8	Low alloy steel	0.03D	0.8D	RPM	43210	21220	17000	12770	10250	8450	6490
					IPM	71	54	68	60	62	60	54
	9		0.03D	0.8D	RPM	43210	21220	17000	12770	10250	8450	6490
					IPM	71	54	68	60	62	60	54
	11.1	High alloyed steel, and tool steel	0.03D	0.8D	RPM	43210	21220	17000	12770	10250	8450	6490
					IPM	71	54	68	60	62	60	54
	11.2		0.03D	0.8D	RPM	33730	16840	13490	10090	8090	6640	5100
					IPM	52	38	52	43	44	43	38
H	38.1	Hardened steel	0.03D	0.8D	RPM	33730	16840	13490	10090	8090	6640	5100
					IPM	52	38	52	43	44	43	38
	38.2		0.03D	0.8D	RPM	22710	11180	8960	6700	5410	4430	3400
					IPM	34	26	34	29	30	29	26
	39.1		0.03D	0.8D	RPM	18800	9270	6900	5150	4170	3450	2580
					IPM	22	16	20	18	18	16	14
	39.2		0.03D	0.8D	RPM	14270	7310	5510	4070	3350	2780	2060
					IPM	13	10	12	10	11	10	9
	39.3		0.03D	0.8D	RPM	12310	6230	4790	3610	2880	2370	1800
					IPM	9	7	9	8	8	7	7
	40	Chilled Cast Iron	0.03D	0.8D	RPM	33730	16840	13490	10090	8090	6640	5100
					IPM	52	38	52	43	44	43	38
	41	Hardened Cast Iron	0.03D	0.8D	RPM	22710	11180	8960	6700	5410	4430	3400
					IPM	34	26	34	29	30	29	26

X1-EH END MILLS

RECOMMENDED CUTTING CONDITIONS

HPK17 SERIES

4 FLUTE CORNER RADIUS - SIDE CUTTING



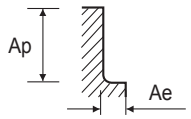
SFM = Surface Feet per Minute
IPM = Inches Per Minute
RPM = Revolutions Per Minute
Ap : Inch (Axial Depth of Cut)
IPT = Inches Per Tooth
Ae : Inch (Radial Depth of Cut)

ISO	VDI 3323	Material Description	Side Cutting Ae	Side Cutting Ap	Para-meter	Diameter (Ø) 1	1.2	1.5	1.8	2	2.5
P	5	Non-alloy steel	0.03D	0.8D	RPM	49180	46560	41610	36460	34430	27600
					IPM	62	63	66	68	70	71
	8	Low alloy steel	0.03D	0.8D	RPM	49180	46560	41610	36460	34430	27600
					IPM	62	63	66	68	70	71
	9		0.03D	0.8D	RPM	49180	46560	41610	36460	34430	27600
					IPM	62	63	66	68	70	71
	11.1	High alloyed steel, and tool steel	0.03D	0.8D	RPM	49180	46560	41610	36460	34430	27600
					IPM	62	63	66	68	70	71
	11.2		0.03D	0.8D	RPM	39340	36980	32750	29150	27050	21630
					IPM	43	43	43	45	51	51
H	38.1	Hardened steel	0.03D	0.8D	RPM	39340	36980	32750	29150	27050	21630
					IPM	43	43	43	45	51	51
	38.2		0.03D	0.8D	RPM	26230	24720	21940	19060	18030	14420
					IPM	29	30	31	32	34	34
	39.1		0.03D	0.8D	RPM	21310	19060	17410	15450	14750	11850
					IPM	17	17	19	19	21	21
	39.2		0.03D	0.8D	RPM	16390	14940	13180	11850	11480	9170
					IPM	10	11	12	12	13	13
	39.3		0.03D	0.8D	RPM	13110	12260	10920	10090	9840	7830
					IPM	8	9	10	10	11	10
	40	Chilled Cast Iron	0.03D	0.8D	RPM	39340	36980	32750	29150	27050	21630
					IPM	43	43	43	45	51	51
	41	Hardened Cast Iron	0.03D	0.8D	RPM	26230	24720	21940	19060	18030	14420
					IPM	29	30	31	32	34	34

ISO	VDI 3323	Material Description	Side Cutting Ae	Side Cutting Ap	Para-meter	Diameter (Ø) 3	3.5	4	4.5	5	6	8	10	12
P	5	Non-alloy steel	0.03D	0.8D	RPM	22400	19670	17210	16790	16070	13390	10250	8030	6830
					IPM	71	72	73	77	81	78	77	71	71
	8	Low alloy steel	0.03D	0.8D	RPM	22400	19670	17210	16790	16070	13390	10250	8030	6830
					IPM	71	72	73	77	81	78	77	71	71
	9		0.03D	0.8D	RPM	22400	19670	17210	16790	16070	13390	10250	8030	6830
					IPM	71	72	73	77	81	78	77	71	71
	11.1	High alloyed steel, and tool steel	0.03D	0.8D	RPM	22400	19670	17210	16790	16070	13390	10250	8030	6830
					IPM	71	72	73	77	81	78	77	71	71
	11.2		0.03D	0.8D	RPM	18030	15450	13520	12790	12790	10660	7990	6390	5460
					IPM	51	52	53	57	60	57	54	51	52
H	38.1	Hardened steel	0.03D	0.8D	RPM	18030	15450	13520	12790	12790	10660	7990	6390	5460
					IPM	51	52	53	57	60	57	54	51	52
	38.2		0.03D	0.8D	RPM	12020	10300	9020	8780	8520	7100	5330	4260	3550
					IPM	34	35	35	38	40	38	36	34	34
	39.1		0.03D	0.8D	RPM	9840	8450	7380	6950	6560	5460	4100	3280	2730
					IPM	22	22	22	23	24	22	21	20	19
	39.2		0.03D	0.8D	RPM	7650	6590	5740	5460	5250	4370	3280	2620	2190
					IPM	13	13	14	14	15	14	13	12	12
	39.3		0.03D	0.8D	RPM	6560	5670	4920	4740	4590	3830	2870	2300	1910
					IPM	9	10	10	11	12	11	10	9	9
	40	Chilled Cast Iron	0.03D	0.8D	RPM	18030	15450	13520	12790	12790	10660	7990	6390	5460
					IPM	51	52	53	57	60	57	54	51	52
	41	Hardened Cast Iron	0.03D	0.8D	RPM	12020	10300	9020	8780	8520	7100	5330	4260	3550
					IPM	34	35	35	38	40	38	36	34	34

HPK27 SERIES

6 FLUTE CORNER RADIUS - SIDE CUTTING

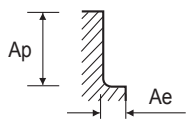


SFM = Surface Feet per Minute
IPM = Inches Per Minute
RPM = Revolutions Per Minute
Ap : Inch (Axial Depth of Cut)
IPT = Inches Per Tooth
Ae : Inch (Radial Depth of Cut)

ISO	VDI 3323	Material Description	Side Cutting Ae	Side Cutting Ap	Parameter	Diameter (Ø) 1/4	5/16	3/8	1/2	5/8
P	5	Non-alloy steel	0.05D	1.0D	RPM	24150	21270	18440	12670	10400
					IPM	205	197	188	173	164
	8	Low alloy steel	0.05D	1.0D	RPM	24150	21270	18440	12670	10400
					IPM	205	197	188	173	164
	9		0.05D	1.0D	RPM	24150	21270	18440	12670	10400
					IPM	205	197	188	173	164
	11.1	High alloyed steel, and tool steel	0.05D	1.0D	RPM	24150	21270	18440	12670	10400
					IPM	205	197	188	173	164
	11.2		0.05D	1.0D	RPM	22870	20190	17510	12150	10090
					IPM	187	180	172	157	151
H	38.1	Hardened steel	0.05D	1.0D	RPM	22870	20190	17510	12150	10090
					IPM	187	180	172	157	151
	38.2		0.05D	1.0D	RPM	15550	13600	11690	7780	6230
					IPM	187	177	167	145	139
	39.1		0.03D	1.0D	RPM	13130	11480	9790	6440	5200
					IPM	127	118	111	96	95
	39.2		0.03D	1.0D	RPM	10200	8960	7670	5150	4170
					IPM	80	75	71	61	52
	39.3		0.03D	1.0D	RPM	7780	6800	5870	3910	3090
					IPM	56	53	50	44	35
	40	Chilled Cast Iron	0.05D	1.0D	RPM	22870	20190	17510	12150	10090
					IPM	187	180	172	157	151
	41	Hardened Cast Iron	0.05D	1.0D	RPM	15550	13600	11690	7780	6230
					IPM	187	177	167	145	139

HPK18 SERIES

6 FLUTE CORNER RADIUS - SIDE CUTTING



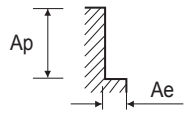
ISO	VDI 3323	Material Description	Side Cutting Ae	Side Cutting Ap	Parameter	Diameter (Ø) 6	8	10	12
P	5	Non-alloy steel	0.05D	1.0D	RPM	6560	4960	3970	3330
					IPM	60	61	59	55
	8	Low alloy steel	0.05D	1.0D	RPM	6560	4960	3970	3330
					IPM	60	61	59	55
	9		0.05D	1.0D	RPM	6560	4960	3970	3330
					IPM	60	61	59	55
	11.1	High alloyed steel, and tool steel	0.05D	1.0D	RPM	6560	4960	3970	3330
					IPM	60	61	59	55
	11.2		0.05D	1.0D	RPM	5790	4430	3480	2900
					IPM	49	51	48	44
H	38.1	Hardened steel	0.05D	1.0D	RPM	5790	4430	3480	2900
					IPM	49	51	48	44
	38.2		0.05D	1.0D	RPM	5190	3980	3080	2600
					IPM	43	43	40	38
	39.1		0.03D	1.0D	RPM	4540	3400	2690	2270
					IPM	35	35	34	32
	39.2		0.03D	1.0D	RPM	3940	2950	2360	1970
					IPM	29	29	28	26
	39.3		0.03D	1.0D	RPM	2620	1970	1610	1370
					IPM	17	17	17	16
	40	Chilled Cast Iron	0.05D	1.0D	RPM	5790	4430	3480	2900
					IPM	49	51	48	44
	41	Hardened Cast Iron	0.05D	1.0D	RPM	5190	3980	3080	2600
					IPM	43	43	40	38

X1-EH END MILLS

RECOMMENDED CUTTING CONDITIONS

HPK21 SERIES

4 FLUTE SQUARE - SIDE CUTTING

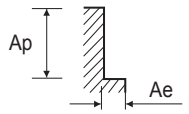


SFM = Surface Feet per Minute
IPM = Inches Per Minute
RPM = Revolutions Per Minute
Ap : Inch (Axial Depth of Cut)
IPT = Inches Per Tooth
Ae : Inch (Radial Depth of Cut)

ISO	VDI 3323	Material Description	Side Cutting		Para-meter	Diameter (Ø)									
			Ae	Ap		1	2	3	4	5	6	8	10	12	16
P	5	Non-alloy steel	0.03D	0.8D	RPM	49180	34430	22400	17210	16070	13390	10250	8030	6830	5020
					IPM	62	70	71	73	81	78	77	71	71	61
	8	Low alloy steel	0.03D	0.8D	RPM	49180	34430	22400	17210	16070	13390	10250	8030	6830	5020
					IPM	62	70	71	73	81	78	77	71	71	61
	9		0.03D	0.8D	RPM	49180	34430	22400	17210	16070	13390	10250	8030	6830	5020
					IPM	62	70	71	73	81	78	77	71	71	61
	11.1	High alloyed steel, and tool steel	0.03D	0.8D	RPM	49180	34430	22400	17210	16070	13390	10250	8030	6830	5020
					IPM	62	70	71	73	81	78	77	71	71	61
	11.2		0.03D	0.8D	RPM	39340	27050	18030	13520	12790	10660	7990	6390	5460	4000
					IPM	43	51	51	53	60	57	54	51	52	45
H	38.1	Hardened steel	0.03D	0.8D	RPM	39340	27050	18030	13520	12790	10660	7990	6390	5460	4000
					IPM	43	51	51	53	60	57	54	51	52	45
	38.2		0.03D	0.8D	RPM	26230	18030	12020	9020	8520	7100	5330	4260	3550	2660
					IPM	29	34	34	35	40	38	36	34	34	29
	39.1		0.03D	0.8D	RPM	21310	14750	9840	7380	6560	5460	4100	3280	2730	2050
					IPM	17	21	22	22	24	22	21	20	19	17
	39.2		0.03D	0.8D	RPM	16390	11480	7650	5740	5250	4370	3280	2620	2190	1640
					IPM	10	13	13	14	15	14	13	12	12	11
	39.3		0.03D	0.8D	RPM	13110	9840	6560	4920	4590	3830	2870	2300	1910	1440
					IPM	8	11	9	10	12	11	10	9	9	8
	40	Chilled Cast Iron	0.03D	0.8D	RPM	39340	27050	18030	13520	12790	10660	7990	6390	5460	4000
					IPM	43	51	51	53	60	57	54	51	52	45
	41	Hardened Cast Iron	0.03D	0.8D	RPM	26230	18030	12020	9020	8520	7100	5330	4260	3550	2660
					IPM	29	34	34	35	40	38	36	34	34	29

HPK23 SERIES

4&6 FLUTE SQUARE - SIDE CUTTING



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

ISO	VDI 3323	Material Description	Side Cutting Ae	Side Cutting Ap	Parameter	Diameter (Ø) 1	2	3	4	5	6	8	10	12
P	5	Non-alloy steel	0.04D	1.5D	RPM	39340	19670	13110	9840	7870	6560	4920	3940	3280
					IPM	50	40	41	42	40	60	60	59	54
	8	Low alloy steel	0.04D	1.5D	RPM	39340	19670	13110	9840	7870	6560	4920	3940	3280
					IPM	50	40	41	42	40	60	60	59	54
	9		0.04D	1.5D	RPM	39340	19670	13110	9840	7870	6560	4920	3940	3280
					IPM	50	40	41	42	40	60	60	59	54
	11.1	High alloyed steel, and tool steel	0.04D	1.5D	RPM	39340	19670	13110	9840	7870	6560	4920	3940	3280
					IPM	50	40	41	42	40	60	60	59	54
	11.2		0.04D	1.5D	RPM	31150	15570	10380	7790	6230	5190	3890	3120	2600
					IPM	34	29	29	31	29	43	42	40	38
H	38.1	Hardened steel	0.04D	1.5D	RPM	31150	15570	10380	7790	6230	5190	3890	3120	2600
					IPM	34	29	29	31	29	43	42	40	38
	38.2		0.04D	1.5D	RPM	31150	15570	10380	7790	6230	5190	3890	3120	2600
					IPM	34	29	29	31	29	43	42	40	38
	39.1		0.04D	1.5D	RPM	22280	11140	7430	5570	4460	3710	2790	2230	1860
					IPM	25	21	21	22	21	27	28	26	25
	39.2		0.04D	1.5D	RPM	22280	11140	7430	5570	4460	3710	2790	2230	1860
					IPM	25	21	21	22	21	27	28	26	25
	39.3		0.04D	1.5D	RPM	15920	7960	5310	3980	3180	2650	1990	1590	1330
					IPM	13	11	12	12	12	18	17	17	16
	40	Chilled Cast Iron	0.04D	1.5D	RPM	31150	15570	10380	7790	6230	5190	3890	3120	2600
					IPM	34	29	29	31	29	43	42	40	38
	41	Hardened Cast Iron	0.04D	1.5D	RPM	31150	15570	10380	7790	6230	5190	3890	3120	2600
					IPM	34	29	29	31	29	43	42	40	38

ISO	VDI 3323	Material Description	Side Cutting Ae	Side Cutting Ap	Parameter	Diameter (Ø) 1	2	3	4	5	6	8	10	12
P	5	Non-alloy steel	0.01D	3.0D	RPM	19670	9840	6560	4920	3940	3280	2460	1970	1640
					IPM	25	20	21	21	20	31	29	28	27
	8	Low alloy steel	0.01D	3.0D	RPM	19670	9840	6560	4920	3940	3280	2460	1970	1640
					IPM	25	20	21	21	20	31	29	28	27
	9		0.01D	3.0D	RPM	19670	9840	6560	4920	3940	3280	2460	1970	1640
					IPM	25	20	21	21	20	31	29	28	27
	11.1	High alloyed steel, and tool steel	0.01D	3.0D	RPM	19670	9840	6560	4920	3940	3280	2460	1970	1640
					IPM	25	20	21	21	20	31	29	28	27
	11.2		0.01D	3.0D	RPM	19670	9840	6560	4920	3940	3280	2460	1970	1640
					IPM	22	19	19	19	19	23	23	23	24
H	38.1	Hardened steel	0.01D	3.0D	RPM	19670	9840	6560	4920	3940	3280	2460	1970	1640
					IPM	22	19	19	19	19	23	23	23	24
	38.2		0.01D	3.0D	RPM	19670	9840	6560	4920	3940	3280	2460	1970	1640
					IPM	22	19	19	19	19	23	23	23	24
	39.1		0.01D	3.0D	RPM	16390	8200	5460	4100	3280	2730	2050	1640	1370
					IPM	18	15	15	16	15	19	19	19	19
	39.2		0.01D	3.0D	RPM	16390	8200	5460	4100	3280	2730	2050	1640	1370
					IPM	18	15	15	16	15	19	19	19	19
	40	Chilled Cast Iron	0.01D	3.0D	RPM	19670	9840	6560	4920	3940	3280	2460	1970	1640
					IPM	22	19	19	19	19	23	23	23	24
	41	Hardened Cast Iron	0.01D	3.0D	RPM	19670	9840	6560	4920	3940	3280	2460	1970	1640
					IPM	22	19	19	19	19	23	23	23	24

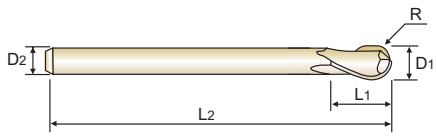
4G MILL END MILLS

PLAIN SHANK **GMF15 SERIES**

CARBIDE, 2 FLUTE BALL NOSE

▶ New coating and new tool geometry give 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° | R ±.0002 (R≤1/8) | R ±.0004 (R>1/8) | PLAIN | Y Coating | p.A184

Unit : Inch

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GMF15901	R.002	.004	3/16	.008	1-1/2
GMF15902	R.004	.008	3/16	1/64	1-1/2
GMF15903	R.006	.012	3/16	1/32	1-1/2
GMF15904	R.075	.015	3/16	1/32	1-1/2
GMF15905	R.010	.020	3/16	3/64	1-1/2
GMF15906	R.012	.024	3/16	3/64	1-1/2
GMF15907	R.014	.028	3/16	1/16	1-1/2
GMF15908	R.0155	.031	3/16	1/16	1-1/2
GMF15909	R.0175	.035	3/16	5/64	1-1/2
GMF15003	R.0234	3/64	3/16	3/32	2
GMF15004	R1/32	1/16	3/16	5/32	2
GMF15914	R.0391	5/64	3/16	3/16	2
GMF15006	R3/64	3/32	1/4	1/4	2-3/8
GMF15919	R1/16	1/8	1/4	1/4	2-3/8
GMF15923	R3/32	3/16	1/4	5/16	2-3/4
GMF15013	R.102	13/64	1/4	5/16	2-3/8
GMF15929	R1/8	1/4	1/4	1/2	3-1/2
GMF15018	R9/64	9/32	5/16	9/16	3-1/2
GMF15931	R5/32	5/16	5/16	1/2	3-1/2
GMF15934	R3/16	3/8	3/8	5/8	3-1/2
GMF15939	R1/4	1/2	1/2	11/16	4
GMF15036	R9/32	9/16	9/16	1	4
GMF15040	R5/16	5/8	5/8	1	4

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

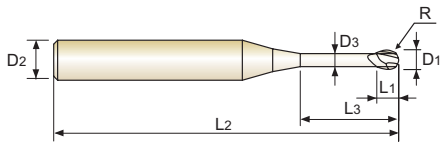
ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	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			
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
Recommended																		○		◎	○

CARBIDE, 2 FLUTE BALL NOSE with NECK

- ▶ New coating and new tool geometry give 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° | R ±.0002 (R≤1/8) | R ±.0004 (R>1/8) | PLAIN | Y Coating

p.A185-A187

Unit : Inch

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
GMF16901	R.004	.008	3/16	.008	1/64	1-1/2	.006
GMF16902	R.004	.008	3/16	.008	3/64	1-1/2	.006
GMF16903	R.006	.012	3/16	.010	3/64	1-1/2	.010
GMF16904	R.006	.012	3/16	.010	5/64	1-1/2	.010
GMF16905	R.006	.012	3/16	.010	1/8	1-1/2	.010
GMF16906	R.0075	.015	3/16	1/64	3/64	1-1/2	.013
GMF16907	R.0075	.015	3/16	1/64	5/64	1-1/2	.013
GMF16908	R.0075	.015	3/16	1/64	1/8	1-1/2	.013
GMF16909	R.0075	.015	3/16	1/64	5/32	1-1/2	.013
GMF16910	R.010	.020	3/16	1/64	3/64	1-3/4	.018
GMF16911	R.010	.020	3/16	1/64	5/64	1-3/4	.018
GMF16912	R.010	.020	3/16	1/64	1/8	1-3/4	.018
GMF16913	R.010	.020	3/16	1/64	5/32	1-3/4	.018
GMF16914	R.010	.020	3/16	1/64	3/16	1-3/4	.018
GMF16915	R.010	.020	3/16	1/64	1/4	1-3/4	.018
GMF16916	R.010	.020	3/16	1/64	5/16	1-3/4	.018
GMF16917	R.010	.020	3/16	1/64	3/8	1-3/4	.018
GMF16918	R.012	.024	3/16	1/32	5/64	1-3/4	.022
GMF16919	R.012	.024	3/16	1/32	1/8	1-3/4	.022
GMF16920	R.012	.024	3/16	1/32	5/32	1-3/4	.022
GMF16921	R.012	.024	3/16	1/32	3/16	1-3/4	.022
GMF16922	R.012	.024	3/16	1/32	1/4	1-3/4	.022
GMF16923	R.012	.024	3/16	1/32	5/16	1-3/4	.022
GMF16924	R.012	.024	3/16	1/32	3/8	1-3/4	.022
GMF16925	R.012	.024	3/16	1/32	1/2	1-3/4	.022
GMF16002	R1/64	1/32	3/16	1/32	5/64	1-3/4	.029
GMF16926	R1/64	1/32	3/16	1/32	1/8	1-3/4	.029
GMF16927	R1/64	1/32	3/16	1/32	5/32	1-3/4	.029
GMF16928	R1/64	1/32	3/16	1/32	3/16	1-3/4	.029
GMF16929	R1/64	1/32	3/16	1/32	1/4	1-3/4	.029
GMF16930	R1/64	1/32	3/16	1/32	5/16	1-3/4	.029
GMF16931	R1/64	1/32	3/16	1/32	3/8	1-3/4	.029

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	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				
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
Recommended																		○		◎	○

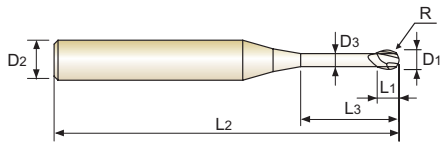
4G MILL END MILLS

PLAIN SHANK **GMF16 SERIES**

CARBIDE, 2 FLUTE BALL NOSE with NECK

▶ New coating and new tool geometry give 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° | R ±.0002 (R≤1/8) | R ±.0004 (R>1/8) | PLAIN | Y Coating

p.A185-A187

Unit : Inch

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
GMF16003	R.0234	3/64	3/16	3/64	1/8	2	.044
GMF16932	R.0234	3/64	3/16	3/64	5/32	2	.044
GMF16933	R.0234	3/64	3/16	3/64	3/16	2	.044
GMF16934	R.0234	3/64	3/16	3/64	1/4	2	.044
GMF16935	R.0234	3/64	3/16	3/64	5/16	2	.044
GMF16936	R.0234	3/64	3/16	3/64	3/8	2	.044
GMF16937	R.0234	3/64	3/16	3/64	1/2	2	.044
GMF16938	R.0234	3/64	3/16	3/64	9/16	2	.044
GMF16939	R.0234	3/64	3/16	3/64	5/8	2	.044
GMF16940	R.0234	3/64	3/16	3/64	3/4	2	.044
GMF16004	R1/32	1/16	3/16	1/16	5/32	2	.060
GMF16941	R1/32	1/16	3/16	1/16	1/4	2	.060
GMF16942	R1/32	1/16	3/16	1/16	5/16	2	.060
GMF16943	R1/32	1/16	3/16	1/16	3/8	2	.060
GMF16944	R1/32	1/16	3/16	1/16	1/2	2	.060
GMF16945	R1/32	1/16	3/16	1/16	9/16	2	.060
GMF16946	R1/32	1/16	3/16	1/16	5/8	2	.060
GMF16947	R1/32	1/16	3/16	1/16	3/4	2	.060
GMF16005	R.0391	5/64	3/16	5/64	1/4	2	.076
GMF16948	R.0391	5/64	3/16	5/64	5/16	2	.076
GMF16949	R.0391	5/64	3/16	5/64	3/8	2	.076
GMF16950	R.0391	5/64	3/16	5/64	1/2	2	.076
GMF16951	R.0391	5/64	3/16	5/64	9/16	2	.076
GMF16952	R.0391	5/64	3/16	5/64	5/8	2	.076
GMF16953	R.0391	5/64	3/16	5/64	11/16	2	.076
GMF16954	R.0391	5/64	3/16	5/64	3/4	2	.076
GMF16955	R.0391	5/64	3/16	5/64	1	2-3/8	.076
GMF16956	R.0391	5/64	3/16	5/64	1-3/16	2-3/4	.076
GMF16006	R3/64	3/32	3/16	3/32	3/8	2	.089
GMF16957	R3/64	3/32	3/16	3/32	3/4	2	.089
GMF16008	R1/16	1/8	1/4	1/8	5/16	2	.119
GMF16958	R1/16	1/8	1/4	1/8	3/8	2	.119

NEXT PAGE ▶

◎ : Excellent ○ : Good

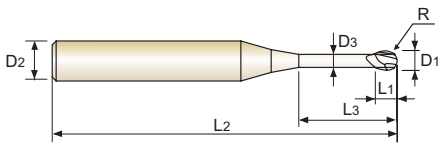
ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	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			
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
Recommended																		○		◎	○

CARBIDE, 2 FLUTE BALL NOSE with NECK

- ▶New coating and new tool geometry give 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° | R ±.0002 (R≤1/8) | R ±.0004 (R>1/8) | PLAIN | Y Coating

p.A185-A187

Unit : Inch

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter 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	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	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				
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
Recommended																		○		◎	○

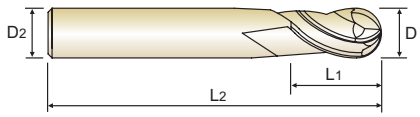
4G MILL END MILLS

PLAIN SHANK **GMF17 SERIES**

CARBIDE, 4 FLUTE BALL NOSE

- ▶ New coating and new tool geometry give 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° | R ±.0002 (R1/8) | R ±.0004 (R>1/8) | PLAIN | Y Coating

p.A188

Unit : Inch

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

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

◎ : Excellent ○ : Good

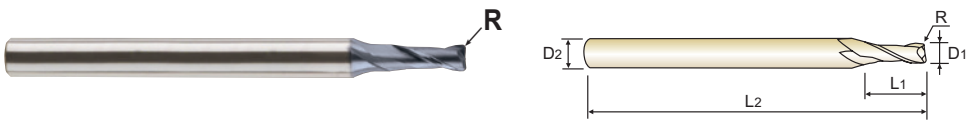
ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	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			
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
Recommended																		○		◎	○

4G MILL END MILLS

CARBIDE, 2 FLUTE CORNER RADIUS

- New coating and new tool geometry give 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 | 2 | 30° | R ±.0004 (D≤1/4) | R ±.0006 (D>1/4) | PLAIN | Y Coating | p.A188

Unit : Inch

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

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

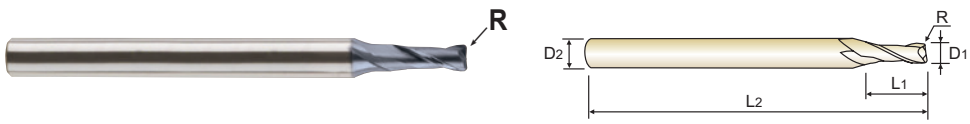
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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
Recommended																		○		◎	○

4G MILL END MILLS

PLAIN SHANK **GMF18 SERIES**

CARBIDE, 2 FLUTE CORNER RADIUS

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



CARBIDE | 2 | 30° | R ±.0004 (D≤1/4) | R ±.0006 (D>1/4) | PLAIN | Y Coating

p.A188

Unit : Inch

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GMF18916	R.040	**1/4**	1/4	5/8	2-3/8
GMF18020	R.020	**5/16**	5/16	3/4	2-3/4
GMF18945	R.030	**5/16**	5/16	3/4	2-3/4
GMF18921	R.040	**5/16**	5/16	3/4	2-3/4
GMF18024	R.020	**3/8**	3/8	1	3
GMF18947	R.030	**3/8**	3/8	1	3
GMF18926	R.040	**3/8**	3/8	1	3
GMF18032	R.020	**1/2**	1/2	1-3/16	3-1/8
GMF18949	R.030	**1/2**	1/2	1-3/16	3-1/8
GMF18931	R.040	**1/2**	1/2	1-3/16	3-1/8

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

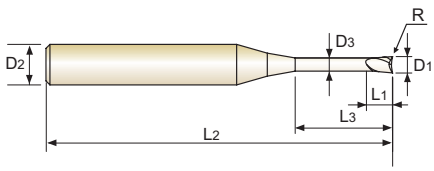
ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	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			
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
Recommended																		○		◎	○

CARBIDE, 2 FLUTE CORNER RADIUS with NECK

- New coating and new tool geometry give 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° | R ±.0004 | R ±.0006 | PLAIN | Y Coating

p.A189-A190

D≤1/4 D>1/4

Unit : Inch

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
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

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	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			
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
Recommended																		○		◎	○

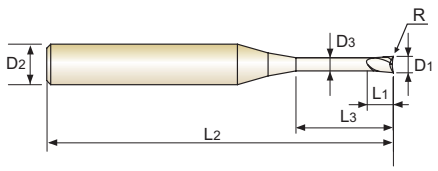
4G MILL END MILLS

PLAIN SHANK **GMF19 SERIES**

CARBIDE, 2 FLUTE CORNER RADIUS with NECK

▶ New coating and new tool geometry give 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° | R ±.0004 | R ±.0006 | PLAIN | Y Coating

p.A189-A190

D≤1/4 D>1/4

Unit : Inch

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
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

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◎ : Excellent ○ : Good

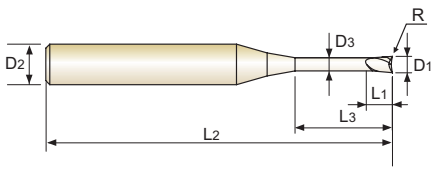
ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	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			
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
Recommended																		○		◎	○

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- ▶New coating and new tool geometry give outstanding cutting performance and wear resistance
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- ▶Available in many more various length shanks and corner radiuses





CARBIDE | 2 | 30° | R ±.0004 | R ±.0006 | PLAIN | Y Coating

p.A189-A190

D≤1/4 D>1/4

Unit : Inch

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
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

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	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			
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
Recommended																		○		◎	○

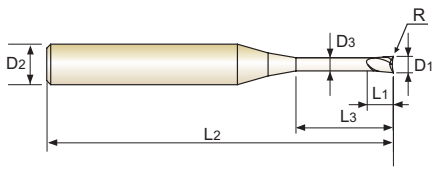
4G MILL END MILLS

PLAIN SHANK **GMF19 SERIES**

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CARBIDE | 2 | 30° | R ±.0004 | R ±.0006 | PLAIN | Y Coating

p.A189-A190

Unit : Inch

EDP No.	Corner Radius R (D≤1/4 / D>1/4)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter 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

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◎ : Excellent ○ : Good

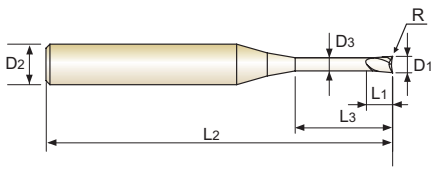
ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	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			
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
Recommended																		○		◎	○

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CARBIDE | 2 | 30° | R ±.0004 | R ±.0006 | PLAIN | Y Coating

p.A189-A190

Unit : Inch

EDP No.	Corner Radius R (D≤1/4 / D>1/4)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter 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

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	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				
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
Recommended																		○		◎	○

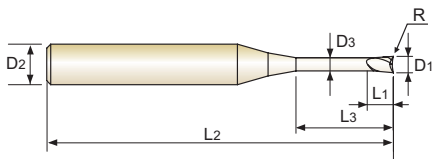
4G MILL END MILLS

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CARBIDE | 2 | 30° | R ±.0004 | R ±.0006 | PLAIN | Y Coating

p.A189-A190

Unit : Inch

EDP No.	Corner Radius R (D≤1/4)	Corner Radius R (D>1/4)	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

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	

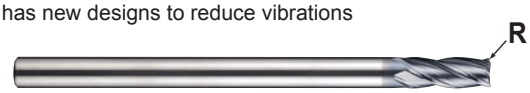
◎ : Excellent ○ : Good

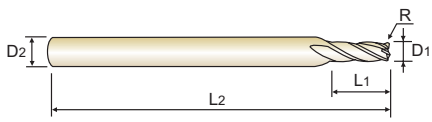
ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	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			
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
Recommended																		○		◎	○

CARBIDE, 4 FLUTE CORNER RADIUS

- ▶New coating and new tool geometry give outstanding cutting performance and wear resistance
- ▶Excellent performance when cutting steels, up to HRc55
- ▶Available in many more various length shanks and corner radiuses
- ▶Due to Multiple Helix on 1/8" and over diameter end mills, vibration is minimized and tool life increased
- ▶4 flute series has new designs to reduce vibrations





CARBIDE | 4 | 27°/30° | R ±.0008 | PLAIN | Y Coating

p.A191

D1<Ø1/8, 30° Helix

Unit : Inch

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

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

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	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			
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
Recommended																		○		◎	○

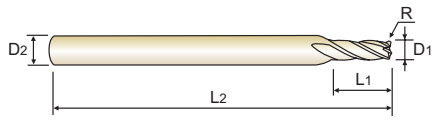
4G MILL END MILLS

PLAIN SHANK **GMF20 SERIES**

CARBIDE, 4 FLUTE CORNER RADIUS

- ▶ New coating and new tool geometry give outstanding cutting performance and wear resistance
- ▶ Excellent performance when cutting steels, up to HRc55
- ▶ Available in many more various length shanks and corner radiuses
- ▶ Due to Multiple Helix on 1/8" and over diameter end mills, vibration is minimized and tool life increased
- ▶ 4 flute series has new designs to reduce vibrations





CARBIDE | 4 | 27°/30° | R ±.0008 | PLAIN | Y Coating

p.A191

D1<Ø1/8, 30° Helix

Unit : Inch

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GMF20024	R.020	**3/8**	3/8	1	3
GMF20939	R.030	**3/8**	3/8	1	3
GMF20919	R.012	**3/8**	3/8	1	4
GMF20921	R.040	**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

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

◎ : Excellent ○ : Good

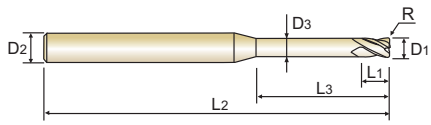
ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	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			
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
Recommended																		○		◎	○

CARBIDE, 4 FLUTE CORNER RADIUS with NECK

- ▶New coating and new tool geometry give 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





CARBIDE | 4 | 27°/30° | R ±.0008 | PLAIN | Y Coating

p.A192

D1<Ø1/8, 30° Helix

Unit : Inch

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
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

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◎ : 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	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			
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
Recommended																		○		◎	○

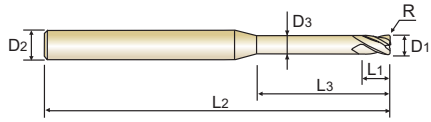
4G MILL END MILLS

PLAIN SHANK **GMF21 SERIES**

CARBIDE, 4 FLUTE CORNER RADIUS with NECK

- ▶ New coating and new tool geometry give 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 have new designs to reduce vibrations





CARBIDE | 4 | 27°/30° | R ±.0008 | PLAIN | Y Coating

p.A192

D1<Ø1/8, 30° Helix

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

NEXT PAGE ▶

◎ : Excellent ○ : Good

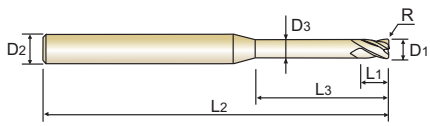
ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	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			
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
Recommended																		○		◎	○

CARBIDE, 4 FLUTE CORNER RADIUS with NECK

- ▶New coating and new tool geometry give 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 have new designs to reduce vibrations





CARBIDE | 4 | 27°/30° | R ±.0008 | PLAIN | Y Coating

p.A192

D1<Ø1/8, 30° Helix

Unit : Inch

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
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					
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	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			
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
Recommended																		○		◎	○

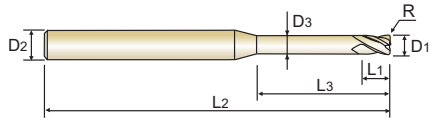
4G MILL END MILLS

PLAIN SHANK **GMF21 SERIES**

CARBIDE, 4 FLUTE CORNER RADIUS with NECK

- ▶ New coating and new tool geometry give 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





CARBIDE | 4 | 27°/30° | R ±.0008 | PLAIN | Y Coating

p.A192

D1<Ø1/8, 30° Helix

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

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◎ : Excellent ○ : Good

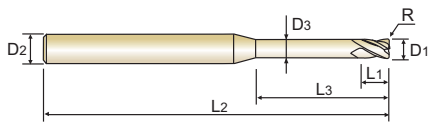
ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	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			
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
Recommended																		○		◎	○

CARBIDE, 4 FLUTE CORNER RADIUS with NECK

- ▶New coating and new tool geometry give 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





CARBIDE | 4 | 27°/30° | R ±.0008 | PLAIN | Y Coating

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D1<Ø1/8, 30° Helix

Unit : Inch

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
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

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

◎ : 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	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			
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
Recommended																		○		◎	○

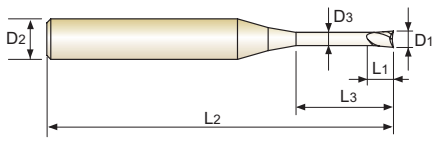
4G MILL END MILLS

PLAIN SHANK **GMF22 SERIES**

CARBIDE, 2 FLUTE with NECK

- ▶ New coating and new tool geometry give 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 | Y Coating

p.A193-A195

Unit : Inch

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter 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

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	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			
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
Recommended																		○		◎	○

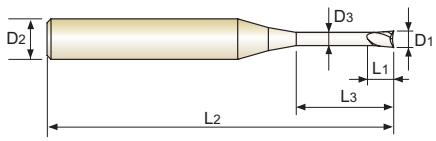
4G MILL END MILLS

PLAIN SHANK **GMF22 SERIES**

CARBIDE, 2 FLUTE with NECK

- ▶ New coating and new tool geometry give outstanding cutting performance and wear resistance
- ▶ Excellent performance when cutting steels, up to HRc55
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- ▶ For 1/32" and under 1/32" diameter sizes, double neck increases tool rigidity and minimizes vibration
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CARBIDE | 2 | 30° | PLAIN | Y Coating

p.A193-A195

Unit : Inch

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter 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

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	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			
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
Recommended																		○		◎	○

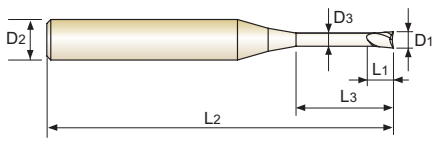
4G MILL END MILLS

PLAIN SHANK **GMF22 SERIES**

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- Excellent for Rib Processing of various depths





CARBIDE | 2 | 30° | PLAIN | Y Coating

p.A193-A195

Unit : Inch

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter 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~-.0005	h5
over Ø1/4	0~-.0006	

◎ : 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	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	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

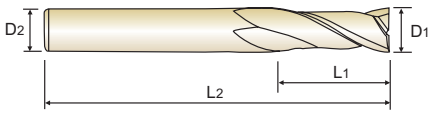
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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
Recommended																		○		◎	○

4G MILL END MILLS

CARBIDE, 2 FLUTE LONG LENGTH

- New coating and new tool geometry give 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 | Y Coating

p.A196-A197

Unit : Inch

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

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	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			
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
Recommended																		○		◎	○

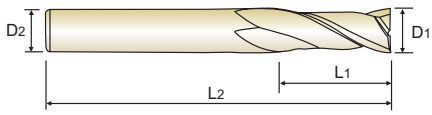
4G MILL END MILLS

PLAIN SHANK **GMF24 SERIES**

CARBIDE, 2 FLUTE LONG LENGTH

▶ New coating and new tool geometry give 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 | Y Coating

p.A196-A197

Unit : Inch

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GMF24922	13/64	1/4	1-1/2	4
GMF24016	1/4	1/4	5/8	2-3/8
GMF24924	1/4	1/4	3/4	2-3/4
GMF24926	1/4	1/4	1	3
GMF24927	1/4	1/4	1-3/16	3-1/8
GMF24930	1/4	1/4	1-3/8	3-1/2
GMF24931	1/4	1/4	1-1/2	3-1/2
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
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
GMF24940	3/8	3/8	1-3/8	3-1/2
GMF24941	3/8	3/8	1-1/2	3-1/2
GMF24943	3/8	3/8	1-3/4	4
GMF24944	3/8	3/8	2	4
GMF24945	3/8	3/8	2-3/8	4-1/4
GMF24032	1/2	1/2	1-3/8	3-1/2
GMF24946	1/2	1/2	1-1/2	4
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

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

◎ : 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	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			
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
Recommended																		○		◎	○

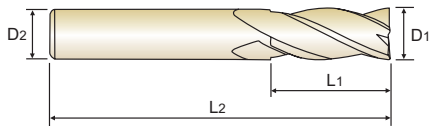
4G MILL END MILLS

PLAIN SHANK **GMF25 SERIES**

CARBIDE, 4 FLUTE

▶ New coating and new tool geometry give 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 | Y Coating

p.A198

D1<Ø1/8, 30° Helix

Unit : Inch

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

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

◎ : 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	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			
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
Recommended																		○		◎	○

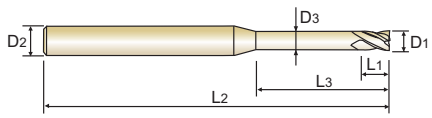
4G MILL END MILLS

PLAIN SHANK **GMF28 SERIES**

CARBIDE, 4 FLUTE with NECK

▶ New coating and new tool geometry give 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 | Y Coating

p.A199

Unit : Inch

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
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

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	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			
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
Recommended																		○		◎	○

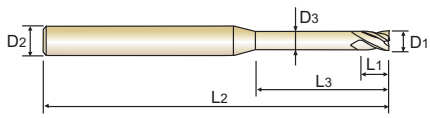
4G MILL END MILLS

PLAIN SHANK **GMF28 SERIES**

CARBIDE, 4 FLUTE with NECK

- ▶ New coating and new tool geometry give 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 | Y Coating

p.A199

Unit : Inch

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
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

◎ : 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	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			
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
Recommended																		○		◎	○

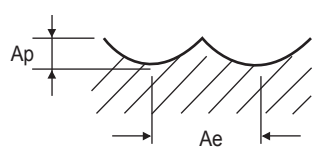
4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

GMF15 SERIES — 2 FLUTE BALL NOSE - PLANE

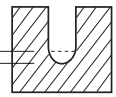
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)											
						.004	.008	.012	.015	.020	.024	.028	.031	.035	3/64	1/16	5/64
P	1-8	Non-alloy steel Low alloy steel	0.08D	0.05D	RPM	39400	29530	29530	29490	29530	29530	29530	30480	30370	30240	28350	30050
					IPM(FEED)	21	28	35	44	56	68	79	94	104	122	121	136
	9	Low alloy steel	0.08D	0.05D	RPM	39370	29530	29530	31500	29530	29530	29530	30480	30370	29030	27210	28910
					IPM(FEED)	19	24	31	42	49	58	68	79	90	102	100	114
	10-11.1	High alloyed steel, and tool steel	0.08D	0.05D	RPM	39400	29530	29530	29490	29530	29530	29530	30480	30370	30240	28350	30050
					IPM(FEED)	21	28	35	44	56	68	79	94	104	122	121	136
	11.2		0.08D	0.05D	RPM	39370	29530	29530	31500	29530	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	RPM	39400	29530	29530	29490	29530	29530	29530	30480	30370	30240	28350	30050
					IPM(FEED)	21	28	35	44	56	68	79	94	104	122	121	136
H	38.1-38.2	Hardened steel	0.08D	0.05D	RPM	32480	26570	26570	28350	26570	26570	26570	27430	27330	26000	24380	24190
					IPM(FEED)	16	22	28	37	44	51	60	72	81	92	89	95
	40	Chilled Cast Iron	0.08D	0.05D	RPM	39370	29530	29530	31500	29530	29530	29530	30480	30370	29030	27210	28910
					IPM(FEED)	19	24	31	42	49	58	68	79	90	102	100	114
	41	Hardened Cast Iron	0.08D	0.05D	RPM	32480	26570	26570	28350	26570	26570	26570	27430	27330	26000	24380	24190
					IPM(FEED)	16	22	28	37	44	51	60	72	81	92	89	95

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
P	1-8	Non-alloy steel Low alloy steel	0.08D	0.05D	RPM	24990	18770	12310	10820	7880	7070	6710	5860	3940	3670	3370
					IPM(FEED)	145	134	132	133	108	102	100	92	66	65	63
	9	Low alloy steel	0.08D	0.05D	RPM	24040	18030	11820	10350	7600	6820	6470	5610	3780	3530	3240
					IPM(FEED)	125	118	114	112	92	86	83	77	56	58	52
	10-11.1	High alloyed steel, and tool steel	0.08D	0.05D	RPM	24990	18770	12310	10820	7880	7070	6710	5860	3940	3670	3370
					IPM(FEED)	145	134	132	133	108	102	100	92	66	65	63
	11.2		0.08D	0.05D	RPM	24040	18030	11820	10350	7600	6820	6470	5610	3780	3530	3240
					IPM(FEED)	125	118	114	112	92	86	83	77	56	58	52
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.08D	0.05D	RPM	24990	18770	12310	10820	7880	7070	6710	5860	3940	3670	3370
					IPM(FEED)	145	134	132	133	108	102	100	92	66	65	63
H	38.1-38.2	Hardened steel	0.08D	0.05D	RPM	20160	15120	9920	8720	6240	5680	5440	4720	3170	2970	2720
					IPM(FEED)	99	89	86	86	69	66	64	60	42	42	41
	40	Chilled Cast Iron	0.08D	0.05D	RPM	24040	18030	11820	10350	7600	6820	6470	5610	3780	3530	3240
					IPM(FEED)	125	118	114	112	92	86	83	77	56	58	52
	41	Hardened Cast Iron	0.08D	0.05D	RPM	20160	15120	9920	8720	6240	5680	5440	4720	3170	2970	2720
					IPM(FEED)	99	89	86	86	69	66	64	60	42	42	41



GMF16 SERIES 2 FLUTE BALL NOSE - SLOTTING

(Depth of Cut per one pass) Ap



ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)														
				.008	.008	.012	.012	.012	.015	.015	.015	.015	.020	.020	.020	.020	.020	.020
			LBS	1/64	3/64	3/64	5/64	1/8	3/64	5/64	1/8	5/32	3/64	5/64	1/8	5/32	3/16	1/4
P	1-8	Non-alloy steel Low alloy steel	RPM	49210	44290	49210	44290	39370	43040	38740	38740	34440	33660	33660	30300	30300	30300	26930
			IPM(FEED)	13	10	19	15	12	20	16	16	13	27	27	22	22	22	17
			Ap	.0007	.0003	.0007	.0004	.0003	.0009	.0006	.0004	.0004	.0018	.0013	.0007	.0007	.0004	.0004
	9	Low alloy steel	RPM	49210	44290	49210	44290	39370	40730	36660	36660	32590	31790	31790	28610	28610	28610	25430
			IPM(FEED)	12	10	17	14	11	18	14	14	11	22	22	18	18	18	14
			Ap	.0006	.0002	.0006	.0004	.0002	.0008	.0004	.0003	.0003	.0015	.0011	.0006	.0006	.0004	.0004
	10-11.1	High alloyed steel, and tool steel	RPM	49210	44290	49210	44290	39370	43040	38740	38740	34440	33660	33660	30300	30300	30300	26930
			IPM(FEED)	13	10	19	15	12	20	16	16	13	27	27	22	22	22	17
			Ap	.0007	.0003	.0007	.0004	.0003	.0009	.0006	.0004	.0004	.0018	.0013	.0007	.0007	.0004	.0004
	11.2		RPM	49210	44290	49210	44290	39370	40730	36660	36660	32590	31790	31790	28610	28610	28610	25430
			IPM(FEED)	12	10	17	14	11	18	14	14	11	22	22	18	18	18	14
			Ap	.0006	.0002	.0006	.0004	.0002	.0008	.0004	.0003	.0003	.0015	.0011	.0006	.0006	.0004	.0004
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	RPM	49210	44290	49210	44290	39370	43040	38740	38740	34440	33660	33660	30300	30300	30300	26930
			IPM(FEED)	13	10	19	15	12	20	16	16	13	27	27	22	22	22	17
			Ap	.0007	.0003	.0007	.0004	.0003	.0009	.0006	.0004	.0004	.0018	.0013	.0007	.0007	.0004	.0004
H	38.1-38.2	Hardened steel	RPM	42520	38270	42130	37910	33700	35910	32310	32310	28720	28050	28050	25250	25250	25250	22440
			IPM(FEED)	10	8	14	11	9	14	11	11	9	20	20	16	16	16	13
			Ap	.0004	.0002	.0004	.0002	.0002	.0005	.0003	.0002	.0002	.0010	.0007	.0004	.0004	.0002	.0002
	40	Chilled Cast Iron	RPM	49210	44290	49210	44290	39370	40730	36660	36660	32590	31790	31790	28610	28610	28610	25430
			IPM(FEED)	12	10	17	14	11	18	14	14	11	22	22	18	18	18	14
			Ap	.0006	.0002	.0006	.0004	.0002	.0008	.0004	.0003	.0003	.0015	.0011	.0006	.0006	.0004	.0004
	41	Hardened Cast Iron	RPM	42520	38270	42130	37910	33700	35910	32310	32310	28720	28050	28050	25250	25250	25250	22440
			IPM(FEED)	10	8	14	11	9	14	11	11	9	20	20	16	16	16	13
			Ap	.0004	.0002	.0004	.0002	.0002	.0005	.0003	.0002	.0002	.0010	.0007	.0004	.0004	.0002	.0002

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)														
				.020	.020	.024	.024	.024	.024	.024	.024	.024	.024	1/32	1/32	1/32	1/32	1/32
			LBS	5/16	3/8	5/64	1/8	5/32	3/16	1/4	5/16	3/8	1/2	5/64	1/8	5/32	3/16	1/4
P	1-8	Non-alloy steel Low alloy steel	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	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	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		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	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	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	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
	41	Hardened Cast Iron	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

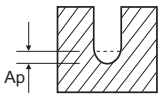
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4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

GMF16 SERIES — 2 FLUTE BALL NOSE - SLOTTING

(Depth of Cut per one pass) Ap

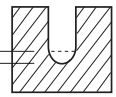


ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)														
				1/32	1/32	3/64	3/64	3/64	3/64	3/64	3/64	3/64	3/64	3/64	3/64	1/16	1/16	1/16
			LBS	5/16	3/8	1/8	5/32	3/16	1/4	5/16	3/8	1/2	9/16	5/8	3/4	5/32	1/4	5/16
P	1-8	Non-alloy steel Low alloy steel	RPM	31020	27580	26510	26510	26510	23860	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	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	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		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	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	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	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	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	5/64	5/64	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	RPM	20320	20320	20320	20320	18070	18140	18140	18140	16330	16330	16330	16330	16330	14510	10890
			IPM(FEED)	48	48	48	48	38	71	71	71	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	RPM	19220	19220	19220	19220	17080	17130	17130	17130	15420	15420	15420	15420	15420	13710	10280
			IPM(FEED)	41	41	41	41	32	60	60	60	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	RPM	20320	20320	20320	20320	18070	18140	18140	18140	16330	16330	16330	16330	16330	14510	10890
			IPM(FEED)	48	48	48	48	38	71	71	71	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		RPM	19220	19220	19220	19220	17080	17130	17130	17130	15420	15420	15420	15420	15420	13710	10280
			IPM(FEED)	41	41	41	41	32	60	60	60	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	RPM	20320	20320	20320	20320	18070	18140	18140	18140	16330	16330	16330	16330	16330	14510	10890
			IPM(FEED)	48	48	48	48	38	71	71	71	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	RPM	17010	17010	17010	17010	15120	15120	15120	15120	13610	13610	13610	13610	13610	12090	9070
			IPM(FEED)	33	33	33	33	26	51	51	51	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	RPM	19220	19220	19220	19220	17080	17130	17130	17130	15420	15420	15420	15420	15420	13710	10280
			IPM(FEED)	41	41	41	41	32	60	60	60	49	49	49	49	49	39	25
			Ap	.0019	.0019	.0012	.0012	.0012	.0041	.0041	.0041	.0024	.0024	.0024	.0015	.0015	.0015	.0009
	41	Hardened Cast Iron	RPM	17010	17010	17010	17010	15120	15120	15120	15120	13610	13610	13610	13610	13610	12090	9070
			IPM(FEED)	33	33	33	33	26	51	51	51	41	41	41	41	41	33	22
			Ap	.0013	.0013	.0008	.0008	.0008	.0027	.0027	.0027	.0016	.0016	.0016	.0010	.0010	.0010	.0006

GMF16 SERIES — 2 FLUTE BALL NOSE - SLOTTING

(Depth of Cut per one pass) Ap



ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)															
				3/32	3/32	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8	3/16	3/16	3/16	3/16
			LBS	3/8	3/4	5/16	3/8	1/2	9/16	5/8	11/16	3/4	1	1-3/16	1-3/8	3/8	1/2	9/16	5/8
P	1-8	Non-alloy steel Low alloy steel	RPM	16590	14930	12940	12940	12940	12940	12940	11650	11650	11650	11650	10360	8230	8230	8230	8230
			IPM(FEED)	80	64	76	76	76	76	76	62	62	62	62	49	65	65	65	65
			Ap	.0059	.0034	.0113	.0113	.0079	.0079	.0079	.0045	.0045	.0045	.0028	.0028	.0169	.0169	.0169	.0118
	9	Low alloy steel	RPM	15640	14080	12190	12190	12190	12190	12190	10970	10970	10970	10970	9750	7810	7810	7810	7810
			IPM(FEED)	66	54	64	64	64	64	64	52	52	52	52	41	55	55	55	55
			Ap	.0049	.0028	.0094	.0094	.0066	.0066	.0066	.0037	.0037	.0037	.0024	.0024	.0141	.0141	.0141	.0098
	10-11.1	High alloyed steel, and tool steel	RPM	16590	14930	12940	12940	12940	12940	12940	11650	11650	11650	11650	10360	8230	8230	8230	8230
			IPM(FEED)	80	64	76	76	76	76	76	62	62	62	62	49	65	65	65	65
			Ap	.0059	.0034	.0113	.0113	.0079	.0079	.0079	.0045	.0045	.0045	.0028	.0028	.0169	.0169	.0169	.0118
	11.2		RPM	15640	14080	12190	12190	12190	12190	12190	10970	10970	10970	10970	9750	7810	7810	7810	7810
			IPM(FEED)	66	54	64	64	64	64	64	52	52	52	52	41	55	55	55	55
			Ap	.0049	.0028	.0094	.0094	.0066	.0066	.0066	.0037	.0037	.0037	.0024	.0024	.0141	.0141	.0141	.0098
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	RPM	16590	14930	12940	12940	12940	12940	12940	11650	11650	11650	11650	10360	8230	8230	8230	8230
			IPM(FEED)	80	64	76	76	76	76	76	62	62	62	62	49	65	65	65	65
			Ap	.0059	.0034	.0113	.0113	.0079	.0079	.0079	.0045	.0045	.0045	.0028	.0028	.0169	.0169	.0169	.0118
H	38.1-38.2	Hardened steel	RPM	13860	12470	10770	10770	10770	10770	10770	9690	9690	9690	9690	8620	6890	6890	6890	6890
			IPM(FEED)	54	44	53	53	53	53	53	43	43	43	43	34	46	46	46	46
			Ap	.0033	.0019	.0063	.0063	.0044	.0044	.0044	.0025	.0025	.0025	.0016	.0016	.0094	.0094	.0094	.0066
	40	Chilled Cast Iron	RPM	15640	14080	12190	12190	12190	12190	12190	10970	10970	10970	10970	9750	7810	7810	7810	7810
			IPM(FEED)	66	54	64	64	64	64	64	52	52	52	52	41	55	55	55	55
			Ap	.0049	.0028	.0094	.0094	.0066	.0066	.0066	.0037	.0037	.0037	.0024	.0024	.0141	.0141	.0141	.0098
	41	Hardened Cast Iron	RPM	13860	12470	10770	10770	10770	10770	10770	9690	9690	9690	9690	8620	6890	6890	6890	6890
			IPM(FEED)	54	44	53	53	53	53	53	43	43	43	43	34	46	46	46	46
			Ap	.0033	.0019	.0063	.0063	.0044	.0044	.0044	.0025	.0025	.0025	.0016	.0016	.0094	.0094	.0094	.0066

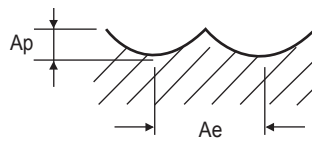
ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)															
				3/16	3/16	3/16	3/16	3/16	3/16	13/64	1/4	1/4	5/16	5/16	3/8	3/8	3/8	1/2	1/2
			LBS	11/16	3/4	1	1-3/16	1-3/8	1-1/2	13/64	3/4	1-3/16	1	1-3/8	1-3/16	1-3/16	1-1/2	1-1/4	1-1/4
P	1-8	Non-alloy steel Low alloy steel	RPM	8230	8230	7410	7410	7410	7410	6720	6140	6140	4890	4890	4040	4040	4040	3020	3020
			IPM(FEED)	65	65	53	53	53	53	57	71	71	72	72	68	68	68	57	57
			Ap	.0118	.0118	.0067	.0067	.0067	.0067	.0073	.0225	.0157	.0197	.0197	.0236	.0236	.0236	.0450	.0450
	9	Low alloy steel	RPM	7810	7810	7030	7030	7030	7030	6370	5860	5860	4640	4640	3860	3860	3860	2880	2880
			IPM(FEED)	55	55	45	45	45	45	45	60	60	60	60	58	58	58	48	48
			Ap	.0098	.0098	.0056	.0056	.0056	.0056	.0061	.0187	.0131	.0164	.0164	.0197	.0197	.0197	.0375	.0375
	10-11.1	High alloyed steel, and tool steel	RPM	8230	8230	7410	7410	7410	7410	6720	6140	6140	4890	4890	4040	4040	4040	3020	3020
			IPM(FEED)	65	65	53	53	53	53	57	71	71	72	72	68	68	68	57	57
			Ap	.0118	.0118	.0067	.0067	.0067	.0067	.0073	.0225	.0157	.0197	.0197	.0236	.0236	.0236	.0450	.0450
	11.2		RPM	7810	7810	7030	7030	7030	7030	6370	5860	5860	4640	4640	3860	3860	3860	2880	2880
			IPM(FEED)	55	55	45	45	45	45	45	60	60	60	60	58	58	58	48	48
			Ap	.0098	.0098	.0056	.0056	.0056	.0056	.0061	.0187	.0131	.0164	.0164	.0197	.0197	.0197	.0375	.0375
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	RPM	8230	8230	7410	7410	7410	7410	6720	6140	6140	4890	4890	4040	4040	4040	3020	3020
			IPM(FEED)	65	65	53	53	53	53	57	71	71	72	72	68	68	68	57	57
			Ap	.0118	.0118	.0067	.0067	.0067	.0067	.0073	.0225	.0157	.0197	.0197	.0236	.0236	.0236	.0450	.0450
H	38.1-38.2	Hardened steel	RPM	6890	6890	6200	6200	6200	6200	5580	5200	5200	4030	4030	3360	3360	3360	2500	2500
			IPM(FEED)	46	46	37	37	37	37	40	49	49	51	51	50	50	50	41	41
			Ap	.0066	.0066	.0037	.0037	.0037	.0037	.0041	.0125	.0087	.0109	.0190	.0131	.0131	.0131	.0250	.0250
	40	Chilled Cast Iron	RPM	7810	7810	7030	7030	7030	7030	6370	5860	5860	4640	4640	3860	3860	3860	2880	2880
			IPM(FEED)	55	55	45	45	45	45	45	60	60	60	60	58	58	58	48	48
			Ap	.0098	.0098	.0056	.0056	.0056	.0056	.0061	.0187	.0131	.0164	.0164	.0197	.0197	.0197	.0375	.0375
	41	Hardened Cast Iron	RPM	6890	6890	6200	6200	6200	6200	5580	5200	5200	4030	4030	3360	3360	3360	2500	2500
			IPM(FEED)	46	46	37	37	37	37	40	49	49	51	51	50	50	50	41	41
			Ap	.0066	.0066	.0037	.0037	.0037	.0037	.0041	.0125	.0087	.0109	.0190	.0131	.0131	.0131	.0250	.0250

4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

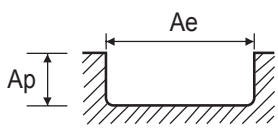
GMF17 SERIES — 4 FLUTE BALL NOSE - PLANE

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø) 1/8	3/16	1/4	5/16	3/8	1/2
P	1-8	Non-alloy steel Low alloy steel	0.05D	0.02D	RPM	22700	17600	14400	11400	9600	7200
					IPM(FEED)	202	224	231	208	190	159
	9	Low alloy steel	0.05D	0.02D	RPM	16540	13020	11530	9270	7720	5790
					IPM(FEED)	144	153	167	158	143	119
	10-11.1	High alloyed steel, and tool steel	0.08D	0.02D	RPM	22700	17600	14400	11400	9600	7200
					IPM(FEED)	202	224	231	208	190	159
	11.2		0.05D	0.02D	RPM	16540	13020	11530	9270	7720	5790
					IPM(FEED)	144	153	167	158	143	119
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.05D	0.02D	RPM	22700	17600	14400	11400	9600	7200
					IPM(FEED)	202	224	231	208	190	159
H	38.1-38.2	Hardened steel	0.05D	0.02D	RPM	15120	12250	10490	8390	6990	5230
					IPM(FEED)	136	144	143	133	119	89
	40	Chilled Cast Iron	0.05D	0.02D	RPM	16540	13020	11530	9270	7720	5790
					IPM(FEED)	144	153	167	158	143	119
	41	Hardened Cast Iron	0.05D	0.02D	RPM	15120	12250	10490	8390	6990	5230
					IPM(FEED)	136	144	143	133	119	89

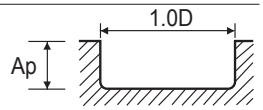


GMF18 SERIES — 2 FLUTE CORNER RADIUS - SLOTTING

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
P	1-8	Non-alloy steel Low alloy steel	1.0D	0.2D	RPM	25000	20800	18100	12500	11700	8900	7500	6000	5300	3900
					IPM(FEED)	10	9	10	10	12	16	19	22	22	16
	9	Low alloy steel	1.0D	0.2D	RPM	15870	12760	11650	8090	7540	5620	4760	3830	3440	2630
					IPM(FEED)	4	4	5	5	6	8	9	10	10	9
	10-11.1	High alloyed steel, and tool steel	1.0D	0.2D	RPM	25000	20800	18100	12500	11700	8900	7500	6000	5300	3900
					IPM(FEED)	10	9	10	10	12	16	19	22	22	16
	11.2		1.0D	0.2D	RPM	15870	12760	11650	8090	7540	5620	4760	3830	3440	2630
					IPM(FEED)	4	4	5	5	6	8	9	10	10	9
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1.0D	0.2D	RPM	25000	20800	18100	12500	11700	8900	7500	6000	5300	3900
					IPM(FEED)	10	9	10	10	12	16	19	22	22	16
H	38.1-38.2	Hardened steel	1.0D	0.2D	RPM	9830	8030	7260	4990	4690	3680	3100	2540	2120	1590
					IPM(FEED)	2	2	3	3	3	4	5	5	5	4
	40	Chilled Cast Iron	1.0D	0.2D	RPM	15870	12760	11650	8090	7540	5620	4760	3830	3440	2630
					IPM(FEED)	4	4	5	5	6	8	9	10	10	9
	41	Hardened Cast Iron	1.0D	0.2D	RPM	9830	8030	7260	4990	4690	3680	3100	2540	2120	1590
					IPM(FEED)	2	2	3	3	3	4	5	5	5	4



GMF19 SERIES 2 FLUTE CORNER RADIUS - SLOTTING



ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)													
				.008	.012	.012	.015	.015	.015	.015	.020	.020	.020	.020	.020	.024	.024
			LBS	3/64	3/64	5/64	3/64	1/16	5/64	3/32	3/64	1/16	5/64	1/8	5/32	5/64	1/8
P	1-8	Non-alloy steel Low alloy steel	RPM	44290	49210	44290	52490	52490	47240	47240	42320	42320	42320	38090	38090	35830	32240
			IPM(FEED)	5	8	6	8	8	7	7	9	9	9	7	7	10	8
			Ap	.0006	.0017	.0009	.0021	.0021	.0012	.0012	.0040	.0028	.0028	.0016	.0016	.0033	.0019
	9	Low alloy steel	RPM	30560	31500	28350	33600	33600	30240	30240	27560	27560	27560	24800	24800	23620	21260
			IPM(FEED)	2	3	3	4	4	3	3	4	4	4	3	3	4	4
			Ap	.0005	.0013	.0007	.0016	.0016	.0009	.0009	.0030	.0021	.0021	.0012	.0012	.0025	.0015
	10-11.1	High alloyed steel, and tool steel	RPM	44290	49210	44290	52490	52490	47240	47240	42320	42320	42320	38090	38090	35830	32240
			IPM(FEED)	5	8	6	8	8	7	7	9	9	9	7	7	10	8
			Ap	.0006	.0017	.0009	.0021	.0021	.0012	.0012	.0040	.0028	.0028	.0016	.0016	.0033	.0019
	11.2		RPM	30560	31500	28350	33600	33600	30240	30240	27560	27560	27560	24800	24800	23620	21260
			IPM(FEED)	2	3	3	4	4	3	3	4	4	4	3	3	4	4
			Ap	.0005	.0013	.0007	.0016	.0016	.0009	.0009	.0030	.0021	.0021	.0012	.0012	.0025	.0015
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	RPM	44290	49210	44290	52490	52490	47240	47240	42320	42320	42320	38090	38090	35830	32240
			IPM(FEED)	5	8	6	8	8	7	7	9	9	9	7	7	10	8
			Ap	.0006	.0017	.0009	.0021	.0021	.0012	.0012	.0040	.0028	.0028	.0016	.0016	.0033	.0019
H	38.1-38.2	Hardened steel	RPM	18740	19690	17720	21000	21000	18900	18900	16830	16830	16830	15150	15150	14270	12840
			IPM(FEED)	1	2	2	2	2	2	2	2	2	2	2	2	3	2
			Ap	.0004	.0010	.0006	.0013	.0013	.0007	.0007	.0024	.0017	.0017	.0009	.0009	.0020	.0011
	40	Chilled Cast Iron	RPM	30560	31500	28350	33600	33600	30240	30240	27560	27560	27560	24800	24800	23620	21260
			IPM(FEED)	2	3	3	4	4	3	3	4	4	4	3	3	4	4
			Ap	.0005	.0013	.0007	.0016	.0016	.0009	.0009	.0030	.0021	.0021	.0012	.0012	.0025	.0015
	41	Hardened Cast Iron	RPM	18740	19690	17720	21000	21000	18900	18900	16830	16830	16830	15150	15150	14270	12840
			IPM(FEED)	1	2	2	2	2	2	2	2	2	2	2	2	3	2
			Ap	.0004	.0010	.0006	.0013	.0013	.0007	.0007	.0024	.0017	.0017	.0009	.0009	.0020	.0011

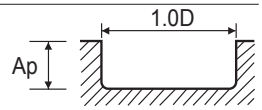
ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)													
				.024	.024	.031	.031	.031	.031	3/64	3/64	3/64	3/64	3/64	1/16	1/16	1/16
			LBS	5/32	1/4	5/64	5/32	1/4	5/16	1/8	5/32	1/4	5/16	3/8	5/32	1/4	5/16
P	1-8	Non-alloy steel Low alloy steel	RPM	32240	28660	36980	33280	33280	29590	27800	27800	25020	25020	25020	24940	24940	24940
			IPM(FEED)	8	6	10	8	8	7	9	9	8	8	8	11	11	11
			Ap	.0019	.0012	.0062	.0025	.0015	.0015	.0094	.0066	.0037	.0037	.0037	.0125	.0087	.0087
	9	Low alloy steel	RPM	21260	18900	24380	21950	21950	19510	18140	18140	16330	16330	16330	15310	15310	15310
			IPM(FEED)	4	3	4	4	4	3	4	4	3	3	3	5	5	5
			Ap	.0015	.0009	.0046	.0019	.0012	.0012	.0070	.0049	.0028	.0028	.0028	.0094	.0066	.0066
	10-11.1	High alloyed steel, and tool steel	RPM	32240	28660	36980	33280	33280	29590	27800	27800	25020	25020	25020	24940	24940	24940
			IPM(FEED)	8	6	10	8	8	7	9	9	8	8	8	11	11	11
			Ap	.0019	.0012	.0062	.0025	.0015	.0015	.0094	.0066	.0037	.0037	.0037	.0125	.0087	.0087
	11.2		RPM	21260	18900	24380	21950	21950	19510	18140	18140	16330	16330	16330	15310	15310	15310
			IPM(FEED)	4	3	4	4	4	3	4	4	3	3	3	5	5	5
			Ap	.0015	.0009	.0046	.0019	.0012	.0012	.0070	.0049	.0028	.0028	.0028	.0094	.0066	.0066
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	RPM	32240	28660	36980	33280	33280	29590	27800	27800	25020	25020	25020	24940	24940	24940
			IPM(FEED)	8	6	10	8	8	7	9	9	8	8	8	11	11	11
			Ap	.0019	.0012	.0062	.0025	.0015	.0015	.0094	.0066	.0037	.0037	.0037	.0125	.0087	.0087
H	38.1-38.2	Hardened steel	RPM	12840	11420	14730	13260	13260	11790	11090	11090	9980	9980	9980	9640	9640	9640
			IPM(FEED)	2	2	3	2	2	2	2	2	2	2	2	3	3	3
			Ap	.0011	.0007	.0037	.0015	.0009	.0009	.0056	.0039	.0022	.0022	.0022	.0075	.0052	.0052
	40	Chilled Cast Iron	RPM	21260	18900	24380	21950	21950	19510	18140	18140	16330	16330	16330	15310	15310	15310
			IPM(FEED)	4	3	4	4	4	3	4	4	3	3	3	5	5	5
			Ap	.0015	.0009	.0046	.0019	.0012	.0012	.0070	.0049	.0028	.0028	.0028	.0094	.0066	.0066
	41	Hardened Cast Iron	RPM	12840	11420	14730	13260	13260	11790	11090	11090	9980	9980	9980	9640	9640	9640
			IPM(FEED)	2	2	3	2	2	2	2	2	2	2	2	3	3	3
			Ap	.0011	.0007	.0037	.0015	.0009	.0009	.0056	.0039	.0022	.0022	.0022	.0075	.0052	.0052

NEXT PAGE ▶

4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

GMF19 SERIES — 2 FLUTE CORNER RADIUS - SLOTTING

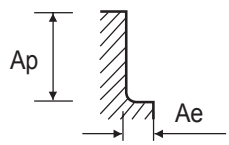


ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)												
				1/16	1/16	5/64	5/64	5/64	5/64	5/64	5/64	1/8	1/8	1/8	1/8	1/8
			LBS	3/8	1/2	1/4	5/16	3/8	1/2	9/16	5/8	5/16	3/8	1/2	5/8	3/4
P	1-8	Non-alloy steel Low alloy steel	RPM	22450	22450	21770	21770	21770	19590	19590	19590	15020	15020	15020	15020	13520
			IPM(FEED)	9	9	12	12	12	10	10	10	12	12	12	12	10
			Ap	.0050	.0050	.0109	.0109	.0109	.0063	.0063	.0063	.0250	.0250	.0175	.0175	.0100
	9	Low alloy steel	RPM	13780	13780	13910	13910	13910	12520	12520	12520	9730	9730	9730	9730	8760
			IPM(FEED)	4	4	6	6	6	5	5	5	6	6	6	6	5
			Ap	.0037	.0037	.0082	.0082	.0082	.0047	.0047	.0047	.0187	.0187	.0131	.0131	.0075
	10-11.1	High alloyed steel, and tool steel	RPM	22450	22450	21770	21770	21770	19590	19590	19590	15020	15020	15020	15020	13520
			IPM(FEED)	9	9	12	12	12	10	10	10	12	12	12	12	10
			Ap	.0050	.0050	.0109	.0109	.0109	.0063	.0063	.0063	.0250	.0250	.0175	.0175	.0100
	11.2		RPM	13780	13780	13910	13910	13910	12520	12520	12520	9730	9730	9730	9730	8760
			IPM(FEED)	4	4	6	6	6	5	5	5	6	6	6	6	5
			Ap	.0037	.0037	.0082	.0082	.0082	.0047	.0047	.0047	.0187	.0187	.0131	.0131	.0075
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	RPM	22450	22450	21770	21770	21770	19590	19590	19590	15020	15020	15020	15020	13520
			IPM(FEED)	9	9	12	12	12	10	10	10	12	12	12	12	10
			Ap	.0050	.0050	.0109	.0109	.0109	.0063	.0063	.0063	.0250	.0250	.0175	.0175	.0100
H	38.1-38.2	Hardened steel	RPM	8670	8670	8710	8710	8710	7840	7840	7840	5950	5950	5950	5950	5360
			IPM(FEED)	2	2	3	3	3	3	3	3	3	3	3	3	2
			Ap	.0030	.0030	.0066	.0066	.0066	.0037	.0037	.0037	.0150	.0150	.0105	.0105	.0060
	40	Chilled Cast Iron	RPM	13780	13780	13910	13910	13910	12520	12520	12520	9730	9730	9730	9730	8760
			IPM(FEED)	4	4	6	6	6	5	5	5	6	6	6	6	5
			Ap	.0037	.0037	.0082	.0082	.0082	.0047	.0047	.0047	.0187	.0187	.0131	.0131	.0075
	41	Hardened Cast Iron	RPM	8670	8670	8710	8710	8710	7840	7840	7840	5950	5950	5950	5950	5360
			IPM(FEED)	2	2	3	3	3	3	3	3	3	3	3	3	2
			Ap	.0030	.0030	.0066	.0066	.0066	.0037	.0037	.0037	.0150	.0150	.0105	.0105	.0060

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
			LBS	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
P	1-8	Non-alloy steel Low alloy steel	RPM	11550	11550	11550	11550	10390	10390	8980	8980	7260	6300	4720	3750
			IPM(FEED)	21	21	21	21	17	17	22	22	25	26	19	18
			Ap	.0375	.0375	.0263	.0263	.0150	.0150	.0500	.0350	.0437	.0525	.1000	.1250
	9	Low alloy steel	RPM	7350	7350	7350	7350	6610	6610	5670	5670	4590	4200	3160	2540
			IPM(FEED)	10	10	10	10	8	8	11	11	12	12	10	8
			Ap	.0281	.0281	.0197	.0197	.0113	.0113	.0375	.0263	.0328	.0394	.0750	.0937
	10-11.1	High alloyed steel, and tool steel	RPM	11550	11550	11550	11550	10390	10390	8980	8980	7260	6300	4720	3750
			IPM(FEED)	21	21	21	21	17	17	22	22	25	26	19	18
			Ap	.0375	.0375	.0263	.0263	.0150	.0150	.0500	.0350	.0437	.0525	.1000	.1250
	11.2		RPM	7350	7350	7350	7350	6610	6610	5670	5670	4590	4200	3160	2540
			IPM(FEED)	10	10	10	10	8	8	11	11	12	12	10	8
			Ap	.0281	.0281	.0197	.0197	.0113	.0113	.0375	.0263	.0328	.0394	.0750	.0937
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	RPM	11550	11550	11550	11550	10390	10390	8980	8980	7260	6300	4720	3750
			IPM(FEED)	21	21	21	21	17	17	22	22	25	26	19	18
			Ap	.0375	.0375	.0263	.0263	.0150	.0150	.0500	.0350	.0437	.0525	.1000	.1250
H	38.1-38.2	Hardened steel	RPM	4790	4790	4790	4790	4310	4310	3710	3710	3040	2540	1890	1550
			IPM(FEED)	5	5	5	5	4	4	5	5	6	6	5	4
			Ap	.0225	.0225	.0157	.0157	.0090	.0090	.0300	.0210	.0263	.0315	.0600	.0750
	40	Chilled Cast Iron	RPM	7350	7350	7350	7350	6610	6610	5670	5670	4590	4200	3160	2540
			IPM(FEED)	10	10	10	10	8	8	11	11	12	12	10	8
			Ap	.0281	.0281	.0197	.0197	.0113	.0113	.0375	.0263	.0328	.0394	.0750	.0937
	41	Hardened Cast Iron	RPM	4790	4790	4790	4790	4310	4310	3710	3710	3040	2540	1890	1550
			IPM(FEED)	5	5	5	5	4	4	5	5	6	6	5	4
			Ap	.0225	.0225	.0157	.0157	.0090	.0090	.0300	.0210	.0263	.0315	.0600	.0750

GMF20 SERIES 4 FLUTE 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
P	1-8	Non-alloy steel Low alloy steel	0.05D	2.0D	RPM	25000	18100	12500	9400	8900	7500	6000	5300	3900
					IPM(FEED)	12	13	13	16	16	16	18	19	13
	9	Low alloy steel	0.05D	2.0D	RPM	15870	11650	8090	5960	5620	4760	3830	3440	2630
					IPM(FEED)	9	10	10	12	14	13	14	15	12
	10-11.1	High alloyed steel, and tool steel	0.05D	2.0D	RPM	25000	18100	12500	9400	8900	7500	6000	5300	3900
					IPM(FEED)	12	13	13	16	16	16	18	19	13
	11.2		0.05D	2.0D	RPM	15870	11650	8090	5960	5620	4760	3830	3440	2630
					IPM(FEED)	9	10	10	12	14	13	14	15	12
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.05D	2.0D	RPM	25000	18100	12500	9400	8900	7500	6000	5300	3900
					IPM(FEED)	12	13	13	16	16	16	18	19	13
H	38.1-38.2	Hardened steel	0.02D	2.0D	RPM	9830	7260	4990	3830	3680	3100	2540	2120	1590
					IPM(FEED)	5	5	5	6	7	6	7	7	5
	40	Chilled Cast Iron	0.05D	2.0D	RPM	15870	11650	8090	5960	5620	4760	3830	3440	2630
					IPM(FEED)	9	10	10	12	14	13	14	15	12
	41	Hardened Cast Iron	0.02D	2.0D	RPM	9830	7260	4990	3830	3680	3100	2540	2120	1590
					IPM(FEED)	5	5	5	6	7	6	7	7	5

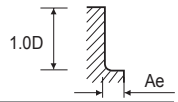


* 1.5XD Axial cutting depth should be for DIA over 5/8 inch

4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

GMF21 SERIES — 4 FLUTE CORNER RADIUS - SIDE CUTTING

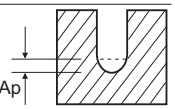


ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)													
				3/64	3/64	3/64	1/16	1/16	1/16	1/16	5/64	5/64	5/64	5/64	1/8	1/8	1/8
			LBS	5/32	1/4	5/16	1/4	5/16	3/8	1/2	1/4	5/16	3/8	1/2	5/16	3/8	1/2
P	1-8	Non-alloy steel Low alloy steel	RPM	29980	26990	26990	24940	24940	22450	22450	21770	21770	21770	19590	15020	15020	15020
			IPM(FEED)	15	12	12	14	14	11	11	15	15	15	12	15	15	15
			Ae	.0010	.0006	.0006	.0013	.0013	.0007	.0007	.0017	.0017	.0017	.0009	.0037	.0037	.0026
	9	Low alloy steel	RPM	19050	17140	17140	15310	15310	13780	13780	13910	13910	13910	12520	9730	9730	9730
			IPM(FEED)	10	9	9	10	10	8	8	11	11	11	9	12	12	12
			Ae	.0007	.0004	.0004	.0010	.0010	.0006	.0006	.0012	.0012	.0012	.0007	.0028	.0028	.0020
	10	High alloyed steel, and tool steel	RPM	29980	26990	26990	24940	24940	22450	22450	21770	21770	21770	19590	15020	15020	15020
			IPM(FEED)	15	12	12	14	14	11	11	15	15	15	12	15	15	15
			Ae	.0010	.0006	.0006	.0013	.0013	.0007	.0007	.0017	.0017	.0017	.0009	.0037	.0037	.0026
	11.1-11.2		RPM	19050	17140	17140	15310	15310	13780	13780	13910	13910	13910	12520	9730	9730	9730
			IPM(FEED)	10	9	9	10	10	8	8	11	11	11	9	12	12	12
			Ae	.0007	.0004	.0004	.0010	.0010	.0006	.0006	.0012	.0012	.0012	.0007	.0028	.0028	.0020
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	RPM	29980	26990	26990	24940	24940	22450	22450	21770	21770	21770	19590	15020	15020	15020
			IPM(FEED)	15	12	12	14	14	11	11	15	15	15	12	15	15	15
			Ae	.0010	.0006	.0006	.0013	.0013	.0007	.0007	.0017	.0017	.0017	.0009	.0037	.0037	.0026
H	38.1-38.2	Hardened steel	RPM	11790	10610	10610	9640	9640	8670	8670	8710	8710	8710	7840	5950	5950	5950
			IPM(FEED)	6	5	5	5	5	4	4	6	6	6	5	6	6	6
			Ae	.0006	.0004	.0004	.0008	.0008	.0004	.0004	.0010	.0010	.0010	.0006	.0022	.0022	.0016
	40	Chilled Cast Iron	RPM	19050	17140	17140	15310	15310	13780	13780	13910	13910	13910	12520	9730	9730	9730
			IPM(FEED)	10	9	9	10	10	8	8	11	11	11	9	12	12	12
			Ae	.0007	.0004	.0004	.0010	.0010	.0006	.0006	.0012	.0012	.0012	.0007	.0028	.0028	.0020
	41	Hardened Cast Iron	RPM	11790	10610	10610	9640	9640	8670	8670	8710	8710	8710	7840	5950	5950	5950
			IPM(FEED)	6	5	5	5	5	4	4	6	6	6	5	6	6	6
			Ae	.0006	.0004	.0004	.0008	.0008	.0004	.0004	.0010	.0010	.0010	.0006	.0022	.0022	.0016

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)															
				1/8	1/8	1/8	3/16	3/16	3/16	3/16	3/16	1/4	5/16	5/16	3/8	3/8	1/2	1/2	5/8	3/4
			LBS	5/8	3/4	1	3/8	1/2	5/8	3/4	1	3/4	1	1-3/8	1-3/16	1-1/2	1-1/4	1-3/4	1-3/8	1-1/2
P	1-8	Non-alloy steel Low alloy steel	RPM	15020	13520	13520	11550	11550	11550	11550	10390	8980	7260	7260	6300	6300	4720	4720	3750	3150
			IPM(FEED)	15	12	12	21	21	21	21	17	19	22	22	23	23	16	16	13	11
			Ae	.0026	.0015	.0015	.0056	.0056	.0039	.0039	.0022	.0075	.0066	.0066	.0079	.0079	.0150	.0105	.0187	.0225
	9	Low alloy steel	RPM	9730	8760	8760	7350	7350	7350	7350	6610	5670	4590	4590	4200	4200	3160	3160	2540	2050
			IPM(FEED)	12	9	9	18	18	18	18	14	16	17	17	18	18	14	14	11	9
			Ae	.0020	.0011	.0011	.0042	.0042	.0030	.0030	.0017	.0056	.0049	.0049	.0059	.0059	.0113	.0079	.0141	.0169
	10	High alloyed steel, and tool steel	RPM	15020	13520	13520	11550	11550	11550	11550	10390	8980	7260	7260	6300	6300	4720	4720	3750	3150
			IPM(FEED)	15	12	12	21	21	21	21	17	19	22	22	23	23	16	16	13	11
			Ae	.0026	.0015	.0015	.0056	.0056	.0039	.0039	.0022	.0075	.0066	.0066	.0079	.0079	.0150	.0105	.0187	.0225
	11.1-11.2		RPM	9730	8760	8760	7350	7350	7350	7350	6610	5670	4590	4590	4200	4200	3160	3160	2540	2050
			IPM(FEED)	12	9	9	18	18	18	18	14	16	17	17	18	18	14	14	11	9
			Ae	.0020	.0011	.0011	.0042	.0042	.0030	.0030	.0017	.0056	.0049	.0049	.0059	.0059	.0113	.0079	.0141	.0169
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	RPM	15020	13520	13520	11550	11550	11550	11550	10390	8980	7260	7260	6300	6300	4720	4720	3750	3150
			IPM(FEED)	15	12	12	21	21	21	21	17	19	22	22	23	23	16	16	13	11
			Ae	.0026	.0015	.0015	.0056	.0056	.0039	.0039	.0022	.0075	.0066	.0066	.0079	.0079	.0150	.0105	.0187	.0225
H	38.1-38.2	Hardened steel	RPM	5950	5360	5360	4790	4790	4790	4790	4310	3710	3040	3040	2540	2540	1890	1890	1550	1260
			IPM(FEED)	6	5	5	8	8	8	8	7	8	8	8	8	8	6	6	5	4
			Ae	.0016	.0009	.0009	.0034	.0034	.0024	.0024	.0013	.0045	.0039	.0039	.0047	.0047	.0090	.0063	.0113	.0135
	40	Chilled Cast Iron	RPM	9730	8760	8760	7350	7350	7350	7350	6610	5670	4590	4590	4200	4200	3160	3160	2540	2050
			IPM(FEED)	12	9	9	18	18	18	18	14	16	17	17	18	18	14	14	11	9
			Ae	.0020	.0011	.0011	.0042	.0042	.0030	.0030	.0017	.0056	.0049	.0049	.0059	.0059	.0113	.0079	.0141	.0169
	41	Hardened Cast Iron	RPM	5950	5360	5360	4790	4790	4790	4790	4310	3710	3040	3040	2540	2540	1890	1890	1550	1260
			IPM(FEED)	6	5	5	8	8	8	8	7	8	8	8	8	8	6	6	5	4
			Ae	.0016	.0009	.0009	.0034	.0034	.0024	.0024	.0013	.0045	.0039	.0039	.0047	.0047	.0090	.0063	.0113	.0135

GMF22 SERIES — 2 FLUTE SQUARE - SLOTTING

(Depth of Cut per one pass) Ap



ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)													
				.008	.015	.015	.015	.015	.015	.020	.020	.020	.020	.020	.024	.024	.024
			LBS	3/64	3/64	3/64	1/8	5/32	3/16	5/64	1/8	5/32	3/16	1/4	5/64	1/8	5/32
P	1-8	Non-alloy steel Low alloy steel	RPM	34100	26930	24240	24240	21540	21540	26970	24270	24270	24270	21570	26970	24270	24270
			IPM(FEED)	12	12	10	10	8	8	21	17	17	17	13	30	24	24
			Ap	.0003	.0009	.0006	.0004	.0004	.0004	.0013	.0007	.0007	.0004	.0004	.0015	.0009	.0009
	9	Low alloy steel	RPM	32160	25430	22890	22890	20350	20350	25390	22850	22850	22850	20310	25390	22850	22850
			IPM(FEED)	9	9	7	7	5	5	17	13	13	13	11	21	17	17
			Ap	.0002	.0007	.0004	.0003	.0003	.0003	.0010	.0006	.0006	.0004	.0004	.0012	.0007	.0007
	10	High alloyed steel, and tool steel	RPM	34100	26930	24240	24240	21540	21540	26970	24270	24270	24270	21570	26970	24270	24270
			IPM(FEED)	12	12	10	10	8	8	21	17	17	17	13	30	24	24
			Ap	.0003	.0009	.0006	.0004	.0004	.0004	.0013	.0007	.0007	.0004	.0004	.0015	.0009	.0009
	11.1-11.2		RPM	32160	25430	22890	22890	20350	20350	25390	22850	22850	22850	20310	25390	22850	22850
			IPM(FEED)	9	9	7	7	5	5	17	13	13	13	11	21	17	17
			Ap	.0002	.0007	.0004	.0003	.0003	.0003	.0010	.0006	.0006	.0004	.0004	.0012	.0007	.0007
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	RPM	34100	26930	24240	24240	21540	21540	26970	24270	24270	24270	21570	26970	24270	24270
			IPM(FEED)	12	12	10	10	8	8	21	17	17	17	13	30	24	24
			Ap	.0003	.0009	.0006	.0004	.0004	.0004	.0013	.0007	.0007	.0004	.0004	.0015	.0009	.0009
H	38.1-38.2	Hardened steel	RPM	28440	22440	20200	20200	17950	17950	22440	20200	20200	20200	17950	22440	20200	20200
			IPM(FEED)	6	7	6	6	5	5	11	9	9	9	7	16	13	13
			Ap	.0002	.0005	.0003	.0002	.0002	.0002	.0007	.0004	.0004	.0002	.0002	.0008	.0005	.0005
	40	Chilled Cast Iron	RPM	32160	25430	22890	22890	20350	20350	25390	22850	22850	22850	20310	25390	22850	22850
			IPM(FEED)	9	9	7	7	5	5	17	13	13	13	11	21	17	17
			Ap	.0002	.0007	.0004	.0003	.0003	.0003	.0010	.0006	.0006	.0004	.0004	.0012	.0007	.0007
	41	Hardened Cast Iron	RPM	28440	22440	20200	20200	17950	17950	22440	20200	20200	20200	17950	22440	20200	20200
			IPM(FEED)	6	7	6	6	5	5	11	9	9	9	7	16	13	13
			Ap	.0002	.0005	.0003	.0002	.0002	.0002	.0007	.0004	.0004	.0002	.0002	.0008	.0005	.0005

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)													
				.024	.024	.024	.024	1/32	1/32	1/32	1/32	1/32	1/32	1/32	3/64	3/64	3/64
			LBS	3/16	1/4	5/16	3/8	5/64	1/8	5/32	3/16	1/4	5/16	3/8	1/8	5/32	3/16
P	1-8	Non-alloy steel Low alloy steel	RPM	24270	21570	21570	16180	27620	27620	27620	24850	24850	24850	22090	22070	22070	22070
			IPM(FEED)	24	19	19	13	31	31	31	25	25	25	20	37	37	37
			Ap	.0009	.0006	.0003	.0003	.0028	.0020	.0020	.0011	.0011	.0007	.0007	.0042	.0030	.0030
	9	Low alloy steel	RPM	22850	20310	20310	15240	26000	26000	26000	23400	23400	23400	20800	20860	20860	20860
			IPM(FEED)	17	14	14	9	24	24	24	20	20	20	15	29	29	29
			Ap	.0007	.0004	.0002	.0002	.0022	.0015	.0015	.0009	.0009	.0006	.0006	.0033	.0023	.0023
	10	High alloyed steel, and tool steel	RPM	24270	21570	21570	16180	27620	27620	27620	24850	24850	24850	22090	22070	22070	22070
			IPM(FEED)	24	19	19	13	31	31	31	25	25	25	20	37	37	37
			Ap	.0009	.0006	.0003	.0003	.0028	.0020	.0020	.0011	.0011	.0007	.0007	.0042	.0030	.0030
	11.1-11.2		RPM	22850	20310	20310	15240	26000	26000	26000	23400	23400	23400	20800	20860	20860	20860
			IPM(FEED)	17	14	14	9	24	24	24	20	20	20	15	29	29	29
			Ap	.0007	.0004	.0002	.0002	.0022	.0015	.0015	.0009	.0009	.0006	.0006	.0033	.0023	.0023
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	RPM	24270	21570	21570	16180	27620	27620	27620	24850	24850	24850	22090	22070	22070	22070
			IPM(FEED)	24	19	19	13	31	31	31	25	25	25	20	37	37	37
			Ap	.0009	.0006	.0003	.0003	.0028	.0020	.0020	.0011	.0011	.0007	.0007	.0042	.0030	.0030
H	38.1-38.2	Hardened steel	RPM	20200	17950	17950	13460	22980	22980	22980	20680	20680	20680	18380	18340	18340	18340
			IPM(FEED)	13	10	10	7	18	18	18	14	14	14	11	19	19	19
			Ap	.0005	.0003	.0002	.0002	.0016	.0011	.0011	.0006	.0006	.0004	.0004	.0024	.0017	.0017
	40	Chilled Cast Iron	RPM	22850	20310	20310	15240	26000	26000	26000	23400	23400	23400	20800	20860	20860	20860
			IPM(FEED)	17	14	14	9	24	24	24	20	20	20	15	29	29	29
			Ap	.0007	.0004	.0002	.0002	.0022	.0015	.0015	.0009	.0009	.0006	.0006	.0033	.0023	.0023
	41	Hardened Cast Iron	RPM	20200	17950	17950	13460	22980	22980	22980	20680	20680	20680	18380	18340	18340	18340
			IPM(FEED)	13	10	10	7	18	18	18	14	14	14	11	19	19	19
			Ap	.0005	.0003	.0002	.0002	.0016	.0011	.0011	.0006	.0006	.0004	.0004	.0024	.0017	.0017

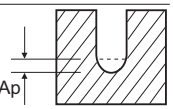
NEXT PAGE ▶

4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

GMF22 SERIES — 2 FLUTE SQUARE - SLOTTING

(Depth of Cut per one pass) Ap



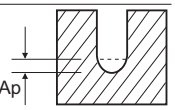
ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)													
				3/64	3/64	3/64	3/64	3/64	3/64	3/64	1/16	1/16	1/16	1/16	1/16	1/16	1/16
			LBS	1/4	5/16	3/8	1/2	9/16	5/8	3/4	5/32	1/4	5/16	3/8	1/2	9/16	5/8
P	1-8	Non-alloy steel Low alloy steel	RPM	19870	19870	19870	17660	17660	17660	13240	18140	18140	18140	16330	16330	16330	16330
			IPM(FEED)	30	30	30	24	24	24	16	34	34	34	27	27	27	27
			Ap	.0017	.0017	.0017	.0011	.0011	.0006	.0006	.0056	.0039	.0039	.0022	.0022	.0014	.0014
	9	Low alloy steel	RPM	18780	18780	18780	16690	16690	16690	12520	17100	17100	17100	15390	15390	15390	15390
			IPM(FEED)	23	23	23	18	18	18	12	24	24	24	19	19	19	19
			Ap	.0013	.0013	.0013	.0008	.0008	.0005	.0005	.0044	.0031	.0031	.0017	.0017	.0011	.0011
	10	High alloyed steel, and tool steel	RPM	19870	19870	19870	17660	17660	17660	13240	18140	18140	18140	16330	16330	16330	16330
			IPM(FEED)	30	30	30	24	24	24	16	34	34	34	27	27	27	27
			Ap	.0017	.0017	.0017	.0011	.0011	.0006	.0006	.0056	.0039	.0039	.0022	.0022	.0014	.0014
	11.1-11.2		RPM	18780	18780	18780	16690	16690	16690	12520	17100	17100	17100	15390	15390	15390	15390
			IPM(FEED)	23	23	23	18	18	18	12	24	24	24	19	19	19	19
			Ap	.0013	.0013	.0013	.0008	.0008	.0005	.0005	.0044	.0031	.0031	.0017	.0017	.0011	.0011
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	RPM	19870	19870	19870	17660	17660	17660	13240	18140	18140	18140	16330	16330	16330	16330
			IPM(FEED)	30	30	30	24	24	24	16	34	34	34	27	27	27	27
			Ap	.0017	.0017	.0017	.0011	.0011	.0006	.0006	.0056	.0039	.0039	.0022	.0022	.0014	.0014
H	38.1-38.2	Hardened steel	RPM	16510	16510	16510	14670	14670	14670	11010	15120	15120	15120	13610	13610	13610	13610
			IPM(FEED)	16	16	16	12	12	12	8	18	18	18	14	14	14	14
			Ap	.0009	.0009	.0009	.0006	.0006	.0004	.0004	.0031	.0022	.0022	.0013	.0013	.0008	.0008
	40	Chilled Cast Iron	RPM	18780	18780	18780	16690	16690	16690	12520	17100	17100	17100	15390	15390	15390	15390
			IPM(FEED)	23	23	23	18	18	18	12	24	24	24	19	19	19	19
			Ap	.0013	.0013	.0013	.0008	.0008	.0005	.0005	.0044	.0031	.0031	.0017	.0017	.0011	.0011
	41	Hardened Cast Iron	RPM	16510	16510	16510	14670	14670	14670	11010	15120	15120	15120	13610	13610	13610	13610
			IPM(FEED)	16	16	16	12	12	12	8	18	18	18	14	14	14	14
			Ap	.0009	.0009	.0009	.0006	.0006	.0004	.0004	.0031	.0022	.0022	.0013	.0013	.0008	.0008

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)													
				1/16	5/64	5/64	5/64	5/64	5/64	5/64	5/64	3/32	3/32	3/32	3/32	1/8	1/8
			LBS	3/4	1/4	5/16	3/8	1/2	9/16	5/8	3/4	5/16	1/2	5/8	3/4	5/16	3/8
P	1-8	Non-alloy steel Low alloy steel	RPM	14510	14510	14510	14510	13060	13060	13060	13060	12910	11620	11620	11620	10300	10300
			IPM(FEED)	22	33	33	33	26	26	26	26	40	33	33	33	32	32
			Ap	.0014	.0049	.0049	.0049	.0028	.0028	.0028	.0018	.0059	.0034	.0034	.0034	.0113	.0113
	9	Low alloy steel	RPM	13680	13710	13710	13710	12340	12340	12340	12340	12180	10960	10960	10960	9730	9730
			IPM(FEED)	15	25	25	25	20	20	20	20	28	23	23	23	22	22
			Ap	.0011	.0038	.0038	.0038	.0022	.0022	.0022	.0014	.0046	.0026	.0026	.0026	.0087	.0087
	10	High alloyed steel, and tool steel	RPM	14510	14510	14510	14510	13060	13060	13060	13060	12910	11620	11620	11620	10300	10300
			IPM(FEED)	22	33	33	33	26	26	26	26	40	33	33	33	32	32
			Ap	.0014	.0049	.0049	.0049	.0028	.0028	.0028	.0018	.0059	.0034	.0034	.0034	.0113	.0113
	11.1-11.2		RPM	13680	13710	13710	13710	12340	12340	12340	12340	12180	10960	10960	10960	9730	9730
			IPM(FEED)	15	25	25	25	20	20	20	20	28	23	23	23	22	22
			Ap	.0011	.0038	.0038	.0038	.0022	.0022	.0022	.0014	.0046	.0026	.0026	.0026	.0087	.0087
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	RPM	14510	14510	14510	14510	13060	13060	13060	13060	12910	11620	11620	11620	10300	10300
			IPM(FEED)	22	33	33	33	26	26	26	26	40	33	33	33	32	32
			Ap	.0014	.0049	.0049	.0049	.0028	.0028	.0028	.0018	.0059	.0034	.0034	.0034	.0113	.0113
H	38.1-38.2	Hardened steel	RPM	12090	12090	12090	12090	10890	10890	10890	10890	10810	9730	9730	9730	6240	6240
			IPM(FEED)	11	19	19	19	15	15	15	15	21	17	17	17	17	17
			Ap	.0008	.0027	.0027	.0027	.0016	.0016	.0016	.0010	.0033	.0019	.0019	.0019	.0063	.0063
	40	Chilled Cast Iron	RPM	13680	13710	13710	13710	12340	12340	12340	12340	12180	10960	10960	10960	9730	9730
			IPM(FEED)	15	25	25	25	20	20	20	20	28	23	23	23	22	22
			Ap	.0011	.0038	.0038	.0038	.0022	.0022	.0022	.0014	.0046	.0026	.0026	.0026	.0087	.0087
	41	Hardened Cast Iron	RPM	12090	12090	12090	12090	10890	10890	10890	10890	10810	9730	9730	9730	6240	6240
			IPM(FEED)	11	19	19	19	15	15	15	15	21	17	17	17	17	17
			Ap	.0008	.0027	.0027	.0027	.0016	.0016	.0016	.0010	.0033	.0019	.0019	.0019	.0063	.0063

NEXT PAGE ▶

GMF22 SERIES — 2 FLUTE SQUARE - SLOTTING

(Depth of Cut per one pass) Ap



ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)													
				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
			LBS	1/2	9/16	5/8	11/16	3/4	1	3/8	1/2	5/8	11/16	3/4	1	1-13/16	3/4
P	1-8	Non-alloy steel Low alloy steel	RPM	10300	10300	10300	9270	9270	9270	6720	6720	6720	6720	6720	6050	6050	6200
			IPM(FEED)	32	32	32	26	26	26	43	43	43	43	43	35	35	44
			Ap	.0079	.0079	.0079	.0045	.0045	.0045	.0169	.0169	.0118	.0118	.0118	.0067	.0067	.0128
	9	Low alloy steel	RPM	9730	9730	9730	8760	8760	8760	6380	6380	6380	6380	6380	5740	5740	5910
			IPM(FEED)	22	22	22	18	18	18	38	38	38	38	38	31	31	34
			Ap	.0061	.0061	.0061	.0035	.0035	.0035	.0131	.0131	.0092	.0092	.0092	.0052	.0052	.0100
	10	High alloyed steel, and tool steel	RPM	10300	10300	10300	9270	9270	9270	6720	6720	6720	6720	6720	6050	6050	6200
			IPM(FEED)	32	32	32	26	26	26	43	43	43	43	43	35	35	44
			Ap	.0079	.0079	.0079	.0045	.0045	.0045	.0169	.0169	.0118	.0118	.0118	.0067	.0067	.0128
	11.1-11.2		RPM	9730	9730	9730	8760	8760	8760	6380	6380	6380	6380	6380	5740	5740	5910
			IPM(FEED)	22	22	22	18	18	18	38	38	38	38	38	31	31	34
			Ap	.0061	.0061	.0061	.0035	.0035	.0035	.0131	.0131	.0092	.0092	.0092	.0052	.0052	.0100
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	RPM	10300	10300	10300	9270	9270	9270	6720	6720	6720	6720	6720	6050	6050	6200
			IPM(FEED)	32	32	32	26	26	26	43	43	43	43	43	35	35	44
			Ap	.0079	.0079	.0079	.0045	.0045	.0045	.0169	.0169	.0118	.0118	.0118	.0067	.0067	.0128
H	38.1-38.2	Hardened steel	RPM	6240	6240	6240	5610	5610	5610	5630	5630	5630	5630	5630	5060	5060	5230
			IPM(FEED)	17	17	17	14	14	14	25	25	25	25	25	21	21	23
			Ap	.0044	.0044	.0044	.0025	.0025	.0025	.0094	.0094	.0066	.0066	.0066	.0037	.0037	.0071
	40	Chilled Cast Iron	RPM	9730	9730	9730	8760	8760	8760	6380	6380	6380	6380	6380	5740	5740	5910
			IPM(FEED)	22	22	22	18	18	18	38	38	38	38	38	31	31	34
			Ap	.0061	.0061	.0061	.0035	.0035	.0035	.0131	.0131	.0092	.0092	.0092	.0052	.0052	.0100
	41	Hardened Cast Iron	RPM	6240	6240	6240	5610	5610	5610	5630	5630	5630	5630	5630	5060	5060	5230
			IPM(FEED)	17	17	17	14	14	14	25	25	25	25	25	21	21	23
			Ap	.0044	.0044	.0044	.0025	.0025	.0025	.0094	.0094	.0066	.0066	.0066	.0037	.0037	.0071

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)											
				13/64	13/64	13/64	13/64	1/4	1/4	1/4	5/16	3/8	3/8	1/2	1/2
			LBS	1-3/16	1-3/8	1-1/2	2	5/8	3/4	1-3/16	1	1-3/16	1-3/4	1-3/8	2
P	1-8	Non-alloy steel Low alloy steel	RPM	5580	5580	5580	5580	5010	5010	5010	4030	3360	3360	2500	2500
			IPM(FEED)	36	36	36	36	39	39	39	38	37	37	30	30
			Ap	.0073	.0073	.0073	.0046	.0225	.0225	.0157	.0197	.0236	.0236	.0450	.0315
	9	Low alloy steel	RPM	5320	5320	5320	5320	4720	4720	4720	3830	3200	3200	2380	2380
			IPM(FEED)	28	28	28	28	31	31	31	30	28	28	22	22
			Ap	.0057	.0057	.0057	.0035	.0175	.0175	.0122	.0153	.0184	.0184	.0350	.0245
	10	High alloyed steel, and tool steel	RPM	5580	5580	5580	5580	5010	5010	5010	4030	3360	3360	2500	2500
			IPM(FEED)	36	36	36	36	39	39	39	38	37	37	30	30
			Ap	.0073	.0073	.0073	.0046	.0225	.0225	.0157	.0197	.0236	.0236	.0450	.0315
	11.1-11.2		RPM	5320	5320	5320	5320	4720	4720	4720	3830	3200	3200	2380	2380
			IPM(FEED)	28	28	28	28	31	31	31	30	28	28	22	22
			Ap	.0057	.0057	.0057	.0035	.0175	.0175	.0122	.0153	.0184	.0184	.0350	.0245
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	RPM	5580	5580	5580	5580	5010	5010	5010	4030	3360	3360	2500	2500
			IPM(FEED)	36	36	36	36	39	39	39	38	37	37	30	30
			Ap	.0073	.0073	.0073	.0046	.0225	.0225	.0157	.0197	.0236	.0236	.0450	.0315
H	38.1-38.2	Hardened steel	RPM	4710	4710	4710	4710	4160	4160	4160	3330	2760	2760	2060	2060
			IPM(FEED)	19	19	19	19	21	21	21	20	17	17	13	13
			Ap	.0041	.0041	.0041	.0025	.0125	.0125	.0087	.0109	.0131	.0131	.0250	.0175
	40	Chilled Cast Iron	RPM	5320	5320	5320	5320	4720	4720	4720	3830	3200	3200	2380	2380
			IPM(FEED)	28	28	28	28	31	31	31	30	28	28	22	22
			Ap	.0057	.0057	.0057	.0035	.0175	.0175	.0122	.0153	.0184	.0184	.0350	.0245
	41	Hardened Cast Iron	RPM	4710	4710	4710	4710	4160	4160	4160	3330	2760	2760	2060	2060
			IPM(FEED)	19	19	19	19	21	21	21	20	17	17	13	13
			Ap	.0041	.0041	.0041	.0025	.0125	.0125	.0087	.0109	.0131	.0131	.0250	.0175

4G MILL END MILLS

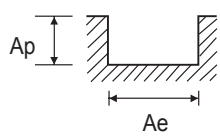
RECOMMENDED CUTTING CONDITIONS

GMF24 SERIES — 2 FLUTE SQUARE - SLOTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)												
						3/64	3/64	3/64	3/64	3/64	1/16	1/16	1/16	1/16	1/16	5/64	5/64	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
P	1-8	Non-alloy steel Low alloy steel	1.0D	0.3D (Up to Ø1/8 : 0.2D)	RPM	13710	13710	12340	12340	12340	10000	10000	9000	9000	9000	9210	9210	8290	8290
					IPM(FEED)	3	3	3	2	2	3	3	2	2	2	3	3	3	2
	9	Low alloy steel	1.0D	0.3D (Up to Ø1/8 : 0.2D)	RPM	10970	10970	9870	9870	9870	8000	8000	7200	7200	7200	7370	7370	6640	6640
					IPM(FEED)	3	3	2	2	2	2	2	2	2	2	3	3	2	2
	10	High alloyed steel, and tool steel	1.0D	0.3D (Up to Ø1/8 : 0.2D)	RPM	13710	13710	12340	12340	12340	10000	10000	9000	9000	9000	9210	9210	8290	8290
					IPM(FEED)	3	3	3	2	2	3	3	2	2	2	3	3	3	2
	11.1-11.2		1.0D	0.3D (Up to Ø1/8 : 0.2D)	RPM	10970	10970	9870	9870	9870	8000	8000	7200	7200	7200	7370	7370	6640	6640
					IPM(FEED)	3	3	2	2	2	2	2	2	2	2	3	3	2	2
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1.0D	0.3D (Up to Ø1/8 : 0.2D)	RPM	13710	13710	12340	12340	12340	10000	10000	9000	9000	9000	9210	9210	8290	8290
					IPM(FEED)	3	3	3	2	2	3	3	2	2	2	3	3	3	3
H	38.1-38.2	Hardened steel	1.0D	0.05D	RPM	6860	6860	6170	6170	6170	5000	5000	4500	4500	4500	4610	4610	4150	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	1.2
	40	Chilled Cast Iron	1.0D	0.3D (Up to Ø1/8 : 0.2D)	RPM	10970	10970	9870	9870	9870	8000	8000	7200	7200	7200	7370	7370	6640	6640
					IPM(FEED)	3	3	2	2	2	2	2	2	2	2	3	3	2	2
	41	Hardened Cast Iron	1.0D	0.05D	RPM	6860	6860	6170	6170	6170	5000	5000	4500	4500	4500	4610	4610	4150	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	1.0

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)												
						3/32	1/8	1/8	1/8	1/8	1/8	3/16	3/16	3/16	3/16	3/16	13/64	13/64	13/64
					LOC	5/8	3/8	1/2	5/8	3/4	1	1/2	5/8	3/4	1	1-3/16	3/4	1	1-3/16
P	1-8	Non-alloy steel Low alloy steel	1.0D	0.3D (Up to Ø1/8 : 0.2D)	RPM	7640	5670	5670	5670	5100	5100	3630	3630	3630	3270	3270	4130	4130	3720
					IPM(FEED)	3	4	4	4	3	3	3	3	3	3	3	6	6	5
	9	Low alloy steel	1.0D	0.3D (Up to Ø1/8 : 0.2D)	RPM	6150	4600	4600	4600	4140	4140	2890	2890	2890	2600	2600	3270	3270	2940
					IPM(FEED)	3	3	3	3	2	2	3	3	3	3	2	5	5	4
	10	High alloyed steel, and tool steel	1.0D	0.3D (Up to Ø1/8 : 0.2D)	RPM	7640	5670	5670	5670	5100	5100	3630	3630	3630	3270	3270	4130	4130	3720
					IPM(FEED)	3	4	4	4	3	3	3	3	3	3	3	6	6	5
	11.1-11.2		1.0D	0.3D (Up to Ø1/8 : 0.2D)	RPM	6150	4600	4600	4600	4140	4140	2890	2890	2890	2600	2600	3270	3270	2940
					IPM(FEED)	3	3	3	3	2	2	3	3	3	3	2	5	5	4
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1.0D	0.3D (Up to Ø1/8 : 0.2D)	RPM	8290	7640	5670	5670	5670	5100	5100	3630	3630	3630	3270	3270	4130	3720
					IPM(FEED)	2	3	4	4	4	3	3	3	3	3	3	3	6	5
H	38.1-38.2	Hardened steel	1.0D	0.05D	RPM	4150	3820	2830	2830	2830	2550	2550	1820	1820	1820	1640	1640	2140	1930
					IPM(FEED)	1.0	1.4	1.4	1.4	1.4	1.2	1.0	1.4	1.4	1.4	1.2	1.2	2.0	1.6
	40	Chilled Cast Iron	1.0D	0.3D (Up to Ø1/8 : 0.2D)	RPM	6150	4600	4600	4600	4140	4140	2890	2890	2890	2600	2600	3270	3270	2940
					IPM(FEED)	3	3	3	3	2	2	3	3	3	3	2	5	5	4
	41	Hardened Cast Iron	1.0D	0.05D	RPM	3820	2830	2830	2830	2550	2550	1820	1820	1820	1640	1640	2140	2140	1930
					IPM(FEED)	1.4	1.4	1.4	1.4	1.2	1.0	1.4	1.4	1.4	1.2	1.2	2.0	2.0	1.6

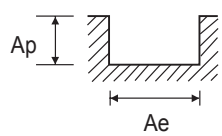
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GMF24 SERIES 2 FLUTE SQUARE - SLOTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)													
						13/64	1/4	1/4	1/4	1/4	1/4	1/4	1/4	5/16	5/16	5/16	5/16	5/16	5/16
					LOC	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	Non-alloy steel Low alloy steel	1.0D	0.3D (Up to Ø1/8 : 0.2D)	RPM	3720	3390	3390	3390	3390	3050	3050	3050	2930	2930	2930	2930	2630	2630
					IPM(FEED)	5	6	6	6	5	5	4	4	8	8	8	7	6	5
	9	Low alloy steel	1.0D	0.3D (Up to Ø1/8 : 0.2D)	RPM	2940	2720	2720	2720	2720	2450	2450	2450	2320	2320	2320	2320	2080	2080
					IPM(FEED)	4	5	5	5	5	4	4	4	6	6	6	5	5	4
	10	High alloyed steel, and tool steel	1.0D	0.3D (Up to Ø1/8 : 0.2D)	RPM	3720	3390	3390	3390	3390	3050	3050	3050	2930	2930	2930	2930	2630	2630
					IPM(FEED)	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)	RPM	2940	2720	2720	2720	2720	2450	2450	2450	2320	2320	2320	2320	2080	2080
					IPM(FEED)	4	5	5	5	5	4	4	4	6	6	6	5	5	4
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1.0D	0.3D (Up to Ø1/8 : 0.2D)	RPM	3720	3390	3390	3390	3390	3050	3050	3050	2930	2930	2930	2930	2630	2630
					IPM(FEED)	5	6	6	6	5	5	4	4	8	8	8	7	6	5
H	38.1-38.2	Hardened steel	1.0D	0.05D	RPM	1930	1760	1760	1760	1760	1580	1580	1580	1530	1530	1530	1530	1380	1380
					IPM(FEED)	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	Chilled Cast Iron	1.0D	0.3D (Up to Ø1/8 : 0.2D)	RPM	2940	2720	2720	2720	2720	2450	2450	2450	2320	2320	2320	2320	2080	2080
					IPM(FEED)	4	5	5	5	5	4	4	4	6	6	6	5	5	4
	41	Hardened Cast Iron	1.0D	0.05D	RPM	1930	1760	1760	1760	1760	1580	1580	1580	1530	1530	1530	1530	1380	1380
					IPM(FEED)	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	Material Description	Ae	Ap	Parameter	Diameter (Ø)													
						3/8	3/8	3/8	3/8	3/8	3/8	1/2	1/2	1/2	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	Non-alloy steel Low alloy steel	1.0D	0.3D (Up to Ø1/8 : 0.2D)	RPM	2700	2700	2700	2700	2430	2430	1790	1790	1790	1790	1790	1790	1730	1340	1210
					IPM(FEED)	8	8	8	7	6	6	5	5	5	5	5	5	6	3	3
	9	Low alloy steel	1.0D	0.3D (Up to Ø1/8 : 0.2D)	RPM	2200	2200	2200	2200	1980	1980	1490	1490	1490	1490	1490	1490	1300	1050	940
					IPM(FEED)	7	7	7	6	5	4	5	5	5	4	4	4	4	2	2
	10	High alloyed steel, and tool steel	1.0D	0.3D (Up to Ø1/8 : 0.2D)	RPM	2700	2700	2700	2700	2430	2430	1790	1790	1790	1790	1790	1790	1730	1340	1210
					IPM(FEED)	8	8	8	7	6	6	5	5	5	5	5	5	6	3	3
	11.1-11.2		1.0D	0.3D (Up to Ø1/8 : 0.2D)	RPM	2200	2200	2200	2200	1980	1980	1490	1490	1490	1490	1490	1490	1300	1050	940
					IPM(FEED)	7	7	7	6	5	4	5	5	5	4	4	4	4	2	2
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1.0D	0.3D (Up to Ø1/8 : 0.2D)	RPM	2700	2700	2700	2700	2430	2430	1790	1790	1790	1790	1790	1790	1730	1340	1210
					IPM(FEED)	8	8	8	7	6	6	5	5	5	5	5	5	6	3	3
H	38.1-38.2	Hardened steel	1.0D	0.05D	RPM	1330	1330	1330	1330	1200	1200	900	900	900	900	900	900	810	660	600
					IPM(FEED)	3.0	3.0	3.0	2.6	2.4	2.0	2.0	2.0	2.0	1.6	1.6	1.6	2.0	1.2	1.0
	40	Chilled Cast Iron	1.0D	0.3D (Up to Ø1/8 : 0.2D)	RPM	2200	2200	2200	2200	1980	1980	1490	1490	1490	1490	1490	1490	1300	1050	940
					IPM(FEED)	7	7	7	6	5	4	5	5	5	4	4	4	4	2	2
	41	Hardened Cast Iron	1.0D	0.05D	RPM	1330	1330	1330	1330	1200	1200	900	900	900	900	900	900	810	660	600
					IPM(FEED)	3.0	3.0	3.0	2.6	2.4	2.0	2.0	2.0	2.0	1.6	1.6	1.6	2.0	1.2	1.0



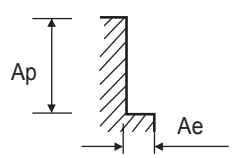
4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

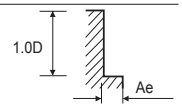
GMF25 SERIES 4 FLUTE SQUARE - SIDE CUTTING

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	17/64
P	1-8	Non-alloy steel Low alloy steel	0.05D	1.0D	RPM	22680	17720	14560	13440	10540	10090	8180	7640	7330	6570	6290
					IPM(FEED)	12	11	12	14	13	19	24	25	27	27	28
	9	Low alloy steel	0.05D	1.0D	RPM	13610	10630	9520	8610	6570	6230	4960	4580	4410	3970	3800
					IPM(FEED)	7	7	7	9	8	12	15	15	17	17	17
	10	High alloyed steel, and tool steel	0.05D	1.0D	RPM	22680	17720	14560	13440	10540	10090	8180	7640	7330	6570	6290
					IPM(FEED)	12	11	12	14	13	19	24	25	27	27	28
	11.1-11.2		0.05D	1.0D	RPM	13610	10630	9520	8610	6570	6230	4960	4580	4410	3970	3800
					IPM(FEED)	7	7	7	9	8	12	15	15	17	17	17
M	14.1	Stainless steel	0.05D	1.0D	RPM	11340	8860	7940	7170	5460	5200	4160	3830	3710	3350	3200
					IPM(FEED)	6	6	6	7	7	10	12	13	13	13	14
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.05D	1.0D	RPM	22680	17720	14560	13440	10540	10090	8180	7640	7330	6570	6290
					IPM(FEED)	12	11	12	14	13	19	24	25	27	27	28
H	38.1-38.2	Hardened steel	0.05D	1.0D	RPM	9070	7090	6350	5510	3970	3860	3110	2810	2670	2360	2310
					IPM(FEED)	2	2	2	3	2	3	3	3	3	3	4
	40	Chilled Cast Iron	0.05D	1.0D	RPM	13610	10630	9520	8610	6570	6230	4960	4580	4410	3970	3800
					IPM(FEED)	7	7	7	9	8	12	15	15	17	17	17
	41	Hardened Cast Iron	0.05D	1.0D	RPM	9070	7090	6350	5510	3970	3860	3110	2810	2670	2360	2310
					IPM(FEED)	2	2	2	3	2	3	3	3	3	3	4

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)									
						9/32	19/64	5/16	11/32	23/64	3/8	7/16	1/2	9/16	5/8
P	1-8	Non-alloy steel Low alloy steel	0.05D	1.0D	RPM	5980	5650	5290	4830	4590	4280	3710	3240	3030	2770
					IPM(FEED)	28	29	30	28	27	27	23	21	19	18
	9	Low alloy steel	0.05D	1.0D	RPM	3610	3390	3170	2910	2790	2620	2280	1980	1860	1710
					IPM(FEED)	16	16	16	15	14	13	11	10	9	9
	10	High alloyed steel, and tool steel	0.05D	1.0D	RPM	5980	5650	5290	4830	4590	4280	3710	3240	3030	2770
					IPM(FEED)	28	29	30	28	27	27	23	21	19	18
	11.1-11.2		0.05D	1.0D	RPM	3610	3390	3170	2910	2790	2620	2280	1980	1860	1710
					IPM(FEED)	16	16	16	15	14	13	11	10	9	9
M	14.1	Stainless steel	0.05D	1.0D	RPM	3030	2840	2650	2420	2330	2200	1880	1610	1510	1390
					IPM(FEED)	14	14	15	14	13	13	11	10	9	8
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.05D	1.0D	RPM	5980	5650	5290	4830	4590	4280	3710	3240	3030	2770
					IPM(FEED)	28	29	30	28	27	27	23	21	19	18
H	38.1-38.2	Hardened steel	0.05D	1.0D	RPM	2250	2190	2120	1950	1870	1780	1560	1370	1260	1140
					IPM(FEED)	4	4	5	4	4	4	4	3	3	3
	40	Chilled Cast Iron	0.05D	1.0D	RPM	3610	3390	3170	2910	2790	2620	2280	1980	1860	1710
					IPM(FEED)	16	16	16	15	14	13	11	10	9	9
	41	Hardened Cast Iron	0.05D	1.0D	RPM	2250	2190	2120	1950	1870	1780	1560	1370	1260	1140
					IPM(FEED)	4	4	5	4	4	4	4	3	3	3



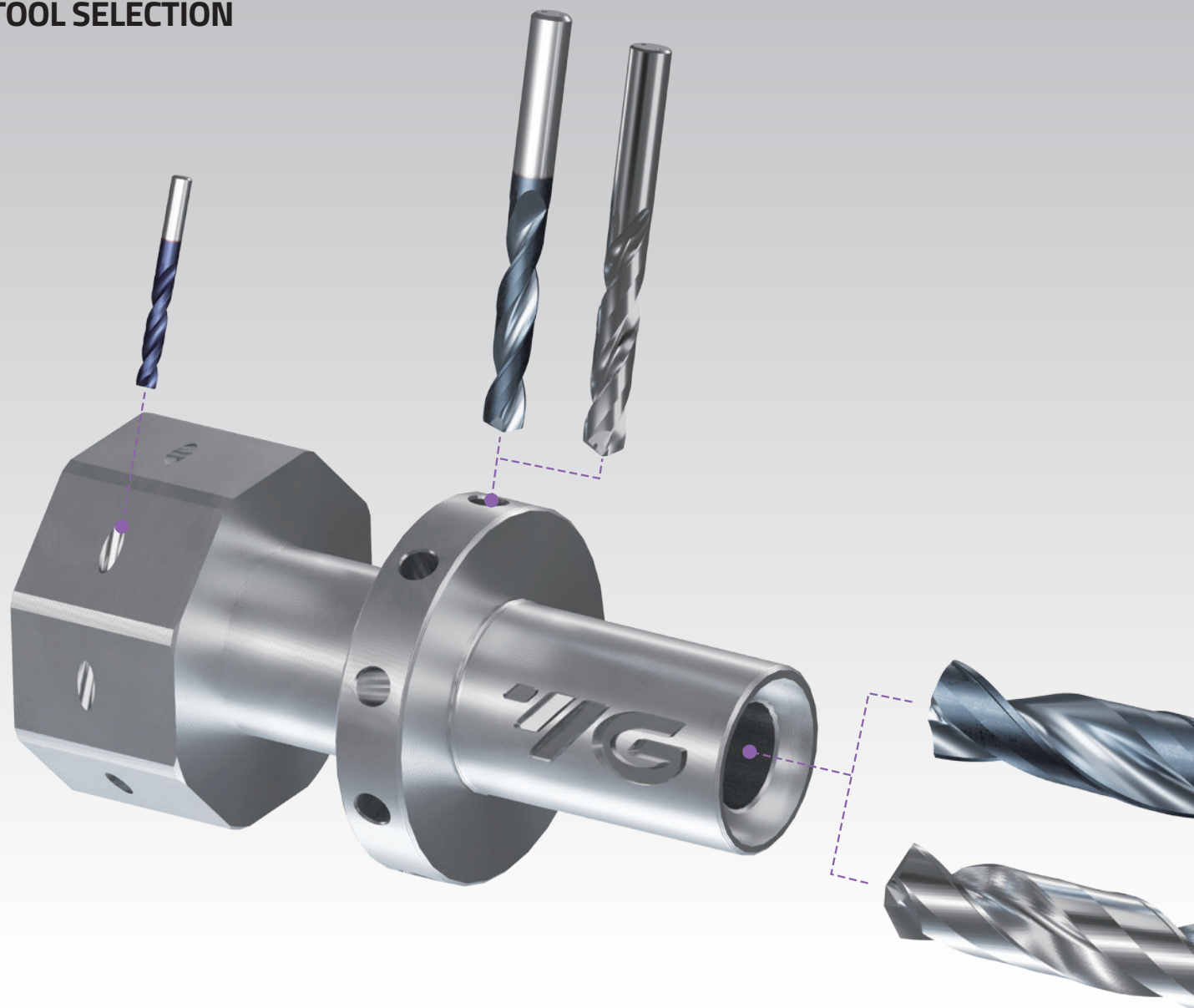
GMF28 SERIES 4 FLUTE SQUARE - SIDE CUTTING



ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)															
				3/64	3/64	3/64	3/64	1/16	1/16	1/16	1/16	1/16	5/64	5/64	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
P	1-8	Non-alloy steel Low alloy steel	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	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	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		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	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	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	.016	.011
	40	Chilled Cast Iron	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
	41	Hardened Cast Iron	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	.016	.011

ISO	VDI 3323	Parameter	Diameter (Ø)																	
			1/8	1/8	1/8	3/16	3/16	3/16	3/16	3/16	13/64	13/64	1/4	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	1-5/8	1-3/16	1-3/4	1-3/8	2
P	1-8	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	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	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	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	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	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	.063	.044
	40	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
	41	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	.063	.044

SMALL PARTS MACHINING
TOOL SELECTION



HOLEMAKING

for Small Parts Machining

P M K N S H : Excellent
P M K N S H : Good

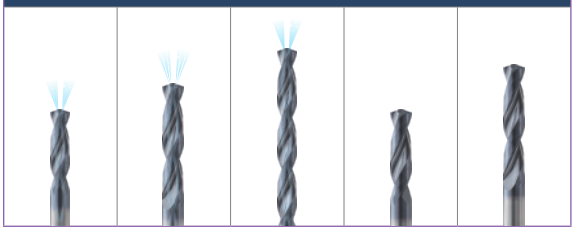
SOLID CARBIDE DRILL

Work Material	Item	Application	Surface Treatment / Coating	Flute Lengths	Size Range Min	Size Range Max	Page
P M K	 **Dream Drills Soft - Micro**	High-precision, high-efficiency machining for precision and IT applications	GX-Coating	3xD	0.3mm	0.95mm	**B3**
P M K H	 **Dream Drill X**	For Extended tool life in carbon steels, alloy steels, and cast iron / Extreme wear resistance, high heat endurance, chipping protection	RCH-Coating	3xD 5xD 8xD	1.0mm 1/16”	12mm 1/2”	**B5**
P M N S	 **Dream Drills - INOX**	For Stainless Steel / Lower Torque / Improved chip formation	TiAlN	3xD 5xD 8xD	1.0mm 1/16”	12mm 1/2”	**B24**
N	 **Dream Drills - ALU**	For Aluminum and Aluminum alloys	DLC	5xD	3.0mm 1/8”	12mm 1/2”	**B35**
P K	 **Dream Drills - MQL (Minimum Quantity Lubrication)**	For drilling deep holes Polished flute for enhanced chip evacuation	TiAlN	10xD 12xD 15xD 20xD	3.0mm 1/8”	12mm 1/2”	**B41**
P M K N	 **Dream Drills - Flat Bottom**	180° Point Angle Drill for Holes on Various Angled Surfaces	X-Coating TiAlN	2xD 5xD	0.5mm 1/32”	12mm 1/2”	**B55**

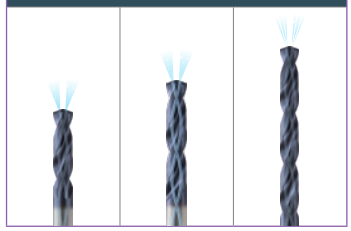
MICRO

SERIES	DGXPA01
DRILLING DEPTH	3xD
LENGTH	Micro
SIZE MIN	D0.3
SIZE MAX	D0.95
PAGE	B3
SURFACE TREATMENT	GX-Coating
MODEL	

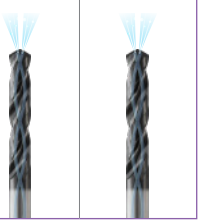
X

SERIES	DTX406	DTX408	DTX421	DTX423	DTX424
DRILLING DEPTH	3xD	5XD	8×D	3XD	5XD
LENGTH	SHORT	LONG	EXTRA LONG	SHORT	LONG
SIZE MIN	D3.0	D1.0	D3.0	D3.0	D1.0
SIZE MAX	D1/2	D1/2	D1/2	D1/2	D1/2
PAGE	B5	B8	B11	B14	B17
SURFACE TREATMENT	RCH-Coating				
MODEL					

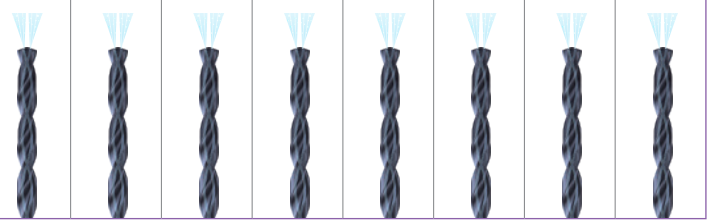
INOX

SERIES	DH451	DH452	DH453
DRILLING DEPTH	3XD	5XD	8XD
LENGTH	SHORT	LONG	EXTRA LONG
SIZE MIN	D1/16	D1.0	D5/64
SIZE MAX	D1/2	D1/2	D1/2
PAGE	B24	B27	B31
SURFACE TREATMENT	TiAlN		
MODEL			

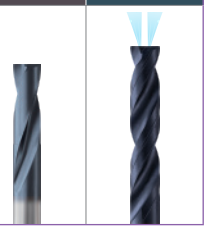
ALU

SERIES	DGE466 DGE718	DGE433
DRILLING DEPTH	5XD	5XD
LENGTH	LONG	LONG
SIZE MIN	D13/64	D3.0
SIZE MAX	D1/2	D1/2
PAGE	B36	B38
SURFACE TREATMENT	DLC	
MODEL		

MQL

SERIES	DH510	DH512	DH515	DH520	DHM10	DHM12	DHM15	DHM20
DRILLING DEPTH	10XD	12XD	15XD	20XD	10XD	12XD	15XD	20XD
LENGTH	EXTRA LONG							
SIZE MIN	D3.0	D3.0	D3.0	D3.0	D3.0	D3.0	D3.0	D3.0
SIZE MAX	D1/2	D1/2	D1/2	D12.0	D12.0	D12.0	D12.0	D12.0
PAGE	B42	B44	B46	B49	B51		B52	
SURFACE TREATMENT	TiAlN							
MODEL								

FLAT BOTTOM

SERIES	DPP447	DH450
DRILLING DEPTH	2XD	5XD
LENGTH	SHORT	LONG
SIZE MIN	D0.5	D3.0
SIZE MAX	D1/2	D1/2
PAGE	B55	B58
SURFACE TREATMENT	X-Coating	TiAlN
MODEL		

GUIDE TO ICONS

Tool Material

CARBIDE Carbide

Helix Angle

30° N 20~30° Drills

Tolerance of Dimension

m7 h7 Tolerance of Outside Diameter

h7 h6 Tolerance of Shank Diameter

Point Angle

118° 140° 180°

Coolant Supply Pressure

20 bar Internal Coolant Suppy at 20 bar average pressure

45 bar Internal Coolant Suppy at 45 bar average pressure

Cutting Condition

Surface Treatment

RCH Coating YG-1 RCH-Coating

TiAlN Titanium Aluminum Nitride Coating

X Coating YG-1 X-Coating

GX Coating YG-1 GX-Coating

DLC Diamond-Like Carbon Coating

DREAM DRILL SOFT - MICRO

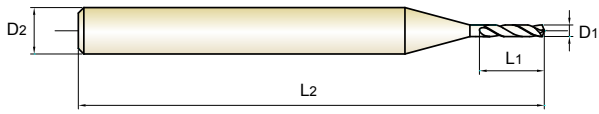
DGXPA01 SERIES

CARBIDE, without COOLANT HOLES

▶High-precision, high-efficiency machining for precision and IT applications.
▶Advanced thinning with excellent self-centering and cutting performance.







CARBIDE | 30° | h6 | h7 | 140° | GX Coating

p.B4

3×D

Unit : mm

EDP No.	Drill Diameter		Shank Diameter	Flute Length	Overall Length
	Metric	Decimal			
GX-Coating	D1		D2	L1	L2
DGXPA01003	0.3	.0118	3	1.5	38
DGXPA01004	0.4	.0157	3	2.5	38
DGXPA01005	0.5	.0197	3	3	38
DGXPA01006	0.6	.0236	3	3.5	38
DGXPA01007	0.7	.0276	3	4.5	38
DGXPA01907	0.75	.0295	3	4.5	38

EDP No.	Drill Diameter		Shank Diameter	Flute Length	Overall Length
	Metric	Decimal			
GX-Coating	D1		D2	L1	L2
DGXPA01008	0.8	.0315	3	5	38
DGXPA01908	0.85	.0335	3	5	38
DGXPA01009	0.9	.0354	3	5.5	38
DGXPA01909	0.95	.0374	3	5.5	38

◎ : 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	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			
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
Recommended																					

DREAM DRILL SOFT - MICRO

RECOMMENDED CUTTING CONDITIONS

DGXPA01 SERIES

Vc = m/min.
RPM = rev./min.
FEED = mm/rev.

ISO	VDI 3323	Material Description	Vc(m/min)	Drill Diameter(mm)			
				METRIC	0.3	0.6	0.8
P	2	Non-alloy steel	30	RPM	31,830	15,920	11,940
				FEED	0.003 (0.1D)	0.007 (0.1D)	0.007 (0.1D)
	3		30	RPM	31,830	15,920	11,940
				FEED	0.003 (0.1D)	0.007 (0.1D)	0.007 (0.1D)
	6	Low alloy steel	30	RPM	31,830	15,920	11,940
				FEED	0.003 (0.1D)	0.007 (0.1D)	0.007 (0.1D)
	7		30	RPM	31,830	15,920	11,940
				FEED	0.003 (0.1D)	0.007 (0.1D)	0.007 (0.1D)
	10	High alloyed steel, and tool steel	30	RPM	31,830	15,920	11,940
				FEED	0.003 (0.1D)	0.007 (0.1D)	0.007 (0.1D)
M	12	Stainless steel	25	RPM	26,530	13,260	9,950
				FEED	0.001(0.1D)	0.002(0.1D)	0.002(0.1D)
	13		25	RPM	26,530	13,260	9,950
				FEED	0.001(0.1D)	0.002(0.1D)	0.002(0.1D)
K	15	Grey cast iron	30	RPM	31,830	15,920	11,940
				FEED	0.003 (0.1D)	0.007 (0.1D)	0.007 (0.1D)
	16		30	RPM	31,830	15,920	11,940
				FEED	0.003 (0.1D)	0.007 (0.1D)	0.007 (0.1D)
	17	Nodular cast iron	30	RPM	31,830	15,920	11,940
				FEED	0.003 (0.1D)	0.007 (0.1D)	0.007 (0.1D)
	18		30	RPM	31,830	15,920	11,940
				FEED	0.003 (0.1D)	0.007 (0.1D)	0.007 (0.1D)
	19	Malleable cast iron	30	RPM	31,830	15,920	11,940
				FEED	0.003 (0.1D)	0.007 (0.1D)	0.007 (0.1D)
	20		30	RPM	31,830	15,920	11,940
				FEED	0.003 (0.1D)	0.007 (0.1D)	0.007 (0.1D)

DREAM DRILL X

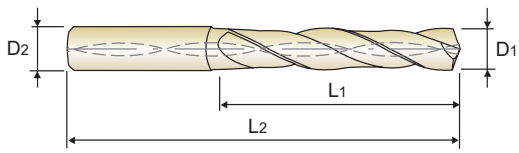
DTX406

CARBIDE, 3XD with COOLANT HOLES (RCH-COATING)

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- ▶ Soft Cutting Action and Reduced Axial Forces; Easy to Recondition
- ▶ Good Self-Centering even at Low Feed Rates and Unstable Situations
- ▶ Excellent Chip Breaking and Chip Evacuation







DIN 6537 | CARBIDE | h6 | m7 | 140° | 20 bar | RCH Coating

p.B20-B21

SHORT

3×D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
RCH-Coating	D1			D2	L1	L2
DTX406030	3.0		.1181	6	20	62
DTX406031	3.1		.1220	6	20	62
DTX406008F	3.175	1/8	.1250	6	20	62
DTX406032	3.2		.1260	6	20	62
DTX406033	3.3		.1299	6	20	62
DTX406034	3.4		.1339	6	20	62
DTX406035	3.5		.1378	6	20	62
DTX406009F	3.572	9/64	.1406	6	20	62
DTX406036	3.6		.1417	6	20	62
DTX406037	3.7		.1457	6	20	62
DTX406038	3.8		.1496	6	24	66
DTX406039	3.9		.1535	6	24	66
DTX406010F	3.969	5/32	.1563	6	24	66
DTX406040	4.0		.1575	6	24	66
DTX406041	4.1		.1614	6	24	66
DTX406042	4.2		.1654	6	24	66
DTX406043	4.3		.1693	6	24	66
DTX406011F	4.366	11/64	.1719	6	24	66
DTX406044	4.4		.1732	6	24	66
DTX406045	4.5		.1772	6	24	66
DTX406046	4.6		.1811	6	24	66
DTX406047	4.7		.1850	6	24	66
DTX406012F	4.763	3/16	.1875	6	24	66
DTX406048	4.8		.1890	6	28	66
DTX406049	4.9		.1929	6	28	66
DTX406050	5.0		.1969	6	28	66

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
RCH-Coating	D1			D2	L1	L2
DTX406051	5.1		.2008	6	28	66
DTX406013F	5.159	13/64	.2031	6	28	66
DTX406052	5.2		.2047	6	28	66
DTX406053	5.3		.2087	6	28	66
DTX406054	5.4		.2126	6	28	66
DTX406055	5.5		.2165	6	28	66
DTX406014F	5.556	7/32	.2188	6	28	66
DTX406056	5.6		.2205	6	28	66
DTX406057	5.7		.2244	6	28	66
DTX406058	5.8		.2283	6	28	66
DTX406059	5.9		.2323	6	28	66
DTX406015F	5.953	15/64	.2344	6	28	66
DTX406060	6.0		.2362	6	28	66
DTX406061	6.1		.2402	8	34	79
DTX406062	6.2		.2441	8	34	79
DTX406063	6.3		.2480	8	34	79
DTX406016F	6.350	1/4	.2500	8	34	79
DTX406064	6.4		.2520	8	34	79
DTX406065	6.5		.2559	8	34	79
DTX406006L	6.528	F	.2570	8	34	79
DTX406066	6.6		.2598	8	34	79
DTX406067	6.7		.2638	8	34	79
DTX406017F	6.747	17/64	.2656	8	34	79
DTX406068	6.8		.2677	8	34	79
DTX406069	6.9		.2717	8	34	79
DTX406009L	6.909	I	.2720	8	34	79

▶ Other shank types are available on your request.

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

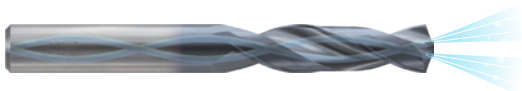
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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
Recommended																		○			

DREAM DRILL X

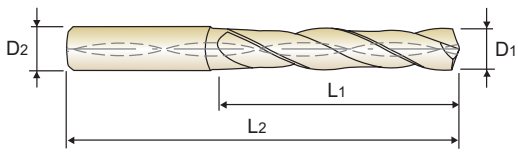
DTX406

CARBIDE, 3XD with COOLANT HOLES (RCH-COATING)

- Upgraded Coating for Higher Tool Life in Various Materials
- Soft Cutting Action and Reduced Axial Forces; Easy to Recondition
- Good Self-Centering even at Low Feed Rates and Unstable Situations
- Excellent Chip Breaking and Chip Evacuation







DIN 6537 | CARBIDE | h6 | m7 | 140° | 20 bar | RCH Coating

p.B20-B21

SHORT

3×D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
RCH-Coating	D1			D2	L1	L2
DTX406070	7.0		.2756	8	34	79
DTX406071	7.1		.2795	8	41	79
DTX406018F	7.144	9/32	.2812	8	41	79
DTX406072	7.2		.2835	8	41	79
DTX406073	7.3		.2874	8	41	79
DTX406074	7.4		.2913	8	41	79
DTX406075	7.5		.2953	8	41	79
DTX406019F	7.541	19/64	.2969	8	41	79
DTX406076	7.6		.2992	8	41	79
DTX406077	7.7		.3031	8	41	79
DTX406078	7.8		.3071	8	41	79
DTX406079	7.9		.3110	8	41	79
DTX406020F	7.938	5/16	.3125	8	41	79
DTX406080	8.0		.3150	8	41	79
DTX406081	8.1		.3189	10	47	89
DTX406082	8.2		.3228	10	47	89
DTX406083	8.3		.3268	10	47	89
DTX406021F	8.334	21/64	.3281	10	47	89
DTX406084	8.4		.3307	10	47	89
DTX406017L	8.433	Q	.3320	10	47	89
DTX406085	8.5		.3346	10	47	89
DTX406086	8.6		.3386	10	47	89
DTX406087	8.7		.3425	10	47	89
DTX406022F	8.731	11/32	.3438	10	47	89
DTX406088	8.8		.3465	10	47	89
DTX406089	8.9		.3504	10	47	89

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
RCH-Coating	D1			D2	L1	L2
DTX406090	9.0		.3543	10	47	89
DTX406091	9.1		.3583	10	47	89
DTX406023F	9.128	23/64	.3594	10	47	89
DTX406092	9.2		.3622	10	47	89
DTX406093	9.3		.3661	10	47	89
DTX406021L	9.347	U	.3680	10	47	89
DTX406094	9.4		.3701	10	47	89
DTX406095	9.5		.3740	10	47	89
DTX406024F	9.525	3/8	.3750	10	47	89
DTX406096	9.6		.3780	10	47	89
DTX406097	9.7		.3819	10	47	89
DTX406098	9.8		.3858	10	47	89
DTX406099	9.9		.3898	10	47	89
DTX406025F	9.922	25/64	.3906	10	47	89
DTX406100	10.0		.3937	10	47	89
DTX406101	10.1		.3976	12	55	102
DTX406102	10.2		.4016	12	55	102
DTX406103	10.3		.4055	12	55	102
DTX406026F	10.319	13/32	.4062	12	55	102
DTX406104	10.4		.4094	12	55	102
DTX406105	10.5		.4134	12	55	102
DTX406106	10.6		.4173	12	55	102
DTX406107	10.7		.4212	12	55	102
DTX406027F	10.716	27/64	.4219	12	55	102
DTX406108	10.8		.4252	12	55	102
DTX406109	10.9		.4291	12	55	102

▶ Other shank types are available on your request.

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

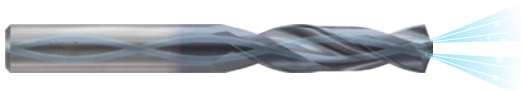
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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
Recommended																		○			

DREAM DRILL X

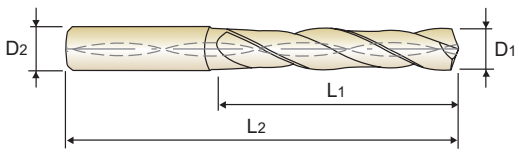
DTX406

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DIN 6537 | CARBIDE | h6 | m7 | 140° | 20 bar | RCH Coating

p.B20-B21

SHORT

3 × D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
RCH-Coating	D1			D2	L1	L2
DTX406110	11.0		.4330	12	55	102
DTX406111	11.1		.4370	12	55	102
DTX406028F	11.113	7/16	.4375	12	55	102
DTX406112	11.2		.4409	12	55	102
DTX406113	11.3		.4448	12	55	102
DTX406114	11.4		.4488	12	55	102
DTX406115	11.5		.4527	12	55	102
DTX406029F	11.509	29/64	.4531	12	55	102

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
RCH-Coating	D1			D2	L1	L2
DTX406116	11.6		.4566	12	55	102
DTX406117	11.7		.4606	12	55	102
DTX406118	11.8		.4645	12	55	102
DTX406119	11.9		.4685	12	55	102
DTX406030F	11.906	15/32	.4688	12	55	102
DTX406120	12.0		.4724	12	55	102
DTX406032F	12.7	1/2	.5000	14	60	107

▶ Other shank types are available on your request.

◎ : 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	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			
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
Recommended																		○			

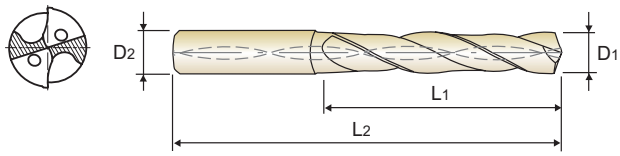
DREAM DRILL X

DTX408

CARBIDE, 5XD with COOLANT HOLES (RCH-COATING)

- ▶ Upgraded Coating for Higher Tool Life in Various Materials
- ▶ Soft Cutting Action and Reduced Axial Forces; Easy to Recondition
- ▶ Good Self-Centering even at Low Feed Rates and Unstable Situations
- ▶ Excellent Chip Breaking and Chip Evacuation





DIN 6537 | CARBIDE | h6 | m7 | 140° | 20 bar | RCH Coating

p.B20-B21

LONG

5×D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
RCH-Coating	D1			D2	L1	L2
DTX408010	1.0		.0394	3	8	55
DTX408011	1.1		.0433	3	12	55
DTX408012	1.2		.0472	3	12	55
DTX408013	1.3		.0512	3	12	55
DTX408014	1.4		.0551	3	12	55
DTX408015	1.5		.0591	3	16	55
DTX408004F	1.588	1/16	.0625	3	16	55
DTX408016	1.6		.0630	3	16	55
DTX408017	1.7		.0669	3	16	55
DTX408018	1.8		.0709	3	16	55
DTX408019	1.9		.0748	3	16	55
DTX408005F	1.984	5/64	.0781	3	16	55
DTX408020	2.0		.0787	4	21	57
DTX408021	2.1		.0827	4	21	57
DTX408022	2.2		.0866	4	21	57
DTX408023	2.3		.0906	4	21	57
DTX408006F	2.381	3/32	.0938	4	21	57
DTX408024	2.4		.0945	4	21	57
DTX408025	2.5		.0984	4	21	57
DTX408026	2.6		.1024	4	21	57
DTX408027	2.7		.1063	4	21	57
DTX408007F	2.778	7/64	.1094	4	21	57
DTX408028	2.8		.1102	4	21	57
DTX408029	2.9		.1142	4	21	57
DTX408030	3.0		.1181	6	28	66
DTX408031	3.1		.1220	6	28	66
DTX408008F	3.175	1/8	.1250	6	28	66
DTX408032	3.2		.1260	6	28	66

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
RCH-Coating	D1			D2	L1	L2
DTX408033	3.3		.1299	6	28	66
DTX408034	3.4		.1339	6	28	66
DTX408035	3.5		.1378	6	28	66
DTX408009F	3.572	9/64	.1406	6	28	66
DTX408036	3.6		.1417	6	28	66
DTX408037	3.7		.1457	6	28	66
DTX408038	3.8		.1496	6	36	74
DTX408039	3.9		.1535	6	36	74
DTX408010F	3.969	5/32	.1563	6	36	74
DTX408040	4.0		.1575	6	36	74
DTX408041	4.1		.1614	6	36	74
DTX408042	4.2		.1654	6	36	74
DTX408043	4.3		.1693	6	36	74
DTX408011F	4.366	11/64	.1719	6	36	74
DTX408044	4.4		.1732	6	36	74
DTX408045	4.5		.1772	6	36	74
DTX408046	4.6		.1811	6	36	74
DTX408047	4.7		.1850	6	36	74
DTX408012F	4.763	3/16	.1875	6	36	74
DTX408048	4.8		.1890	6	44	82
DTX408049	4.9		.1929	6	44	82
DTX408050	5.0		.1969	6	44	82
DTX408051	5.1		.2008	6	44	82
DTX408013F	5.159	13/64	.2031	6	44	82
DTX408052	5.2		.2047	6	44	82
DTX408053	5.3		.2087	6	44	82
DTX408054	5.4		.2126	6	44	82
DTX408055	5.5		.2165	6	44	82

▶ Other shank types are available on your request.

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

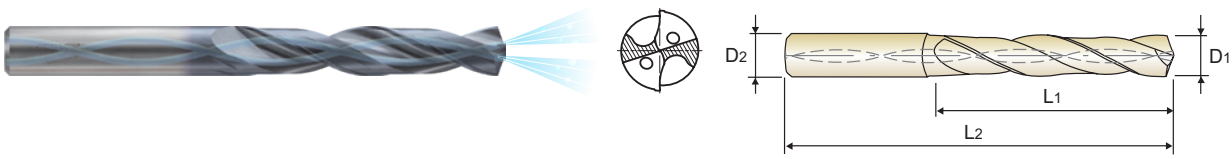
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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
Recommended																		○			

DREAM DRILL X

DTX408

CARBIDE, 5XD with COOLANT HOLES (RCH-COATING)

- Upgraded Coating for Higher Tool Life in Various Materials
- Soft Cutting Action and Reduced Axial Forces; Easy to Recondition
- Good Self-Centering even at Low Feed Rates and Unstable Situations
- Excellent Chip Breaking and Chip Evacuation



DIN 6537 | CARBIDE | h6 | m7 | 140° | 20 bar | RCH Coating

p.B20-B21

LONG

5×D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
RCH-Coating	D1			D2	L1	L2
DTX408014F	5.556	7/32	.2188	6	44	82
DTX408056	5.6		.2205	6	44	82
DTX408057	5.7		.2244	6	44	82
DTX408058	5.8		.2283	6	44	82
DTX408059	5.9		.2323	6	44	82
DTX408015F	5.953	15/64	.2344	6	44	82
DTX408060	6.0		.2362	6	44	82
DTX408061	6.1		.2402	8	53	91
DTX408062	6.2		.2441	8	53	91
DTX408063	6.3		.2480	8	53	91
DTX408016F	6.350	1/4	.2500	8	53	91
DTX408064	6.4		.2520	8	53	91
DTX408065	6.5		.2559	8	53	91
DTX408006L	6.528	F	.2570	8	53	91
DTX408066	6.6		.2598	8	53	91
DTX408067	6.7		.2638	8	53	91
DTX408017F	6.747	17/64	.2656	8	53	91
DTX408068	6.8		.2677	8	53	91
DTX408069	6.9		.2717	8	53	91
DTX408009L	6.909	I	.2720	8	53	91
DTX408070	7.0		.2756	8	53	91
DTX408071	7.1		.2795	8	53	91
DTX408018F	7.144	9/32	.2812	8	53	91
DTX408072	7.2		.2835	8	53	91
DTX408073	7.3		.2874	8	53	91
DTX408074	7.4		.2913	8	53	91
DTX408075	7.5		.2953	8	53	91
DTX408019F	7.541	19/64	.2969	8	53	91

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
RCH-Coating	D1			D2	L1	L2
DTX408076	7.6		.2992	8	53	91
DTX408077	7.7		.3031	8	53	91
DTX408078	7.8		.3071	8	53	91
DTX408079	7.9		.3110	8	53	91
DTX408020F	7.938	5/16	.3125	8	53	91
DTX408080	8.0		.3150	8	53	91
DTX408081	8.1		.3189	10	61	103
DTX408082	8.2		.3228	10	61	103
DTX408083	8.3		.3268	10	61	103
DTX408021F	8.334	21/64	.3281	10	61	103
DTX408084	8.4		.3307	10	61	103
DTX408017L	8.433	Q	.3320	10	61	103
DTX408085	8.5		.3346	10	61	103
DTX408086	8.6		.3386	10	61	103
DTX408087	8.7		.3425	10	61	103
DTX408022F	8.731	11/32	.3438	10	61	103
DTX408088	8.8		.3465	10	61	103
DTX408089	8.9		.3504	10	61	103
DTX408090	9.0		.3543	10	61	103
DTX408091	9.1		.3583	10	61	103
DTX408023F	9.128	23/64	.3594	10	61	103
DTX408092	9.2		.3622	10	61	103
DTX408093	9.3		.3661	10	61	103
DTX408021L	9.347	U	.3680	10	61	103
DTX408094	9.4		.3701	10	61	103
DTX408095	9.5		.3740	10	61	103
DTX408024F	9.525	3/8	.3750	10	61	103
DTX408096	9.6		.3780	10	61	103

▶ Other shank types are available on your request.

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	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			
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
Recommended																		○			

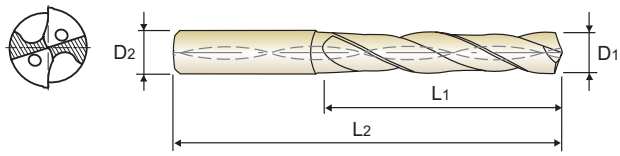
DREAM DRILL X

DTX408

CARBIDE, 5XD with COOLANT HOLES (RCH-COATING)

- ▶ Upgraded Coating for Higher Tool Life in Various Materials
- ▶ Soft Cutting Action and Reduced Axial Forces; Easy to Recondition
- ▶ Good Self-Centering even at Low Feed Rates and Unstable Situations
- ▶ Excellent Chip Breaking and Chip Evacuation





DIN 6537 | CARBIDE | h6 | m7 | 140° | 20 bar | RCH Coating

p.B20-B21

LONG

5×D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
RCH-Coating	D1			D2	L1	L2
DTX408097	9.7		.3819	10	61	103
DTX408098	9.8		.3858	10	61	103
DTX408099	9.9		.3898	10	61	103
DTX408025F	9.922	25/64	.3906	10	61	103
DTX408100	10.0		.3937	10	61	103
DTX408101	10.1		.3976	12	71	118
DTX408102	10.2		.4016	12	71	118
DTX408103	10.3		.4055	12	71	118
DTX408026F	10.319	13/32	.4062	12	71	118
DTX408104	10.4		.4094	12	71	118
DTX408105	10.5		.4134	12	71	118
DTX408106	10.6		.4173	12	71	118
DTX408107	10.7		.4212	12	71	118
DTX408027F	10.716	27/64	.4219	12	71	118
DTX408108	10.8		.4252	12	71	118
DTX408109	10.9		.4291	12	71	118
DTX408110	11.0		.4330	12	71	118
DTX408111	11.1		.4370	12	71	118
DTX408028F	11.113	7/16	.4375	12	71	118

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
RCH-Coating	D1			D2	L1	L2
DTX408112	11.2		.4409	12	71	118
DTX408113	11.3		.4448	12	71	118
DTX408114	11.4		.4488	12	71	118
DTX408115	11.5		.4527	12	71	118
DTX408029F	11.509	29/64	.4531	12	71	118
DTX408116	11.6		.4566	12	71	118
DTX408117	11.7		.4606	12	71	118
DTX408118	11.8		.4645	12	71	118
DTX408119	11.9		.4685	12	71	118
DTX408030F	11.906	15/32	.4688	12	71	118
DTX408120	12.0		.4724	12	71	118
DTX408032F	12.7	1/2	.5000	14	77	124

▶ Other shank types are available on your request.

◎ : 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	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		◎	◎	◎	○	◎	◎	○	○	◎	○	○	○		◎	○	◎	○	◎	○

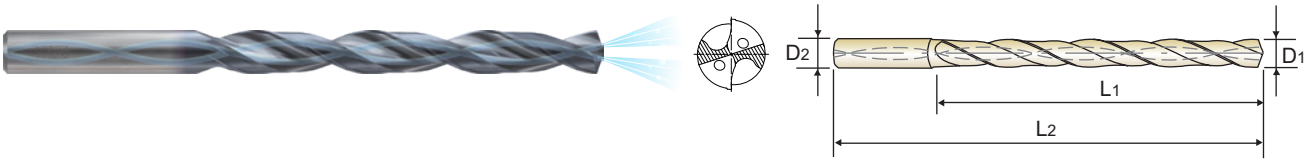
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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
Recommended																		○			

DREAM DRILL X

DTX421

CARBIDE, 8XD with COOLANT HOLES (RCH-COATING)

- ▶ Upgraded Coating for Higher Tool Life in Various Materials
- ▶ Soft Cutting Action and Reduced Axial Forces; Easy to Recondition
- ▶ Good Self-Centering even at Low Feed Rates and Unstable Situations
- ▶ Excellent Chip Breaking and Chip Evacuation



DIN 6537 | CARBIDE | h6 | m7 | 140° | 20 bar | RCH Coating

p.B20-B21

EXTRA LONG

8×D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
RCH-Coating	D1			D2	L1	L2
DTX421030	3.0		.1181	6	34	72
DTX421031	3.1		.1220	6	34	72
DTX421008F	3.175	1/8	.1250	6	34	72
DTX421032	3.2		.1260	6	34	72
DTX421033	3.3		.1299	6	34	72
DTX421034	3.4		.1339	6	34	72
DTX421029G	3.450	#29	.1360	6	34	72
DTX421035	3.5		.1378	6	34	72
DTX421009F	3.572	9/64	.1406	6	34	72
DTX421036	3.6		.1417	6	34	72
DTX421037	3.7		.1457	6	34	72
DTX421038	3.8		.1496	6	43	81
DTX421039	3.9		.1535	6	43	81
DTX421010F	3.969	5/32	.1563	6	43	81
DTX421040	4.0		.1575	6	43	81
DTX421021G	4.040	#21	.1590	6	43	81
DTX421041	4.1		.1614	6	43	81
DTX421042	4.2		.1654	6	43	81
DTX421043	4.3		.1693	6	43	81
DTX421011F	4.366	11/64	.1719	6	43	81
DTX421044	4.4		.1732	6	43	81
DTX421045	4.5		.1772	6	43	81
DTX421046	4.6		.1811	6	43	81
DTX421047	4.7		.1850	6	43	81
DTX421012F	4.763	3/16	.1875	6	57	95
DTX421048	4.8		.1890	6	57	95

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
RCH-Coating	D1			D2	L1	L2
DTX421049	4.9		.1929	6	57	95
DTX421050	5.0		.1969	6	57	95
DTX421051	5.1		.2008	6	57	95
DTX421013F	5.159	13/64	.2031	6	57	95
DTX421052	5.2		.2047	6	57	95
DTX421053	5.3		.2087	6	57	95
DTX421054	5.4		.2126	6	57	95
DTX421055	5.5		.2165	6	57	95
DTX421014F	5.556	7/32	.2188	6	57	95
DTX421056	5.6		.2205	6	57	95
DTX421057	5.7		.2244	6	57	95
DTX421058	5.8		.2283	6	57	95
DTX421059	5.9		.2323	6	57	95
DTX421015F	5.953	15/64	.2344	6	57	95
DTX421060	6.0		.2362	6	57	95
DTX421061	6.1		.2402	8	76	114
DTX421062	6.2		.2441	8	76	114
DTX421063	6.3		.2480	8	76	114
DTX421016F	6.350	1/4	.2500	8	76	114
DTX421064	6.4		.2520	8	76	114
DTX421065	6.5		.2559	8	76	114
DTX421006L	6.528	F	.2570	8	76	114
DTX421066	6.6		.2598	8	76	114
DTX421067	6.7		.2638	8	76	114
DTX421017F	6.747	17/64	.2656	8	76	114
DTX421068	6.8		.2677	8	76	114

▶ Other shank types are available on your request.

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

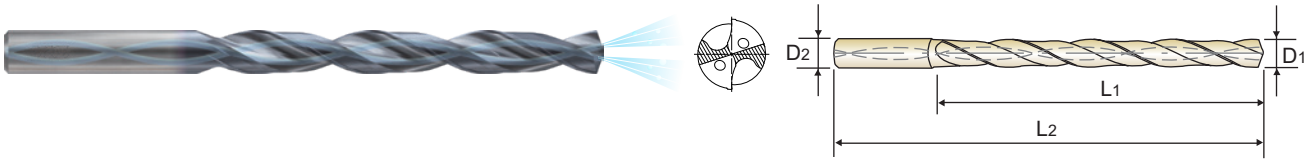
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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
Recommended																		○			

DREAM DRILL X

DTX421

CARBIDE, 8XD with COOLANT HOLES (RCH-COATING)

- Upgraded Coating for Higher Tool Life in Various Materials
- Soft Cutting Action and Reduced Axial Forces; Easy to Recondition
- Good Self-Centering even at Low Feed Rates and Unstable Situations
- Excellent Chip Breaking and Chip Evacuation



DIN 6537 | CARBIDE | h6 | m7 | 140° | 20 bar | RCH Coating

p.B20-B21

EXTRA LONG

8×D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
RCH-Coating	D1			D2	L1	L2
DTX421069	6.9		.2717	8	76	114
DTX421009L	6.909	I	.2720	8	76	114
DTX421070	7.0		.2756	8	76	114
DTX421071	7.1		.2795	8	76	114
DTX421018F	7.144	9/32	.2813	8	76	114
DTX421072	7.2		.2835	8	76	114
DTX421073	7.3		.2874	8	76	114
DTX421074	7.4		.2913	8	76	114
DTX421075	7.5		.2953	8	76	114
DTX421019F	7.541	19/64	.2969	8	76	114
DTX421076	7.6		.2992	8	76	114
DTX421077	7.7		.3031	8	76	114
DTX421078	7.8		.3071	8	76	114
DTX421079	7.9		.3110	8	76	114
DTX421020F	7.938	5/16	.3125	8	76	114
DTX421080	8.0		.3150	8	76	114
DTX421081	8.1		.3189	10	95	142
DTX421082	8.2		.3228	10	95	142
DTX421083	8.3		.3268	10	95	142
DTX421021F	8.334	21/64	.3281	10	95	142
DTX421084	8.4		.3307	10	95	142
DTX421017L	8.430	Q	.3320	10	95	142
DTX421085	8.5		.3346	10	95	142
DTX421086	8.6		.3386	10	95	142
DTX421087	8.7		.3425	10	95	142
DTX421022F	8.731	11/32	.3438	10	95	142

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
RCH-Coating	D1			D2	L1	L2
DTX421088	8.8		.3465	10	95	142
DTX421089	8.9		.3504	10	95	142
DTX421090	9.0		.3543	10	95	142
DTX421091	9.1		.3583	10	95	142
DTX421023F	9.128	23/64	.3594	10	95	142
DTX421092	9.2		.3622	10	95	142
DTX421093	9.3		.3661	10	95	142
DTX421021L	9.350	U	.3680	10	95	142
DTX421094	9.4		.3701	10	95	142
DTX421095	9.5		.3740	10	95	142
DTX421024F	9.525	3/8	.3750	10	95	142
DTX421096	9.6		.3780	10	95	142
DTX421097	9.7		.3819	10	95	142
DTX421098	9.8		.3858	10	95	142
DTX421099	9.9		.3898	10	95	142
DTX421025F	9.922	25/64	.3906	10	95	142
DTX421100	10.0		.3937	10	95	142
DTX421101	10.1		.3976	12	114	162
DTX421102	10.2		.4016	12	114	162
DTX421103	10.3		.4055	12	114	162
DTX421026F	10.319	13/32	.4063	12	114	162
DTX421104	10.4		.4094	12	114	162
DTX421105	10.5		.4134	12	114	162
DTX421106	10.6		.4173	12	114	162
DTX421107	10.7		.4212	12	114	162
DTX421027F	10.716	27/64	.4219	12	114	162

▶ Other shank types are available on your request.

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

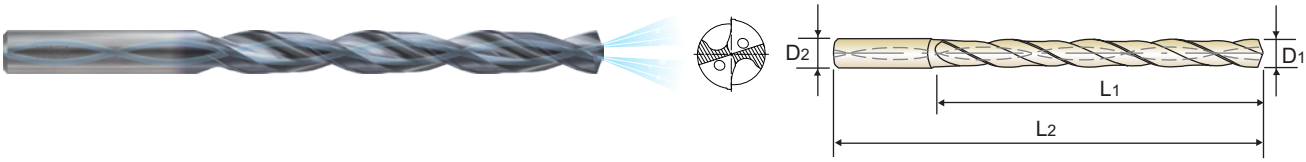
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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
Recommended																		○			

DREAM DRILL X

DTX421

CARBIDE, 8XD with COOLANT HOLES (RCH-COATING)

- ▶ Upgraded Coating for Higher Tool Life in Various Materials
- ▶ Soft Cutting Action and Reduced Axial Forces; Easy to Recondition
- ▶ Good Self-Centering even at Low Feed Rates and Unstable Situations
- ▶ Excellent Chip Breaking and Chip Evacuation



DIN 6537 | CARBIDE | h6 | m7 | 140° | 20 bar | RCH Coating

p.B20-B21

EXTRA LONG

8×D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
RCH-Coating	D1			D2	L1	L2
DTX421108	10.8		.4252	12	114	162
DTX421109	10.9		.4291	12	114	162
DTX421110	11.0		.4330	12	114	162
DTX421111	11.1		.4370	12	114	162
DTX421028F	11.113	7/16	.4375	12	114	162
DTX421112	11.2		.4409	12	114	162
DTX421113	11.3		.4448	12	114	162
DTX421114	11.4		.4488	12	114	162
DTX421115	11.5		.4527	12	114	162
DTX421029F	11.509	29/64	.4531	12	114	162

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
RCH-Coating	D1			D2	L1	L2
DTX421116	11.6		.4566	12	114	162
DTX421117	11.7		.4606	12	114	162
DTX421118	11.8		.4645	12	114	162
DTX421119	11.9		.4685	12	114	162
DTX421030F	11.906	15/32	.4688	12	114	162
DTX421120	12.0		.4724	12	114	162
DTX421032F	12.7	1/2	.5000	14	133	178

▶ Other shank types are available on your request.

◎ : 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	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			
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
Recommended																		○			

DREAM DRILL X

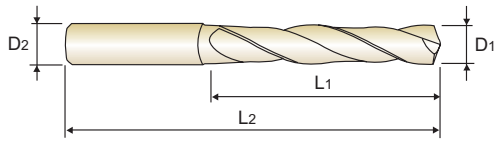
DTX423

CARBIDE, 3XD without COOLANT HOLES (RCH-COATING)

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- Excellent Chip Breaking and Chip Evacuation







DIN 6537 | CARBIDE | h6 | m7 | 140° | RCH Coating

p.B22-B23

SHORT

3×D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
RCH-Coating	D1			D2	L1	L2
DTX423030	3.0		.1181	6	20	62
DTX423031	3.1		.1220	6	20	62
DTX423008F	3.175	1/8	.1250	6	20	62
DTX423032	3.2		.1260	6	20	62
DTX423033	3.3		.1299	6	20	62
DTX423034	3.4		.1339	6	20	62
DTX423035	3.5		.1378	6	20	62
DTX423009F	3.572	9/64	.1406	6	20	62
DTX423036	3.6		.1417	6	20	62
DTX423037	3.7		.1457	6	20	62
DTX423038	3.8		.1496	6	24	66
DTX423039	3.9		.1535	6	24	66
DTX423010F	3.969	5/32	.1563	6	24	66
DTX423040	4.0		.1575	6	24	66
DTX423041	4.1		.1614	6	24	66
DTX423042	4.2		.1654	6	24	66
DTX423043	4.3		.1693	6	24	66
DTX423011F	4.366	11/64	.1719	6	24	66
DTX423044	4.4		.1732	6	24	66
DTX423045	4.5		.1772	6	24	66
DTX423046	4.6		.1811	6	24	66
DTX423047	4.7		.1850	6	24	66
DTX423012F	4.763	3/16	.1875	6	24	66
DTX423048	4.8		.1890	6	28	66
DTX423049	4.9		.1929	6	28	66
DTX423050	5.0		.1969	6	28	66

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
RCH-Coating	D1			D2	L1	L2
DTX423051	5.1		.2008	6	28	66
DTX423013F	5.159	13/64	.2031	6	28	66
DTX423052	5.2		.2047	6	28	66
DTX423053	5.3		.2087	6	28	66
DTX423054	5.4		.2126	6	28	66
DTX423055	5.5		.2165	6	28	66
DTX423014F	5.556	7/32	.2188	6	28	66
DTX423056	5.6		.2205	6	28	66
DTX423057	5.7		.2244	6	28	66
DTX423058	5.8		.2283	6	28	66
DTX423059	5.9		.2323	6	28	66
DTX423015F	5.953	15/64	.2344	6	28	66
DTX423060	6.0		.2362	6	28	66
DTX423061	6.1		.2402	8	34	79
DTX423062	6.2		.2441	8	34	79
DTX423063	6.3		.2480	8	34	79
DTX423016F	6.350	1/4	.2500	8	34	79
DTX423064	6.4		.2520	8	34	79
DTX423065	6.5		.2559	8	34	79
DTX423006L	6.528	F	.2570	8	34	79
DTX423066	6.6		.2598	8	34	79
DTX423067	6.7		.2638	8	34	79
DTX423017F	6.747	17/64	.2656	8	34	79
DTX423068	6.8		.2677	8	34	79
DTX423069	6.9		.2717	8	34	79
DTX423009L	6.909	I	.2720	8	34	79

▶ Other shank types are available on your request.

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	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			
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
Recommended																		○			

DREAM DRILL X

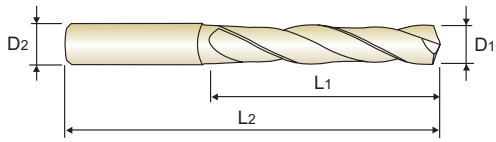
DTX423

CARBIDE, 3XD without COOLANT HOLES (RCH-COATING)

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DIN 6537 | CARBIDE | h6 | m7 | 140° | RCH Coating

p.B22-B23

SHORT

3×D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
RCH-Coating	D1			D2	L1	L2
DTX423070	7.0		.2756	8	34	79
DTX423071	7.1		.2795	8	41	79
DTX423018F	7.144	9/32	.2812	8	41	79
DTX423072	7.2		.2835	8	41	79
DTX423073	7.3		.2874	8	41	79
DTX423074	7.4		.2913	8	41	79
DTX423075	7.5		.2953	8	41	79
DTX423019F	7.541	19/64	.2969	8	41	79
DTX423076	7.6		.2992	8	41	79
DTX423077	7.7		.3031	8	41	79
DTX423078	7.8		.3071	8	41	79
DTX423079	7.9		.3110	8	41	79
DTX423020F	7.938	5/16	.3125	8	41	79
DTX423080	8.0		.3150	8	41	79
DTX423081	8.1		.3189	10	47	89
DTX423082	8.2		.3228	10	47	89
DTX423083	8.3		.3268	10	47	89
DTX423021F	8.334	21/64	.3281	10	47	89
DTX423084	8.4		.3307	10	47	89
DTX423017L	8.433	Q	.3320	10	47	89
DTX423085	8.5		.3346	10	47	89
DTX423086	8.6		.3386	10	47	89
DTX423087	8.7		.3425	10	47	89
DTX423022F	8.731	11/32	.3438	10	47	89
DTX423088	8.8		.3465	10	47	89
DTX423089	8.9		.3504	10	47	89

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
RCH-Coating	D1			D2	L1	L2
DTX423090	9.0		.3543	10	47	89
DTX423091	9.1		.3583	10	47	89
DTX423023F	9.128	23/64	.3594	10	47	89
DTX423092	9.2		.3622	10	47	89
DTX423093	9.3		.3661	10	47	89
DTX423021L	9.347	U	.3680	10	47	89
DTX423094	9.4		.3701	10	47	89
DTX423095	9.5		.3740	10	47	89
DTX423024F	9.525	3/8	.3750	10	47	89
DTX423096	9.6		.3780	10	47	89
DTX423097	9.7		.3819	10	47	89
DTX423098	9.8		.3858	10	47	89
DTX423099	9.9		.3898	10	47	89
DTX423025F	9.922	25/64	.3906	10	47	89
DTX423100	10.0		.3937	10	47	89
DTX423101	10.1		.3976	12	55	102
DTX423102	10.2		.4016	12	55	102
DTX423103	10.3		.4055	12	55	102
DTX423026F	10.319	13/32	.4062	12	55	102
DTX423104	10.4		.4094	12	55	102
DTX423105	10.5		.4134	12	55	102
DTX423106	10.6		.4173	12	55	102
DTX423107	10.7		.4213	12	55	102
DTX423027F	10.716	27/64	.4219	12	55	102
DTX423108	10.8		.4252	12	55	102
DTX423109	10.9		.4291	12	55	102

▶ Other shank types are available on your request.

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	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			
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
Recommended																		○			

DREAM DRILL X

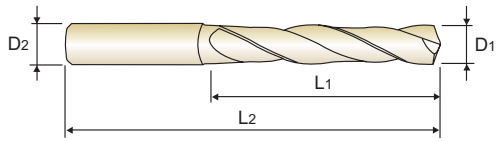
DTX423

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- ▶ Good Self-Centering even at Low Feed Rates and Unstable Situations
- ▶ Excellent Chip Breaking and Chip Evacuation







DIN 6537 | CARBIDE | h6 | m7 | 140° | RCH Coating

p.B22-B23

SHORT

3×D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
RCH-Coating	D1			D2	L1	L2
DTX423110	11.0		.4331	12	55	102
DTX423111	11.1		.4370	12	55	102
DTX423028F	11.113	7/16	.4375	12	55	102
DTX423112	11.2		.4409	12	55	102
DTX423113	11.3		.4449	12	55	102
DTX423114	11.4		.4488	12	55	102
DTX423115	11.5		.4528	12	55	102
DTX423029F	11.509	29/64	.4531	12	55	102

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
RCH-Coating	D1			D2	L1	L2
DTX423116	11.6		.4567	12	55	102
DTX423117	11.7		.4606	12	55	102
DTX423118	11.8		.4646	12	55	102
DTX423119	11.9		.4685	12	55	102
DTX423030F	11.906	15/32	.4688	12	55	102
DTX423120	12.0		.4724	12	55	102
DTX423032F	12.7	1/2	.5000	14	60	107

▶ Other shank types are available on your request.

◎ : 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	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			
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
Recommended																		○			

DREAM DRILL X

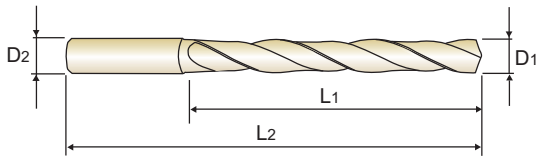
DTX424

CARBIDE, 5XD without COOLANT HOLES (RCH-COATING)

- ▶ Upgraded Coating for Higher Tool Life in Various Materials
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DIN 6537 | CARBIDE | h6 | m7 | 140° | RCH Coating

p.B22-B23

LONG

5 × D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
RCH-Coating	D1			D2	L1	L2
DTX424010	1.0		.0394	3	8	55
DTX424011	1.1		.0433	3	12	55
DTX424012	1.2		.0472	3	12	55
DTX424013	1.3		.0512	3	12	55
DTX424014	1.4		.0551	3	12	55
DTX424015	1.5		.0591	3	16	55
DTX424004F	1.588	1/16	.0625	3	16	55
DTX424016	1.6		.0630	3	16	55
DTX424017	1.7		.0669	3	16	55
DTX424018	1.8		.0709	3	16	55
DTX424019	1.9		.0748	3	16	55
DTX424005F	1.984	5/64	.0781	3	16	55
DTX424020	2.0		.0787	4	21	57
DTX424021	2.1		.0827	4	21	57
DTX424022	2.2		.0866	4	21	57
DTX424023	2.3		.0906	4	21	57
DTX424006F	2.381	3/32	.0938	4	21	57
DTX424024	2.4		.0945	4	21	57
DTX424025	2.5		.0984	4	21	57
DTX424026	2.6		.1024	4	21	57
DTX424027	2.7		.1063	4	21	57
DTX424007F	2.778	7/64	.1094	4	21	57
DTX424028	2.8		.1102	4	21	57
DTX424029	2.9		.1142	4	21	57
DTX424030	3.0		.1181	6	28	66
DTX424031	3.1		.1220	6	28	66

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
RCH-Coating	D1			D2	L1	L2
DTX424008F	3.175	1/8	.1250	6	28	66
DTX424032	3.2		.1260	6	28	66
DTX424033	3.3		.1299	6	28	66
DTX424034	3.4		.1339	6	28	66
DTX424035	3.5		.1378	6	28	66
DTX424009F	3.572	9/64	.1406	6	28	66
DTX424036	3.6		.1417	6	28	66
DTX424037	3.7		.1457	6	28	66
DTX424038	3.8		.1496	6	36	74
DTX424039	3.9		.1535	6	36	74
DTX424010F	3.969	5/32	.1563	6	36	74
DTX424040	4.0		.1575	6	36	74
DTX424041	4.1		.1614	6	36	74
DTX424042	4.2		.1654	6	36	74
DTX424043	4.3		.1693	6	36	74
DTX424011F	4.366	11/64	.1719	6	36	74
DTX424044	4.4		.1732	6	36	74
DTX424045	4.5		.1772	6	36	74
DTX424046	4.6		.1811	6	36	74
DTX424047	4.7		.1850	6	36	74
DTX424012F	4.763	3/16	.1875	6	36	74
DTX424048	4.8		.1890	6	44	82
DTX424049	4.9		.1929	6	44	82
DTX424050	5.0		.1969	6	44	82
DTX424051	5.1		.2008	6	44	82
DTX424013F	5.159	13/64	.2031	6	44	82

▶ Other shank types are available on your request.

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	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			
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
Recommended																		○			

DREAM DRILL X

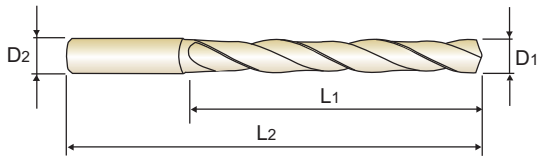
DTX424

CARBIDE, 5XD without COOLANT HOLES (RCH-COATING)

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- Soft Cutting Action and Reduced Axial Forces; Easy to Recondition
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DIN 6537 | CARBIDE | h6 | m7 | 140° | RCH Coating

p.B22-B23

LONG

5×D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
RCH-Coating	D1			D2	L1	L2
DTX424052	5.2		.2047	6	44	82
DTX424053	5.3		.2087	6	44	82
DTX424054	5.4		.2126	6	44	82
DTX424055	5.5		.2165	6	44	82
DTX424014F	5.556	7/32	.2188	6	44	82
DTX424056	5.6		.2205	6	44	82
DTX424057	5.7		.2244	6	44	82
DTX424058	5.8		.2283	6	44	82
DTX424059	5.9		.2323	6	44	82
DTX424015F	5.953	15/64	.2344	6	44	82
DTX424060	6.0		.2362	6	44	82
DTX424061	6.1		.2402	8	53	91
DTX424062	6.2		.2441	8	53	91
DTX424063	6.3		.2480	8	53	91
DTX424016F	6.350	1/4	.2500	8	53	91
DTX424064	6.4		.2520	8	53	91
DTX424065	6.5		.2559	8	53	91
DTX424006L	6.528	F	.2570	8	53	91
DTX424066	6.6		.2598	8	53	91
DTX424067	6.7		.2638	8	53	91
DTX424017F	6.747	17/64	.2656	8	53	91
DTX424068	6.8		.2677	8	53	91
DTX424069	6.9		.2717	8	53	91
DTX424009L	6.909	I	.2720	8	53	91
DTX424070	7.0		.2756	8	53	91
DTX424071	7.1		.2795	8	53	91

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
RCH-Coating	D1			D2	L1	L2
DTX424018F	7.144	9/32	.2812	8	53	91
DTX424072	7.2		.2835	8	53	91
DTX424073	7.3		.2874	8	53	91
DTX424074	7.4		.2913	8	53	91
DTX424075	7.5		.2953	8	53	91
DTX424019F	7.541	19/64	.2969	8	53	91
DTX424076	7.6		.2992	8	53	91
DTX424077	7.7		.3031	8	53	91
DTX424078	7.8		.3071	8	53	91
DTX424079	7.9		.3110	8	53	91
DTX424020F	7.938	5/16	.3125	8	53	91
DTX424080	8.0		.3150	8	53	91
DTX424081	8.1		.3189	10	61	103
DTX424082	8.2		.3228	10	61	103
DTX424083	8.3		.3268	10	61	103
DTX424021F	8.334	21/64	.3281	10	61	103
DTX424084	8.4		.3307	10	61	103
DTX424017L	8.433	Q	.3320	10	61	103
DTX424085	8.5		.3346	10	61	103
DTX424086	8.6		.3386	10	61	103
DTX424087	8.7		.3425	10	61	103
DTX424022F	8.731	11/32	.3438	10	61	103
DTX424088	8.8		.3465	10	61	103
DTX424089	8.9		.3504	10	61	103
DTX424090	9.0		.3543	10	61	103
DTX424091	9.1		.3583	10	61	103

▶ Other shank types are available on your request.

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	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			
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
Recommended																		○			

DREAM DRILL X

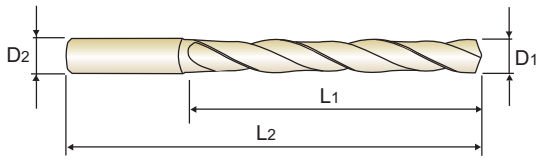
DTX424

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DIN 6537 | CARBIDE | h6 | m7 | 140° | RCH Coating

p.B22-B23

LONG

5×D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
RCH-Coating	D1			D2	L1	L2
DTX424023F	9.128	23/64	.3594	10	61	103
DTX424092	9.2		.3622	10	61	103
DTX424093	9.3		.3661	10	61	103
DTX424021L	9.347	U	.3680	10	61	103
DTX424094	9.4		.3701	10	61	103
DTX424095	9.5		.3740	10	61	103
DTX424024F	9.525	3/8	.3750	10	61	103
DTX424096	9.6		.3780	10	61	103
DTX424097	9.7		.3819	10	61	103
DTX424098	9.8		.3858	10	61	103
DTX424099	9.9		.3898	10	61	103
DTX424025F	9.922	25/64	.3906	10	61	103
DTX424100	10.0		.3937	10	61	103
DTX424101	10.1		.3976	12	71	118
DTX424102	10.2		.4016	12	71	118
DTX424103	10.3		.4055	12	71	118
DTX424026F	10.319	13/32	.4062	12	71	118
DTX424104	10.4		.4094	12	71	118
DTX424105	10.5		.4134	12	71	118
DTX424106	10.6		.4173	12	71	118
DTX424107	10.7		.4213	12	71	118
DTX424027F	10.716	27/64	.4219	12	71	118
DTX424108	10.8		.4252	12	71	118
DTX424109	10.9		.4291	12	71	118
DTX424110	11.0		.4331	12	71	118
DTX424111	11.1		.4370	12	71	118

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
RCH-Coating	D1			D2	L1	L2
DTX424028F	11.113	7/16	.4375	12	71	118
DTX424112	11.2		.4409	12	71	118
DTX424113	11.3		.4449	12	71	118
DTX424114	11.4		.4488	12	71	118
DTX424115	11.5		.4528	12	71	118
DTX424029F	11.509	29/64	.4531	12	71	118
DTX424116	11.6		.4567	12	71	118
DTX424117	11.7		.4606	12	71	118
DTX424118	11.8		.4646	12	71	118
DTX424119	11.9		.4685	12	71	118
DTX424030F	11.906	15/32	.4688	12	71	118
DTX424120	12.0		.4724	12	71	118
DTX424032F	12.7	1/2	.5000	14	77	124

▶ Other shank types are available on your request.

◎ : 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	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			
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
Recommended																		○			

DREAM DRILL X

RECOMMENDED CUTTING CONDITIONS

DTX406, DTX408, DTX421 SERIES with COOLANT HOLES

SFM = ft/min.
RPM = rev./min.
FEED = inch/rev.

ISO	VDI 3323	Material Description	SFM	Drill Diameter			SFM	Drill Diameter							
			1.0 ~ 2.9	METRIC	1.0	2.0	3.0 ~ 12.0	METRIC	3.0	-	4.0	-	5.0	6.0	-
			-	FRACTIONAL	-	-	1/8 ~ 1/2	FRACTIONAL	-	1/8	-	3/16	-	-	1/4
			.0394 ~ .0787	DECIMAL	.0394	.0787	.1181 ~ .5000	DECIMAL	.1181	.1250	.1575	.1875	.1969	.2362	.2500
P	2	Non-alloy steel	263	RPM	25460	12730	362	RPM	11670		8750	7000		5840	
				FEED	.0012 - .0020	.0020 - .0028		FEED	.0024 - .0047		.0031 - .0055	.0055 - .0079		.0063 - .0087	
	3		263	RPM	25460	12730	362	RPM	11670		8750	7000		5840	
				FEED	.0012 - .0020	.0020 - .0028		FEED	.0024 - .0047		.0031 - .0055	.0055 - .0079		.0063 - .0087	
	4		263	RPM	25460	12730	362	RPM	11670		8750	7000		5840	
				FEED	.0012 - .0020	.0020 - .0028		FEED	.0016 - .0039		.0028 - .0051	.0039 - .0063		.0047 - .0071	
	5		230	RPM	22280	11140	296	RPM	9550		7160	5730		4770	
				FEED	.0012 - .0020	.0020 - .0028		FEED	.0016 - .0039		.0028 - .0051	.0039 - .0063		.0047 - .0071	
	6	Low alloy steel	263	RPM	25460	12730	362	RPM	11670		8750	7000		5840	
				FEED	.0012 - .0020	.0020 - .0028		FEED	.0024 - .0047		.0031 - .0055	.0055 - .0079		.0063 - .0087	
	7		230	RPM	22280	11140	296	RPM	9550		7160	5730		4770	
				FEED	.0012 - .0020	.0020 - .0028		FEED	.0024 - .0047		.0031 - .0055	.0039 - .0079		.0047 - .0094	
	8		230	RPM	22280	11140	296	RPM	9550		7160	5730		4770	
				FEED	.0008 - .0016	.0012 - .0020		FEED	.0016 - .0039		.0028 - .0051	.0039 - .0063		.0047 - .0071	
	9		132	RPM	12730	6370	165	RPM	5310		3980	3180		2650	
				FEED	.0008 - .0016	.0012 - .0020		FEED	.0012 - .0031		.0020 - .0043	.0031 - .0055		.0039 - .0063	
	10	High alloyed steel, and tool steel	198	RPM	19100	9550	263	RPM	8490		6370	5090		4240	
				FEED	.0012 - .0020	.0020 - .0028		FEED	.0016 - .0039		.0028 - .0051	.0039 - .0063		.0047 - .0071	
	11		132	RPM	12730	6370	148	RPM	4770		3580	2860		2390	
				FEED	.0008 - .0016	.0012 - .0020		FEED	.0012 - .0031		.0020 - .0043	.0031 - .0055		.0039 - .0063	
M	12	Stainless steel	198	RPM	19100	9550	263	RPM	8490		6370	5090		4240	
				FEED	.0012 - .0020	.0020 - .0028		FEED	.0024 - .0047		.0031 - .0055	.0055 - .0079		.0063 - .0087	
	13		148	RPM	14320	7160	181	RPM	5840		4380	3500		2920	
				FEED	.0008 - .0016	.0012 - .0020		FEED	.0016 - .0039		.0028 - .0051	.0039 - .0063		.0047 - .0071	
K	15	Grey cast iron	263	RPM	25460	12730	362	RPM	11670		8750	7000		5840	
				FEED	.0016 - .0024	.0016 - .0024		FEED	.0031 - .0055		.0047 - .0071	.0059 - .0087		.0079 - .0102	
	16		247	RPM	23870	11940	313	RPM	10080		7560	6050		5040	
				FEED	.0016 - .0024	.0016 - .0024		FEED	.0024 - .0047		.0031 - .0055	.0055 - .0079		.0063 - .0087	
	17	Nodular cast iron	296	RPM	28650	14320	395	RPM	12730		9550	7640		6370	
				FEED	.0016 - .0024	.0016 - .0024		FEED	.0031 - .0055		.0047 - .0071	.0059 - .0087		.0079 - .0102	
	18		198	RPM	19100	9550	263	RPM	8490		6370	5090		4240	
				FEED	.0016 - .0024	.0016 - .0024		FEED	.0024 - .0047		.0031 - .0055	.0055 - .0079		.0063 - .0087	
	19	Malleable cast iron	230	RPM	22280	11140	296	RPM	9550		7160	5730		4770	
				FEED	.0016 - .0024	.0016 - .0024		FEED	.0031 - .0055		.0047 - .0071	.0059 - .0087		.0079 - .0102	
	20		198	RPM	19100	9550	263	RPM	8490		6370	5090		4240	
				FEED	.0012 - .0020	.0020 - .0028		FEED	.0024 - .0047		.0031 - .0055	.0055 - .0079		.0063 - .0087	
H	38	Hardened steel	82	RPM	7960	3980	98	RPM	3180		2390	1910		1590	
				FEED	.0004- .0008	.0004- .0012		FEED	.0004- .0012		.0004- .0016	.0008- .0020		.0012 - .0024	

▶ Recommend to reduce the feed rate as following
Feed 100% : DTX406(3xD), DTX408(5xD)
Feed 75% : DTX421(8xD)

NEXT PAGE ▶

DTX406, DTX408, DTX421 SERIES with COOLANT HOLES

SFM = ft/min.
RPM = rev./min.
FEED = inch/rev.

ISO	VDI 3323	Material Description	SFM	Drill Diameter						
			3.0 ~ 12.0	METRIC	-	8.0	-	10.0	12.0	-
			1/8 ~ 1/2	FRACTIONAL	5/16	-	3/8	-	-	1/2
			.1181 ~ .5000	DECIMAL	.3125	.3150	.3750	.3937	.4724	.5000
P	2	Non-alloy steel	362	RPM	4380		3500		2920	2770
				FEED	.0071 - .0094		.0075 - .0106		.0083 - .0114	.0083 - .0114
	3		362	RPM	4380		3500		2920	2770
				FEED	.0071 - .0094		.0075 - .0106		.0083 - .0114	.0083 - .0114
	4		362	RPM	4380		3500		2920	2770
				FEED	.0055 - .0079		.0059 - .0091		.0067 - .0098	.0067 - .0098
	5		296	RPM	3580		2860		2390	2260
				FEED	.0055 - .0079		.0059 - .0091		.0067 - .0098	.0067 - .0098
	6	Low alloy steel	362	RPM	4380		3500		2920	2770
				FEED	.0071 - .0094		.0075 - .0106		.0083 - .0114	.0083 - .0114
	7		296	RPM	3580		2860		2390	2260
				FEED	.0063 - .0110		.0075 - .0106		.0083 - .0114	.0083 - .0114
	8		296	RPM	3580		2860		2390	2260
				FEED	.0055 - .0079		.0059 - .0091		.0067 - .0098	.0067 - .0098
	9		165	RPM	1990		1590		1330	1260
				FEED	.0047 - .0071		.0051 - .0075		.0055 - .0079	.0055 - .0079
	10	High alloyed steel, and tool steel	263	RPM	3180		2550		2120	2010
				FEED	.0055 - .0079		.0059 - .0091		.0067 - .0098	.0067 - .0098
	11		148	RPM	1790		1430		1190	1130
				FEED	.0047 - .0071		.0051 - .0075		.0055 - .0079	.0055 - .0079
M	12	Stainless steel	263	RPM	3180		2550		2120	2010
				FEED	.0071 - .0094		.0075 - .0106		.0083 - .0114	.0083 - .0114
	13		181	RPM	2190		1750		1460	1380
				FEED	.0055 - .0079		.0059 - .0091		.0067 - .0098	.0067 - .0098
K	15	Grey cast iron	362	RPM	4380		3500		2920	2770
				FEED	.0087 - .0110		.0098 - .0130		.0106 - .0138	.0106 - .0138
	16		313	RPM	3780		3020		2520	2390
				FEED	.0071 - .0094		.0075 - .0106		.0083 - .0114	.0083 - .0114
	17	Nodular cast iron	395	RPM	4770		3820		3180	3020
				FEED	.0087 - .0110		.0098 - .0130		.0106 - .0138	.0106 - .0138
	18		263	RPM	3180		2550		2120	2010
				FEED	.0071 - .0094		.0075 - .0106		.0083 - .0114	.0083 - .0114
	19	Malleable cast iron	296	RPM	3580		2860		2390	2260
				FEED	.0087 - .0110		.0098 - .0130		.0106 - .0138	.0106 - .0138
	20		263	RPM	3180		2550		2120	2010
				FEED	.0071 - .0094		.0075 - .0106		.0083 - .0114	.0083 - .0114
H	38	Hardened steel	98	RPM	1190		950		800	750
				FEED	.0012 - .0024		.0016 - .0028		.0016 - .0031	.0016 - .0031

▶ Recommend to reduce the feed rate as following
Feed 100% : DTX406(3xD), DTX408(5xD)
Feed 75% : DTX421(8xD)

DREAM DRILL X

RECOMMENDED CUTTING CONDITIONS

DTX423, DTX424 SERIES without COOLANT HOLES

SFM = ft/min.
RPM = rev./min.
FEED = inch/rev.

ISO	VDI 3323	Material Description	SFM	Drill Diameter			SFM	Drill Diameter							
			1.0 ~ 2.9	METRIC	1.0	2.0	3.0 ~ 12.0	METRIC	3.0	-	4.0	-	5.0	6.0	-
			-	FRACTIONAL	-	-	1/8 ~ 1/2	FRACTIONAL	-	1/8	-	3/16	-	-	1/4
			.0394 ~ .0787	DECIMAL	.0394	.0787	.1181 ~ .5000	DECIMAL	.1181	.1250	.1575	.1875	.1969	.2362	.2500
P	2	Non-alloy steel	230	RPM	22280	11140	329	RPM	10610		7960		6370		5310
				FEED	.0012 - .0020	.0020 - .0028		FEED	.0024 - .0047		.0031 - .0055		.0055 - .0079		.0063 - .0087
	3		230	RPM	22280	11140	329	RPM	10610		7960		6370		5310
				FEED	.0012 - .0020	.0020 - .0028		FEED	.0024 - .0047		.0031 - .0055		.0055 - .0079		.0063 - .0087
	4		230	RPM	22280	11140	329	RPM	10610		7960		6370		5310
				FEED	.0012 - .0020	.0020 - .0028		FEED	.0016 - .0039		.0028 - .0051		.0039 - .0063		.0047 - .0071
	5		197	RPM	19100	9550	263	RPM	8490		6370		5090		4240
				FEED	.0012 - .0020	.0020 - .0028		FEED	.0016 - .0039		.0028 - .0051		.0039 - .0063		.0047 - .0071
	6	Low alloy steel	230	RPM	22280	11140	329	RPM	10610		7960		6370		5310
				FEED	.0012 - .0020	.0020 - .0028		FEED	.0024 - .0047		.0031 - .0055		.0055 - .0079		.0063 - .0087
	7		197	RPM	19100	9550	263	RPM	8490		6370		5090		4240
				FEED	.0012 - .0020	.0020 - .0028		FEED	.0024 - .0047		.0031 - .0055		.0039 - .0079		.0047 - .0094
	8		197	RPM	19100	9550	263	RPM	8490		6370		5090		4240
				FEED	.0008 - .0016	.0012 - .0020		FEED	.0016 - .0039		.0028 - .0051		.0039 - .0063		.0047 - .0071
	9		99	RPM	9550	4770	132	RPM	4240		3180		2550		2120
				FEED	.0008 - .0016	.0012 - .0020		FEED	.0012 - .0031		.0020 - .0043		.0031 - .0055		.0039 - .0063
	10	High alloyed steel, and tool steel	165	RPM	15920	7960	230	RPM	7430		5570		4460		3710
				FEED	.0012 - .0020	.0020 - .0028		FEED	.0016 - .0039		.0028 - .0051		.0039 - .0063		.0047 - .0071
	11		99	RPM	9550	4770	132	RPM	4240		3180		2550		2120
				FEED	.0008 - .0016	.0012 - .0020		FEED	.0012 - .0031		.002 - .0043		.0031 - .0055		.0039 - .0063
M	12	Stainless steel	165	RPM	15920	7960	230	RPM	7430		5570		4460		3710
				FEED	.0012 - .0020	.0020 - .0028		FEED	.0024 - .0047		.0031 - .0055		.0055 - .0079		.0063 - .0087
	13		115	RPM	11140	5570	148	RPM	4770		3580		2860		2390
				FEED	.0008 - .0016	.0012 - .0020		FEED	.0016 - .0039		.0028 - .0051		.0039 - .0063		.0047 - .0071
K	15	Grey cast iron	230	RPM	22280	11140	329	RPM	10610		7960		6370		5310
				FEED	.0016 - .0024	.0016 - .0024		FEED	.0031 - .0055		.0047 - .0071		.0059 -.0087		.0079 -.0102
	16		214	RPM	20690	10350	263	RPM	8490		6370		5090		4240
				FEED	.0016 - .0024	.0016 - .0024		FEED	.0024 - .0047		.0031 - .0055		.0055 - .0079		.0063 - .0087
	17	Nodular cast iron	230	RPM	22280	11140	329	RPM	10610		7960		6370		5310
				FEED	.0016 - .0024	.0016 - .0024		FEED	.0031 - .0055		.0047 - .0071		.0059 -.0087		.0079 -.0102
	18		165	RPM	15920	7960	230	RPM	7430		5570		4460		3710
				FEED	.0016 - .0024	.0016 - .0024		FEED	.0024 - .0047		.0031 - .0055		.0055 - .0079		.0063 - .0087
	19	Malleable cast iron	197	RPM	19100	9550	263	RPM	8490		6370		5090		4240
				FEED	.0016 - .0024	.0016 - .0024		FEED	.0031 - .0055		.0047 - .0071		.0059 -.0087		.0079 -.0102
	20		165	RPM	15920	7960	230	RPM	7430		5570		4460		3710
				FEED	.0012 - .0020	.0020 - .0028		FEED	.0024 - .0047		.0031 - .0055		.0055 - .0079		.0063 - .0087
H	38	Hardened steel	65	RPM	6370	3180	82	RPM	2650		1990		1590		1330
				FEED	.0004 - .0008	.0004 - .0012		FEED	.0004 - .0012		.0004 - .0016		.0008 - .0020		.0012 - .0024

▶ Recommend to reduce the feed rate as following

NEXT PAGE ▶

DTX423, DTX424 SERIES without COOLANT HOLES

SFM = ft/min.
RPM = rev./min.
FEED = inch/rev.

ISO	VDI 3323	SFM	Drill Diameter						
		3.0 ~ 20.0	METRIC	-	8.0	-	10.0	12.0	-
		1/8 ~ 3/4	FRACTIONAL	5/16	-	3/8	-	-	1/2
		.1181 ~ .7874	DECIMAL	.3125	.3150	.3750	.3937	.4724	.5000
P	2	329	RPM	3980		3180		2650	2510
			FEED	.0071 - .0094		.0075 - .0106		.0083 - .0114	.0083 - .0114
	3	329	RPM	3980		3180		2650	2510
			FEED	.0071 - .0094		.0075 - .0106		.0083 - .0114	.0083 - .0114
	4	329	RPM	3980		3180		2650	2510
			FEED	.0055 - .0079		.0059 - .0091		.0067 - .0098	.0067 - .0098
	5	263	RPM	3180		2550		2120	2010
			FEED	.0055 - .0079		.0059 - .0091		.0067 - .0098	.0067 - .0098
	6	329	RPM	3980		3180		2650	2510
			FEED	.0071 - .0094		.0075 - .0106		.0083 - .0114	.0083 - .0114
	7	263	RPM	3180		2550		2120	2010
			FEED	.0063 - .011		.0075 - .0106		.0083 - .0114	.0083 - .0114
	8	263	RPM	3180		2550		2120	2010
			FEED	.0055 - .0079		.0059 - .0091		.0067 - .0098	.0067 - .0098
	9	132	RPM	1590		1270		1060	1010
			FEED	.0047 - .0071		.0051 - .0075		.0055 - .0079	.0055 - .0079
	10	230	RPM	2790		2230		1860	1760
			FEED	.0055 - .0079		.0059 - .0091		.0067 - .0098	.0067 - .0098
	11	132	RPM	1590		1270		1060	1010
			FEED	.0047 - .0071		.0051 - .0075		.0055 - .0079	.0055 - .0079
M	12	230	RPM	2790		2230		1860	1760
			FEED	.0071 - .0094		.0075 - .0106		.0083 - .0114	.0083 - .0114
	13	148	RPM	1790		1430		1190	1130
			FEED	.0055 - .0079		.0059 - .0091		.0067 - .0098	.0067 - .0098
K	15	329	RPM	3980		3180		2650	2510
			FEED	.0087 - .0110		.0098 - .0130		.0106 - .0138	.0106 - .0138
	16	263	RPM	3180		2550		2120	2010
			FEED	.0071 - .0094		.0075 - .0106		.0083 - .0114	.0083 - .0114
	17	329	RPM	3980		3180		2650	2510
			FEED	.0087 - .0110		.0098 - .0130		.0106 - .0138	.0106 - .0138
	18	230	RPM	2790		2230		1860	1760
			FEED	.0071 - .0094		.0075 - .0106		.0083 - .0114	.0083 - .0114
	19	263	RPM	3180		2550		2120	2010
			FEED	.0087 - .0110		.0098 - .0130		.0106 -. 0138	.0106 - .0138
	20	230	RPM	2790		2230		1860	1760
			FEED	.0071 - .0094		.0075 - .0106		.0083 - .0114	.0083 - .0114
H	38	82	RPM	990		800		660	620
			FEED	.0012 - .0024		.0016 - .0028		.0016 - .0031	.0016 - .0031

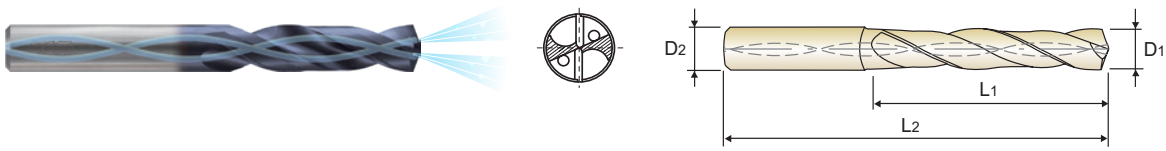
▶ Recommend to reduce the feed rate as following

DREAM DRILLS - INOX

DH451

CARBIDE, 3XD with COOLANT HOLES

- Special flute shape and geometry suitable for machining stainless steel
- Excellent chip evacuation from better surface treatment
- Point R-thinning achieves superior centering and chip curling
- TiAlN Coating for better surface finishes and longer tool life



DIN 6537 | CARBIDE | h6 | m7 | 140° | 20 bar | TiAlN

p.B34-B35

SHORT
3×D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH451021	2.1		.0827	4	20	55
DH451006F	2.381	3/32	.0937	4	20	55
DH451027	2.7		.1063	4	20	55
DH451007F	2.778	7/64	.1094	4	20	55
DH451929	2.95		.1161	6	20	62
DH451030	3.0		.1181	6	20	62
DH451031	3.1		.1220	6	20	62
DH451008F	3.175	1/8	.1250	6	20	62
DH451032	3.2		.1260	6	20	62
DH451030G	3.264	#30	.1285	6	20	62
DH451033	3.3		.1299	6	20	62
DH451034	3.4		.1339	6	20	62
DH451035	3.5		.1378	6	20	62
DH451009F	3.572	9/64	.1406	6	20	62
DH451036	3.6		.1417	6	20	62
DH451037	3.7		.1457	6	20	62
DH451038	3.8		.1496	6	24	66
DH451039	3.9		.1535	6	24	66
DH451010F	3.969	5/32	.1563	6	24	66
DH451040	4.0		.1575	6	24	66
DH451021G	4.039	#21	.1590	6	24	66
DH451041	4.1		.1614	6	24	66
DH451042	4.2		.1654	6	24	66

▶ Other shank types are available on your request.

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH451043	4.3		.1693	6	24	66
DH451011F	4.366	11/64	.1719	6	24	66
DH451044	4.4		.1732	6	24	66
DH451045	4.5		.1772	6	24	66
DH451046	4.6		.1811	6	24	66
DH451047	4.7		.1850	6	24	66
DH451012F	4.763	3/16	.1875	6	24	66
DH451048	4.8		.1890	6	28	66
DH451011G	4.851	#11	.1910	6	24	66
DH451049	4.9		.1929	6	28	66
DH451050	5.0		.1969	6	28	66
DH451051	5.1		.2008	6	28	66
DH451013F	5.159	13/64	.2031	6	28	66
DH451052	5.2		.2047	6	28	66
DH451053	5.3		.2087	6	28	66
DH451054	5.4		.2126	6	28	66
DH451055	5.5		.2165	6	28	66
DH451014F	5.556	7/32	.2188	6	28	66
DH451056	5.6		.2205	6	28	66
DH451057	5.7		.2244	6	28	66
DH451058	5.8		.2283	6	28	66
DH451059	5.9		.2323	6	28	66
DH451015F	5.953	15/64	.2344	6	28	66
DH451060	6.0		.2362	6	28	66
DH451061	6.1		.2402	8	34	79
DH451062	6.2		.2441	8	34	79

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	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		◎	○			◎	○					◎	◎	◎						

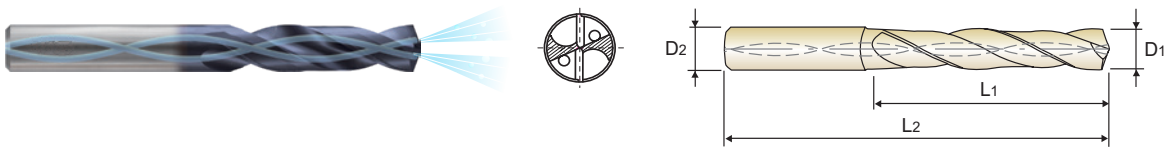
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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
Recommended	◎	◎	○	○	○												○				

DREAM DRILLS - INOX

DH451

CARBIDE, 3XD with COOLANT HOLES

- ▶ Special flute shape and geometry suitable for machining stainless steel
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DIN 6537 | CARBIDE | h6 | m7 | 140° | 20 bar | TiAlN

p.B34-B35

SHORT

3×D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH451004L	6.248	D	.2460	6	28	66
DH451063	6.3		.2480	8	34	79
DH451016F	6.350	1/4	.2500	8	34	79
DH451064	6.4		.2520	8	34	79
DH451065	6.5		.2559	8	34	79
DH451006L	6.528	F	.2570	8	34	79
DH451066	6.6		.2598	8	34	79
DH451067	6.7		.2638	8	34	79
DH451017F	6.747	17/64	.2656	8	34	79
DH451068	6.8		.2677	8	34	79
DH451069	6.9		.2717	8	34	79
DH451009L	6.909	I	.2720	8	34	79
DH451070	7.0		.2756	8	34	79
DH451071	7.1		.2795	8	41	79
DH451018F	7.144	9/32	.2812	8	41	79
DH451072	7.2		.2835	8	41	79
DH451073	7.3		.2874	8	41	79
DH451074	7.4		.2913	8	41	79
DH451075	7.5		.2953	8	41	79
DH451019F	7.541	19/64	.2969	8	41	79
DH451076	7.6		.2992	8	41	79
DH451077	7.7		.3031	8	41	79
DH451078	7.8		.3071	8	41	79
DH451978	7.85		.3091	8	41	79
DH451079	7.9		.3110	8	41	79
DH451020F	7.938	5/16	.3125	8	41	79

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH451080	8.0		.3150	8	41	79
DH451081	8.1		.3189	10	47	89
DH451082	8.2		.3228	10	47	89
DH451083	8.3		.3268	10	47	89
DH451021F	8.334	21/64	.3281	10	47	89
DH451084	8.4		.3307	10	47	89
DH451017L	8.433	Q	.3320	10	47	89
DH451085	8.5		.3346	10	47	89
DH451086	8.6		.3386	10	47	89
DH451087	8.7		.3425	10	47	89
DH451022F	8.731	11/32	.3438	10	47	89
DH451088	8.8		.3465	10	47	89
DH451089	8.9		.3504	10	47	89
DH451090	9.0		.3543	10	47	89
DH451091	9.1		.3583	10	47	89
DH451023F	9.128	23/64	.3594	10	47	89
DH451092	9.2		.3622	10	47	89
DH451093	9.3		.3661	10	47	89
DH451021L	9.347	U	.3680	10	47	89
DH451094	9.4		.3701	10	47	89
DH451095	9.5		.3740	10	47	89
DH451024F	9.525	3/8	.3750	10	47	89
DH451096	9.6		.3780	10	47	89
DH451097	9.7		.3819	10	47	89
DH451098	9.8		.3858	10	47	89
DH451099	9.9		.3898	10	47	89

▶ Other shank types are available on your request.

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	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		◎	○			◎	○					◎	◎	◎						

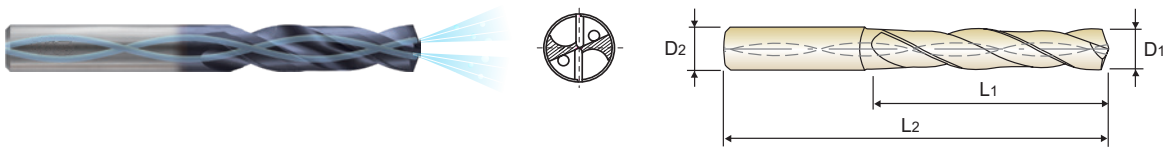
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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
Recommended	◎	◎	○	○	○												○				

DREAM DRILLS - INOX

DH451

CARBIDE, 3XD with COOLANT HOLES

- ▶ Special flute shape and geometry suitable for machining stainless steel
- ▶ Excellent chip evacuation from better surface treatment
- ▶ Point R-thinning achieves superior centering and chip curling
- ▶ TiAlN Coating for better surface finishes and longer tool life



DIN 6537 | CARBIDE | h6 | m7 | 140° | 20 bar | TiAlN

p.B34-B35

SHORT

3×D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH451025F	9.922	25/64	.3906	10	47	89
DH451100	10.0		.3937	10	47	89
DH451101	10.1		.3976	12	55	102
DH451102	10.2		.4016	12	55	102
DH451103	10.3		.4055	12	55	102
DH451026F	10.319	13/32	.4062	12	55	102
DH451104	10.4		.4094	12	55	102
DH451105	10.5		.4134	12	55	102
DH451106	10.6		.4173	12	55	102
DH451107	10.7		.4212	12	55	102
DH451027F	10.716	27/64	.4219	12	55	102
DH451108	10.8		.4252	12	55	102
DH451109	10.9		.4291	12	55	102
DH451110	11.0		.4330	12	55	102
DH451111	11.1		.4370	12	55	102
DH451028F	11.113	7/16	.4375	12	55	102
DH451112	11.2		.4409	12	55	102
DH451113	11.3		.4448	12	55	102
DH451114	11.4		.4488	12	55	102
DH451115	11.5		.4527	12	55	102

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH451029F	11.509	29/64	.4531	12	55	102
DH451116	11.6		.4566	12	55	102
DH451117	11.7		.4606	12	55	102
DH451118	11.8		.4645	12	55	102
DH451119	11.9		.4685	12	55	102
DH451030F	11.906	15/32	.4688	12	55	102
DH451120	12.0		.4724	12	55	102
DH451032F	12.7	1/2	.5000	14	60	107

▶ Other shank types are available on your request.

◎ : 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	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			
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
Recommended	◎	◎	○	○	○												○				

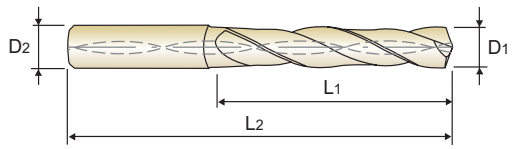
DREAM DRILLS - INOX

DH452 SERIES

CARBIDE, 5XD with COOLANT HOLES

- ▶ Special flute shape and geometry suitable for machining stainless steel
- ▶ Excellent chip evacuation from better surface treatment
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- ▶ TiAlN coating for better surface finishes and longer tool life





DIN 6537 | CARBIDE | h6 | m7 | 140° | 20 bar | TiAlN

p.B34-B35

LONG

5×D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH452010	1.0		.0394	3	8	55
DH452918	1.85		.0728	3	16	55
DH452011	1.1		.0433	3	12	55
DH452012	1.2		.0472	3	12	55
DH452912	1.25		.0492	3	12	55
DH452013	1.3		.0512	3	12	55
DH452014	1.4		.0551	3	12	55
DH452914	1.45		.0571	3	12	55
DH452015	1.5		.0591	3	16	55
DH452004F	1.588	1/16	.0625	3	16	55
DH452016	1.6		.0630	3	16	55
DH452017	1.7		.0669	3	16	55
DH452917	1.75		.0689	3	16	55
DH452018	1.8		.0709	3	16	55
DH452019	1.9		.0748	3	16	55
DH452005F	1.984	5/64	.0781	3	16	55
DH452020	2.0		.0787	4	21	57
DH452920	2.05		.0807	4	21	57
DH452021	2.1		.0827	4	21	57
DH452921	2.15		.0846	4	21	57
DH452022	2.2		.0866	4	21	57
DH452023	2.3		.0906	4	21	57
DH452006F	2.381	3/32	.0938	4	21	57
DH452024	2.4		.0945	4	21	57
DH452041G	2.438	#41	.0960	4	21	57
DH452025	2.5		.0984	4	21	57

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH452038G	2.58	#38	.1015	4	21	57
DH452026	2.6		.1024	4	21	57
DH452037G	2.64	#37	.1014	4	21	57
DH452926	2.65		.1043	4	21	57
DH452027	2.7		.1063	4	21	57
DH452007F	2.778	7/64	.1094	4	21	57
DH452028	2.8		.1102	4	21	57
DH452928	2.85		.1122	4	21	57
DH452029	2.9		.1142	4	21	57
DH452030	3.0		.1181	6	28	66
DH452031G	3.05	#31	.1200	6	28	66
DH452031	3.1		.122	6	28	66
DH452931	3.15		.1240	6	28	66
DH452008F	3.175	1/8	.125	6	28	66
DH452032	3.2		.126	6	28	66
DH452932	3.25			6	28	66
DH452033	3.3		.1299	6	28	66
DH452034	3.4		.1339	6	28	66
DH452029G	3.45	#29	.1360	6	28	66
DH452035	3.5		.1378	6	28	66
DH452009F	3.572	9/64	.1406	6	28	66
DH452036	3.6		.1417	6	28	66
DH452027G	3.66	#27	.1440	6	28	66
DH452037	3.7		.1457	6	28	66
DH452937	3.75			6	28	66
DH452038	3.8		.1496	6	36	74

▶ Other shank types are available on your request.

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	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			
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
Recommended	◎	◎	○	○	○												○				

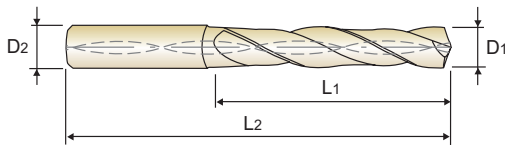
DREAM DRILLS - INOX

DH452 SERIES

CARBIDE, 5XD with COOLANT HOLES

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DIN 6537 | CARBIDE | h6 | m7 | 140° | 20 bar | TiAlN

p.B34-B35

LONG

5×D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH452039	3.9		.1535	6	36	74
DH452010F	3.969	5/32	.1563	6	36	74
DH452040	4.0		.1575	6	36	74
DH452020G	4.09	#20	.1610	6	36	74
DH452041	4.1		.1614	6	36	74
DH452042	4.2		.1654	6	36	74
DH452019G	4.22	#19	.1660	6	36	74
DH452942	4.25			6	36	74
DH452043	4.3		.1693	6	36	74
DH452011F	4.366	11/64	.1719	6	36	74
DH452044	4.4		.1732	6	36	74
DH452045	4.5		.1772	6	36	74
DH452046	4.6		.1811	6	36	74
DH452946	4.65			6	36	74
DH452047	4.7		.185	6	36	74
DH452947	4.75			6	36	74
DH452012F	4.763	3/16	.1875	6	36	74
DH452048	4.8		.189	6	44	82
DH452049	4.9		.1929	6	44	82
DH452050	5.0		.1969	6	44	82
DH452051	5.1		.2008	6	44	82
DH452013F	5.159	13/64	.2031	6	44	82
DH452052	5.2		.2047	6	44	82
DH452952	5.25		.2067	6	44	82
DH452053	5.3		.2087	6	44	82
DH452054	5.4		.2126	6	44	82
DH452003G	5.41	#3	.2130	6	44	82

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH452055	5.5		.2165	6	44	82
DH452955	5.55		.2185	6	44	82
DH452014F	5.556	7/32	.2188	6	44	82
DH452056	5.6		.2205	6	44	82
DH452956	5.65		.2224	6	44	82
DH452057	5.7		.2244	6	44	82
DH452957	5.75		.2264	6	44	82
DH452058	5.8		.2283	6	44	82
DH452059	5.9		.2323	6	44	82
DH452015F	5.953	15/64	.2344	6	44	82
DH452060	6.0		.2362	6	44	82
DH452061	6.1		.2402	8	53	91
DH452062	6.2		.2441	8	53	91
DH452063	6.3		.248	8	53	91
DH452016F	6.35	1/4	.25	8	53	91
DH452064	6.4		.252	8	53	91
DH452065	6.5		.2559	8	53	91
DH452006L	6.528	F	.257	8	53	91
DH452965	6.55		.2579	8	53	91
DH452066	6.6		.2598	8	53	91
DH452966	6.65		.2618	8	53	91
DH452067	6.7		.2638	8	53	91
DH452017F	6.747	17/64	.2656	8	53	91
DH452068	6.8		.2677	8	53	91
DH452069	6.9		.2717	8	53	91
DH452009L	6.909	I	.272	8	53	91

NEXT PAGE ▶

▶ Other shank types are available on your request.

◎ : 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	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		◎	○			◎	○					◎	◎	◎						

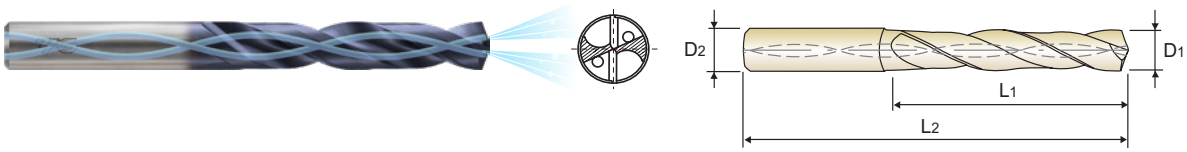
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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
Recommended	◎	◎	○	○	○												○				

DREAM DRILLS - INOX

DH452 SERIES

CARBIDE, 5XD with COOLANT HOLES

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DIN 6537 | CARBIDE | h6 | m7 | 140° | 20 bar | TiAlN

p.B34-B35

LONG

5 × D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH452070	7.0		.2756	8	53	91
DH452071	7.1		.2795	8	53	91
DH452018F	7.144	9/32	.2812	8	53	91
DH452072	7.2		.2835	8	53	91
DH452073	7.3		.2874	8	53	91
DH452973	7.35		.2894	8	53	91
DH452074	7.4		.2913	8	53	91
DH452075	7.5		.2953	8	53	91
DH452975	7.55		.2972	8	53	91
DH452019F	7.541	19/64	.2969	8	53	91
DH452076	7.6		.2992	8	53	91
DH452976	7.65		.3012	8	53	91
DH452077	7.7		.3031	8	53	91
DH452078	7.8		.3071	8	53	91
DH452079	7.9		.311	8	53	91
DH452020F	7.938	5/16	.3125	8	53	91
DH452080	8.0		.315	8	53	91
DH452081	8.1		.3189	10	61	103
DH452082	8.2		.3228	10	61	103
DH452083	8.3		.3268	10	61	103
DH452021F	8.334	21/64	.3281	10	61	103
DH452084	8.4		.3307	10	61	103
DH452017L	8.433	Q	.332	10	61	103
DH452085	8.5		.3346	10	61	103
DH452086	8.6		.3386	10	61	103
DH452087	8.7		.3425	10	61	103

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH452022F	8.731	11/32	.3438	10	61	103
DH452088	8.8		.3465	10	61	103
DH452089	8.9		.3504	10	61	103
DH452090	9.0		.3543	10	61	103
DH452091	9.1		.3583	10	61	103
DH452023F	9.128	23/64	.3594	10	61	103
DH452092	9.2		.3622	10	61	103
DH452992	9.25		.3642	10	61	103
DH452093	9.3		.3661	10	61	103
DH452021L	9.347	U	.368	10	61	103
DH452094	9.4		.3701	10	61	103
DH452095	9.5		.374	10	61	103
DH452024F	9.525	3/8	.375	10	61	103
DH452096	9.6		.378	10	61	103
DH452996	9.65		.3799	10	61	103
DH452097	9.7		.3819	10	61	103
DH452997	9.75		.3839	10	61	103
DH452098	9.8		.3858	10	61	103
DH452099	9.9		.3898	10	61	103
DH452025F	9.922	25/64	.3906	10	61	103
DH452100	10.0		.3937	10	61	103
DH452101	10.1		.3976	12	71	118
DH452102	10.2		.4016	12	71	118
DH452103	10.3		.4055	12	71	118
DH452026F	10.319	13/32	.4062	12	71	118
DH452104	10.4		.4094	12	71	118

▶ Other shank types are available on your request.

◎ : 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	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			
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
Recommended	◎	◎	○	○	○												○				

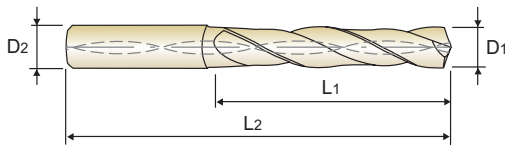
DREAM DRILLS - INOX

DH452 SERIES

CARBIDE, 5XD with COOLANT HOLES

- Special flute shape and geometry suitable for machining stainless steel
- Excellent chip evacuation from better surface treatment
- Point R-thinning achieves superior centering and chip curling
- TiAlN coating for better surface finishes and longer tool life





DIN 6537 | CARBIDE | h6 | m7 | 140° | 20 bar | TiAlN

p.B34-B35

LONG

5×D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH452105	10.5		.4134	12	71	118
DH452106	10.6		.4173	12	71	118
DH452107	10.7		.4212	12	71	118
DH452027F	10.716	27/64	.4219	12	71	118
DH452807	10.75		.4232	12	71	118
DH452108	10.8		.4252	12	71	118
DH452109	10.9		.4291	12	71	118
DH452110	11.0		.433	12	71	118
DH452111	11.1		.437	12	71	118
DH452028F	11.113	7/16	.4375	12	71	118
DH452112	11.2		.4409	12	71	118
DH452113	11.3		.4448	12	71	118
DH452114	11.4		.4488	12	71	118
DH452115	11.5		.4527	12	71	118
DH452029F	11.509	29/64	.4531	12	71	118
DH452116	11.6		.4566	12	71	118
DH452117	11.7		.4606	12	71	118
DH452118	11.8		.4645	12	71	118
DH452119	11.9		.4685	12	71	118
DH452030F	11.906	15/32	.4688	12	71	118
DH452120	12.0		.4724	12	71	118
DH452032F	12.7	1/2	.500	14	77	124

▶ Other shank types are available on your request.

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	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			
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
Recommended	◎	◎	○	○	○												○				

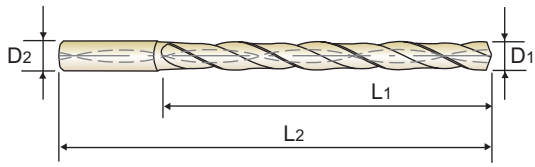
DREAM DRILLS - INOX

DH453 SERIES

CARBIDE, 8XD with COOLANT HOLES

- ▶ Special flute shape and geometry suitable for machining stainless steel
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- ▶ TiAlN coating for better surface finishes and longer tool life





DIN 6537 | CARBIDE | h6 | m7 | 140° | 20 bar | TiAlN

p.B34-B35

EXTRA LONG

8×D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH453005F	1.98	5/64	.0781	3	20	60
DH453020	2.0		.0787	4	25	66
DH453021	2.1		.0827	4	25	66
DH453022	2.2		.0866	4	25	66
DH453023	2.3		.0906	4	25	66
DH453006F	2.381	3/32	.0938	4	30	66
DH453024	2.4		.0945	4	30	66
DH453025	2.5		.0984	4	30	66
DH453026	2.6		.1024	4	30	66
DH453027	2.7		.1063	4	30	66
DH453007F	2.778	7/64	.1094	4	30	66
DH453028	2.8		.1102	4	30	66
DH453029	2.9		.1142	4	30	66
DH453030	3.0		.1181	6	34	72
DH453031G	3.048	#31	.1200	6	34	72
DH453031	3.1		.1220	6	34	72
DH453008F	3.175	1/8	.1250	6	34	72
DH453032	3.2		.1260	6	34	72
DH453033	3.3		.1299	6	34	72
DH453034	3.4		.1339	6	34	72
DH453029G	3.454	#29	.1360	6	34	72
DH453035	3.5		.1378	6	34	72
DH453009F	3.572	9/64	.1406	6	34	72
DH453036	3.6		.1417	6	34	72
DH453037	3.7		.1457	6	34	72
DH453038	3.8		.1496	6	43	81
DH453039	3.9		.1535	6	43	81

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH453010F	3.969	5/32	.1563	6	43	81
DH453040	4.0		.1575	6	43	81
DH453021G	4.038	#21	.1590	6	43	81
DH453020G	4.089	#20	.1610	6	43	81
DH453041	4.1		.1614	6	43	81
DH453042	4.2		.1654	6	43	81
DH453019G	4.216	#19	.1660	6	43	81
DH453043	4.3		.1693	6	43	81
DH453011F	4.366	11/64	.1719	6	43	81
DH453044	4.4		.1732	6	43	81
DH453045	4.5		.1772	6	43	81
DH453046	4.6		.1811	6	43	81
DH453047	4.7		.1850	6	43	81
DH453012F	4.763	3/16	.1875	6	57	95
DH453048	4.8		.1890	6	57	95
DH453049	4.9		.1929	6	57	95
DH453050	5.0		.1969	6	57	95
DH453051	5.1		.2008	6	57	95
DH453013F	5.159	13/64	.2031	6	57	95
DH453052	5.2		.2047	6	57	95
DH453053	5.3		.2087	6	57	95
DH453054	5.4		.2126	6	57	95
DH453003G	5.410	#3	.2130	6	57	95
DH453055	5.5		.2165	6	57	95
DH453014F	5.556	7/32	.2188	6	57	95
DH453056	5.6		.2205	6	57	95
DH453057	5.7		.2244	6	57	95

▶ Other shank types are available on your request.

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	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			
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
Recommended	◎	◎	○	○	○												○				

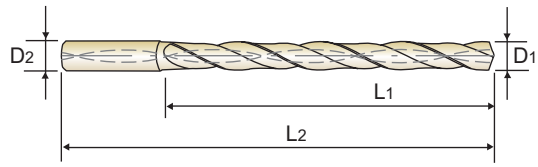
DREAM DRILLS - INOX

DH453 SERIES

CARBIDE, 8XD with COOLANT HOLES

- ▶ Special flute shape and geometry suitable for machining stainless steel
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DIN 6537 | CARBIDE | h6 | m7 | 140° | 20 bar | TiAlN

p.B34-B35

EXTRA LONG

8×D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH453058	5.8		.2283	6	57	95
DH453059	5.9		.2323	6	57	95
DH453015F	5.953	15/64	.2344	6	57	95
DH453060	6.0		.2362	6	57	95
DH453061	6.1		.2402	8	76	114
DH453062	6.2		.2441	8	76	114
DH453063	6.3		.2480	8	76	114
DH453016F	6.350	1/4	.2500	8	76	114
DH453064	6.4		.2520	8	76	114
DH453065	6.5		.2559	8	76	114
DH453006L	6.527	F	.2570	8	76	114
DH453066	6.6		.2598	8	76	114
DH453067	6.7		.2638	8	76	114
DH453017F	6.747	17/64	.2656	8	76	114
DH453068	6.8		.2677	8	76	114
DH453069	6.9		.2717	8	76	114
DH453009L	6.909	I	.2720	8	76	114
DH453070	7.0		.2756	8	76	114
DH453071	7.1		.2795	8	76	114
DH453018F	7.144	9/32	.2813	8	76	114
DH453072	7.2		.2835	8	76	114
DH453073	7.3		.2874	8	76	114
DH453074	7.4		.2913	8	76	114
DH453075	7.5		.2953	8	76	114
DH453019F	7.541	19/64	.2969	8	76	114
DH453076	7.6		.2992	8	76	114
DH453077	7.7		.3031	8	76	114

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH453078	7.8		.3071	8	76	114
DH453079	7.9		.3110	8	76	114
DH453020F	7.938	5/16	.3125	8	76	114
DH453080	8.0		.3150	8	76	114
DH453081	8.1		.3189	10	95	142
DH453082	8.2		.3228	10	95	142
DH453083	8.3		.3268	10	95	142
DH453021F	8.334	21/64	.3281	10	95	142
DH453084	8.4		.3307	10	95	142
DH453017L	8.432	Q	.3320	10	95	142
DH453085	8.5		.3346	10	95	142
DH453086	8.6		.3386	10	95	142
DH453087	8.7		.3425	10	95	142
DH453022F	8.731	11/32	.3438	10	95	142
DH453088	8.8		.3465	10	95	142
DH453089	8.9		.3504	10	95	142
DH453090	9.0		.3543	10	95	142
DH453091	9.1		.3583	10	95	142
DH453023F	9.128	23/64	.3594	10	95	142
DH453092	9.2		.3622	10	95	142
DH453093	9.3		.3661	10	95	142
DH453021L	9.347	U	.3680	10	95	142
DH453094	9.4		.3701	10	95	142
DH453095	9.5		.3740	10	95	142
DH453024F	9.525	3/8	.3750	10	95	142
DH453096	9.6		.3780	10	95	142

NEXT PAGE ▶

▶ Other shank types are available on your request.

◎ : 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	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			
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
Recommended	◎	◎	○	○	○												○				

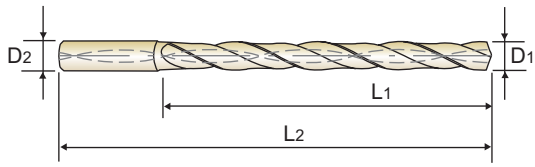
DREAM DRILLS - INOX

DH453 SERIES

CARBIDE, 8XD with COOLANT HOLES

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DIN 6537 | CARBIDE | h6 | m7 | 140° | 20 bar | TiAlN

p.B34-B35

EXTRA LONG

8×D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D_1			D_2	L_1	L_2
DH453097	9.7		.3819	10	95	142
DH453098	9.8		.3858	10	95	142
DH453099	9.9		.3898	10	95	142
DH453025F	9.922	25/64	.3906	10	95	142
DH453100	10.0		.3937	10	95	142
DH453101	10.1		.3976	12	114	162
DH453102	10.2		.4016	12	114	162
DH453103	10.3		.4055	12	114	162
DH453026F	10.319	13/32	.4063	12	114	162
DH453104	10.4		.4094	12	114	162
DH453105	10.5		.4134	12	114	162
DH453106	10.6		.4173	12	114	162
DH453107	10.7		.4212	12	114	162
DH453027F	10.716	27/64	.4219	12	114	162
DH453108	10.8		.4252	12	114	162
DH453109	10.9		.4291	12	114	162
DH453110	11.0		.4330	12	114	162
DH453111	11.1		.4370	12	114	162
DH453028F	11.113	7/16	.4375	12	114	162
DH453112	11.2		.4409	12	114	162
DH453113	11.3		.4448	12	114	162
DH453114	11.4		.4488	12	114	162
DH453115	11.5		.4527	12	114	162
DH453029F	11.509	29/64	.4531	12	114	162
DH453116	11.6		.4566	12	114	162
DH453117	11.7		.4606	12	114	162
DH453118	11.8		.4645	12	114	162

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D_1			D_2	L_1	L_2
DH453119	11.9		.4685	12	114	162
DH453030F	11.906	15/32	.4688	12	114	162
DH453120	12.0		.4724	12	114	162
DH453032F	12.7	1/2	.5000	14	133	178

▶ Other shank types are available on your request.

◎ : 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	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			
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
Recommended	◎	◎	○	○	○												○				

DREAM DRILLS - INOX

RECOMMENDED CUTTING CONDITIONS

DH451, DH452, DH453 SERIES with COOLANT HOLES

SFM = ft/min.
RPM = rev./min.
FEED = inch/rev.

ISO	VDI 3323	Material Description	SFM	Drill Diameter			SFM	Drill Diameter							
				METRIC	1.0	2.0		METRIC	3.0	-	4.0	-	5.0	6.0	-
				FRACTIONAL	-	-		FRACTIONAL	-	1/8	-	3/16	-	-	1/4
				DECIMAL	.0394	.0787		DECIMAL	.1181	.1250	.1575	.1875	.1969	.2362	.2500
P	2	Non-alloy steel	230	RPM	22280	11140	329	RPM	10610		7960		6370		5310
				FEED	.0008 - .0016	.0016 - .0024		FEED	.0016 - .0039		.0024 - .0047		.0047 - .0071		.0055 - .0079
	3		230	RPM	22280	11140	329	RPM	10610		7960		6370		5310
				FEED	.0008 - .0016	.0016 - .0024		FEED	.0016 - .0039		.0024 - .0047		.0047 - .0071		.0055 - .0079
	6	Low alloy steel	230	RPM	22280	11140	329	RPM	10610		7960		6370		5310
				FEED	.0008 - .0016	.0016 - .0024		FEED	.0016 - .0039		.0024 - .0047		.0047 - .0071		.0055 - .0079
	7		160	RPM	15920	7960	230	RPM	7430		5570		4460		3710
				FEED	.0008 - .0016	.0016 - .0024		FEED	.0016 - .0039		.0024 - .0047		.0047 - .0071		.0055 - .0079
M	12	Stainless steel	130	RPM	12730	6370	165	RPM	5310		3980		3180		2650
				FEED	.0008 - .0016	.0008 - .0016		FEED	.0012 - .0020		.0020 - .0035		.0028 - .0043		.0035 - .0051
	13		80	RPM	7960	3980	132	RPM	4240		3180		2550		2120
				FEED	.0008 - .0016	.0008 - .0016		FEED	.0012 - .0020		.0020 - .0035		.0028 - .0043		.0035 - .0051
	14		150	RPM	14320	7160	198	RPM	6370		4770		3820		3180
				FEED	.0008 - .0016	.0008 - .0016		FEED	.0016 - .0024		.0024 - .0039		.0031 - .0047		.0039 - .0055
N	21	Aluminum-wrought alloy	430	RPM	41380	20690	659	RPM	21220		15920		12730		10610
				FEED	.0016 - .0039	.0031 - .0055		FEED	.0055 - .0079		.0075 - .0098		.0079 - .0102		.0087 - .0110
	22		430	RPM	41380	20690	659	RPM	21220		15920		12730		10610
				FEED	.0016 - .0039	.0031 - .0055		FEED	.0055 - .0079		.0075 - .0098		.0079 - .0102		.0087 - .0110
	23	Aluminum-cast, alloyed	360	RPM	35010	17510	593	RPM	19100		14320		11460		9550
				FEED	.0016 - .0039	.0031 - .0055		FEED	.0055 - .0079		.0075 - .0098		.0079 - .0102		.0087 - .0110
	24		360	RPM	35010	17510	593	RPM	19100		14320		11460		9550
				FEED	.0016 - .0039	.0031 - .0055		FEED	.0055 - .0079		.0075 - .0098		.0079 - .0102		.0087 - .0110
	25		300	RPM	28650	14320	494	RPM	15920		11940		9550		7960
				FEED	.0016 - .0031	.0024 - .0039		FEED	.0047 - .0071		.0063 - .0087		.0067 - .0091		.0075 - .0098
S	37	Titanium Alloys	80	RPM	7960	3980	132	RPM	4240		3180		2550		2120
				FEED	.0004 - .0012	.0004 - .0012		FEED	.0008 - .0016		.0016 - .0031		.0024 - .0039		.0031 - .0047

▶ Recommend to reduce the feed rate as following

Feed 100% : DH463/DH714/DH451(3xD), DH464/DH714/DH452(5xD)

Feed 85% : DH453(8xD)

NEXT PAGE ▶

DREAM DRILLS - INOX

RECOMMENDED CUTTING CONDITIONS

DH451, DH452, DH453 SERIES with COOLANT HOLES

SFM = ft/min.
RPM = rev./min.
FEED = inch/rev.

ISO	VDI 3323	Material Description	SFM	Drill Diameter						
				METRIC	-	8.0	-	10.0	12.0	-
				FRACTIONAL	5/16	-	3/8	-	-	1/2
				DECIMAL	.3125	.3150	.3750	.3937	.4724	.5000
P	2	Non-alloy steel	329	RPM	3980		3180		2650	2510
				FEED	.0063 - .0087		.0079 - .0102		.0071 - .0110	.0071 - .0110
	3		329	RPM	3980		3180		2650	2510
				FEED	.0063 - .0087		.0079 - .0102		.0071 - .0110	.0071 - .0110
	6	Low alloy steel	329	RPM	3980		3180		2650	2510
				FEED	.0063 - .0087		.0079 - .0102		.0071 - .0110	.0071 - .0110
	7		230	RPM	2790		2230		1860	1760
				FEED	.0063 - .0087		.0079 - .0102		.0071 - .0110	.0071 - .0110
M	12	Stainless steel	165	RPM	1990		1590		1330	1260
				FEED	.0035 - .0051		.0039 - .0059		.0043 - .0063	.0043 - .0063
	13		132	RPM	1590		1270		1060	1010
				FEED	.0035 - .0051		.0039 - .0059		.0043 - .0063	.0043 - .0063
	14		198	RPM	2390		1910		1590	1510
				FEED	.0039 - .0055		.0043 - .0063		.0047 - .0067	.0047 - .0067
N	21	Aluminum-wrought alloy	659	RPM	7960		6370		5310	5030
				FEED	.0094 - .0118		.0114 - .0138		.0114 - .0138	.0114 - .0138
	22		659	RPM	7960		6370		5310	5030
				FEED	.0094 - .0118		.0114 - .0138		.0114 - .0138	.0114 - .0138
	23	Aluminum-cast, alloyed	593	RPM	7160		5730		4770	4530
				FEED	.0094 - .0118		.0114 - .0138		.0114 - .0138	.0114 - .0138
	24		593	RPM	7160		5730		4770	4530
				FEED	.0094 - .0118		.0114 - .0138		.0114 - .0138	.0114 - .0138
	25		494	RPM	5970		4770		3980	3770
				FEED	.0087 - .0110		.0094 - .0118		.0094 - .0118	.0094 - .0118
S	37	Titanium Alloys	132	RPM	1590		1270		1060	1010
				FEED	.0031 - .0047		.0035 - .0055		.0039 - .0059	.0039 - .0059

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

DREAM DRILLS - ALU

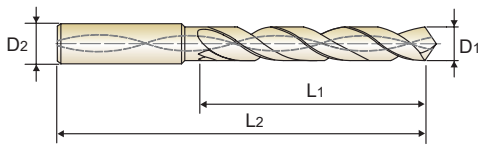
DGE466 SERIES
DGE718 SERIES

CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES

- ▶ Optimized thining for Aluminum & Aluminum Alloys to prevent any clogging from chip welding
- ▶ Wider and deeper flute gullets for maximum chip removal
- ▶ Special geometry and smooth coating reduces built up edge and improves finishes







CARBIDE | h6 | 118° | 20 bar | DLC

p.B41

LONG
5×D

Unit : inch

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

EDP No.	Drill Diameter		Shank Diameter	Flute Length	Overall Length
	Fractional	Decimal			
DLC	D1		D2	L1	L2
DGE718021	21/64	.3281	3/8	2-43/64	5
DGE466217	Q	.3320	11/32	2-43/64	5
DGE718217	Q	.3320	3/8	2-43/64	5
DGE466022	11/32	.3438	11/32	2-27/32	5
DGE718022	11/32	.3438	3/8	2-27/32	5
DGE718023	23/64	.3594	3/8	3	5-23/64
DGE466023	23/64	.3594	25/64	3	5-23/64
DGE718221	U	.3680	3/8	3	5-23/64
DGE466221	U	.3680	25/64	3	5-23/64
DGE718024	3/8	.3750	3/8	3-5/32	5-23/64
DGE466024	3/8	.3750	25/64	3-5/32	5-23/64
DGE466025	25/64	.3906	25/64	3-5/32	5-23/64
DGE718025	25/64	.3906	7/16	3-5/32	5-23/64
DGE466026	13/32	.4062	27/64	3-5/16	5-7/8
DGE718026	13/32	.4062	7/16	3-5/16	5-7/8
DGE466027	27/64	.4219	27/64	3-15/32	5-7/8
DGE718027	27/64	.4219	7/16	3-15/32	5-7/8
DGE718028	7/16	.4375	7/16	3-5/8	6-7/32

▶ Other shank types are available on your request.

◎ : 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	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			
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
Recommended	◎	◎	◎	◎																	

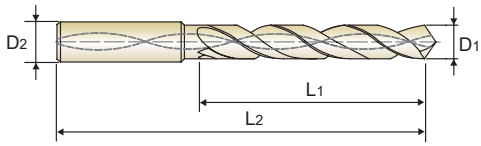
DREAM DRILLS - ALU

CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES

▶ Optimized thining for Aluminum & Aluminum Alloys to prevent any clogging from chip welding
▶ Wider and deeper flute gullets for maximum chip removal
▶ Special geometry and smooth coating reduces built up edge and improves finishes







CARBIDE | h6 | 118° | 20 bar | DLC p.B41

LONG
5×D

Unit : mm

EDP No.	Drill Diameter		Shank Diameter	Flute Length	Overall Length
	Fractional	Decimal			
DLC	D_1		D_2	L_1	L_2
DGE466028	7/16	.4375	15/32	3-5/8	6-7/32
DGE466029	29/64	.4531	15/32	3-25/32	6-7/32
DGE718029	29/64	.4531	1/2	3-25/32	6-7/32
DGE466030	15/32	.4688	15/32	3-25/32	6-7/32
DGE718030	15/32	.4688	1/2	3-25/32	6-7/32
DGE466031	31/64	.4844	1/2	3-15/16	6-37/64
DGE466032	1/2	.5000	1/2	4-3/32	6-37/64

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

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	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			
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
Recommended	◎	◎	◎	◎																	

DREAM DRILLS - ALU

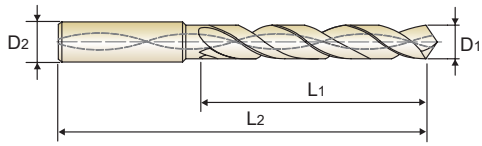
DGE433 SERIES

CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES

- Optimized thining for Aluminum & Aluminum Alloys to prevent any clogging from chip welding
- Wider and deeper flute gullets for maximum chip removal
- Special geometry and smooth coating reduces built up edge and improves finishes







DIN 6537 | CARBIDE | h6 | m7 | 118° | 20 bar | DLC

p.B41

LONG

5×D

Unit : mm

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

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
DLC	D1			D2	L1	L2
DGE433046	4.6		.1811	6	36	74
DGE433047	4.7		.1850	6	36	74
DGE433012F	4.763	3/16	.1875	6	36	74
DGE433048	4.8		.1890	6	44	82
DGE433049	4.9		.1929	6	44	82
DGE433050	5.0		.1969	6	44	82
DGE433051	5.1		.2008	6	44	82
DGE433013F	5.159	13/64	.2031	6	44	82
DGE433052	5.2		.2047	6	44	82
DGE433053	5.3		.2087	6	44	82
DGE433054	5.4		.2126	6	44	82
DGE433055	5.5		.2165	6	44	82
DGE433014F	5.556	7/32	.2188	6	44	82
DGE433056	5.6		.2205	6	44	82
DGE433057	5.7		.2244	6	44	82
DGE433058	5.8		.2283	6	44	82
DGE433059	5.9		.2323	6	44	82
DGE433015F	5.953	15/64	.2344	6	44	82
DGE433060	6.0		.2362	6	44	82
DGE433061	6.1		.2402	8	53	91

▶ Other shank types are available on your request.

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	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			
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
Recommended	◎	◎	◎	◎																	

DREAM DRILLS - ALU

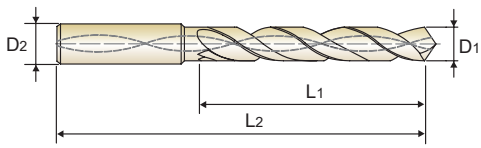
DGE433 SERIES

CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES

- ▶ Optimized thining for Aluminum & Aluminum Alloys to prevent any clogging from chip welding
- ▶ Wider and deeper flute gullets for maximum chip removal
- ▶ Special geometry and smooth coating reduces built up edge and improves finishes







DIN 6537 | CARBIDE | h6 | m7 | 118° | 20 bar | DLC

p.B41

LONG

5×D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
DLC	D1			D2	L1	L2
DGE433062	6.2		.2441	8	53	91
DGE433063	6.3		.2480	8	53	91
DGE433016F	6.350	1/4	.2500	8	53	91
DGE433064	6.4		.2520	8	53	91
DGE433065	6.5		.2559	8	53	91
DGE433006L	6.528	F	.2570	8	53	9
DGE433066	6.6		.2598	8	53	91
DGE433067	6.7		.2638	8	53	91
DGE433017F	6.747	17/64	.2656	8	53	91
DGE433068	6.8		.2677	8	53	91
DGE433069	6.9		.2717	8	53	91
DGE433009L	6.909	I	.2720	8	53	91
DGE433070	7.0		.2756	8	53	91
DGE433071	7.1		.2795	8	53	91
DGE433018F	7.144	9/32	.2812	8	53	91
DGE433072	7.2		.2835	8	53	91
DGE433073	7.3		.2874	8	53	91
DGE433074	7.4		.2913	8	53	91
DGE433075	7.5		.2953	8	53	91
DGE433019F	7.541	19/64	.2969	8	53	91

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
DLC	D1			D2	L1	L2
DGE433076	7.6		.2992	8	53	91
DGE433077	7.7		.3031	8	53	91
DGE433078	7.8		.3071	8	53	91
DGE433079	7.9		.3110	8	53	91
DGE433020F	7.938	5/16	.3125	8	53	91
DGE433080	8.0		.3150	8	53	91
DGE433081	8.1		.3189	10	61	103
DGE433082	8.2		.3228	10	61	103
DGE433083	8.3		.3268	10	61	103
DGE433021F	8.334	21/64	.3281	10	61	103
DGE433084	8.4		.3307	10	61	103
DGE433017L	8.433	Q	.3320	10	61	103
DGE433085	8.5		.3346	10	61	103
DGE433086	8.6		.3386	10	61	103
DGE433087	8.7		.3425	10	61	103
DGE433022F	8.731	11/32	.3438	10	61	103
DGE433088	8.8		.3465	10	61	103
DGE433089	8.9		.3504	10	61	103
DGE433090	9.0		.3543	10	61	103
DGE433091	9.1		.3583	10	61	103

▶ Other shank types are available on your request.

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	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			
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
Recommended	◎	◎	◎	◎																	

DREAM DRILLS - ALU

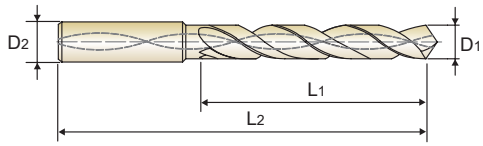
DGE433 SERIES

CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES

- ▶ Optimized thining for Aluminum & Aluminum Alloys to prevent any clogging from chip welding
- ▶ Wider and deeper flute gullets for maximum chip removal
- ▶ Special geometry and smooth coating reduces built up edge and improves finishes







DIN 6537 | CARBIDE | h6 | m7 | 118° | 20 bar | DLC

p.B41

LONG

5×D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
DLC	D1			D2	L1	L2
DGE433023F	9.128	23/64	.3594	10	61	103
DGE433092	9.2		.3622	10	61	103
DGE433093	9.3		.3661	10	61	103
DGE433021L	9.347	U	.3680	10	61	103
DGE433094	9.4		.3701	10	61	103
DGE433095	9.5		.3740	10	61	103
DGE433024F	9.525	3/8	.3750	10	61	103
DGE433096	9.6		.3780	10	61	103
DGE433097	9.7		.3819	10	61	103
DGE433098	9.8		.3858	10	61	103
DGE433099	9.9		.3898	10	61	103
DGE433025F	9.922	25/64	.3906	10	61	103
DGE433100	10.0		.3937	10	61	103
DGE433101	10.1		.3976	12	71	118
DGE433102	10.2		.4016	12	71	118
DGE433103	10.3		.4055	12	71	118
DGE433026F	10.319	13/32	.4062	12	71	118
DGE433104	10.4		.4094	12	71	118
DGE433105	10.5		.4134	12	71	118
DGE433106	10.6		.4173	12	71	118

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
DLC	D1			D2	L1	L2
DGE433107	10.7		.4212	12	71	118
DGE433027F	10.716	27/64	.4219	12	71	118
DGE433108	10.8		.4252	12	71	118
DGE433109	10.9		.4291	12	71	118
DGE433110	11.0		.4330	12	71	118
DGE433111	11.1		.4370	12	71	118
DGE433028F	11.113	7/16	.4375	12	71	118
DGE433112	11.2		.4409	12	71	118
DGE433113	11.3		.4448	12	71	118
DGE433114	11.4		.4488	12	71	118
DGE433115	11.5		.4527	12	71	118
DGE433029F	11.509	29/64	.4531	12	71	118
DGE433116	11.6		.4566	12	71	118
DGE433117	11.7		.4606	12	71	118
DGE433118	11.8		.4645	12	71	118
DGE433119	11.9		.4685	12	71	118
DGE433030F	11.906	15/32	.4688	12	71	118
DGE433120	12.0		.4724	12	71	118
DGE433032F	12.7	1/2	.5000	14	77	124

▶ Other shank types are available on your request.

◎ : 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	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			
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
Recommended	◎	◎	◎	◎																	

DGE466, DGE718, DGE433 SERIES with COOLANT HOLES

SFM = ft/min.
RPM = rev./min.
FEED = inch/rev.

ISO	VDI 3323	Material Description	SFM	Drill Diameter							
				METRIC	3.0	-	4.0	-	5.0	6.0	-
				FRACTIONAL	-	1/8	-	3/16	-	-	1/4
				DECIMAL	.1181	.1250	.1575	.1875	.1969	.2362	.2500
N	21	Aluminum-wrought alloy	658	RPM	21220		15920	12730		10610	
				FEED	.0047 - .0071		.0055 - .0087	.0059 - .0091		.0067 - .0098	
	22		527	RPM	16980		12730	10190		8490	
				FEED	.0047 - .0071		.0055 - .0087	.0059 - .0091		.0067 - .0098	
	23	Aluminum-cast, alloyed	494	RPM	15920		11940	9550		7960	
				FEED	.0059 - .0083		.0067 - .0098	.0075 - .0106		.0083 - .0110	
	24		461	RPM	14850		11140	8910		7430	
				FEED	.0059 - .0083		.0067 - .0098	.0075 - .0106		.0083 - .0110	

ISO	VDI 3323	Material Description	SFM	Drill Diameter						
				METRIC	-	8.0	-	10.0	12.0	-
				FRACTIONAL	5/16	-	3/8	-	-	1/2
				DECIMAL	.3125	.3150	.3750	.3937	.4724	.5000
N	21	Aluminum-wrought alloy	658	RPM	7960		6370		5310	5030
				FEED	.0083 - .0110		.0094 - .0118		.0094 - .0118	.0094 - .0118
	22		527	RPM	6370		5090		4240	4030
				FEED	.0083 - .0110		.0094 - .0118		.0094 - .0118	.0094 - .0118
	23	Aluminum-cast, alloyed	494	RPM	5970		4770		3980	3770
				FEED	.0094 - .0122		.0114 - .0177		.0130 - .0217	.0130 - .0217
	24		461	RPM	5570		4460		3710	3520
				FEED	.0094 - .0122		.0114 - .0177		.0130 - .0217	.0130 - .0217

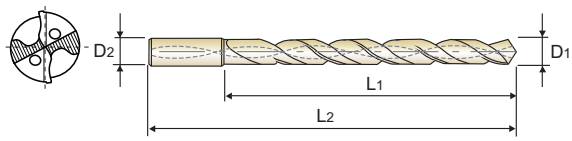
DREAM DRILLS - MQL TYPE

DH510 SERIES

CARBIDE, 10XD with COOLANT HOLES

- ▶ 4-Facet Point for good centering capability
- ▶ Optimized special flutes are ideal for removing chips and for productive drilling
- ▶ Enhanced chip evacuation by polished flute upgraded TiAlN nano layer full coating
- ▶ MQL system compatible (Minimum Quantity Lubrication)





CARBIDE | 30° | h6 | h7 | 140° | 20 bar | TiAlN

p.B53-B54

EXTRA LONG

10×D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Inch	Decimal			
TiAlN	D_1			D_2	L_1	L_2
DH510030	3.0		.1181	3	39	90
DH510031	3.1		.1220	4	46	97
DH510008F	3.175	1/8	.1250	4	46	97
DH510032	3.2		.1260	4	46	97
DH510033	3.3		.1299	4	46	97
DH510034	3.4		.1339	4	46	97
DH510035	3.5		.1378	4	46	97
DH510036	3.6		.1417	4	52	103
DH510037	3.7		.1457	4	52	103
DH510038	3.8		.1496	4	52	103
DH510039	3.9		.1535	4	52	103
DH510040	4.0		.1575	4	52	103
DH510041	4.1		.1614	5	59	112
DH510042	4.2		.1654	5	59	112
DH510043	4.3		.1693	5	59	112
DH510044	4.4		.1732	5	59	112
DH510045	4.5		.1772	5	59	112
DH510046	4.6		.1811	5	65	118
DH510047	4.7		.1850	5	65	118
DH510048	4.8		.1890	5	65	118
DH510049	4.9		.1929	5	65	118
DH510050	5.0		.1969	5	65	118
DH510051	5.1		.2008	6	72	127
DH510052	5.2		.2047	6	72	127
DH510053	5.3		.2087	6	72	127
DH510054	5.4		.2126	6	72	127
DH510055	5.5		.2165	6	72	127
DH510056	5.6		.2205	6	78	133

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Inch	Decimal			
TiAlN	D_1			D_2	L_1	L_2
DH510057	5.7		.2244	6	78	133
DH510058	5.8		.2283	6	78	133
DH510059	5.9		.2323	6	78	133
DH510060	6.0		.2362	6	78	133
DH510061	6.1		.2402	7	85	141
DH510062	6.2		.2441	7	85	141
DH510063	6.3		.2480	7	85	141
DH510016F	6.350	1/4	.2500	7	85	141
DH510064	6.4		.2520	7	85	141
DH510065	6.5		.2559	7	85	141
DH510006L	6.528	F	.2570	7	91	147
DH510066	6.6		.2598	7	91	147
DH510067	6.7		.2638	7	91	147
DH510017F	6.746	17/64	.2656	7	91	147
DH510068	6.8		.2677	7	91	147
DH510069	6.9		.2717	7	91	147
DH510009L	6.909	I	.2720	7	91	147
DH510070	7.0		.2756	7	91	147
DH510071	7.1		.2795	8	98	155
DH510018F	7.142	9/32	.2812	8	98	155
DH510072	7.2		.2835	8	98	155
DH510073	7.3		.2874	8	98	155
DH510074	7.4		.2913	8	98	155
DH510075	7.5		.2953	8	98	155
DH510019F	7.541	19/64	.2969	8	104	161
DH510076	7.6		.2992	8	104	161
DH510077	7.7		.3031	8	104	161
DH510078	7.8		.3071	8	104	161

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	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			
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
Recommended																					

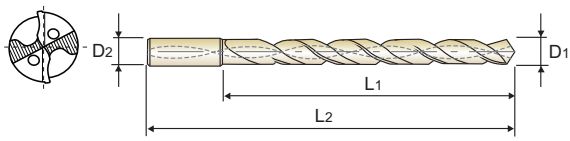
DREAM DRILLS - MQL TYPE

DH510 SERIES

CARBIDE, 10XD with COOLANT HOLES

- ▶ 4-Facet Point for good centering capability
- ▶ Optimized special flutes are ideal for removing chips and for productive drilling
- ▶ Enhanced chip evacuation by polished flute upgraded TiAlN nano layer full coating
- ▶ MQL system compatible (Minimum Quantity Lubrication)





CARBIDE | 30° | h6 | h7 | 140° | 20 bar | TiAlN

p.B53-B54

EXTRA LONG

10×D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Inch	Decimal			
TiAlN	D1			D2	L1	L2
DH510079	7.9		.3110	8	104	161
DH510020F	7.938	5/16	.3125	8	104	161
DH510080	8.0		.3150	8	104	161
DH510081	8.1		.3189	9	111	169
DH510082	8.2		.3228	9	111	169
DH510083	8.3		.3268	9	111	169
DH510021F	8.334	21/64	.3281	9	111	169
DH510084	8.4		.3307	9	111	169
DH510017L	8.433	Q	.3320	9	111	169
DH510085	8.5		.3346	9	111	169
DH510086	8.6		.3386	9	117	175
DH510087	8.7		.3425	9	117	175
DH510022F	8.733	11/32	.3438	9	117	175
DH510088	8.8		.3465	9	117	175
DH510089	8.9		.3504	9	117	175
DH510090	9.0		.3543	9	117	175
DH510091	9.1		.3583	10	124	182
DH510023F	9.129	23/64	.3594	10	124	182
DH510092	9.2		.3622	10	124	182
DH510093	9.3		.3661	10	124	182
DH510021L	9.347	U	.3680	10	124	182
DH510094	9.4		.3701	10	124	182
DH510095	9.5		.3740	10	124	182
DH510024F	9.525	3/8	.3750	10	130	188
DH510096	9.6		.3780	10	130	188
DH510097	9.7		.3819	10	130	188
DH510098	9.8		.3858	10	130	188
DH510099	9.9		.3898	10	130	188

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Inch	Decimal			
TiAlN	D1			D2	L1	L2
DH510025F	9.921	25/64	.3906	10	130	188
DH510100	10.0		.3937	10	130	188
DH510101	10.1		.3976	11	137	201
DH510102	10.2		.4016	11	137	201
DH510103	10.3		.4055	11	137	201
DH510026F	10.318	13/32	.4062	11	137	201
DH510104	10.4		.4094	11	137	201
DH510105	10.5		.4134	11	137	201
DH510106	10.6		.4173	11	143	207
DH510107	10.7		.4213	11	143	207
DH510027F	10.716	27/64	.4219	11	143	207
DH510108	10.8		.4252	11	143	207
DH510109	10.9		.4291	11	143	207
DH510110	11.0		.4331	11	143	207
DH510111	11.1		.4370	12	150	215
DH510028F	11.113	7/16	.4375	12	150	215
DH510112	11.2		.4409	12	150	215
DH510113	11.3		.4449	12	150	215
DH510114	11.4		.4488	12	150	215
DH510115	11.5		.4528	12	150	215
DH510029F	11.509	29/64	.4531	12	156	221
DH510116	11.6		.4567	12	156	221
DH510117	11.7		.4606	12	156	221
DH510118	11.8		.4646	12	156	221
DH510119	11.9		.4685	12	156	221
DH510030F	11.908	15/32	.4688	12	156	221
DH510120	12.0		.4724	12	156	221
DH510127	12.7	1/2	.5000	13	169	235

◎ : 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	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			
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
Recommended																					

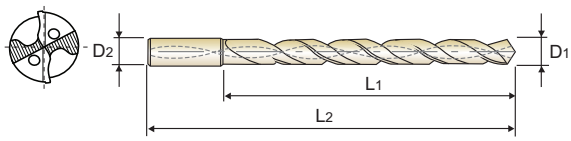
DREAM DRILLS - MQL TYPE

DH512 SERIES

CARBIDE, 12XD with COOLANT HOLES

- ▶ 4-Facet Point for good centering capability
- ▶ Optimized special flutes are ideal for removing chips and for productive drilling
- ▶ Enhanced chip evacuation by polished flute upgraded TiAlN nano layer full coating
- ▶ MQL system compatible (Minimum Quantity Lubrication)





CARBIDE | 30° | h6 | h7 | 140° | 20 bar | TiAlN

p.B53-B54

EXTRA LONG

12 x D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Inch	Decimal			
TiAlN	D_1			D_2	L_1	L_2
DH512030	3.0		.1181	3	45	96
DH512031	3.1		.1220	4	51	102
DH512008F	3.18	1/8	.1250	4	51	102
DH512032	3.2		.1260	4	51	102
DH512033	3.3		.1299	4	51	102
DH512034	3.4		.1339	4	51	102
DH512035	3.5		.1378	4	51	102
DH512036	3.6		.1417	4	60	111
DH512037	3.7		.1457	4	60	111
DH512038	3.8		.1496	4	60	111
DH512039	3.9		.1535	4	60	111
DH512040	4.0		.1575	4	60	111
DH512041	4.1		.1614	5	66	119
DH512042	4.2		.1654	5	66	119
DH512043	4.3		.1693	5	66	119
DH512044	4.4		.1732	5	66	119
DH512045	4.5		.1772	5	66	119
DH512046	4.6		.1811	5	75	128
DH512047	4.7		.1850	5	75	128
DH512048	4.8		.1890	5	75	128
DH512049	4.9		.1929	5	75	128
DH512050	5.0		.1969	5	75	128
DH512051	5.1		.2008	6	81	136
DH512052	5.2		.2047	6	81	136
DH512053	5.3		.2087	6	81	136
DH512054	5.4		.2126	6	81	136
DH512055	5.5		.2165	6	81	136
DH512056	5.6		.2205	6	90	145

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Inch	Decimal			
TiAlN	D_1			D_2	L_1	L_2
DH512057	5.7		.2244	6	90	145
DH512058	5.8		.2283	6	90	145
DH512059	5.9		.2323	6	90	145
DH512060	6.0		.2362	6	90	145
DH512061	6.1		.2402	7	96	152
DH512062	6.2		.2441	7	96	152
DH512063	6.3		.2480	7	96	152
DH512016F	6.35	1/4	.2500	7	96	152
DH512064	6.4		.2520	7	96	152
DH512065	6.5		.2559	7	96	152
DH512006L	6.53	F	.2570	7	105	161
DH512066	6.6		.2598	7	105	161
DH512067	6.7		.2638	7	105	161
DH512017F	6.75	17/64	.2656	7	105	161
DH512068	6.8		.2677	7	105	161
DH512069	6.9		.2717	7	105	161
DH512009L	6.91	I	.2720	7	105	161
DH512070	7.0		.2756	7	105	161
DH512071	7.1		.2795	8	111	168
DH512018F	7.14	9/32	.2813	8	111	168
DH512072	7.2		.2835	8	111	168
DH512073	7.3		.2874	8	111	168
DH512074	7.4		.2913	8	111	168
DH512075	7.5		.2953	8	111	168
DH512019F	7.54	19/64	.2969	8	120	177
DH512076	7.6		.2992	8	120	177
DH512077	7.7		.3031	8	120	177
DH512078	7.8		.3071	8	120	177

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	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			
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
Recommended																					

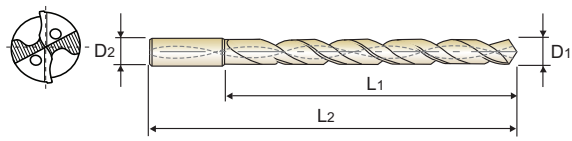
DREAM DRILLS - MQL TYPE

DH512 SERIES

CARBIDE, 12XD with COOLANT HOLES

- ▶ 4-Facet Point for good centering capability
- ▶ Optimized special flutes are ideal for removing chips and for productive drilling
- ▶ Enhanced chip evacuation by polished flute upgraded TiAlN nano layer full coating
- ▶ MQL system compatible (Minimum Quantity Lubrication)





CARBIDE | 30° | h6 | h7 | 140° | 20 bar | TiAlN

p.B53-B54

EXTRA LONG

12 x D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Inch	Decimal			
TiAlN	D1			D2	L1	L2
DH512079	7.9		.3110	8	120	177
DH512020F	7.94	5/16	.3125	8	120	177
DH512080	8.0		.3150	8	120	177
DH512081	8.1		.3189	9	126	184
DH512082	8.2		.3228	9	126	184
DH512083	8.3		.3268	9	126	184
DH512021F	8.33	21/64	.3281	9	126	184
DH512084	8.4		.3307	9	126	184
DH512017L	8.43	Q	.3320	9	126	184
DH512085	8.5		.3346	9	126	184
DH512086	8.6		.3386	9	135	193
DH512087	8.7		.3425	9	135	193
DH512022F	8.73	11/32	.3438	9	135	193
DH512088	8.8		.3465	9	135	193
DH512089	8.9		.3504	9	135	193
DH512090	9.0		.3543	9	135	193
DH512091	9.1		.3583	10	141	199
DH512023F	9.13	23/64	.3594	10	141	199
DH512092	9.2		.3622	10	141	199
DH512093	9.3		.3661	10	141	199
DH512021L	9.35	U	.3680	10	141	199
DH512094	9.4		.3701	10	141	199
DH512095	9.5		.3740	10	141	199
DH512024F	9.53	3/8	.3750	10	150	208
DH512096	9.6		.3780	10	150	208
DH512097	9.7		.3819	10	150	208
DH512098	9.8		.3858	10	150	208
DH512099	9.9		.3898	10	150	208

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Inch	Decimal			
TiAlN	D1			D2	L1	L2
DH512025F	9.92	25/64	.3906	10	150	208
DH512100	10.0		.3937	10	150	208
DH512101	10.1		.3976	11	156	220
DH512102	10.2		.4016	11	156	220
DH512103	10.3		.4055	11	156	220
DH512026F	10.32	13/32	.4063	11	156	220
DH512104	10.4		.4094	11	156	220
DH512105	10.5		.4134	11	156	220
DH512106	10.6		.4173	11	165	229
DH512107	10.7		.4213	11	165	229
DH512027F	10.72	27/64	.4219	11	165	229
DH512108	10.8		.4252	11	165	229
DH512109	10.9		.4291	11	165	229
DH512110	11.0		.4331	11	165	229
DH512111	11.1		.4370	12	171	236
DH512028F	11.11	7/16	.4375	12	171	236
DH512112	11.2		.4409	12	171	236
DH512113	11.3		.4449	12	171	236
DH512114	11.4		.4488	12	171	236
DH512115	11.5		.4528	12	171	236
DH512029F	11.51	29/64	.4531	12	180	245
DH512116	11.6		.4567	12	180	245
DH512117	11.7		.4606	12	180	245
DH512118	11.8		.4646	12	180	245
DH512119	11.9		.4685	12	180	245
DH512030F	11.91	15/32	.4688	12	180	245
DH512120	12.0		.4724	12	180	245
DH512032F	12.70	1/2	.5000	13	195	261

◎ : 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	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			
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
Recommended																					

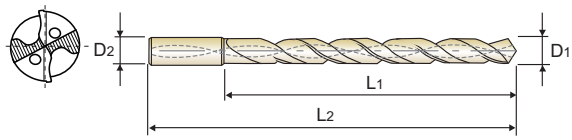
DREAM DRILLS - MQL TYPE

DH515 SERIES

CARBIDE, 15XD with COOLANT HOLES

- ▶ 4-Facet Point for good centering capability
- ▶ Optimized special flutes are ideal for removing chips and for productive drilling
- ▶ Enhanced chip evacuation by polished flute upgraded TiAlN nano layer full coating
- ▶ MQL system compatible (Minimum Quantity Lubrication)





CARBIDE | 30° | h6 | h7 | 140° | 45 bar | TiAlN

p.B53-B54

EXTRA LONG

15×D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Inch	Decimal			
TiAlN	D1			D2	L1	L2
DH515030	3.0		.1181	3	54	105
DH515031	3.1		.1220	4	63	114
DH515008F	3.175	1/8	.1250	4	63	114
DH515032	3.2		.1260	4	63	114
DH515033	3.3		.1299	4	63	114
DH515034	3.4		.1339	4	63	114
DH515035	3.5		.1378	4	63	114
DH515036	3.6		.1417	4	72	123
DH515037	3.7		.1457	4	72	123
DH515038	3.8		.1496	4	72	123
DH515039	3.9		.1535	4	72	123
DH515040	4.0		.1575	4	72	123
DH515041	4.1		.1614	5	81	134
DH515042	4.2		.1654	5	81	134
DH515043	4.3		.1693	5	81	134
DH515044	4.4		.1732	5	81	134
DH515045	4.5		.1772	5	81	134
DH515046	4.6		.1811	5	90	143
DH515047	4.7		.1850	5	90	143
DH515048	4.8		.1890	5	90	143
DH515049	4.9		.1929	5	90	143
DH515050	5.0		.1969	5	90	143
DH515051	5.1		.2008	6	99	154
DH515052	5.2		.2047	6	99	154
DH515053	5.3		.2087	6	99	154
DH515054	5.4		.2126	6	99	154

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Inch	Decimal			
TiAlN	D1			D2	L1	L2
DH515055	5.5		.2165	6	99	154
DH515056	5.6		.2205	6	108	163
DH515057	5.7		.2244	6	108	163
DH515058	5.8		.2283	6	108	163
DH515059	5.9		.2323	6	108	163
DH515060	6.0		.2362	6	108	163
DH515061	6.1		.2402	7	117	173
DH515062	6.2		.2441	7	117	173
DH515063	6.3		.2480	7	117	173
DH515016F	6.350	1/4	.2500	7	117	173
DH515064	6.4		.2520	7	117	173
DH515065	6.5		.2559	7	117	173
DH515006L	6.528	F	.2570	7	126	182
DH515066	6.6		.2598	7	126	182
DH515067	6.7		.2638	7	126	182
DH515017F	6.746	17/64	.2656	7	126	182
DH515068	6.8		.2677	7	126	182
DH515069	6.9		.2717	7	126	182
DH515009L	6.909	I	.2720	7	126	182
DH515070	7.0		.2756	7	126	182
DH515071	7.1		.2795	8	135	192
DH515018F	7.142	9/32	.2812	8	135	192
DH515072	7.2		.2835	8	135	192
DH515073	7.3		.2874	8	135	192
DH515074	7.4		.2913	8	135	192
DH515075	7.5		.2953	8	135	192

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	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			
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
Recommended																					

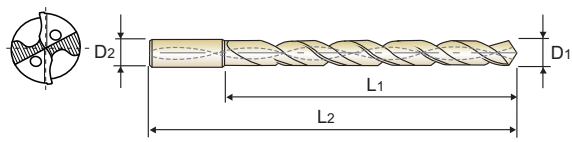
DREAM DRILLS - MQL TYPE

DH515 SERIES

CARBIDE, 15XD with COOLANT HOLES

- ▶ 4-Facet Point for good centering capability
- ▶ Optimized special flutes are ideal for removing chips and for productive drilling
- ▶ Enhanced chip evacuation by polished flute upgraded TiAlN nano layer full coating
- ▶ MQL system compatible (Minimum Quantity Lubrication)





CARBIDE | 30° | h6 | h7 | 140° | 45 bar | TiAlN

p.B53-B54

EXTRA LONG

15×D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Inch	Decimal			
TiAlN	D1			D2	L1	L2
DH515019F	7.541	19/64	.2969	8	144	201
DH515076	7.6		.2992	8	144	201
DH515077	7.7		.3031	8	144	201
DH515078	7.8		.3071	8	144	201
DH515079	7.9		.3110	8	144	201
DH515020F	7.938	5/16	.3125	8	144	201
DH515080	8.0		.3150	8	144	201
DH515081	8.1		.3189	9	153	211
DH515082	8.2		.3228	9	153	211
DH515083	8.3		.3268	9	153	211
DH515021F	8.334	21/64	.3281	9	153	211
DH515084	8.4		.3307	9	153	211
DH515017L	8.433	Q	.3320	9	153	211
DH515085	8.5		.3346	9	153	211
DH515086	8.6		.3386	9	162	220
DH515087	8.7		.3425	9	162	220
DH515022F	8.733	11/32	.3438	9	162	220
DH515088	8.8		.3465	9	162	220
DH515089	8.9		.3504	9	162	220
DH515090	9.0		.3543	9	162	220
DH515091	9.1		.3583	10	171	229
DH515023F	9.129	23/64	.3594	10	171	229
DH515092	9.2		.3622	10	171	229
DH515093	9.3		.3661	10	171	229
DH515021L	9.347	U	.3680	10	171	229
DH515094	9.4		.3701	10	171	229

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Inch	Decimal			
TiAlN	D1			D2	L1	L2
DH515095	9.5		.3740	10	171	229
DH515024F	9.525	3/8	.3750	10	180	238
DH515096	9.6		.3780	10	180	238
DH515097	9.7		.3819	10	180	238
DH515098	9.8		.3858	10	180	238
DH515099	9.9		.3898	10	180	238
DH515025F	9.921	25/64	.3906	10	180	238
DH515100	10.0		.3937	10	180	238
DH515101	10.1		.3976	11	189	253
DH515102	10.2		.4016	11	189	253
DH515103	10.3		.4055	11	189	253
DH515026F	10.318	13/32	.4062	11	189	253
DH515104	10.4		.4094	11	189	253
DH515105	10.5		.4134	11	189	253
DH515106	10.6		.4173	11	198	262
DH515107	10.7		.4213	11	198	262
DH515027F	10.716	27/64	.4219	11	198	262
DH515108	10.8		.4252	11	198	262
DH515109	10.9		.4291	11	198	262
DH515110	11.0		.4331	11	198	262
DH515111	11.1		.4370	12	207	272
DH515028F	11.113	7/16	.4375	12	207	272
DH515112	11.2		.4409	12	207	272
DH515113	11.3		.4449	12	207	272
DH515114	11.4		.4488	12	207	272
DH515115	11.5		.4527	12	207	272

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	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			
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
Recommended																					

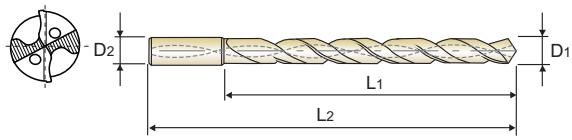
DREAM DRILLS - MQL TYPE

DH515 SERIES

CARBIDE, 15XD with COOLANT HOLES

- ▶ 4-Facet Point for good centering capability
- ▶ Optimized special flutes are ideal for removing chips and for productive drilling
- ▶ Enhanced chip evacuation by polished flute upgraded TiAlN nano layer full coating
- ▶ MQL system compatible (Minimum Quantity Lubrication)





CARBIDE | 30° | h6 | h7 | 140° | 45 bar | TiAlN

p.B53-B54

EXTRA LONG

15×D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Inch	Decimal			
TiAlN	D1			D2	L1	L2
DH515029F	11.509	29/64	.4531	12	216	281
DH515116	11.6		.4567	12	216	281
DH515117	11.7		.4606	12	216	281
DH515118	11.8		.4646	12	216	281
DH515119	11.9		.4685	12	216	281
DH515030F	11.908	15/32	.4688	12	216	281

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Inch	Decimal			
TiAlN	D1			D2	L1	L2
DH515120	12.0		.4724	12	216	281
DH515127	12.7	1/2	.5000	13	234	300

◎ : 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	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			
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
Recommended																					

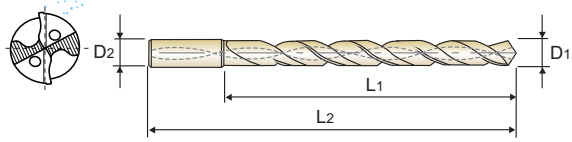
DREAM DRILLS - MQL TYPE

DH520 SERIES

CARBIDE, 20XD with COOLANT HOLES

- ▶ 4-Facet Point for good centering capability
- ▶ Optimized special flutes are ideal for removing chips and for productive drilling
- ▶ Enhanced chip evacuation by polished flute upgraded TiAlN nano layer full coating
- ▶ MQL system compatible (Minimum Quantity Lubrication)





CARBIDE | 30° | h6 | h7 | 140° | 45 bar | TiAlN

p.B53-B54

EXTRA LONG

20 × D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Inch	Decimal			
TiAlN	D1			D2	L1	L2
DH520030	3.0		.1181	3	69	120
DH520031	3.1		.1220	4	81	132
DH520008F	3.175	1/8	.1250	4	81	132
DH520032	3.2		.1260	4	81	132
DH520033	3.3		.1299	4	81	132
DH520034	3.4		.1339	4	81	132
DH520035	3.5		.1378	4	81	132
DH520036	3.6		.1417	4	92	143
DH520037	3.7		.1457	4	92	143
DH520038	3.8		.1496	4	92	143
DH520039	3.9		.1535	4	92	143
DH520040	4.0		.1575	4	92	143
DH520041	4.1		.1614	5	104	157
DH520042	4.2		.1654	5	104	157
DH520043	4.3		.1693	5	104	157
DH520044	4.4		.1732	5	104	157
DH520045	4.5		.1772	5	104	157
DH520046	4.6		.1811	5	115	168
DH520047	4.7		.1850	5	115	168
DH520048	4.8		.1890	5	115	168
DH520049	4.9		.1929	5	115	168
DH520050	5.0		.1969	5	115	168
DH520051	5.1		.2008	6	127	182
DH520052	5.2		.2047	6	127	182
DH520053	5.3		.2087	6	127	182
DH520054	5.4		.2126	6	127	182
DH520055	5.5		.2165	6	127	182
DH520056	5.6		.2205	6	138	193

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Inch	Decimal			
TiAlN	D1			D2	L1	L2
DH520057	5.7		.2244	6	138	193
DH520058	5.8		.2283	6	138	193
DH520059	5.9		.2323	6	138	193
DH520060	6.0		.2362	6	138	193
DH520061	6.1		.2402	7	150	206
DH520062	6.2		.2441	7	150	206
DH520063	6.3		.2480	7	150	206
DH520016F	6.350	1/4	.2500	7	150	206
DH520064	6.4		.2520	7	150	206
DH520065	6.5		.2559	7	150	206
DH520006L	6.528	F	.2570	7	161	217
DH520066	6.6		.2598	7	161	217
DH520067	6.7		.2638	7	161	217
DH520017F	6.746	17/64	.2656	7	161	217
DH520068	6.8		.2677	7	161	217
DH520069	6.9		.2717	7	161	217
DH520009L	6.909	I	.2720	7	161	217
DH520070	7.0		.2756	7	161	217
DH520071	7.1		.2795	8	173	230
DH520018F	7.142	9/32	.2812	8	173	230
DH520072	7.2		.2835	8	173	230
DH520073	7.3		.2874	8	173	230
DH520074	7.4		.2913	8	173	230
DH520075	7.5		.2953	8	173	230
DH520019F	7.541	19/64	.2969	8	184	241
DH520076	7.6		.2992	8	184	241
DH520077	7.7		.3031	8	184	241
DH520078	7.8		.3071	8	184	241

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	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			
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
Recommended																					

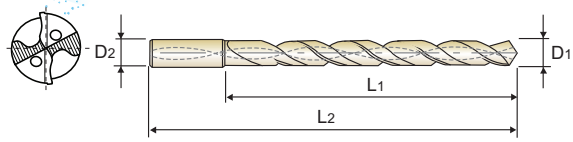
DREAM DRILLS - MQL TYPE

DH520 SERIES

CARBIDE, 20XD with COOLANT HOLES

- ▶ 4-Facet Point for good centering capability
- ▶ Optimized special flutes are ideal for removing chips and for productive drilling
- ▶ Enhanced chip evacuation by polished flute upgraded TiAlN nano layer full coating
- ▶ MQL system compatible (Minimum Quantity Lubrication)





CARBIDE | 30° | h6 | h7 | 140° | 45 bar | TiAlN

p.B53-B54

EXTRA LONG

20 × D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Inch	Decimal			
TiAlN	D_1			D_2	L_1	L_2
DH520079	7.9		.3110	8	184	241
DH520020F	7.938	5/16	.3125	8	184	241
DH520080	8.0		.3150	8	184	241
DH520081	8.1		.3189	9	196	254
DH520082	8.2		.3228	9	196	254
DH520083	8.3		.3268	9	196	254
DH520021F	8.334	21/64	.3281	9	196	254
DH520084	8.4		.3307	9	196	254
DH520017L	8.433	Q	.3320	9	196	254
DH520085	8.5		.3346	9	196	254
DH520086	8.6		.3386	9	207	265
DH520087	8.7		.3425	9	207	265
DH520022F	8.733	11/32	.3438	9	207	265
DH520088	8.8		.3465	9	207	265
DH520089	8.9		.3504	9	207	265
DH520090	9.0		.3543	9	207	265
DH520091	9.1		.3583	10	219	277
DH520023F	9.129	23/64	.3594	10	219	277
DH520092	9.2		.3622	10	219	277
DH520093	9.3		.3661	10	219	277
DH520021L	9.347	U	.3680	10	219	277
DH520094	9.4		.3701	10	219	277
DH520095	9.5		.3740	10	219	277
DH520024F	9.525	3/8	.3750	10	230	288
DH520096	9.6		.3780	10	230	288
DH520097	9.7		.3819	10	230	288
DH520098	9.8		.3858	10	230	288
DH520099	9.9		.3898	10	230	288

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Inch	Decimal			
TiAlN	D_1			D_2	L_1	L_2
DH520025F	9.921	25/64	.3906	10	230	288
DH520100	10.0		.3937	10	230	288
DH520101	10.1		.3976	11	242	306
DH520102	10.2		.4016	11	242	306
DH520103	10.3		.4055	11	242	306
DH520026F	10.318	13/32	.4062	11	242	306
DH520104	10.4		.4094	11	242	306
DH520105	10.5		.4134	11	242	306
DH520106	10.6		.4173	11	253	317
DH520107	10.7		.4213	11	253	317
DH520027F	10.716	27/64	.4219	11	253	317
DH520108	10.8		.4252	11	253	317
DH520109	10.9		.4291	11	253	317
DH520110	11.0		.4331	11	253	317
DH520111	11.1		.4370	12	265	330
DH520028F	11.113	7/16	.4375	12	265	330
DH520112	11.2		.4409	12	265	330
DH520113	11.3		.4449	12	265	330
DH520114	11.4		.4488	12	265	330
DH520115	11.5		.4527	12	265	330
DH520029F	11.509	29/64	.4531	12	276	341
DH520116	11.6		.4567	12	276	341
DH520117	11.7		.4606	12	276	341
DH520118	11.8		.4646	12	276	341
DH520119	11.9		.4685	12	276	341
DH520030F	11.908	15/32	.4688	12	276	341
DH520120	12.0		.4724	12	276	341

◎ : Excellent ○ : Good

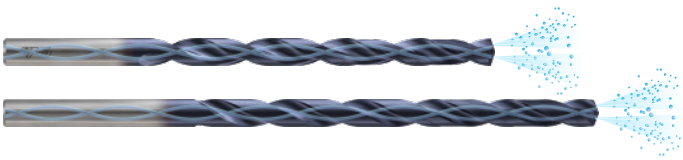
ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	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	◎	◎	○			◎	○	○		○	○				◎	○	◎	○	◎	○

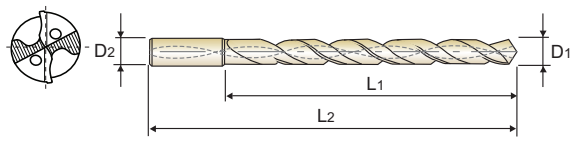
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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
Recommended																					

DREAM DRILLS - MQL TYPE

CARBIDE, 10XD, 12XD with COOLANT HOLES

- ▶ 4-Facet Point for good centering capability
- ▶ Optimized special flutes are ideal for removing chips and for productive drilling
- ▶ Enhanced chip evacuation by polished flute upgraded TiAlN nano layer full coating
- ▶ MQL system compatible (Minimum Quantity Lubrication)





CARBIDE | 30° | h6 | h7 | 140° | 20 bar | TiAlN

p.B53-B54

EXTRA LONG

10 x D | 12 x D

Unit : mm

10xD

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

12xD

EDP No.	Drill Diameter		Shank Diameter	Flute Length	Overall Length
	Metric	Decimal			
TiAlN	D1		D2	L1	L2
DHM12030	3.0	.1181	6	46	86
DHM12035	3.5	.1378	6	54	94
DHM12040	4.0	.1575	6	61	101
DHM12045	4.5	.1772	6	69	109
DHM12050	5.0	.1969	6	76	116
DHM12055	5.5	.2165	6	84	124
DHM12060	6.0	.2362	6	91	131
DHM12070	7.0	.2756	8	106	146
DHM12080	8.0	.3150	8	121	161
DHM12090	9.0	.3543	10	136	180
DHM12100	10.0	.3937	10	152	196
DHM12110	11.0	.4331	12	167	216
DHM12120	12.0	.4724	12	182	231

◎ : 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	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			
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
Recommended																					

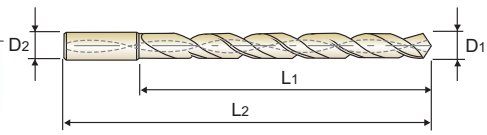
DHM15 SERIES
DHM12 SERIES

DREAM DRILLS - MQL TYPE

CARBIDE, 15XD, 20XD with COOLANT HOLES

- 4-Facet Point for good centering capability
- Optimized special flutes are ideal for removing chips and for productive drilling
- Enhanced chip evacuation by polished flute upgraded TiAlN nano layer full coating
- MQL system compatible (Minimum Quantity Lubrication)





CARBIDE | 30° | h6 | h7 | 140° | 45 bar | TiAlN

p.B53-B54

EXTRA LONG
15 x D | 20 x D

Unit : mm

15xD

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

20xD

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

◎ : Excellent ○ : Good

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	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			
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
Recommended																					

DH510, DH512, DH515, DH520 SERIES with COOLANT HOLES

SFM = ft/min.
RPM = rev./min.
FEED = inch/rev.

ISO	VDI 3323	Material Description	SFM 10xD ~ 20xD	SFM 25xD ~ 30xD	Drill Diameter							
					METRIC	3.0	-	4.0	-	5.0	6.0	-
					FRACTIONAL	-	1/8	-	3/16	-	-	1/4
					DECIMAL	.1181	.1250	.1575	.1875	.1969	.2362	.2500
P	1	Non-alloy steel	395	329	RPM	12730		9550	7640		6370	
					FEED	.0031 - .0047		.0039 - .0055	.0047 - .0071		.0055 - .0079	
	2		329	263	RPM	10610		7960	6370		5310	
					FEED	.0031 - .0047		.0039 - .0055	.0047 - .0071		.0055 - .0079	
	3		263	214	RPM	8490		6370	5090		4240	
					FEED	.0024 - .0039		.0031 - .0047	.0039 - .0063		.0047 - .0071	
	6	Low alloy steel	329	329	RPM	10610		7960	6370		5310	
					FEED	.0031 - .0047		.0039 - .0055	.0047 - .0071		.0055 - .0079	
	7		230	197	RPM	7430		5570	4460		3710	
					FEED	.0024 - .0039		.0031 - .0047	.0039 - .0063		.0047 - .0071	
	8		181	165	RPM	5840		4380	3500		2920	
					FEED	.0024 - .0039		.0031 - .0047	.0039 - .0063		.0047 - .0071	
	10	High alloyed steel, and tool steel	197	165	RPM	6370		4770	3820		3180	
					FEED	.0020 - .0035		.0028 - .0043	.0031 - .0055		.0039 - .0063	
	11		165	148	RPM	5310		3980	3180		2650	
					FEED	.0016 - .0031		.0024 - .0039	.0028 - .0051		.0031 - .0055	
K	15	Grey cast iron	296	247	RPM	9550		7160	5730		4770	
					FEED	.0039 - .0055		.0047 - .0063	.0067 - .0091		.0075 - .0098	
	16		230	197	RPM	7430		5570	4460		3710	
					FEED	.0039 - .0055		.0047 - .0063	.0067 - .0091		.0075 - .0098	
	17	Nodular cast iron	329	263	RPM	10610		7960	6370		5310	
					FEED	.0039 - .0055		.0047 - .0063	.0067 - .0091		.0075 - .0098	
	18		230	197	RPM	7430		5570	4460		3710	
					FEED	.0031 - .0047		.0039 - .0055	.0047 - .0071		.0055 - .0079	
	19	Malleable cast iron	263	214	RPM	8490		6370	5090		4240	
					FEED	.0039 - .0055		.0047 - .0063	.0067 - .0091		.0075 - .0098	
	20		230	181	RPM	7430		5570	4460		3710	
					FEED	.0031 - .0047		.0039 - .0055	.0047 - .0071		.0055 - .0079	

NEXT PAGE ▶

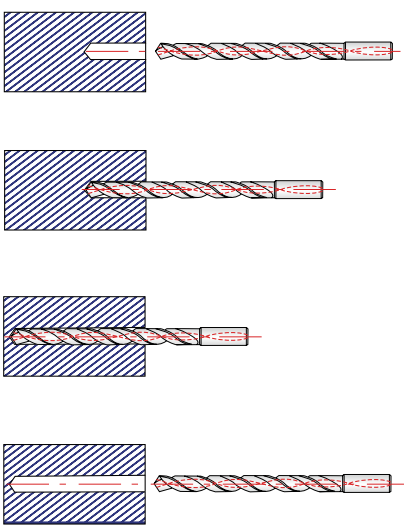
DREAM DRILLS - MQL TYPE

RECOMMENDED CUTTING CONDITIONS

DH510, DH512, DH515, DH520 SERIES with COOLANT HOLES

SFM = ft/min.
RPM = rev./min.
FEED = inch/rev.

ISO	VDI 3323	Material Description	SFM 10xD ~ 20xD	SFM 25xD ~ 30xD	Drill Diameter						
					METRIC	-	8.0	-	10.0	12.0	-
					FRACTIONAL	5/16	-	3/8	-	-	1/2
					DECIMAL	.3125	.3150	.3750	.3937	.4724	.5000
P	1	Non-alloy steel	395	329	RPM	4770		3820		3180	3020
					FEED	.0071 - .0094		.0079 - .0102		.0087 - .0102	.0087 - .0102
	2		329	263	RPM	3980		3180		2650	2510
					FEED	.0071 - .0094		.0079 - .0102		.0087 - .0102	.0087 - .0102
	3		263	214	RPM	3180		2550		2120	2010
					FEED	.0055 - .0079		.0063 - .0087		.0071 - .0094	.0071 - .0094
	6	Low alloy steel	329	329	RPM	3980		3180		2650	2510
					FEED	.0071 - .0094		.0079 - .0102		.0087 - .0102	.0087 - .0102
	7		230	197	RPM	2790		2230		1860	1760
					FEED	.0055 - .0079		.0063 - .0087		.0071 - .0094	.0071 - .0094
	8		181	165	RPM	2190		1750		1460	1380
					FEED	.0055 - .0079		.0063 - .0087		.0071 - .0094	.0071 - .0094
	10	High alloyed steel, and tool steel	197	165	RPM	2390		1910		1590	1510
					FEED	.0047 - .0071		.0055 - .0079		.0063 - .0087	.0063 - .0087
	11		165	148	RPM	1990		1590		1330	1260
					FEED	.0039 - .0063		.0047 - .0071		.0051 - .0075	.0051 - .0075
K	15	Grey cast iron	296	247	RPM	3580		2860		2390	2260
					FEED	.0087 - .0110		.0094 - .0118		.0110 - .0134	.0110 - .0134
	16		230	197	RPM	2790		2230		1860	1760
					FEED	.0087 - .0110		.0094 - .0118		.0110 - .0134	.0110 - .0134
	17	Nodular cast iron	329	263	RPM	3980		3180		2650	2510
					FEED	.0087 - .0110		.0094 - .0118		.0110 - .0134	.0110 - .0134
	18		230	197	RPM	2790		2230		1860	1760
					FEED	.0071 - .0094		.0079 - .0102		.0087 - .0102	.0087 - .0102
	19	Malleable cast iron	263	214	RPM	3180		2550		2120	2010
					FEED	.0087 - .0110		.0094 - .0118		.0110 - .0134	.0110 - .0134
	20		230	181	RPM	2790		2230		1860	1760
					FEED	.0071 - .0094		.0079 - .0102		.0087 - .0102	.0087 - .0102



1. Guide Drilling should be done as Diameter +0.01 ~ +0.1mm between 3xD and 5xD depth.
2. For Main Drilling, proceed with low RPM at Guide Drilling segment. (RPM 300, FEED 400mm/min.)
3. Just before the end of Guide Drilling segment, reduce feed to zero and increase the RPM according to Recommended Cutting Condition chart. (See above)
4. After then, proceed main drilling by increasing feed without step drilling.
5. When coming out from Guide Drilling start point after drilling, RPM should be reduced as 300 and feed should be 1000 mm/min.
6. When coming out from Guide Drilling segment to the outside, the feed should be decreased as 50%.

DREAM DRILLS - FLAT BOTTOM

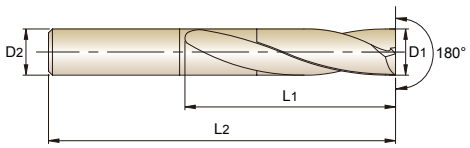
DPP447

CARBIDE, 2XD without COOLANT HOLES

- ▶ Just ONE Drill 180 degree point angle enables drilling of horizontal surface and sloped surface
- ▶ Excellent chip evacuation by optimized flute shape
- ▶ High strength cutting edge to improve tool life and versatility drilling
- ▶ Variety of drilling can be used in a variety of drilling applications







CARBIDE | 20° | h6 | h7 | 180° | X Coating

p.B60-B561

SHORT

2×D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Inch	Decimal			
X-Coating	D1			D2	L1	L2
DPP447005	0.5		.0197	3	2	46
DPP447006	0.6		.0236	3	2.5	46
DPP447007	0.7		.0276	3	3	46
DGX447002F	0.794	1/32	.0313	3	3.5	46
DPP447008	0.8		.0315	3	3.5	46
DPP447009	0.9		.0354	3	4	46
DPP447010	1		.0394	3	4	46
DPP447011	1.1		.0433	3	4.5	46
DPP447003F	1.191	3/64	.0469	3	5	46
DPP447012	1.2		.0472	3	5	46
DPP447013	1.3		.0512	3	5.5	46
DPP447014	1.4		.0551	3	6	46
DPP447015	1.5		.0591	3	6	46
DPP447004F	1.588	1/16	.0625	3	6.5	46
DPP447016	1.6		.0630	3	6.5	46
DPP447017	1.7		.0669	3	7	46
DPP447018	1.8		.0709	3	7.5	46
DPP447019	1.9		.0748	3	8	46
DPP447005F	1.984	5/64	.0781	3	8	46
DPP447020	2		.0787	4	10	50
DPP447021	2.1		.0827	4	12	50
DPP447022	2.2		.0866	4	12	50
DPP447023	2.3		.0906	4	12	50
DPP447006F	2.381	3/32	.0938	4	12	50
DPP447024	2.4		.0945	4	12	50
DPP447025	2.5		.0984	4	12	50

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Inch	Decimal			
X-Coating	D1			D2	L1	L2
DPP447026	2.6		.1024	4	14	50
DPP447027	2.7		.1063	4	14	50
DPP447007F	2.778	7/64	.1094	4	14	50
DPP447028	2.8		.1102	4	14	50
DPP447029	2.9		.1142	4	14	50
DPP447030	3.0		.1181	6	16	50
DPP447031	3.1		.122	6	16	50
DPP447008F	3.175	1/8	.125	6	16	50
DPP447032	3.2		.126	6	16	50
DPP447033	3.3		.1299	6	16	50
DPP447034	3.4		.1339	6	18	50
DPP447035	3.5		.1378	6	18	50
DPP447036	3.6		.1417	6	18	50
DPP447037	3.7		.1457	6	18	50
DPP447038	3.8		.1496	6	18	50
DPP447039	3.9		.1535	6	18	50
DPP447010F	3.969	5/32	.1563	6	18	50
DPP447040	4.0		.1575	6	18	50
DPP447041	4.1		.1614	6	20	60
DPP447042	4.2		.1654	6	20	60
DPP447043	4.3		.1693	6	20	60
DPP447044	4.4		.1732	6	20	60
DPP447045	4.5		.1772	6	22	60
DPP447046	4.6		.1811	6	22	60
DPP447047	4.7		.185	6	22	60
DPP447012F	4.763	3/16	.1875	6	22	60

▶ Other shank types are available on your request.

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	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			
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
Recommended	○	○																			

DREAM DRILLS - FLAT BOTTOM

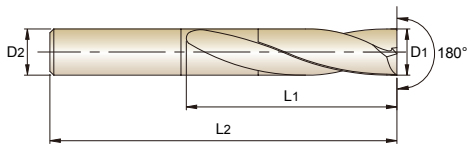
DPP447

CARBIDE, 2XD without COOLANT HOLES

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- Excellent chip evacuation by optimized flute shape
- High strength cutting edge to improve tool life and versatility drilling
- Variety of drilling can be used in a variety of drilling applications







CARBIDE | 20° | h6 | h7 | 180° | X Coating

p.B60-B561

SHORT

2×D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Inch	Decimal			
X-Coating	D1			D2	L1	L2
DPP447048	4.8		.189	6	22	60
DPP447049	4.9		.1929	6	22	60
DPP447050	5.0		.1969	6	22	60
DPP447051	5.1		.2008	6	24	60
DPP447052	5.2		.2047	6	24	60
DPP447053	5.3		.2087	6	24	60
DPP447054	5.4		.2126	6	24	60
DPP447055	5.5		.2165	6	24	60
DPP447014F	5.556	7/32	.2188	6	24	60
DPP447056	5.6		.2205	6	24	60
DPP447057	5.7		.2244	6	26	60
DPP447058	5.8		.2283	6	26	60
DPP447059	5.9		.2323	6	26	60
DPP447060	6.0		.2362	6	26	60
DPP447061	6.1		.2402	8	28	70
DPP447062	6.2		.2441	8	28	70
DPP447063	6.3		.248	8	28	70
DPP447016F	6.35	1/4	.25	8	30	70
DPP447064	6.4		.252	8	30	70
DPP447065	6.5		.2559	8	30	70
DPP447066	6.6		.2598	8	30	70
DPP447067	6.7		.2638	8	30	70
DPP447068	6.8		.2677	8	30	70
DPP447069	6.9		.2717	8	30	70
DPP447070	7.0		.2756	8	30	70
DPP447071	7.1		.2795	8	34	70

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Inch	Decimal			
X-Coating	D1			D2	L1	L2
DPP447018F	7.144	9/32	.2812	8	34	70
DPP447072	7.2		.2835	8	34	70
DPP447073	7.3		.2874	8	34	70
DPP447074	7.4		.2913	8	34	70
DPP447075	7.5		.2953	8	34	70
DPP447076	7.6		.2992	8	34	70
DPP447077	7.7		.3031	8	34	70
DPP447078	7.8		.3071	8	34	70
DPP447079	7.9		.311	8	34	70
DPP447020F	7.938	5/16	.3125	8	34	70
DPP447080	8.0		.315	8	34	70
DPP447081	8.1		.3189	10	38	80
DPP447082	8.2		.3228	10	38	80
DPP447083	8.3		.3268	10	38	80
DPP447021F	8.334	21/64	.3281	10	38	80
DPP447084	8.4		.3307	10	38	80
DPP447085	8.5		.3346	10	38	80
DPP447086	8.6		.3386	10	38	80
DPP447087	8.7		.3425	10	40	80
DPP447088	8.8		.3465	10	40	80
DPP447089	8.9		.3504	10	40	80
DPP447090	9.0		.3543	10	40	80
DPP447091	9.1		.3583	10	42	80
DPP447023F	9.128	23/64	.3594	10	42	80
DPP447092	9.2		.3622	10	42	80
DPP447093	9.3		.3661	10	42	80

▶ Other shank types are available on your request.

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	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				
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
Recommended	○	○																			

DREAM DRILLS - FLAT BOTTOM

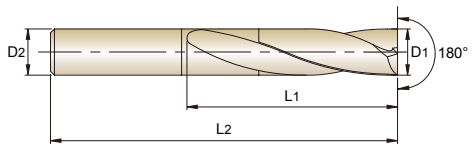
DPP447

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CARBIDE | 20° | h6 | h7 | 180° | X Coating

p.B60-B561

SHORT

2×D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Inch	Decimal			
X-Coating	D1			D2	L1	L2
DPP447094	9.4		.3701	10	42	80
DPP447095	9.5		.374	10	42	80
DPP447024F	9.525	3/8	.375	10	42	80
DPP447096	9.6		.378	10	42	80
DPP447097	9.7		.3819	10	45	80
DPP447098	9.8		.3858	10	45	80
DPP447099	9.9		.3898	10	45	80
DPP447100	10		.3937	10	45	80
DPP447101	10.1		.3976	12	46	90
DPP447102	10.2		.4016	12	46	90
DPP447103	10.3		.4055	12	46	90
DPP447026F	10.319	13/32	.4062	12	46	90
DPP447104	10.4		.4094	12	48	90
DPP447105	10.5		.4134	12	48	90
DPP447106	10.6		.4173	12	48	90
DPP447107	10.7		.4212	12	48	90
DPP447108	10.8		.4252	12	48	90
DPP447109	10.9		.4291	12	48	90
DPP447110	11		.433	12	48	90
DPP447111	11.1		.437	12	50	90
DPP447028F	11.113	7/16	.4375	12	50	90
DPP447112	11.2		.4409	12	50	90
DPP447113	11.3		.4448	12	50	90
DPP447114	11.4		.4488	12	50	90
DPP447115	11.5		.4527	12	50	90
DPP447029F	11.509	29/64	.4531	12	50	90

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Inch	Decimal			
X-Coating	D1			D2	L1	L2
DPP447116	11.6		.4566	12	50	90
DPP447117	11.7		.4606	12	52	90
DPP447118	11.8		.4645	12	52	90
DPP447119	11.9		.4685	12	52	90
DPP447030F	11.906	15/32	.4688	12	52	90
DPP447120	12		.4724	12	52	90
DPP447032F	12.700	1/2	.5000	14	56	100

▶ Other shank types are available on your request.

◎ : 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	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	◎	◎	◎	○	○	◎	○	○	○			○			◎	○				

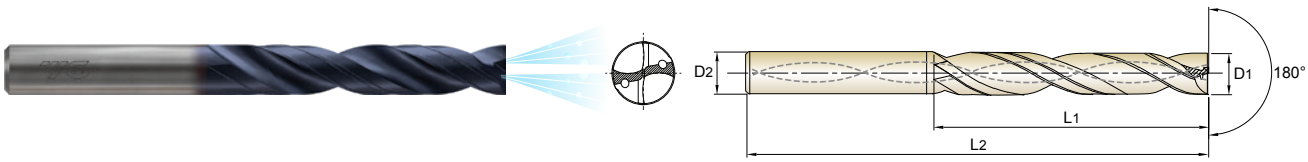
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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
Recommended	○	○																			

DREAM DRILLS - FLAT BOTTOM

DH450

CARBIDE, 5XD with COOLANT HOLES

- For holes on various angled surfaces.
- Optimized flute shape for excellent chip evacuation.
- High strength cutting edge to improve tool life and versatility drilling.
- For through holes, minimized burrs at entrance and exit when drilling thin plate.
- Pilot Drilling for 5xD



DIN 6537 | CARBIDE | 30° | h6 | h7 | 180° | 20 bar | TiAlN

p.B62-B563

LONG

5×D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Inch	Decimal			
TiAlN	D1			D2	L1	L2
DH450030	3.0		.1181	6	28	66
DH450031	3.1		.1220	6	28	66
DH450008F	3.175	1/8	.1250	6	28	66
DH450032	3.2		.1260	6	28	66
DH450033	3.3		.1299	6	28	66
DH450034	3.4		.1339	6	28	66
DH450035	3.5		.1378	6	28	66
DH450036	3.6		.1417	6	28	66
DH450037	3.7		.1457	6	28	66
DH450038	3.8		.1496	6	36	74
DH450039	3.9		.1535	6	36	74
DH450010F	3.969	5/32	.1563	6	36	74
DH450040	4.0		.1575	6	36	74
DH450041	4.1		.1614	6	36	74
DH450042	4.2		.1654	6	36	74
DH450043	4.3		.1693	6	36	74
DH450044	4.4		.1732	6	36	74
DH450045	4.5		.1772	6	36	74
DH450046	4.6		.1811	6	36	74
DH450047	4.7		.1850	6	36	74
DH450012F	4.763	3/16	.1875	6	44	82
DH450048	4.8		.1890	6	44	82
DH450049	4.9		.1929	6	44	82
DH450050	5.0		.1969	6	44	82
DH450051	5.1		.2008	6	44	82
DH450052	5.2		.2047	6	44	82

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Inch	Decimal			
TiAlN	D1			D2	L1	L2
DH450053	5.3		.2087	6	44	82
DH450054	5.4		.2126	6	44	82
DH450055	5.5		.2165	6	44	82
DH450014F	5.556	7/32	.2188	6	44	82
DH450056	5.6		.2205	6	44	82
DH450057	5.7		.2244	6	44	82
DH450058	5.8		.2283	6	44	82
DH450059	5.9		.2323	6	44	82
DH450060	6.0		.2362	6	44	82
DH450061	6.1		.2402	8	53	91
DH450062	6.2		.2441	8	53	91
DH450063	6.3		.2480	8	53	91
DH450016F	6.35	1/4	.2500	8	53	91
DH450064	6.4		.2520	8	53	91
DH450065	6.5		.2559	8	53	91
DH450066	6.6		.2598	8	53	91
DH450067	6.7		.2638	8	53	91
DH450068	6.8		.2677	8	53	91
DH450069	6.9		.2717	8	53	91
DH450070	7.0		.2756	8	53	91
DH450071	7.1		.2795	8	53	91
DH450018F	7.144	9/32	.2812	8	53	91
DH450072	7.2		.2835	8	53	91
DH450073	7.3		.2874	8	53	91
DH450074	7.4		.2913	8	53	91
DH450075	7.5		.2953	8	53	91

▶ Other shank types are available on your request.

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	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	◎	◎	◎	○	○	◎	○	○	○			○			◎	○				

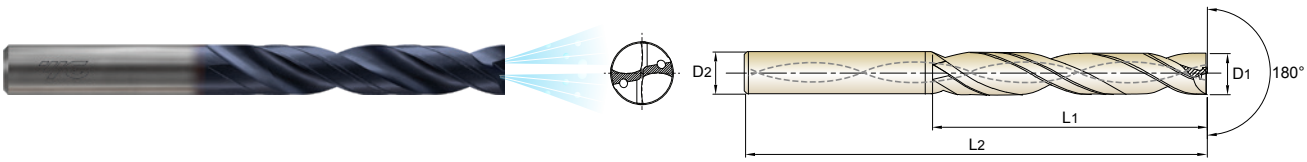
ISO	N										S					H				
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	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
Recommended	○	○																			

DREAM DRILLS - FLAT BOTTOM

DH450

CARBIDE, 5XD with COOLANT HOLES

- For holes on various angled surfaces.
- Optimized flute shape for excellent chip evacuation.
- High strength cutting edge to improve tool life and versatility drilling.
- For through holes, minimized burrs at entrance and exit when drilling thin plate.
- Pilot Drilling for 5xD



DIN 6537 | CARBIDE | 30° | h6 | h7 | 180° | 20 bar | TiAlN

p.B62-B563

LONG

5 × D

Unit : mm

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Inch	Decimal			
TiAlN	D1			D2	L1	L2
DH450076	7.6		.2992	8	53	91
DH450077	7.7		.3031	8	53	91
DH450078	7.8		.3071	8	53	91
DH450079	7.9		.3110	8	53	91
DH450020F	7.938	5/16	.3125	8	53	91
DH450080	8.0		.3150	8	53	91
DH450081	8.1		.3189	10	61	103
DH450082	8.2		.3228	10	61	103
DH450083	8.3		.3268	10	61	103
DH450021F	8.334	21/64	.3281	10	61	103
DH450084	8.4		.3307	10	61	103
DH450085	8.5		.3346	10	61	103
DH450086	8.6		.3386	10	61	103
DH450087	8.7		.3425	10	61	103
DH450088	8.8		.3465	10	61	103
DH450089	8.9		.3504	10	61	103
DH450090	9.0		.3543	10	61	103
DH450091	9.1		.3583	10	61	103
DH450023F	9.128	23/64	.3594	10	61	103
DH450092	9.2		.3622	10	61	103
DH450093	9.3		.3661	10	61	103
DH450094	9.4		.3701	10	61	103
DH450095	9.5		.3740	10	61	103
DH450024F	9.525	3/8	.3750	10	61	103
DH450096	9.6		.3780	10	61	103
DH450097	9.7		.3819	10	61	103

EDP No.	Drill Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Inch	Decimal			
TiAlN	D1			D2	L1	L2
DH450098	9.8		.3858	10	61	103
DH450099	9.9		.3898	10	61	103
DH450100	10.0		.3937	10	61	103
DH450101	10.1		.3976	12	71	118
DH450102	10.2		.4016	12	71	118
DH450103	10.3		.4055	12	71	118
DH450026F	10.319	13/32	.4062	12	71	118
DH450104	10.4		.4094	12	71	118
DH450105	10.5		.4134	12	71	118
DH450106	10.6		.4173	12	71	118
DH450107	10.7		.4212	12	71	118
DH450108	10.8		.4252	12	71	118
DH450109	10.9		.4291	12	71	118
DH450110	11.0		.4330	12	71	118
DH450111	11.1		.4370	12	71	118
DH450028F	11.113	7/16	.4375	12	71	118
DH450112	11.2		.4409	12	71	118
DH450113	11.3		.4449	12	71	118
DH450114	11.4		.4488	12	71	118
DH450115	11.5		.4527	12	71	118
DH450029F	11.509	29/64	.4531	12	71	118
DH450116	11.6		.4567	12	71	118
DH450117	11.7		.4606	12	71	118
DH450118	11.8		.4645	12	71	118
DH450119	11.9		.4685	12	71	118
DH450030F	11.906	15/32	.4688	12	71	118
DH450120	12.0		.4724	12	71	118
DH450032F	12.70	1/2	0.5000	14	77	124

- Other shank types are available on your request.

◎ : 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	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			
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
Recommended	○	○																			

DREAM DRILLS - FLAT BOTTOM

RECOMMENDED CUTTING CONDITIONS

DPP447 SERIES — without COOLANT HOLES

SFM = ft/min.
RPM = rev./min.
FEED = inch/rev.

ISO	VDI 3323	Material Description	SFM	Drill Diameter							
				METRIC	3.0	-	4.0	-	5.0	6.0	-	8.0
				FRACTIONAL	-	1/8	-	3/16	-	-	5/16	-
				DECIMAL	.1181	.1250	.1575	.1875	.1969	.2362	.3125	.3150
P	1	Non-alloy steel	263	RPM	8490		6370	5090		4240	3180	
				FEED	.0008 - .0020		.0012 - .0028	.0012 - .0031		.0016 - .0039	.0031 - .0055	
	2		263	RPM	8490		6370	5090		4240	3180	
				FEED	.0008 - .0020		.0012 - .0028	.0012 - .0031		.0016 - .0039	.0031 - .0055	
	3		230	RPM	7430		5570	4460		3710	2790	
				FEED	.0008 - .0020		.0012 - .0028	.0012 - .0031		.0016 - .0039	.0028 - .0051	
	4		132	RPM	4240		3180	2550		2120	1590	
				FEED	.0008 - .0020		.0012 - .0028	.0012 - .0031		.0016 - .0039	.0028 - .0051	
	5		125	RPM	4030		3020	2420		2020	1510	
				FEED	.0008 - .0020		.0008 - .0024	.0012 - .0031		.0012 - .0035	.0024 - .0047	
	6	Low alloy steel	148	RPM	4770		3580	2860		2390	1790	
				FEED	.0008 - .0020		.0012 - .0028	.0012 - .0031		.0016 - .0039	.0028 - .0051	
	7		132	RPM	4240		3180	2550		2120	1590	
				FEED	.0008 - .0020		.0012 - .0028	.0012 - .0031		.0016 - .0039	.0028 - .0051	
	8		125	RPM	4030		3020	2420		2020	1510	
				FEED	.0008 - .0020		.0008 - .0024	.0012 - .0031		.0012 - .0035	.0024 - .0047	
	9		82	RPM	2650		1990	1590		1330	990	
				FEED	.0004 - .0012		.0008 - .0016	.0008 - .0020		.0012 - .0024	.0012 - .0031	
M	12	Stainless steel	99	RPM	3180		2390	1910		1590	1190	
				FEED	.0004 - .0012		.0004 - .0012	.0008 - .0016		.0008 - .002	.0012 - .0024	
K	15	Grey cast iron	230	RPM	7430		5570	4460		3710	2790	
				FEED	.0008 - .0020		.0008 - .0024	.0012 - .0031		.0012 - .0035	.0024 - .0047	
	16		197	RPM	6370		4770	3820		3180	2390	
				FEED	.0008 - .0020		.0008 - .0020	.0012 - .0024		.0012 - .0028	.0016 - .0039	
N	21	Aluminum-wrought alloy	543	RPM	17510		13130	10500		8750	6570	
				FEED	.0008 - .0020		.0016 - .0031	.0016 - .0039		.0024 - .0047	.0039 - .0063	
	22		543	RPM	17510		13130	10500		8750	6570	
				FEED	.0008 - .0020		.0016 - .0031	.0016 - .0039		.0024 - .0047	.0039 - .0063	

NEXT PAGE ▶

- ▶ The cutting conditions are for 2xD.
- ▶ The rigid and precise machine and holder are required.
- ▶ The recommended depth of hole is measured from the highest point of the hole on drilling in inclined and angled surfaces.
- ▶ The recommended cutting conditions are those for drilling on flat and horizontal surfaces.
- ▶ Please adjust feed rate according to the above surface angle when drilling on an inclined surface.
  - The recommended feed rate 50% or lower, in case of 15°~30° of the incline angle.
  - The recommended feed rate 30% or lower and RPM 70%, in case of 30° ~ of the incline angle.
- ▶ Please decrease cutting speed as material hardness increases.
- ▶ Only use drilling tool. Side milling, traversing, helical milling are not usable.

DREAM DRILLS - FLAT BOTTOM

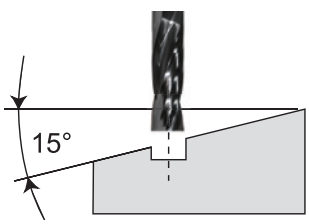
RECOMMENDED CUTTING CONDITIONS

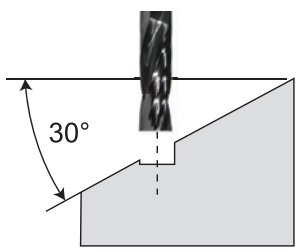
DPP447 SERIES without COOLANT HOLES

SFM = ft/min.
RPM = rev./min.
FEED = inch/rev.

ISO	VDI 3323	Material Description	SFM	Drill Diameter			
			METRIC	-	10.0	12.0	-
			FRACTIONAL	3/8	-	-	1/2
			DECIMAL	.3750	.3937	.4724	.5000
P	1	Non-alloy steel	263	RPM	2550	2120	2010
				FEED	.0043 - .0067	.0043 - .0083	.0043 - .0083
	2		263	RPM	2550	2120	2010
				FEED	.0043 - .0067	.0043 - .0083	.0043 - .0083
	3		230	RPM	2230	1860	1760
				FEED	.0043 - .0067	.0043 - .0083	.0043 - .0083
	4		132	RPM	1270	1060	1010
				FEED	.0043 - .0067	.0043 - .0083	.0043 - .0083
	5		125	RPM	1210	1010	960
				FEED	.0035 - .0059	.0031 - .0071	.0031 - .0071
	6	Low alloy steel	148	RPM	1430	1190	1130
				FEED	.0043 - .0067	.0043 - .0083	.0043 - .0083
	7		132	RPM	1270	1060	1010
				FEED	.0043 - .0067	.0043 - .0083	.0043 - .0083
	8		125	RPM	1210	1010	960
				FEED	.0035 - .0059	.0031 - .0071	.0031 - .0071
	9		82	RPM	800	660	630
				FEED	.0020 - .0039	.0024 - .0047	.0024 - .0047
M	12	Stainless steel	99	RPM	950	800	760
				FEED	.0012 - .0031	.0020 - .0039	.0020 - .0039
K	15	Grey cast iron	230	RPM	2010	1820	1590
				FEED	.0189 - .0236	.0220 - .0276	.0220 - .0283
	16		197	RPM	2510	2270	1990
				FEED	.0213 - .0283	.0248 - .0331	.0252 - .0315
N	21	Aluminum-wrought alloy	543	RPM	5250	4380	4150
				FEED	.0055 - .0079	.0055 - .0094	.0055 - .0094
	22		543	RPM	5250	4380	4150
				FEED	.0055 - .0079	.0055 - .0094	.0055 - .0094

- The cutting conditions are for 2xD.
- The rigid and precise machine and holder are required.
- The recommended depth of hole is measured from the highest point of the hole on drilling in inclined and angled surfaces.
- The recommended cutting conditions are those for drilling on flat and horizontal surfaces.
- Please adjust feed rate according to the above surface angle when drilling on an inclined surface.
  - The recommended feed rate 50% or lower, in case of 15°~30° of the incline angle.
  - The recommended feed rate 30% or lower and RPM 70%, in case of 30° ~ of the incline angle.
- Please decrease cutting speed as material hardness increases.
- Only use drilling tool. Side milling, traversing, helical milling are not usable.





Surface Angle	Cutting Conditions	
	RPM	FEED
0° ~ 15°	100%	100%
15° ~ 30°	100%	50%
30° ~	70%	30%

DREAM DRILLS - FLAT BOTTOM

RECOMMENDED CUTTING CONDITIONS

DH450 SERIES with COOLANT HOLES

SFM = ft/min.
RPM = rev./min.
FEED = inch/rev.

ISO	VDI 3323	Material Description	SFM	Drill Diameter								
				METRIC	3.0	-	4.0	-	5.0	6.0	-	-	8.0
				FRACTIONAL	-	1/8	-	3/16	-	-	1/4	5/16	-
				DECIMAL	.1181	.1250	.1575	.1875	.1969	.2362	.2500	.3125	.3150
P	1	Non-alloy steel	329	RPM	10610		7960	6370		5310		3980	
				FEED	.0020 - .0035		.0031 - .0047	.0035 - .0059		.0047 - .0071		.0071 - .0094	
	2		296	RPM	9550		7160	5730		4770		3580	
				FEED	.0008 - .0020		.0016 - .0031	.0016 - .0039		.0024 - .0047		.0039 - .0063	
	3		296	RPM	9550		7160	5730		4770		3580	
				FEED	.0008 - .0020		.0016 - .0031	.0016 - .0039		.0024 - .0047		.0039 - .0063	
	4		247	RPM	7960		5970	4770		3980		2980	
				FEED	.0008 - .0016		.0012 - .0024	.0020 - .0031		.0020 - .0035		.0024 - .0047	
	5		247	RPM	7960		5970	4770		3980		2980	
				FEED	.0008 - .0016		.0012 - .0024	.0020 - .0031		.0020 - .0035		.0024 - .0047	
	6	Low alloy steel	280	RPM	9020		6760	5410		4510		3380	
				FEED	.0008 - .0020		.0016 - .0031	.0016 - .0039		.0024 - .0047		.0039 - .0063	
	7		247	RPM	7960		5970	4770		3980		2980	
				FEED	.0008 - .0020		.0016 - .0031	.0016 - .0039		.0024 - .0047		.0039 - .0063	
	8		247	RPM	7960		5970	4770		3980		2980	
				FEED	.0008 - .0016		.0012 - .0024	.0020 - .0031		.0020 - .0035		.0024 - .0047	
	9		165	RPM	5310		3980	3180		2650		1990	
				FEED	.0008 - .0016		.0012 - .0024	.0020 - .0031		.0020 - .0035		.0024 - .0047	
M	12	Stainless steel	197	RPM	6370		4770	3820		3180		2390	
				FEED	.0008 - .0020		.0016 - .0031	.0016 - .0039		.0024 - .0047		.0039 - .0063	
K	15	Grey cast iron	296	RPM	9550		7160	5730		4770		3580	
				FEED	.0008 - .0020		.0012 - .0024	.0020 - .0031		.0020 - .0035		.0024 - .0047	
	16		247	RPM	7960		5970	4770		3980		2980	
				FEED	.0008 - .0020		.0008 - .0020	.0012 - .0024		.0012 - .0028		.0016 - .0039	
N	21	Aluminum-wrought alloy	527	RPM	16980		12730	10190		8490		6370	
				FEED	.0020 - .0035		.0031 - .0047	.0035 - .0059		.0047 - .0071		.0071 - .0094	
	22		527	RPM	16980		12730	10190		8490		6370	
				FEED	.0020 - .0035		.0031 - .0047	.0035 - .0059		.0047 - .0071		.0071 - .0094	

▶ Required pilot hole of the same diameter before using the 5xD Flat bottom Drills.
▶ The above table values is for under 5xD depth with pilot drilling operation.

NEXT PAGE ▶

DREAM DRILLS - FLAT BOTTOM

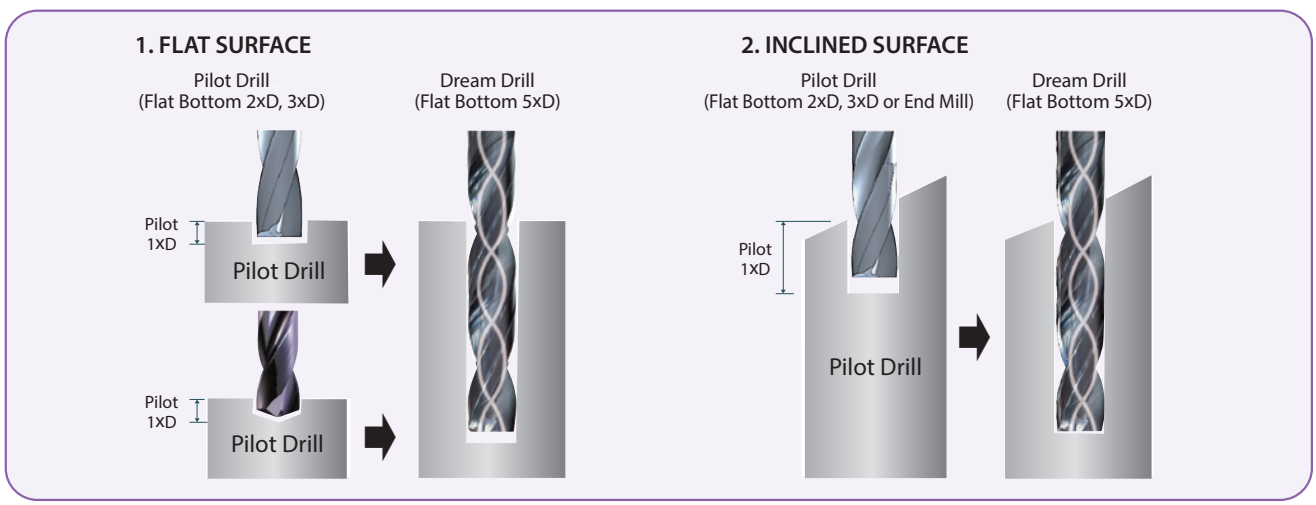
RECOMMENDED CUTTING CONDITIONS

DH450 SERIES with COOLANT HOLES

SFM = ft/min.
RPM = rev./min.
FEED = inch/rev.

ISO	VDI 3323	Material Description	SFM	Drill Diameter			
				METRIC	-	10.0	12.0	-
				FRACTIONAL	3/8	-	-	1/2
				DECIMAL	.3750	.3937	.4724	.5000
P	1	Non-alloy steel	329	RPM	3180		2650	2510
				FEED	.0094 - .0118		.0102 - .0142	.0102 - .0142
	2		296	RPM	2860		2390	2260
				FEED	.0055 - .0079		.0055 - .0094	.0055 - .0094
	3		296	RPM	2860		2390	2260
				FEED	.0055 - .0079		.0055 - .0094	.0055 - .0094
	4		247	RPM	2390		1990	1890
				FEED	.0035 - .0059		.0031 - .0071	.0031 - .0071
	5		247	RPM	2390		1990	1890
				FEED	.0035 - .0059		.0031 - .0071	.0031 - .0071
	6	Low alloy steel	280	RPM	2710		2250	2140
				FEED	.0055 - .0079		.0055 - .0094	.0055 - .0094
	7		247	RPM	2390		1990	1890
				FEED	.0055 - .0079		.0055 - .0094	.0055 - .0094
	8		247	RPM	2390		1990	1890
				FEED	.0035 - .0059		.0031 - .0071	.0031 - .0071
	9		165	RPM	1590		1330	1260
				FEED	.0035 - .0059		.0031 - .0071	.0031 - .0071
M	12	Stainless steel	197	RPM	1910		1590	1510
				FEED	.0055 - .0079		.0055 - .0094	.0055 - .0094
K	15	Grey cast iron	296	RPM	2860		2390	2260
				FEED	.0035 - .0059		.0031 - .0071	.0031 - .0071
	16		247	RPM	2390		1990	1890
				FEED	.0028 - .0051		.0024 - .0063	.0024 - .0063
N	21	Aluminum-wrought alloy	527	RPM	5090		4240	4030
				FEED	.0094 - .0118		.0102 - .0142	.0102 - .0142
	22		527	RPM	5090		4240	4030
				FEED	.0094 - .0118		.0102 - .0142	.0102 - .0142

DREAM DRILLS FLAT BOTTOM - Pilot Drilling for 5xD



- For Flat bottom 5xD drilling depth, Slope surface needs Pilot Drilling with YG-1 Flat Bottom Drill (2×D, 3×D) and Flat surface needs Pilot Drilling with YG-1 Dream Drill General.
- Pilot Drilling Depth : around 1×D
- Pilot Drilling Diameter : same size diameter

SMALL PARTS MACHINING
TOOL SELECTION



THREADING

for Small Parts Machining

P M K N S H : Excellent
P M K N S H : Good

HSS-PM TAP

Work Material	Item	Application	Type	Surface Treatment / Coating	Thread Type	Size Range Min	Size Range Max	Page
P M K N	 **Prime Tap**	High-Performance Multi-Purpose Tap / Prevent Over & Under Feeding / Extended Tool Life	Spiral Flute Spiral Point Forming	X-Coating	M/MF UNC/UNF	M1 #0	M12 1/2"	C4
P	 **YG Tap Chip Breaker**	Solutions for Providing Long-Chip Control and Preventing Bird Nesting / Tap with Chip Breaker for Steel Materials	Spiral Flute	TiN	M/MF UNC/UNF	M4 #8	M12 1/2"	C45

HSS-E TAP

Work Material	Item	Application	Type	Surface Treatment / Coating	Thread Type	Size Range Min	Size Range Max	Page
P M K N	 **Combo Tap**	Multi-Purpose Tap / Prevent Over & Under Feeding	Spiral Flute Spiral Point	Bright Steam Oxide TiN TiCN	M/MF UNC/UNF	M2 #1	M12 1/2"	C27

SOLID CARBIDE THREAD MILL

Work Material	Item	Application	Surface Treatment / Coating	Thread Type	Size Range Min	Size Range Max	Page
P M K N S H	 **Thread Mill**	Miniature Thread Mill for Precision Thread	TiAlN	M UNC/UNF	M1.6 #1	M12 9/16"	C54

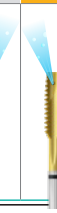
PRIME TAP

HOLE TYPE		Max. 2.5xD Blind Hole		Max. 3.0xD Through Hole	Max. 3.0xD Blind/Through Hole			
TOOL MATERIAL		HSS-PM			HSS-PM			
CHAMFER LEAD		2P~3P	1P~2P	4P~5P	1P~2P	2P~3P	1P~2P	2P~3P
FLUTE TYPE		Spiral Flute		Spiral Point	Forming			
SPIRAL FLUTE ANGLE		R45		-	-	-	-	-
M/MF	DIN Length-ANSI Shank	TRF04	TRF24	TRK04	TRR13	TRR12	TRR17	TRR16
	Page	C6	C9	C12	C15	C20	C23	C25
UNC/UNF	DIN Length-ANSI Shank	TRF14	TRF34	TRK14	TRR11	TRR10	TRR15	TRR14
	page	C4	C7	C10	C13	C17	C22	C24
SURFACE TREATMENT / COATING		X-coating						
MODEL								

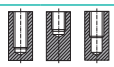
COMBO TAP

HOLE TYPE		Max. 2.5xD Blind Hole			Max. 2.5xD Blind Hole										
TOOL MATERIAL		HSS-E			HSS-E										
CHAMFER LEAD		2P-3P			2P-3P			2P-3P		2P-3P		1P-2P		1P-2P	
FLUTE TYPE		Spiral Flute			Spiral Flute			Spiral Flute		Spiral Flute		Spiral Flute		Spiral Flute	
SPIRAL FLUTE ANGLE		R40			R40			R40		R40		R40		R40	
M	USCTI 302A									T8	T8-N				
	page									C33					
M/MF	USCTI 302A				T5	T5-S	T5-C							T9	T9-C
	page				C30									C35	
UNC/UNF	USCTI 302A	T2	T2-S	T2-C				T6	T6-N			T7	T7-C		
	Page	C27						C32				C34			
SURFACE TREATMENT / COATING		Bright	Steam Oxide	TiCN	Bright	Steam Oxide	TiCN	Bright	TiN	Bright	TiN	Bright	TiCN	Bright	TiCN
MODEL															

COMBO TAP

HOLE TYPE		Max. 3.0xD Through Hole									
TOOL MATERIAL		HSS-E									
CHAMFER LEAD		4P-5P			4P-5P			4P-5P		4P-5P	
FLUTE TYPE		Spiral Point			Spiral Point			Spiral Point		Spiral Point	
M	USCTI 302A									TH	TH-N
	page									C43	
M/MF	USCTI 302A				T3	T3-S	T3-C				
	page				C40						
UNC/UNF	USCTI 302A	T4	T4-S	T4-C				TB	TB-N		
	Page	C36						C42			
SURFACE TREATMENT / COATING		Bright	Steam Oxide	TiCN	Bright	Steam Oxide	TiCN	Bright	TiN	Bright	TiN
MODEL											

YG TAP Chip Breaker

HOLE TYPE		 Max. 2.0xD Blind Hole		
TOOL MATERIAL		HSS-PM		
CHAMFER LEAD		2P~3P	1.5P~2P	2P~3P
FLUTE TYPE		Spiral Flute		
SPIRAL FLUTE ANGLE		R15		
UNC/UNF	DIN Length-ANSI Shank	TTF21	TTF22	TTF23
	Page	C45	C48	C51
M/MF	DIN Length-ANSI Shank	TTF18	TTF19	TTF20
	Page	C47	C50	C52
SURFACE TREATMENT		TiN		
MODEL				

THREAD MILL

TYPE	Miniature	
THREAD FORM	UN	M
HOLE TYPE	 Blind / Through Hole	
FLUTE TYPE	Helix	
HELIX ANGLE	R15	
SERIES	L12DE	L12DD
Page	C54	C55
SURFACE TREATMENT	TiAlN	
MODEL		

GUIDE TO ICONS

Working Material

- VG — Heat treated and heat-resistant steels 850N/mm2 ≤Rm≤1,200N/mm2
- MU — Multi-Purpose

Tool Material

- CARBIDE — Carbide
- HSS PM — YG-1 Premium Powder Metallurgy HSS
- HSS-E — 5% Cobalt HSS

Thread Angle

- 60°
- 55°

Class of Thread

- D
- H

Helix Angle

- R40
- R45

Thread Angle

- UNC UNF
- M/MF

Chamfer Type

- 1P~2P
- 2P~3P
- 4P~5P

Cutting Condition

Surface Treatment

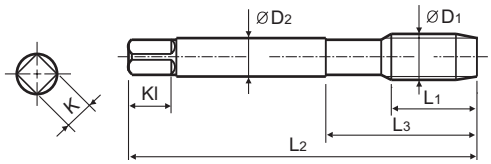
- X Coating — YG-1 X-Coating
- TiAlN — Titanium Aluminum Nitride Coating
- TiN — Titanium Nitride Coating
- TiCN — Titanium Carbon Nitride Coating
- Steam Oxide — Steam Tempered (Black Oxide Finish)
- Bright — Bright Finish

HSS-PM **PRIME TAP** X-Coating

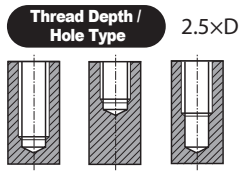
TRF14 SERIES

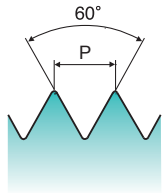
Spiral Flute Taps for Multi-purpose

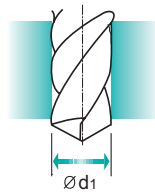




▶ High performance on various ductile materials
▶ Special design to prevent oversized threads and reduce gauging problems







Material groups **MU** | HSS PM | UNC UNF | H | 60° | 2P~3P | R45 | X Coating

p.C26

Unit: Inch

Size ØD1	TPI	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Flute Z	Tapping Drill Diameter (Ød1) Inch	Metric
#1	- 64UNC	TRF14042GS	H2	.374	1.57	.413	.141	.110	.190	2	-	1.5
#1	- 72UNF	TRF14062GS	H2	.374	1.57	.413	.141	.110	.190	2	-	1.5
#2	- 56UNC	TRF14082GS	H2	.437	1.77	.476	.141	.110	.190	2	-	1.8
#3	- 48UNC	TRF14122GS	H2	.500	1.97	.539	.141	.110	.190	2	-	2.0
#4	- 40UNC	TRF14162GS	H2	.200	2.21	.708	.141	.110	.19	2	-	2.3
#4	- 48UNF	TRF14182GS	H2	.200	2.21	.708	.141	.110	.19	2	3/32	-
#5	- 40UNC	TRF14202GS	H2	.200	2.21	.708	.141	.110	.19	3	-	2.6
#6	- 32UNC	TRF14242GS	H2	.248	2.21	.783	.141	.110	.19	3	-	2.8
#6	- 32UNC	TRF14243GS	H3	.248	2.21	.783	.141	.110	.19	3	-	2.8
#6	- 40UNF	TRF14262GS	H2	.248	2.21	.783	.141	.110	.19	3	-	2.9
#8	- 32UNC	TRF14282GS	H2	.251	2.48	.826	.168	.131	.25	3	-	3.4
#8	- 32UNC	TRF14283GS	H3	.251	2.48	.826	.168	.131	.25	3	-	3.4
#8	- 36UNF	TRF14302GS	H2	.251	2.48	.826	.168	.131	.25	3	-	3.5
#10	- 24UNC	TRF14323GS	H3	.326	2.75	.976	.194	.152	.25	3	-	3.9
#10	- 32UNF	TRF14342GS	H2	.326	2.75	.976	.194	.152	.25	3	-	4.1
#10	- 32UNF	TRF14343GS	H3	.326	2.75	.976	.194	.152	.25	3	-	4.1
#12	- 24UNC	TRF14363GS	H3	.330	3.15	1.177	.220	.165	.28	3	-	4.5
#12	- 28UNF	TRF14383GS	H3	.330	3.15	1.177	.220	.165	.28	3	-	4.7
1/4	- 20UNC	TRF14403GS	H3	.397	3.15	1.177	.255	.191	.31	3	-	5.2
1/4	- 20UNC	TRF14405GS	H5	.397	3.15	1.177	.255	.191	.31	3	-	5.2
1/4	- 28UNF	TRF14423GS	H3	.397	3.15	1.177	.255	.191	.31	3	-	5.5
1/4	- 28UNF	TRF14424GS	H4	.397	3.15	1.177	.255	.191	.31	3	-	5.5

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

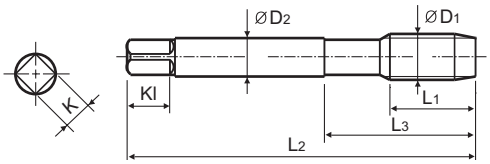
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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
Recommended	○	○	◎	◎	○	◎	◎	◎													

HSS-PM **PRIME TAP** X-Coating

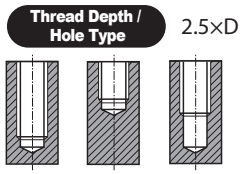
TRF14 SERIES

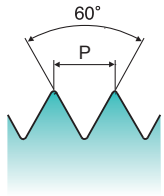
Spiral Flute Taps for Multi-purpose

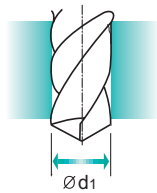




▶ High performance on various ductile materials
▶ Special design to prevent oversized threads and reduce gauging problems







Material groups **MU** | HSS PM | UNC UNF | H | 60° | 2P~3P | R45 | X Coating

p.C26

Unit: Inch

Size ØD1	TPI	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Flute Z	Tapping Drill Diameter (Ød1) Inch	Metric
5/16	- 18UNC	**TRF14443GS**	H3	.556	3.54	1.377	.318	.238	.38	3	-	6.7
5/16	- 18UNC	**TRF14445GS**	H5	.556	3.54	1.377	.318	.238	.38	3	-	6.7
5/16	- 24UNF	**TRF14463GS**	H3	.417	3.54	1.377	.318	.238	.38	3	-	7.0
5/16	- 24UNF	**TRF14464GS**	H4	.417	3.54	1.377	.318	.238	.38	3	-	7.0
3/8	- 16UNC	**TRF14483GS**	H3	.625	3.94	1.535	.381	.286	.44	3	-	8.1
3/8	- 16UNC	**TRF14485GS**	H5	.625	3.94	1.535	.381	.286	.44	3	-	8.1
3/8	- 24UNF	**TRF14503GS**	H3	.417	3.94	1.377	.381	.286	.44	3	-	8.6
3/8	- 24UNF	**TRF14504GS**	H4	.417	3.94	1.377	.381	.286	.44	3	-	8.6
7/16	- 14UNC	**TRF14523GS**	H3	.714	3.94	1.712	.323	.242	.41	3	-	9.5
7/16	- 14UNC	**TRF14525GS**	H5	.714	3.94	1.712	.323	.242	.41	3	-	9.5
7/16	- 20UNF	**TRF14543GS**	H3	.500	3.94	1.712	.323	.242	.41	3	-	10.0
7/16	- 20UNF	**TRF14545GS**	H5	.500	3.94	1.712	.323	.242	.41	3	-	10.0
1/2	- 13UNC	**TRF14563GS**	H3	.769	4.33	1.933	.367	.275	.44	3	-	11.0
1/2	- 13UNC	**TRF14565GS**	H5	.769	4.33	1.933	.367	.275	.44	3	-	11.0
1/2	- 20UNF	**TRF14583GS**	H3	.500	3.94	1.933	.367	.275	.44	3	-	11.6
1/2	- 20UNF	**TRF14585GS**	H5	.500	3.94	1.933	.367	.275	.44	3	-	11.6

◎ : 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	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	○	◎	◎	◎	◎	◎	◎	◎	○	○	○	◎	◎	◎	○	○	◎	◎		

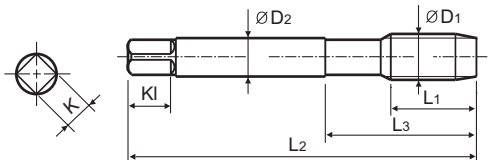
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	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
Recommended	○	○	◎	◎	○	◎	◎	◎													

HSS-PM **PRIME TAP** X-Coating

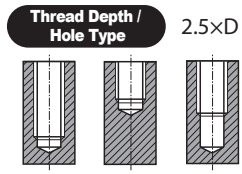
TRF04 SERIES

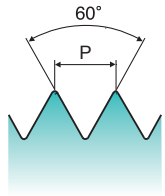
Spiral Flute Taps for Multi-purpose

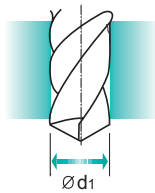




▶ High performance on various ductile materials
▶ Special design to prevent oversized threads and reduce gauging problems







Material groups **MU** | HSS PM | M/MF | D | 60° | 2P~3P | R45 | X Coating

p.C26

Unit: Inch

Size ØD1	Pitch P	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Flute Z	Tapping Drill Diameter (Ød1) Inch	Metric
M2	0.4	TRF04132GS	D2	.126	1.77	.393	.141	.110	.19	2	-	1.6
M2.5	0.45	TRF04173GS	D3	.126	1.97	.511	.141	.110	.19	2	-	2.1
M3	0.5	TRF04203GS	D3	.158	2.21	.708	.141	.110	.19	3	-	2.5
M3.5	0.6	TRF04224GS	D4	.189	2.21	.787	.141	.110	.19	3	-	2.9
M4	0.7	TRF04244GS	D4	.221	2.48	.823	.168	.131	.25	3	-	3.4
M5	0.8	TRF04284GS	D4	.252	2.75	.988	.194	.152	.25	3	-	4.3
M6	1.0	TRF04315GS	D5	.315	3.15	1.177	.255	.191	.31	3	-	5.1
M6	0.75	TRF04324GS	D4	.315	3.15	1.177	.255	.191	.31	3	-	5.3
M7	1.0	TRF04345GS	D5	.394	3.15	1.181	.318	.238	.38	3	-	6.1
M8	1.25	TRF04365GS	D5	.492	3.54	1.378	.318	.238	.38	3	-	6.9
M8	1.0	TRF04375GS	D5	.394	3.54	1.378	.318	.238	.38	3	-	7.1
M9	1.25	TRF04395GS	D5	.492	3.54	1.378	.381	.286	.44	3	-	7.9
M9	1.0	TRF04405GS	D5	.394	3.54	1.378	.381	.286	.44	3	-	8.1
M10	1.5	TRF04426GS	D6	.591	3.94	1.535	.381	.286	.44	3	-	8.7
M10	1.25	TRF04435GS	D5	.492	3.94	1.535	.381	.286	.44	3	-	8.9
M10	1.0	TRF04445GS	D5	.394	3.54	1.378	.381	.286	.44	3	-	9.1
M12	1.75	TRF04506GS	D6	.689	4.33	1.933	.367	.275	.44	3	-	10.5
M12	1.5	TRF04516GS	D6	.591	3.94	1.933	.367	.275	.44	3	-	10.7
M12	1.25	TRF04525GS	D5	.492	3.94	1.933	.367	.275	.44	3	-	10.9

◎ : 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	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	○	◎	◎	◎	◎	◎	◎	◎	○	○	○	◎	◎	◎	○	○	◎	◎		

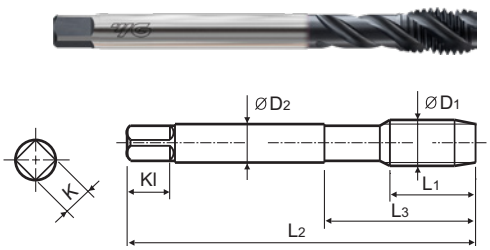
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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
Recommended	○	○	◎	◎	○	◎	◎	◎													

HSS-PM **PRIME TAP** X-Coating

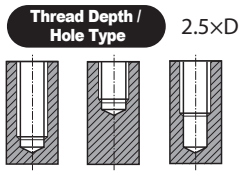
TRF34 SERIES

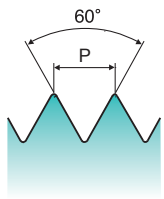
Spiral Flute Taps for Multi-purpose

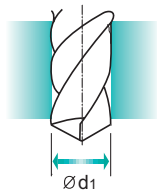
- High performance on various ductile materials
- Special design to prevent oversized threads and reduce gauging problems



Short Chamfer







Material groups **MU** | HSS PM | UNC UNF | H | 60° | 1P~2P | R45 | X Coating

p.C26

Unit: Inch

Size ØD1	TPI	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Flute Z	Tapping Drill Diameter (Ød1) Inch	Metric
#4	- 40UNC	**TRF34162GS**	H2	.200	2.21	.708	.141	.110	.19	2	-	2.3
#4	- 48UNF	**TRF34182GS**	H2	.200	2.21	.708	.141	.110	.19	2	3/32	-
#5	- 40UNC	**TRF34202GS**	H2	.200	2.21	.708	.141	.110	.19	3	-	2.6
#6	- 32UNC	**TRF34242GS**	H2	.248	2.21	.783	.141	.110	.19	3	-	2.8
#6	- 32UNC	**TRF34243GS**	H3	.248	2.21	.783	.141	.110	.19	3	-	2.8
#6	- 40UNF	**TRF34262GS**	H2	.248	2.21	.783	.141	.110	.19	3	-	2.9
#8	- 32UNC	**TRF34282GS**	H2	.251	2.48	.826	.168	.131	.25	3	-	3.4
#8	- 32UNC	**TRF34283GS**	H3	.251	2.48	.826	.168	.131	.25	3	-	3.4
#8	- 36UNF	**TRF34302GS**	H2	.251	2.48	.826	.168	.131	.25	3	-	3.5
#10	- 24UNC	**TRF34323GS**	H3	.326	2.75	.976	.194	.152	.25	3	-	3.9
#10	- 32UNF	**TRF34342GS**	H2	.326	2.75	.976	.194	.152	.25	3	-	4.1
#10	- 32UNF	**TRF34343GS**	H3	.326	2.75	.976	.194	.152	.25	3	-	4.1
#12	- 24UNC	**TRF34363GS**	H3	.330	3.15	1.177	.220	.165	.28	3	-	4.5
#12	- 28UNF	**TRF34383GS**	H3	.330	3.15	1.177	.220	.165	.28	3	-	4.7
1/4	- 20UNC	**TRF34403GS**	H3	.397	3.15	1.177	.255	.191	.31	3	-	5.2
1/4	- 20UNC	**TRF34405GS**	H5	.397	3.15	1.177	.255	.191	.31	3	-	5.2
1/4	- 28UNF	**TRF34423GS**	H3	.397	3.15	1.177	.255	.191	.31	3	-	5.5
1/4	- 28UNF	**TRF34424GS**	H4	.397	3.15	1.177	.255	.191	.31	3	-	5.5
5/16	- 18UNC	**TRF34443GS**	H3	.556	3.54	1.377	.318	.238	.38	3	-	6.7
5/16	- 18UNC	**TRF34445GS**	H5	.556	3.54	1.377	.318	.238	.38	3	-	6.7
5/16	- 24UNF	**TRF34463GS**	H3	.417	3.54	1.377	.318	.238	.38	3	-	7.0
5/16	- 24UNF	**TRF34464GS**	H4	.417	3.54	1.377	.318	.238	.38	3	-	7.0

NEXT PAGE ▶

◎ : Excellent ○ : Good

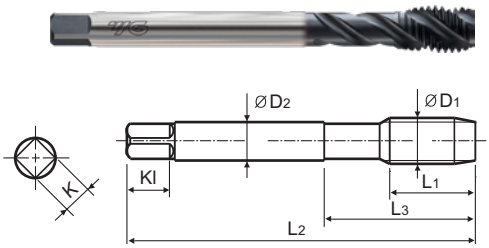
ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	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		
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
Recommended	○	○	◎	◎	○	◎	◎	◎													

HSS-PM **PRIME TAP** X-Coating

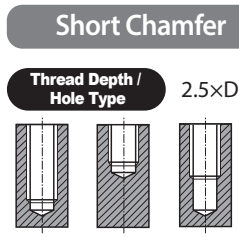
TRF34 SERIES

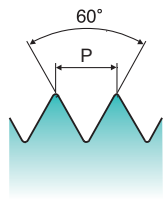
Spiral Flute Taps for Multi-purpose

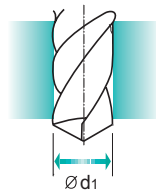


▶ High performance on various ductile materials
▶ Special design to prevent oversized threads and reduce gauging problems

Short Chamfer







Material groups **MU** | HSS PM | UNC UNF | H | 60° | 1P~2P | R45 | X Coating

p.C26

Unit: Inch

Size ØD1	TPI	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Flute Z	Tapping Drill Diameter (Ød1) Inch	Metric
3/8	- 16UNC	**TRF34483GS**	H3	.625	3.94	1.535	.381	.286	.44	3	-	8.1
3/8	- 16UNC	**TRF34485GS**	H5	.625	3.94	1.535	.381	.286	.44	3	-	8.1
3/8	- 24UNF	**TRF34503GS**	H3	.417	3.94	1.377	.381	.286	.44	3	-	8.6
3/8	- 24UNF	**TRF34504GS**	H4	.417	3.94	1.377	.381	.286	.44	3	-	8.6
7/16	- 14UNC	**TRF34523GS**	H3	.714	3.94	1.712	.323	.242	.41	3	-	9.5
7/16	- 14UNC	**TRF34525GS**	H5	.714	3.94	1.712	.323	.242	.41	3	-	9.5
7/16	- 20UNF	**TRF34543GS**	H3	.500	3.94	1.712	.323	.242	.41	3	-	10.0
7/16	- 20UNF	**TRF34545GS**	H5	.500	3.94	1.712	.323	.242	.41	3	-	10.0
1/2	- 13UNC	**TRF34563GS**	H3	.769	4.33	1.933	.367	.275	.44	3	-	11.0
1/2	- 13UNC	**TRF34565GS**	H5	.769	4.33	1.933	.367	.275	.44	3	-	11.0
1/2	- 20UNF	**TRF34583GS**	H3	.500	3.94	1.933	.367	.275	.44	3	-	11.6
1/2	- 20UNF	**TRF34585GS**	H5	.500	3.94	1.933	.367	.275	.44	3	-	11.6

◎ : Excellent ○ : Good

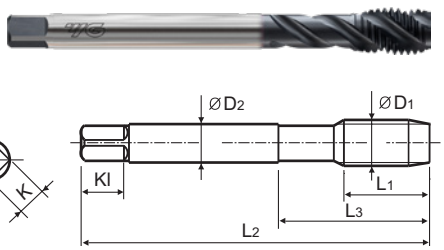
ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	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			
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
Recommended	○	○	◎	◎	○	◎	◎	◎													

HSS-PM **PRIME TAP** X-Coating

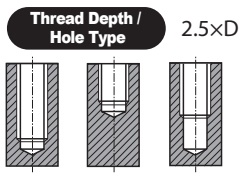
TRF24 SERIES

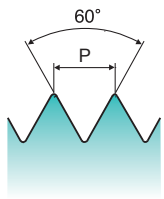
Spiral Flute Taps for Multi-purpose

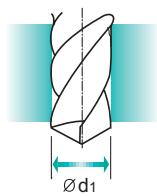


▶ High performance on various ductile materials
▶ Special design to prevent oversized threads and reduce gauging problems

Short Chamfer







Material groups **MU** | HSS PM | M/MF | D | 60° | 1P~2P | R45 | X Coating

p.C26

Unit: Inch

Size	Pitch	EDP No.	Limits	Thread Length	Overall Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute	Tapping Drill Diameter (Ød1)	
ØD1	P			L1	L2	L3	ØD2	K	Kl	Z	Inch	Metric
M3 x	0.5	TRF24203GS	D3	.158	2.21	.708	.141	.110	.19	3	-	2.5
M3.5 x	0.6	TRF24224GS	D4	.189	2.21	.787	.141	.110	.19	3	-	2.9
M4 x	0.7	TRF24244GS	D4	.221	2.48	.823	.168	.131	.25	3	-	3.4
M5 x	0.8	TRF24284GS	D4	.252	2.75	.988	.194	.152	.25	3	-	4.3
M6 x	1.0	TRF24315GS	D5	.315	3.15	1.177	.255	.191	.31	3	-	5.1
M8 x	1.25	TRF24365GS	D5	.492	3.54	1.378	.318	.238	.38	3	-	6.9
M9 x	1.25	TRF24395GS	D5	.492	3.54	1.378	.381	.286	.44	3	-	7.9
M10 x	1.5	TRF24426GS	D6	.591	3.94	1.535	.381	.286	.44	3	-	8.7
M10 x	1.25	TRF24435GS	D5	.492	3.94	1.535	.381	.286	.44	3	-	8.9
M10 x	1.0	TRF24445GS	D5	.394	3.54	1.378	.381	.286	.44	3	-	9.1
M12 x	1.75	TRF24506GS	D6	.689	4.33	1.933	.367	.275	.44	3	-	10.5
M12 x	1.5	TRF24516GS	D6	.591	3.94	1.933	.367	.275	.44	3	-	10.7
M12 x	1.25	TRF24525GS	D5	.492	3.94	1.933	.367	.275	.44	3	-	10.9

◎ : 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	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	○	◎	◎	◎	◎	◎	◎	◎	○	○	○	◎	◎	◎	○	○	◎	◎		

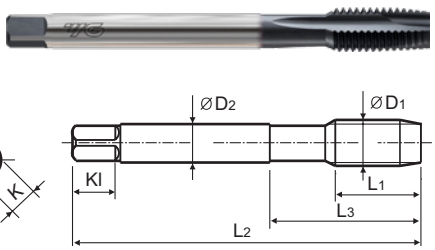
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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
Recommended	○	○	◎	◎	○	◎	◎	◎													

HSS-PM **PRIME TAP** X-Coating

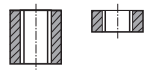
TRK14 SERIES

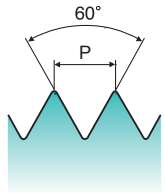
Spiral Point Taps for Multi-purpose

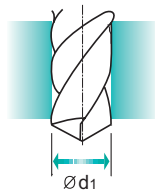
▶ High performance on various ductile materials



Thread Depth / Hole Type 3.0xD







Material groups **MU** | HSS PM | UNC UNF | H | 60° | 4P~5P | X Coating

p.C26

Unit: Inch

Size ØD1	TPI	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Flute Z	Tapping Drill Diameter (Ød1) Inch	Metric
#1	- 64UNC	TRK14042GS	H2	.374	1.57	.413	.141	.110	.190	2	-	1.5
#1	- 72UNF	TRK14062GS	H2	.374	1.57	.413	.141	.110	.190	2	-	1.5
#2	- 56UNC	TRK14082GS	H2	.437	1.77	.476	.141	.110	.19	2	-	1.8
#2	- 64UNF	TRK14102GS	H2	.437	1.77	.476	.141	.110	.19	2	-	1.8
#3	- 48UNC	TRK14122GS	H2	.500	1.97	.539	.141	.110	.19	2	-	2.0
#3	- 56UNF	TRK14142GS	H2	.500	1.97	.539	.141	.110	.19	2	-	2.1
#4	- 40UNC	TRK14162GS	H2	.335	2.21	.708	.141	.110	.19	2	-	2.3
#4	- 48UNF	TRK14182GS	H2	.335	2.21	.708	.141	.110	.19	2	3/32	-
#5	- 40UNC	TRK14202GS	H2	.374	2.21	.708	.141	.110	.19	3	-	2.6
#5	- 44UNF	TRK14222GS	H2	.374	2.21	.708	.141	.110	.19	3	-	2.6
#6	- 32UNC	TRK14242GS	H2	.413	2.21	.787	.141	.110	.19	3	-	2.8
#6	- 32UNC	TRK14243GS	H3	.413	2.21	.787	.141	.110	.19	3	-	2.8
#6	- 40UNF	TRK14262GS	H2	.413	2.21	.787	.141	.110	.19	3	-	2.9
#8	- 32UNC	TRK14282GS	H2	.453	2.48	.826	.168	.131	.25	3	-	3.4
#8	- 32UNC	TRK14283GS	H3	.453	2.48	.826	.168	.131	.25	3	-	3.4
#8	- 36UNF	TRK14302GS	H2	.453	2.48	.826	.168	.131	.25	3	-	3.5
#10	- 24UNC	TRK14323GS	H3	.531	2.75	.984	.194	.152	.25	3	-	3.9
#10	- 32UNF	TRK14342GS	H2	.531	2.75	.984	.194	.152	.25	3	-	4.1
#10	- 32UNF	TRK14343GS	H3	.531	2.75	.984	.194	.152	.25	3	-	4.1
#12	- 24UNC	TRK14363GS	H3	.571	3.15	1.181	.220	.165	.28	3	-	4.5

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

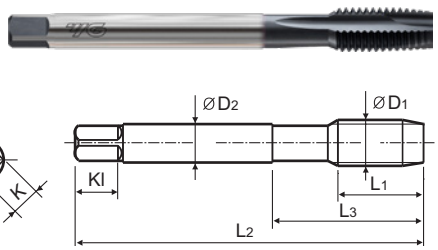
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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
Recommended	○	○	◎	◎	○	◎	◎	◎													

HSS-PM **PRIME TAP** X-Coating

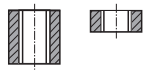
TRK14 SERIES

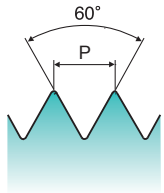
Spiral Point Taps for Multi-purpose

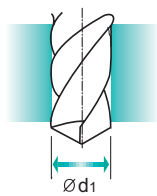
▶ High performance on various ductile materials



Thread Depth / Hole Type 3.0xD







Material groups **MU** | HSS PM | UNC UNF | H | 60° | 4P~5P | X Coating

p.C26

Unit: Inch

Size ØD1	TPI	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Flute Z	Tapping Drill Diameter (Ød1) Inch	Metric
#12	- 28UNF	TRK14383GS	H3	.571	3.15	1.181	.220	.165	.28	3	-	4.7
1/4	- 20UNC	TRK14403GS	H3	.591	3.15	1.177	.255	.191	.31	3	-	5.2
1/4	- 20UNC	TRK14405GS	H5	.591	3.15	1.177	.255	.191	.31	3	-	5.2
1/4	- 28UNF	TRK14423GS	H3	.591	3.15	1.177	.255	.191	.31	3	-	5.5
1/4	- 28UNF	TRK14424GS	H4	.591	3.15	1.177	.255	.191	.31	3	-	5.5
5/16	- 18UNC	TRK14443GS	H3	.669	3.54	1.377	.318	.238	.38	3	-	6.7
5/16	- 18UNC	TRK14445GS	H5	.669	3.54	1.377	.318	.238	.38	3	-	6.7
5/16	- 24UNF	TRK14463GS	H3	.669	3.54	1.377	.318	.238	.38	3	-	7.0
5/16	- 24UNF	TRK14464GS	H4	.669	3.54	1.377	.318	.238	.38	3	-	7.0
3/8	- 16UNC	TRK14483GS	H3	.748	3.94	1.535	.381	.286	.44	3	-	8.1
3/8	- 16UNC	TRK14485GS	H5	.748	3.94	1.535	.381	.286	.44	3	-	8.1
3/8	- 24UNF	TRK14503GS	H3	.748	3.94	1.377	.381	.286	.44	3	-	8.6
3/8	- 24UNF	TRK14504GS	H4	.748	3.94	1.377	.381	.286	.44	3	-	8.6
7/16	- 14UNC	TRK14523GS	H3	.866	3.94	1.437	.323	.242	.41	3	-	9.5
7/16	- 14UNC	TRK14525GS	H5	.866	3.94	1.437	.323	.242	.41	3	-	9.5
7/16	- 20UNF	TRK14543GS	H3	.866	3.94	1.437	.323	.242	.41	3	-	10.0
7/16	- 20UNF	TRK14545GS	H5	.866	3.94	1.437	.323	.242	.41	3	-	10.0
1/2	- 13UNC	TRK14563GS	H3	.984	4.33	1.657	.367	.275	.44	3	-	11.0
1/2	- 13UNC	TRK14565GS	H5	.984	4.33	1.657	.367	.275	.44	3	-	11.0
1/2	- 20UNF	TRK14583GS	H3	.984	3.94	1.657	.367	.275	.44	3	-	11.6
1/2	- 20UNF	TRK14585GS	H5	.984	3.94	1.657	.367	.275	.44	3	-	11.6

◎ : 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	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	○	◎	◎	◎	◎	◎	◎	◎	○	○	○	◎	◎	◎	◎	◎	◎	◎		

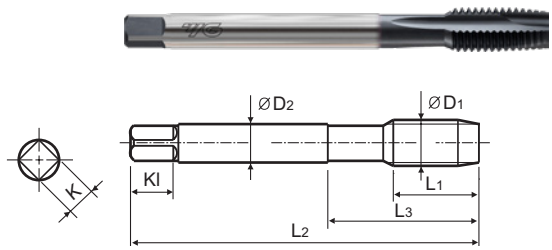
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	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
Recommended	○	○	◎	◎	○	◎	◎	◎													

HSS-PM **PRIME TAP** X-Coating

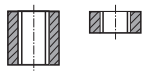
TRK04 SERIES

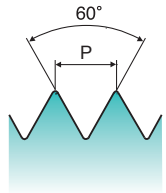
Spiral Point Taps for Multi-purpose

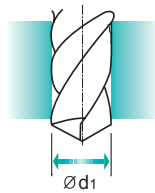
▶ High performance on various ductile materials



Thread Depth / Hole Type 3.0xD







Material groups **MU** | HSS PM | M/MF | D | 60° | 4P~5P | X Coating

p.C26

Unit: Inch

Size		Pitch		EDP No.	Limits	Thread Length	Overall Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute	Tapping Drill Diameter (Ød1)	
ØD1		P				L1	L2	L3	ØD2	K	Kl	Z	Inch	Metric
M2	x	0.4		TRK04132GS	D2	.433	1.77	.472	.141	.110	.19	2	-	1.6
M2.5	x	0.45		TRK04173GS	D3	.472	1.97	.539	.141	.110	.19	2	-	2.1
M3	x	0.5		TRK04203GS	D3	.374	2.21	.705	.141	.110	.19	3	-	2.5
M3.5	x	0.6		TRK04224GS	D4	.413	2.21	.780	.141	.110	.19	3	-	2.9
M4	x	0.7		TRK04244GS	D4	.453	2.48	.819	.168	.131	.25	3	-	3.4
M5	x	0.8		TRK04284GS	D4	.531	2.75	.976	.194	.152	.25	3	-	4.3
M6	x	1.0		TRK04315GS	D5	.591	3.15	1.169	.255	.191	.31	3	-	5.1
M6	x	0.75		TRK04324GS	D4	.591	3.15	1.169	.255	.191	.31	3	-	5.3
M7	x	1.0		TRK04345GS	D5	.669	3.15	1.169	.318	.238	.38	3	-	6.1
M8	x	1.25		TRK04365GS	D5	.669	3.54	1.366	.318	.238	.38	3	-	6.9
M8	x	1.0		TRK04375GS	D5	.669	3.54	1.366	.318	.238	.38	3	-	7.1
M9	x	1.25		TRK04395GS	D5	.669	3.54	1.370	.381	.286	.44	3	-	7.9
M9	x	1.0		TRK04405GS	D5	.669	3.54	1.370	.381	.286	.44	3	-	8.1
M10	x	1.5		TRK04426GS	D6	.748	3.94	1.531	.381	.286	.44	3	-	8.7
M10	x	1.25		TRK04435GS	D5	.748	3.94	1.531	.381	.286	.44	3	-	8.9
M10	x	1.0		TRK04445GS	D5	.748	3.54	1.370	.381	.286	.44	3	-	9.1
M12	x	1.75		TRK04506GS	D6	.984	4.33	1.657	.367	.275	.44	3	-	10.5
M12	x	1.5		TRK04516GS	D6	.984	3.94	1.657	.367	.275	.44	3	-	10.7
M12	x	1.25		TRK04525GS	D5	.984	3.94	1.657	.367	.275	.44	3	-	10.9

◎ : 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	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			
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
Recommended	○	○	◎	◎	○	◎	◎	◎													

HSS-PM **PRIME TAP** X-Coating

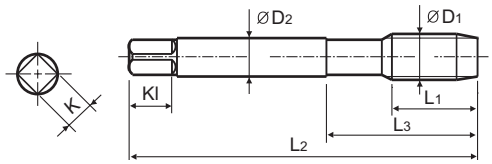
TRR11 SERIES

Forming Taps for Multi-purpose

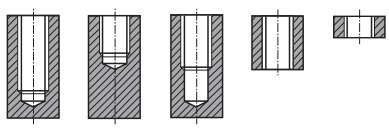
▶ High performance on various ductile materials

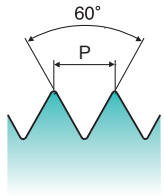


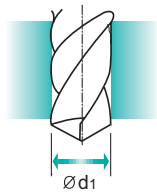
Short Chamfer



Thread Depth / Hole Type 3.0xD







Material groups **MU** | HSS PM | UNC UNF | H | 60° | 1P~2P | X Coating

p.C26

Unit: Inch

Size ØD1	TPI	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Lobe Z	Tapping Drill Diameter (Ød1) Inch	Metric
#0	- 80UNF	TRR11023GS	H3	.315	1.57	.362	.141	.110	.19	4	-	1.4
#1	- 64UNC	TRR11043GS	H3	.315	1.57	.370	.141	.110	.19	4	-	1.7
#2	- 56UNC	TRR11083GS	H3	.386	1.77	.425	.141	.110	.19	4	-	2.0
#2	- 64UNF	TRR11103GS	H3	.386	1.77	.425	.141	.110	.19	4	-	2.0
#3	- 48UNC	TRR11123GS	H3	.386	1.97	.453	.141	.110	.19	4	-	2.3
#3	- 56UNF	TRR11143GS	H3	.386	1.97	.453	.141	.110	.19	4	-	2.3
#4	- 40UNC	TRR11165GS	H5	.299	2.21	.709	.141	.110	.19	4	#38	
#4	- 48UNF	TRR11185GS	H5	.299	2.21	.709	.141	.110	.19	4	-	2.6
#5	- 40UNC	TRR11205GS	H5	.299	2.21	.709	.141	.110	.19	4	-	2.9
#5	- 44UNF	TRR11225GS	H5	.299	2.21	.709	.141	.110	.19	4	-	2.9
#6	- 32UNC	TRR11245GS	H5	.374	2.21	.787	.141	.110	.19	4	1/8	
#6	- 40UNF	TRR11265GS	H5	.374	2.21	.787	.141	.110	.19	4	-	3.2
#8	- 32UNC	TRR11285GS	H5	.374	2.48	.827	.168	.131	.25	4	-	3.8
#8	- 36UNF	TRR11305GS	H5	.374	2.48	.827	.168	.131	.25	4	#24	
#10	- 24UNC	TRR11326GS	H6	.500	2.75	.984	.194	.152	.25	5	-	4.4
#10	- 32UNF	TRR11346GS	H6	.500	2.75	.984	.194	.152	.25	5	-	4.5
#12	- 24UNC	TRR11367GS	H7	.500	3.15	1.142	.220	.165	.28	5	--	5.0
#12	- 28UNF	TRR11387GS	H7	.500	3.15	1.142	.220	.165	.28	5	-	5.1
1/4	- 20UNC	TRR11406GS	H6	.500	3.15	1.181	.255	.191	.31	5	-	5.8
1/4	- 28UNF	TRR11426GS	H6	.500	3.15	1.181	.255	.191	.31	5	15/64	

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	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		
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
Recommended	◎	◎	◎	◎	◎	◎	◎	◎													

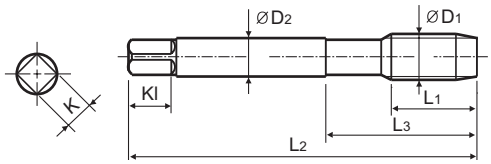
HSS-PM **PRIME TAP** X-Coating

TRR11 SERIES

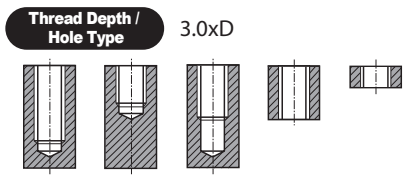
Forming Taps for Multi-purpose

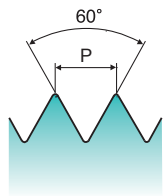
▶ High performance on various ductile materials

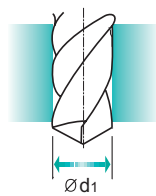




Short Chamfer







Material groups **MU** | HSS PM | UNC UNF | H | 60° | 1P~2P | X Coating

p.C26

Unit: Inch

Size ØD1	TPI	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Lobe Z	Tapping Drill Diameter (Ød1) Inch	Metric
5/16	- 18UNC	TRR11447GS	H7	.555	3.54	1.378	.318	.238	.38	5	-	7.3
5/16	- 24UNF	TRR11467GS	H7	.555	3.54	1.378	.318	.238	.38	5	-	7.5
3/8	- 16UNC	TRR11487GS	H7	.626	3.94	1.575	.381	.286	.44	8	-	8.8
3/8	- 24UNF	TRR11507GS	H7	.626	3.94	1.575	.381	.286	.44	8	-	9.0
7/16	- 14UNC	TRR11528GS	H8	.713	3.94	1.693	.323	.242	.41	8	-	10.3
7/16	- 20UNF	TRR11548GS	H8	.713	3.94	1.693	.323	.242	.41	8	-	10.6
1/2	- 13UNC	TRR11568GS	H8	.768	4.33	1.929	.367	.275	.44	8	-	11.8
1/2	- 20UNF	TRR11588GS	H8	.768	3.94	1.929	.367	.275	.44	8	-	12.1

◎ : 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	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	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎						

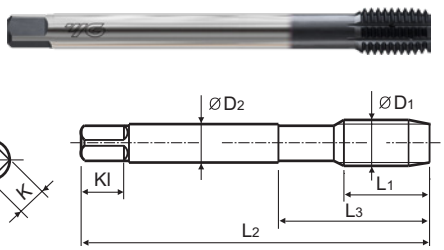
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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
Recommended	◎	◎	◎	◎	◎	◎	◎	◎													

HSS-PM **PRIME TAP** X-Coating

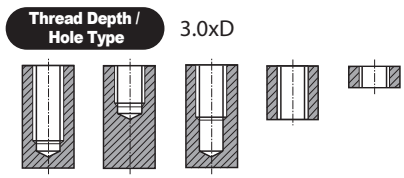
TRR13 SERIES

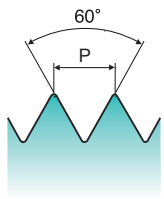
Forming Taps for Multi-purpose

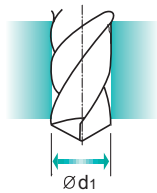
▶ High performance on various ductile materials



Short Chamfer







Material groups **MU** | HSS PM | M/MF | D | 60° | 1P~2P | X Coating

p.C26

Unit: Inch

Size ØD1	Pitch P	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Lobe Z	Tapping Drill Diameter (Ød1) Inch	Metric
M1	x 0.25	TRR13015GS	D5	.217	1.57	.315	.141	.110	.190	4	-	0.9
M1.1	x 0.25	TRR13035GS	D5	.217	1.57	.315	.141	.110	.190	4	-	1.0
M1.2	x 0.25	TRR13055GS	D5	.217	1.57	.315	.141	.110	.190	4	-	1.1
M1.4	x 0.3	TRR13075GS	D5	.276	1.57	.354	.141	.110	.190	4	-	1.25
M1.6	x 0.35	TRR13095GS	D5	.315	1.57	.433	.141	.110	.190	4	-	1.45
M1.7	x 0.35	TRR13K55GS	D5	.315	1.57	.433	.141	.110	.190	4	-	1.55
M1.8	x 0.35	TRR13115GS	D5	.315	1.57	.433	.141	.110	.190	4	-	1.65
M2	x 0.4	TRR13135GS	D5	.315	1.77	.362	.141	.110	.19	4	-	1.8
M2.5	x 0.45	TRR13175GS	D5	.354	1.97	.425	.141	.110	.19	4	-	2.3
M3	x 0.5	TRR13205GS	D5	.236	2.21	.709	.141	.110	.19	4	-	2.8
M3.5	x 0.6	TRR13226GS	D6	.283	2.21	.787	.141	.110	.19	4	-	3.2
M4	x 0.7	TRR13246GS	D6	.331	2.48	.827	.168	.131	.25	4	-	3.7
M4.5	x 0.75	TRR13266GS	D6	.374	2.75	.984	.194	.152	.25	4	-	4.2
M5	x 0.8	TRR13287GS	D7	.378	2.75	.984	.194	.152	.25	5	-	4.6
M6	x 1.0	TRR13318GS	D8	.394	3.15	1.181	.255	.191	.31	5	-	5.6
M7	x 1.0	TRR13348GS	D8	.394	3.15	1.181	.318	.238	.38	5	-	6.6
M8	x 1.25	TRR13369GS	D9	.472	3.54	1.378	.318	.238	.38	5	-	7.5
M8	x 1.0	TRR13378GS	D8	.472	3.54	1.378	.318	.238	.38	5	-	7.6

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	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				
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
Recommended	◎	◎	◎	◎	◎	◎	◎	◎													

HSS-PM **PRIME TAP** X-Coating

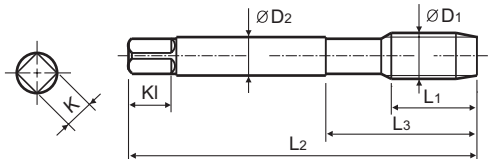
TRR13 SERIES

Forming Taps for Multi-purpose

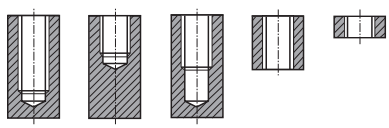
▶ High performance on various ductile materials

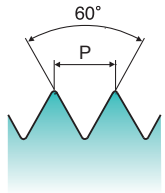


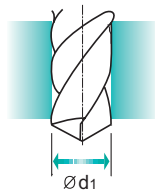
Short Chamfer



Thread Depth / Hole Type 3.0xD







Material groups **MU** | HSS PM | M/MF | D | 60° | 1P~2P | X Coating

p.C26

Unit: Inch

Size	Pitch	EDP No.	Limits	Thread Length	Overall Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Lobe	Tapping Drill Diameter (Ød1)	
$ØD_1$	P			L_1	L_2	L_3	$ØD_2$	K	Kl	Z	Inch	Metric
M10 x	1.5	**TRR13420GS**	D10	.591	3.94	1.535	.381	.286	.44	8	-	9.4
M10 x	1.25	**TRR13439GS**	D9	.591	3.94	1.535	.381	.286	.44	8	-	9.5
M12 x	1.75	**TRR1350AGS**	D11	.669	4.33	1.929	.367	.275	.44	8	-	11.2
M12 x	1.5	**TRR1351AGS**	D11	.669	3.94	1.929	.367	.275	.44	8	-	11.3

◎ : 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	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			
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
Recommended	◎	◎	◎	◎	◎	◎	◎	◎													

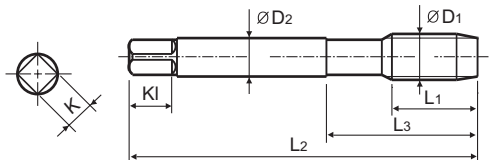
HSS-PM **PRIME TAP** X-Coating

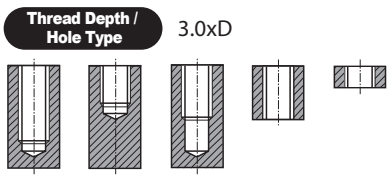
TRR10 SERIES

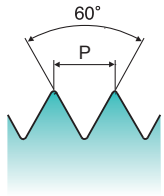
Forming Taps for Multi-purpose

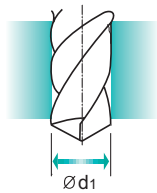
▶ High performance on various ductile materials











Material groups **MU** | HSS PM | UNC UNF | H | 60° | 2P~3P | X Coating

p.C26

Unit: Inch

Size ØD1	TPI	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Lobe Z	Tapping Drill Diameter (Ød1) Inch	Metric
#0	- 80UNF	TRR10023GS	H3	.315	1.57	.362	.141	.110	.19	4	-	1.4
#1	- 64UNC	TRR10043GS	H3	.315	1.57	.370	.141	.110	.19	4	-	1.7
#2	- 56UNC	TRR10082GS	H2	.386	1.77	.425	.141	.110	.19	4	-	2.0
#2	- 56UNC	TRR10083GS	H3	.386	1.77	.425	.141	.110	.19	4	-	2.0
#2	- 64UNF	TRR10102GS	H2	.386	1.77	.425	.141	.110	.19	4	-	2.0
#2	- 64UNF	TRR10103GS	H3	.386	1.77	.425	.141	.110	.19	4	-	2.0
#3	- 48UNC	TRR10122GS	H2	.386	1.97	.453	.141	.110	.19	4	-	2.3
#3	- 48UNC	TRR10123GS	H3	.386	1.97	.453	.141	.110	.19	4	-	2.3
#3	- 56UNF	TRR10142GS	H2	.386	1.97	.453	.141	.110	.19	4	-	2.3
#3	- 56UNF	TRR10143GS	H3	.386	1.97	.453	.141	.110	.19	4	-	2.3
#4	- 40UNC	TRR10163GS	H3	.299	2.21	.709	.141	.110	.19	4	#38	-
#4	- 40UNC	TRR10165GS	H5	.299	2.21	.709	.141	.110	.19	4	#38	-
#4	- 48UNF	TRR10183GS	H3	.299	2.21	.709	.141	.110	.19	4	-	2.6
#4	- 48UNF	TRR10185GS	H5	.299	2.21	.709	.141	.110	.19	4	-	2.6
#5	- 40UNC	TRR10203GS	H3	.299	2.21	.709	.141	.110	.19	4	-	2.9
#5	- 40UNC	TRR10205GS	H5	.299	2.21	.709	.141	.110	.19	4	-	2.9
#5	- 44UNF	TRR10223GS	H3	.299	2.21	.709	.141	.110	.19	4	-	2.9
#5	- 44UNF	TRR10225GS	H5	.299	2.21	.709	.141	.110	.19	4	-	2.9

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	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			
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
Recommended	◎	◎	◎	◎	◎	◎	◎	◎													

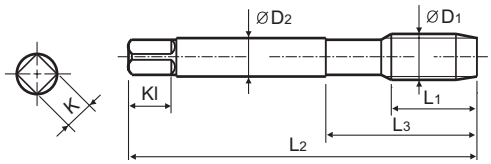
HSS-PM **PRIME TAP** X-Coating

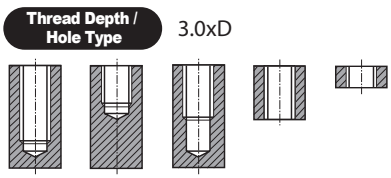
TRR10 SERIES

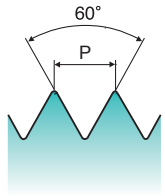
Forming Taps for Multi-purpose

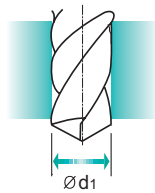
▶ High performance on various ductile materials











Material groups **MU** | HSS PM | UNC UNF | H | 60° | 2P~3P | X Coating

p.C26

Unit: Inch

Size ØD1	TPI	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Lobe Z	Tapping Drill Diameter (Ød1) Inch	Metric
#6	- 32UNC	TRR10243GS	H3	.374	2.21	.787	.141	.110	.19	4	1/8	-
#6	- 32UNC	TRR10245GS	H5	.374	2.21	.787	.141	.110	.19	4	1/8	-
#6	- 40UNF	TRR10263GS	H3	.374	2.21	.787	.141	.110	.19	4	-	3.2
#6	- 40UNF	TRR10265GS	H5	.374	2.21	.787	.141	.110	.19	4	-	3.2
#8	- 32UNC	TRR10283GS	H3	.374	2.48	.827	.168	.131	.25	4	-	3.8
#8	- 32UNC	TRR10285GS	H5	.374	2.48	.827	.168	.131	.25	4	-	3.8
#8	- 36UNF	TRR10303GS	H3	.374	2.48	.827	.168	.131	.25	4	#24	-
#8	- 36UNF	TRR10305GS	H5	.374	2.48	.827	.168	.131	.25	4	#24	-
#10	- 24UNC	TRR10324GS	H4	.500	2.75	.984	.194	.152	.25	5	-	4.4
#10	- 24UNC	TRR10326GS	H6	.500	2.75	.984	.194	.152	.25	5	-	4.4
#10	- 32UNF	TRR10344GS	H4	.500	2.75	.984	.194	.152	.25	5	-	4.5
#10	- 32UNF	TRR10346GS	H6	.500	2.75	.984	.194	.152	.25	5	-	4.5
#12	- 24UNC	TRR10365GS	H5	.500	3.15	1.142	.220	.165	.28	5	-	5.0
#12	- 24UNC	TRR10367GS	H7	.500	3.15	1.142	.220	.165	.28	5	-	5.0
#12	- 28UNF	TRR10385GS	H5	.500	3.15	1.142	.220	.165	.28	5	-	5.1
#12	- 28UNF	TRR10387GS	H7	.500	3.15	1.142	.220	.165	.28	5	-	5.1
1/4	- 20UNC	TRR10404GS	H4	.500	3.15	1.181	.255	.191	.31	5	-	5.8
1/4	- 20UNC	TRR10406GS	H6	.500	3.15	1.181	.255	.191	.31	5	-	5.8
1/4	- 28UNF	TRR10424GS	H4	.500	3.15	1.181	.255	.191	.31	5	15/64	-
1/4	- 28UNF	TRR10426GS	H6	.500	3.15	1.181	.255	.191	.31	5	15/64	-

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	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			
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
Recommended	◎	◎	◎	◎	◎	◎	◎	◎													

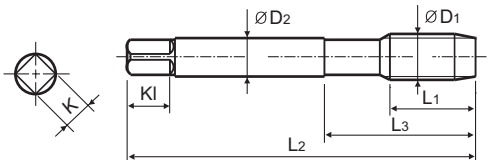
HSS-PM **PRIME TAP** X-Coating

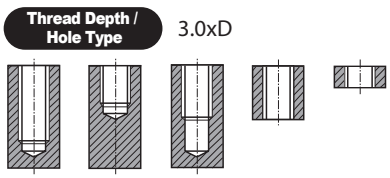
TRR10 SERIES

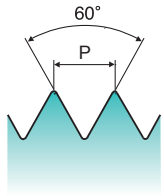
Forming Taps for Multi-purpose

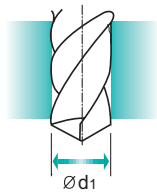
▶ High performance on various ductile materials











Material groups **MU** | HSS PM | UNC UNF | H | 60° | 2P~3P | X Coating

p.C26

Unit: Inch

Size ØD1	TPI	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Lobe Z	Tapping Drill Diameter (Ød1) Inch	Metric
5/16	- 18UNC	TRR10445GS	H5	.555	3.54	1.378	.318	.238	.38	5	-	7.3
5/16	- 18UNC	TRR10447GS	H7	.555	3.54	1.378	.318	.238	.38	5	-	7.3
5/16	- 24UNF	TRR10465GS	H5	.555	3.54	1.378	.318	.238	.38	5	-	7.5
5/16	- 24UNF	TRR10467GS	H7	.555	3.54	1.378	.318	.238	.38	5	-	7.5
3/8	- 16UNC	TRR10485GS	H5	.626	3.94	1.575	.381	.286	.44	8	-	8.8
3/8	- 16UNC	TRR10487GS	H7	.626	3.94	1.575	.381	.286	.44	8	-	8.8
3/8	- 24UNF	TRR10505GS	H5	.626	3.94	1.575	.381	.286	.44	8	-	9.0
3/8	- 24UNF	TRR10507GS	H7	.626	3.94	1.575	.381	.286	.44	8	-	9.0
7/16	- 14UNC	TRR10525GS	H5	.713	3.94	1.693	.323	.242	.41	8	-	10.3
7/16	- 14UNC	TRR10528GS	H8	.713	3.94	1.693	.323	.242	.41	8	-	10.3
7/16	- 20UNF	TRR10545GS	H5	.713	3.94	1.693	.323	.242	.41	8	-	10.6
7/16	- 20UNF	TRR10548GS	H8	.713	3.94	1.693	.323	.242	.41	8	-	10.6
1/2	- 13UNC	TRR10565GS	H5	.768	4.33	1.929	.367	.275	.44	8	-	11.8
1/2	- 13UNC	TRR10568GS	H8	.768	4.33	1.929	.367	.275	.44	8	-	11.8
1/2	- 20UNF	TRR10585GS	H5	.768	3.94	1.929	.367	.275	.44	8	-	12.1
1/2	- 20UNF	TRR10588GS	H8	.768	3.94	1.929	.367	.275	.44	8	-	12.1

▶ 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	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			
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
Recommended	◎	◎	◎	◎	◎	◎	◎	◎													

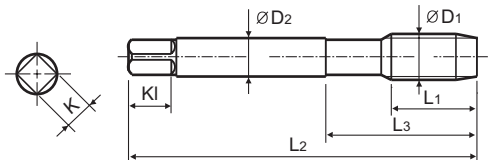
HSS-PM **PRIME TAP** X-Coating

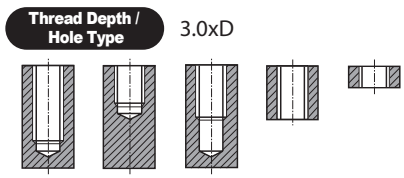
TRR12 SERIES

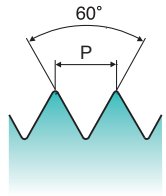
Forming Taps for Multi-purpose

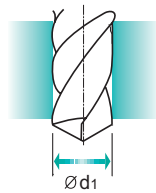
▶ High performance on various ductile materials











Material groups **MU** | HSS PM | M/MF | D | 60° | 2P~3P | X Coating

p.C26

Unit: Inch

Size ØD1	Pitch P	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Lobe Z	Tapping Drill Diameter (Ød1) Inch	Metric
M1	x 0.25	TRR12015GS	D5	.217	1.57	.315	.141	.110	.190	4	-	0.9
M1.1	x 0.25	TRR12035GS	D5	.217	1.57	.315	.141	.110	.190	4	-	1.0
M1.2	x 0.25	TRR12055GS	D5	.217	1.57	.315	.141	.110	.190	4	-	1.1
M1.4	x 0.3	TRR12075GS	D5	.276	1.57	.354	.141	.110	.190	4	-	1.25
M1.6	x 0.35	TRR12095GS	D5	.315	1.57	.433	.141	.110	.190	4	-	1.45
M1.7	x 0.35	TRR12K55GS	D5	.315	1.57	.433	.141	.110	.190	4	-	1.55
M1.8	x 0.35	TRR12115GS	D5	.315	1.57	.433	.141	.110	.190	4	-	1.65
M2	x 0.4	TRR12133GS	D3	.315	1.77	.362	.141	.110	.19	4	-	1.8
M2	x 0.4	TRR12135GS	D5	.315	1.77	.362	.141	.110	.19	4	-	1.8
M2.5	x 0.45	TRR12173GS	D3	.354	1.97	.425	.141	.110	.19	4	-	2.3
M2.5	x 0.45	TRR12175GS	D5	.354	1.97	.425	.141	.110	.19	4	-	2.3
M3	x 0.5	TRR12203GS	D3	.236	2.21	.709	.141	.110	.19	4	-	2.8
M3	x 0.5	TRR12205GS	D5	.236	2.21	.709	.141	.110	.19	4	-	2.8
M3.5	x 0.6	TRR12224GS	D4	.283	2.21	.787	.141	.110	.19	4	-	3.2
M3.5	x 0.6	TRR12226GS	D6	.283	2.21	.787	.141	.110	.19	4	-	3.2
M4	x 0.7	TRR12244GS	D4	.331	2.48	.827	.168	.131	.25	4	-	3.7
M4	x 0.7	TRR12246GS	D6	.331	2.48	.827	.168	.131	.25	4	-	3.7
M4.5	x 0.75	TRR12264GS	D4	.374	2.75	.984	.194	.152	.25	4	-	4.2
M4.5	x 0.75	TRR12266GS	D6	.374	2.75	.984	.194	.152	.25	4	-	4.2
M5	x 0.8	TRR12284GS	D4	.378	2.75	.984	.194	.152	.25	5	-	4.6

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	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				
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
Recommended	◎	◎	◎	◎	◎	◎	◎	◎													

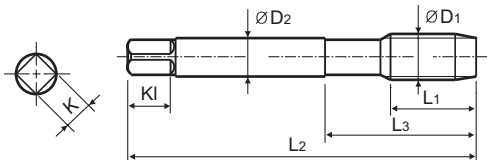
HSS-PM **PRIME TAP** X-Coating

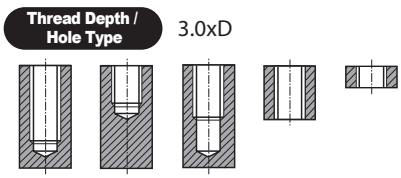
TRR12 SERIES

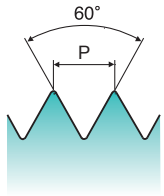
Forming Taps for Multi-purpose

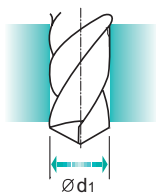
▶ High performance on various ductile materials











Material groups **MU** | HSS PM | M/MF | D | 60° | 2P~3P | X Coating

p.C26

Unit: Inch

Size ØD1	Pitch P	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Lobe Z	Tapping Drill Diameter (Ød1) Inch	Metric
M5 x	0.8	TRR12287GS	D7	.378	2.75	.984	.194	.152	.25	5	-	4.6
M6 x	1	TRR12315GS	D5	.394	3.15	1.181	.255	.191	.31	5	-	5.6
M6 x	1	TRR12318GS	D8	.394	3.15	1.181	.255	.191	.31	5	-	5.6
M7 x	1	TRR12345GS	D5	.394	3.15	1.181	.318	.238	.38	5	-	6.6
M7 x	1	TRR12348GS	D8	.394	3.15	1.181	.318	.238	.38	5	-	6.6
M8 x	1.25	TRR12365GS	D5	.472	3.54	1.378	.318	.238	.38	5	-	7.5
M8 x	1.25	TRR12369GS	D9	.472	3.54	1.378	.318	.238	.38	5	-	7.5
M8 x	1	TRR12375GS	D5	.472	3.54	1.378	.318	.238	.38	5	-	7.6
M8 x	1	TRR12378GS	D8	.472	3.54	1.378	.318	.238	.38	5	-	7.6
M10 x	1.5	TRR12420GS	D10	.591	3.94	1.535	.381	.286	.44	8	-	9.4
M10 x	1.5	TRR12426GS	D6	.591	3.94	1.535	.381	.286	.44	8	-	9.4
M10 x	1.25	TRR12435GS	D5	.591	3.94	1.535	.381	.286	.44	8	-	9.5
M10 x	1.25	TRR12439GS	D9	.591	3.94	1.535	.381	.286	.44	8	-	9.5
M12 x	1.75	TRR12506GS	D6	.669	4.33	1.929	.367	.275	.44	8	-	11.2
M12 x	1.75	TRR1250AGS	D11	.669	4.33	1.929	.367	.275	.44	8	-	11.2
M12 x	1.5	TRR12516GS	D6	.669	3.94	1.929	.367	.275	.44	8	-	11.3
M12 x	1.5	TRR1251AGS	D11	.669	3.94	1.929	.367	.275	.44	8	-	11.3

◎ : 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	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	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎						

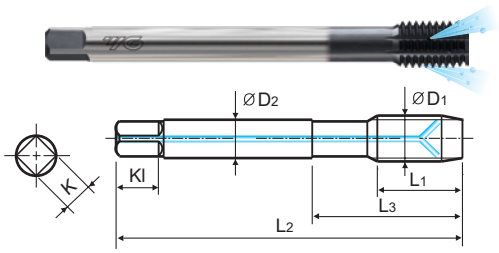
ISO	N										S					H				
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	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
Recommended	◎	◎	◎	◎	◎	◎	◎	◎													

HSS-PM **PRIME TAP** X-Coating

TRR15 SERIES

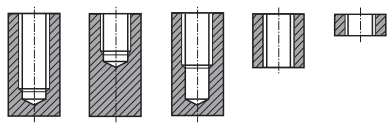
Forming Taps for Multi-purpose

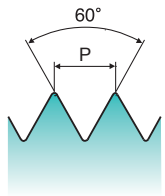
▶ High performance on various ductile materials

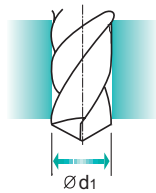


Short Chamfer

Thread Depth / Hole Type 3.0xD







with Internal Coolant

Material groups **MU**

HSS PM | UNC UNF | H | 60° | 1P~2P | X Coating

p.C26

Unit: Inch

Size ØD1	TPI	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Lobe Z	Tapping Drill Diameter (Ød1) Inch	Metric
1/4	- 20UNC	TRR15406GSP	H6	.500	3.15	1.181	.255	.191	.31	5	-	5.8
1/4	- 28UNF	TRR15426GSP	H6	.500	3.15	1.181	.255	.191	.31	5	15/64	-
5/16	- 18UNC	TRR15447GSP	H7	.555	3.54	1.378	.318	.238	.38	5	-	7.3
5/16	- 24UNF	TRR15467GSP	H7	.555	3.54	1.378	.318	.238	.38	5	-	7.5
3/8	- 16UNC	TRR15487GSP	H7	.626	3.94	1.575	.381	.286	.44	8	-	8.8
3/8	- 24UNF	TRR15507GSP	H7	.626	3.94	1.575	.381	.286	.44	8	-	9
7/16	- 14UNC	TRR15528GSP	H8	.713	3.94	1.693	.323	.242	.41	8	-	10.3
7/16	- 20UNF	TRR15548GSP	H8	.713	3.94	1.693	.323	.242	.41	8	-	10.6
1/2	- 13UNC	TRR15568GSP	H8	.768	4.33	1.929	.367	.275	.44	8	-	11.8
1/2	- 20UNF	TRR15588GSP	H8	.768	3.94	1.929	.367	.275	.44	8	-	12.1

◎ : 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	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	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎						

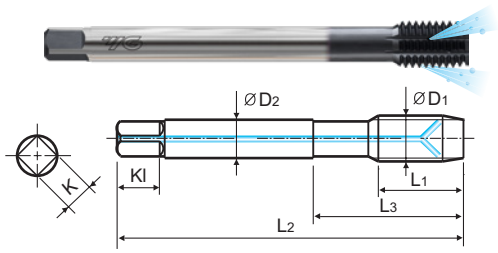
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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
Recommended	◎	◎	◎	◎	◎	◎	◎	◎													

HSS-PM **PRIME TAP** X-Coating

TRR17 SERIES

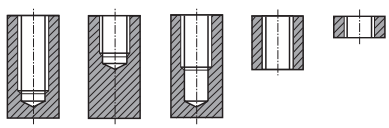
Forming Taps for Multi-purpose

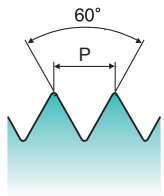
▶ High performance on various ductile materials

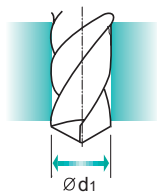


Short Chamfer

Thread Depth / Hole Type 3.0xD







with Internal Coolant

Material groups **MU** | HSS PM | M/MF | D | 60° | 1P~2P | X Coating

p.C26

Unit: Inch

Size ØD1	Pitch P	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Lobe Z	Tapping Drill Diameter (Ød1) Inch	Metric
M6 x	1.0	TRR17318GSP	D8	.394	3.15	1.181	.255	.191	.31	5	-	5.6
M7 x	1.0	TRR17348GSP	D8	.394	3.15	1.181	.318	.238	.38	5	-	6.6
M8 x	1.25	TRR17369GSP	D9	.472	3.54	1.378	.318	.238	.38	5	-	7.5
M8 x	1.0	TRR17378GSP	D8	.472	3.54	1.378	.318	.238	.38	5	-	7.6
M10 x	1.5	TRR17420GSP	D10	.591	3.94	1.535	.381	.286	.44	8	-	9.4
M10 x	1.25	TRR17439GSP	D9	.591	3.94	1.535	.381	.286	.44	8	-	9.5
M12 x	1.75	TRR1750AGSP	D11	.669	4.33	1.929	.367	.275	.44	8	-	11.2
M12 x	1.5	TRR1751AGSP	D11	.669	3.94	1.929	.367	.275	.44	8	-	11.3

◎ : 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	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	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎						

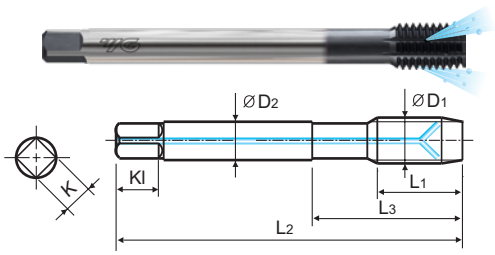
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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
Recommended	◎	◎	◎	◎	◎	◎	◎	◎													

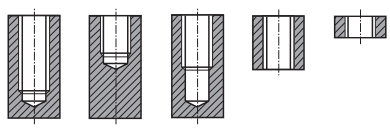
HSS-PM **PRIME TAP** X-Coating

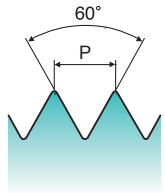
TRR14 SERIES

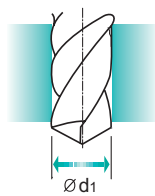
Forming Taps for Multi-purpose

▶ High performance on various ductile materials









with Internal Coolant

Material groups **MU** | HSS PM | UNC UNF | H | 60° | 2P~3P | X Coating

p.C26

Unit: Inch

Size ØD1	TPI	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Lobe Z	Tapping Drill Diameter (Ød1) Inch	Metric
1/4	- 20UNC	TRR14404GSP	H4	.500	3.15	1.181	.255	.191	.31	5	-	5.8
1/4	- 20UNC	TRR14406GSP	H6	.500	3.15	1.181	.255	.191	.31	5	-	5.8
1/4	- 28UNF	TRR14424GSP	H4	.500	3.15	1.181	.255	.191	.31	5	15/64	-
1/4	- 28UNF	TRR14426GSP	H6	.500	3.15	1.181	.255	.191	.31	5	15/64	-
5/16	- 18UNC	TRR14445GSP	H5	.555	3.54	1.378	.318	.238	.38	5	-	7.3
5/16	- 18UNC	TRR14447GSP	H7	.555	3.54	1.378	.318	.238	.38	5	-	7.3
5/16	- 24UNF	TRR14465GSP	H5	.555	3.54	1.378	.318	.238	.38	5	-	7.5
5/16	- 24UNF	TRR14467GSP	H7	.555	3.54	1.378	.318	.238	.38	5	-	7.5
3/8	- 16UNC	TRR14485GSP	H5	.626	3.94	1.575	.381	.286	.44	8	-	8.8
3/8	- 16UNC	TRR14487GSP	H7	.626	3.94	1.575	.381	.286	.44	8	-	8.8
3/8	- 24UNF	TRR14505GSP	H5	.626	3.94	1.575	.381	.286	.44	8	-	9.0
3/8	- 24UNF	TRR14507GSP	H7	.626	3.94	1.575	.381	.286	.44	8	-	9.0
7/16	- 14UNC	TRR14525GSP	H5	.713	3.94	1.693	.323	.242	.41	8	-	10.3
7/16	- 14UNC	TRR14528GSP	H8	.713	3.94	1.693	.323	.242	.41	8	-	10.3
7/16	- 20UNF	TRR14545GSP	H5	.713	3.94	1.693	.323	.242	.41	8	-	10.6
7/16	- 20UNF	TRR14548GSP	H8	.713	3.94	1.693	.323	.242	.41	8	-	10.6
1/2	- 13UNC	TRR14565GSP	H5	.768	4.33	1.929	.367	.275	.44	8	-	11.8
1/2	- 13UNC	TRR14568GSP	H8	.768	4.33	1.929	.367	.275	.44	8	-	11.8
1/2	- 20UNF	TRR14585GSP	H5	.768	3.94	1.929	.367	.275	.44	8	-	12.1
1/2	- 20UNF	TRR14588GSP	H8	.768	3.94	1.929	.367	.275	.44	8	-	12.1

◎ : 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	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	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎						

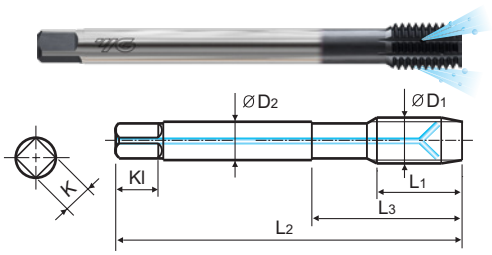
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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
Recommended	◎	◎	◎	◎	◎	◎	◎	◎													

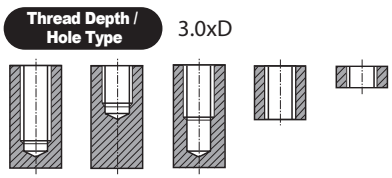
HSS-PM **PRIME TAP** X-Coating

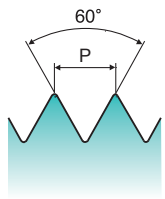
TRR16 SERIES

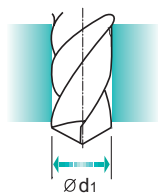
Forming Taps for Multi-purpose

▶ High performance on various ductile materials









with Internal Coolant

Material groups **MU** | HSS PM | M/MF | D | 60° | 2P~3P | X Coating

p.C26

Unit: Inch

Size ØD1	Pitch P	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Lobe Z	Tapping Drill Diameter (Ød1) Inch	Metric
M6 x	1.0	TRR16315GSP	D5	.394	3.15	1.181	.255	.191	.31	5	-	5.6
M6 x	1.0	TRR16318GSP	D8	.394	3.15	1.181	.255	.191	.31	5	-	5.6
M7 x	1.0	TRR16345GSP	D5	.394	3.15	1.181	.318	.238	.38	5	-	6.6
M7 x	1.0	TRR16348GSP	D8	.394	3.15	1.181	.318	.238	.38	5	-	6.6
M8 x	1.25	TRR16365GSP	D5	.472	3.54	1.378	.318	.238	.38	5	-	7.5
M8 x	1.25	TRR16369GSP	D9	.472	3.54	1.378	.318	.238	.38	5	-	7.5
M8 x	1.0	TRR16375GSP	D5	.472	3.54	1.378	.318	.238	.38	5	-	7.6
M8 x	1.0	TRR16378GSP	D8	.472	3.54	1.378	.318	.238	.38	5	-	7.6
M10 x	1.5	TRR16420GSP	D10	.591	3.94	1.535	.381	.286	.44	8	-	9.4
M10 x	1.5	TRR16426GSP	D6	.591	3.94	1.535	.381	.286	.44	8	-	9.4
M10 x	1.25	TRR16435GSP	D5	.591	3.94	1.535	.381	.286	.44	8	-	9.5
M10 x	1.25	TRR16439GSP	D9	.591	3.94	1.535	.381	.286	.44	8	-	9.5
M12 x	1.75	TRR16506GSP	D6	.669	4.33	1.929	.367	.275	.44	8	-	11.2
M12 x	1.75	TRR1650AGSP	D11	.669	4.33	1.929	.367	.275	.44	8	-	11.2
M12 x	1.5	TRR16516GSP	D6	.669	3.94	1.929	.367	.275	.44	8	-	11.3
M12 x	1.5	TRR1651AGSP	D11	.669	3.94	1.929	.367	.275	.44	8	-	11.3

◎ : 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	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		
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
Recommended	◎	◎	◎	◎	◎	◎	◎	◎													

HSS-PM **PRIME TAP** X-Coating

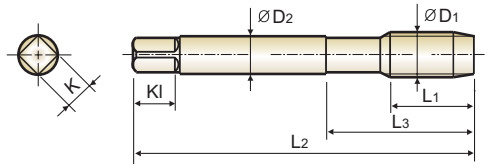
RECOMMENDED CUTTING CONDITIONS

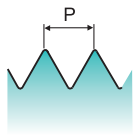
					Spiral Flute	Spiral Point	Forming
					TRF04, TRF14 TRF24, TRF34	TRK04, TRK14	TRR10, TRR11 TRR12, TRR13 TRR14, TRR15 TRR16, TRR17
ISO	VDI 3323	Material Description	HB	HRc	Vc (in/min.)		
P	1	Non-alloy steel	125		16-66	49-148	49-131
	2		190	13	33-164	33-180	49-98
	3		250	25	33-164	33-180	49-98
	4		270	28	49-131	49-164	49-98
	5		300	32	49-131	49-164	49-98
	6	Low alloy steel	180	10	26-98	26-98	49-98
	7		275	29	26-98	26-98	49-98
	8		300	32	26-98	26-98	16-65
	9		350	38	26-98	26-98	16-65
	10	High alloyed steel, and tool steel	200	15	26-98	26-98	16-65
	11		325	35	26-98	26-98	16-65
M	12	Stainless steel	200	15	16-49	26-66	16-49
	13		240	23	16-49	26-66	16-49
	14		180	10	16-49	26-66	10-30
K	15	Grey cast iron	180	10	49-115	49-115	-
	16		260	26	49-115	49-115	-
	17	Nodular cast iron	160	3	49-115	49-115	-
	18		250	25	49-115	49-115	-
N	21	Aluminum-wrought alloy	60		49-115	49-115	65-164
	22		100		49-115	49-115	65-164
	23	Aluminum-cast, alloyed	75		49-115	49-115	65-131
	24		90		49-115	49-115	65-131
	25		130		49-115	49-115	65-131
	26	Copper and Copper Alloys (Bronze / Brass)	110		49-115	49-115	32-98
	27		90		49-115	49-115	32-98
	28		100		49-115	49-115	32-98

HSS-E **COMBO TAP**

Spiral Flute Tap for Multi-Purpose







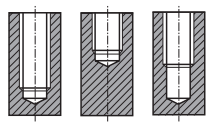
Material groups **MU**

HSS-E | UNC UNF | USCTI 302A | 2P~3P | Bright | Steam Oxide | TiCN | R40

p.C44

Thread Depth / Hole Type

2.5×D



Unit : Inch

Size D1	T.P.I	EDP No. Bright	Steam Oxide	TiCN	Limit	Overall Length L2	Thread Length L1	Neck Length L3	Shank Diameter D2	Square Size K	Square Length Kl	No. of Flute	Tapping Drill Diameter (Ød1) Inch	Metric
#1	- 64UNC	T2042	T2042S	T2042C	H2	.374	1.69	.413	.141	.110	.190	2	-	1.5
#1	- 72UNF	T2062	T2062S	T2062C	H2	.374	1.69	.413	.141	.110	.190	2	-	1.5
#2	- 56UNC	T2082	T2082S	T2082C	H2	1.752	.157	.433	.141	.110	.190	2	-	1.8
#3	- 48UNC	T2122	T2122S	T2122C	H2	1.811	.197	.492	.141	.110	.190	2	-	2.0
#4	- 40UNC	T2162	T2162S	T2162C	H2	1.874	.236	.563	.141	.110	.190	2	-	2.3
#4	- 40UNC	T2163	T2163S	T2163C	H3	1.874	.236	.563	.141	.110	.190	2	-	2.3
#4	- 40UNC	T2164	T2164S	T2164C	H4	1.874	.236	.563	.141	.110	.190	2	-	2.3
#4	- 40UNC	T2165	T2165S	T2165C	H5	1.874	.236	.563	.141	.110	.190	2	-	2.3
#4	- 48UNF	T2182	T2182S	T2182C	H2	1.874	.236	.563	.141	.110	.190	2	3/32	-
#5	- 40UNC	T2202	T2202S	T2202C	H2	1.937	.236	.626	.141	.110	.190	3	-	2.6
#5	- 44UNF	T2222	T2222S	T2222C	H2	1.937	.236	.626	.141	.110	.190	3		2.7
#6	- 32UNC	T2242	T2242S	T2242C	H2	2.000	.276	.689	.141	.110	.190	3	-	2.8
#6	- 32UNC	T2243	T2243S	T2243C	H3	2.000	.276	.689	.141	.110	.190	3	-	2.8
#6	- 32UNC	T2245	T2245S	T2245C	H5	2.000	.276	.689	.141	.110	.190	3	-	2.8
#6	- 32UNC	T2247	T2247S	T2247C	H7	2.000	.276	.689	.141	.110	.190	3	-	2.8
#6	- 32UNC	T224A	T224AS	T224AC	H11	2.000	.276	.689	.141	.110	.190	3	-	2.8
#6	- 40UNF	T2262	T2262S	T2262C	H2	2.000	.276	.689	.141	.110	.190	3	-	2.9
#8	- 32UNC	T2282	T2282S	T2282C	H2	2.126	.276	.752	.168	.131	.250	3	-	3.4
#8	- 32UNC	T2283	T2283S	T2283C	H3	2.126	.276	.752	.168	.131	.250	3	-	3.4
#8	- 32UNC	T2285	T2285S	T2285C	H5	2.126	.276	.752	.168	.131	.250	3	-	3.4
#8	- 32UNC	T2287	T2287S	T2287C	H7	2.126	.276	.752	.168	.131	.250	3	-	3.4
#8	- 32UNC	T228A	T228AS	T228AC	H11	2.126	.276	.752	.168	.131	.250	3	-	3.4
#8	- 36UNF	T2302	T2302S	T2302C	H2	2.126	.276	.752	.168	.131	.250	3	-	3.5
#10	- 24UNC	T2323	T2323S	T2323C	H3	2.374	.354	.906	.194	.152	.250	3	-	3.9
#10	- 24UNC	T2325	T2325S	T2325C	H5	2.374	.354	.906	.194	.152	.250	3	-	3.9
#10	- 24UNC	T232A	T232AS	T232AC	H11	2.374	.354	.906	.194	.152	.250	3	-	3.9
#10	- 32UNF	T2342	T2342S	T2342C	H2	2.374	.276	.906	.194	.152	.250	3	-	4.1
#10	- 32UNF	T2343	T2343S	T2343C	H3	2.374	.276	.906	.194	.152	.250	3	-	4.1

▶ Steam Oxide is not recommended for Aluminum and Aluminum alloys.

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

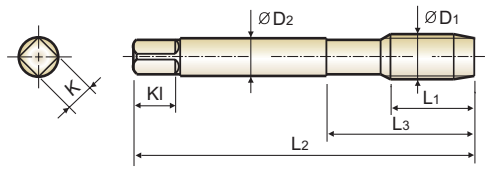
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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
Recommended			◎			◎	◎	◎													

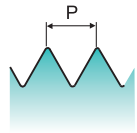
HSS-E **COMBO TAP**

SERIES **T2** **T2-S** **T2-C**

Spiral Flute Tap for Multi-Purpose



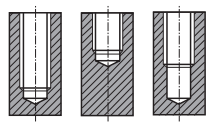




Material groups **MU** | HSS-E | UNC UNF | USCTI 302A | 2P~3P | Bright | Steam Oxide | TiCN | R40 | p.C44

Thread Depth / Hole Type

2.5×D



Unit : Inch

Size D1	T.P.I	EDP No. Bright	Steam Oxide	TiCN	Limit	Overall Length L2	Thread Length L1	Neck Length L3	Shank Diameter D2	Square Size K	Square Length Kl	No. of Flute	Tapping Drill Diameter (Ød1) Inch	Metric
#10 - 32UNF		T2345	T2345S	T2345C	H5	2.374	.276	.906	.194	.152	.250	3	-	4.1
#10 - 32UNF		T2347	T2347S	T2347C	H7	2.374	.276	.906	.194	.152	.250	3	-	4.1
#10 - 32UNF		T234A	T234AS	T234AC	H11	2.374	.276	.906	.194	.152	.250	3	-	4.1
#12 - 24UNC		T2363	T2363S	T2363C	H3	2.374	.354	.906	.220	.165	.280	3	-	4.5
#12 - 28UNF		T2383	T2383S	T2383C	H3	2.374	.276	.906	.220	.165	.280	3	-	4.7
1/4 - 20UNC		T2403	T2403S	T2403C	H3	2.500	.433	1.000	.255	.191	.310	3	-	5.2
1/4 - 20UNC		T2405	T2405S	T2405C	H5	2.500	.433	1.000	.255	.191	.310	3	-	5.2
1/4 - 20UNC		T240A	T240AS	T240AC	H11	2.500	.433	1.000	.255	.191	.310	3	-	5.2
1/4 - 28UNF		T2422	T2422S	T2422C	H2	2.500	.354	1.000	.255	.191	.310	3	-	5.5
1/4 - 28UNF		T2423	T2423S	T2423C	H3	2.500	.354	1.000	.255	.191	.310	3	-	5.5
1/4 - 28UNF		T2424	T2424S	T2424C	H4	2.500	.354	1.000	.255	.191	.310	3	-	5.5
1/4 - 28UNF		T2425	T2425S	T2425C	H5	2.500	.354	1.000	.255	.191	.310	3	-	5.5
1/4 - 28UNF		T2427	T2427S	T2427C	H7	2.500	.354	1.000	.255	.191	.310	3	-	5.5
1/4 - 28UNF		T242A	T242AS	T242AC	H11	2.500	.354	1.000	.255	.191	.310	3	-	5.5
5/16 - 18UNC		T2442	T2442S	T2442C	H2	2.720	.472	1.126	.318	.238	.380	3	-	6.7
5/16 - 18UNC		T2443	T2443S	T2443C	H3	2.720	.472	1.126	.318	.238	.380	3	-	6.7
5/16 - 18UNC		T2445	T2445S	T2445C	H5	2.720	.472	1.126	.318	.238	.380	3	-	6.7
5/16 - 18UNC		T2447	T2447S	T2447C	H7	2.720	.472	1.126	.318	.238	.380	3	-	6.7
5/16 - 18UNC		T244A	T244AS	T244AC	H11	2.720	.472	1.126	.318	.238	.380	3	-	6.7
5/16 - 24UNF		T2462	T2462S	T2462C	H2	2.720	.394	1.126	.318	.238	.380	3	-	7.0
5/16 - 24UNF		T2463	T2463S	T2463C	H3	2.720	.394	1.126	.318	.238	.380	3	-	7.0
5/16 - 24UNF		T2464	T2464S	T2464C	H4	2.720	.394	1.126	.318	.238	.380	3	-	7.0
5/16 - 24UNF		T2465	T2465S	T2465C	H5	2.720	.394	1.126	.318	.238	.380	3	-	7.0
5/16 - 24UNF		T2466	T2466S	T2466C	H6	2.720	.394	1.126	.318	.238	.380	3	-	7.0
5/16 - 24UNF		T2467	T2467S	T2467C	H7	2.720	.394	1.126	.318	.238	.380	3	-	7.0
5/16 - 24UNF		T246A	T246AS	T246AC	H11	2.720	.394	1.126	.318	.238	.380	3	-	7.0
3/8 - 16UNC		T2482	T2482S	T2482C	H2	2.937	.551	1.252	.381	.286	.440	3	-	8.1
3/8 - 16UNC		T2483	T2483S	T2483C	H3	2.937	.551	1.252	.381	.286	.440	3	-	8.1

▶ Steam Oxide is not recommended for Aluminum and Aluminum alloys.

NEXT PAGE ▶

◎ : Excellent ○ : Good

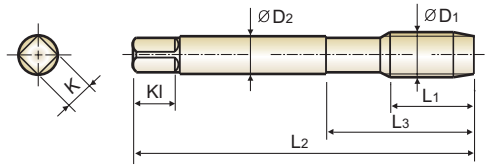
ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	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	○	◎	◎	◎	◎	◎	◎	◎	◎	○		◎	◎	◎	◎	◎	◎	◎		

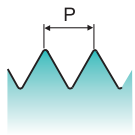
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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
Recommended			◎			◎	◎	◎													

HSS-E **COMBO TAP**

Spiral Flute Tap for Multi-Purpose





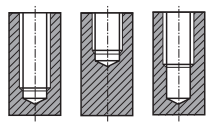


Material groups **MU**

HSS-E | UNC UNF | USCTI 302A | 2P~3P | Bright | Steam Oxide | TiCN | R40

Thread Depth / Hole Type

2.5×D



p.C44

Unit : Inch

Size D1	T.P.I	EDP No. Bright	Steam Oxide	TiCN	Limit	Overall Length L2	Thread Length L1	Neck Length L3	Shank Diameter D2	Square Size K	Square Length Kl	No. of Flute	Tapping Drill Diameter (Ød1) Inch	Metric
3/8 - 16UNC		T2485	T2485S	T2485C	H5	2.937	.551	1.252	.381	.286	.440	3	-	8.1
3/8 - 16UNC		T2487	T2487S	T2487C	H7	2.937	.551	1.252	.381	.286	.440	3	-	8.1
3/8 - 16UNC		T248A	T248AS	T248AC	H11	2.937	.551	1.252	.381	.286	.440	3	-	8.1
3/8 - 24UNF		T2502	T2502S	T2502C	H2	2.937	.394	1.252	.381	.286	.440	3	-	8.6
3/8 - 24UNF		T2503	T2503S	T2503C	H3	2.937	.394	1.252	.381	.286	.440	3	-	8.6
3/8 - 24UNF		T2504	T2504S	T2504C	H4	2.937	.394	1.252	.381	.286	.440	3	-	8.6
3/8 - 24UNF		T2505	T2505S	T2505C	H5	2.937	.394	1.252	.381	.286	.440	3	-	8.6
3/8 - 24UNF		T2507	T2507S	T2507C	H7	2.937	.394	1.252	.381	.286	.440	3	-	8.6
3/8 - 24UNF		T250A	T250AS	T250AC	H11	2.937	.394	1.252	.381	.286	.440	3	-	8.6
7/16 - 14UNC		T2523	T2523S	T2523C	H3	3.157	.591	1.850	.323	.242	.410	3	-	9.5
7/16 - 14UNC		T2525	T2525S	T2525C	H5	3.157	.591	1.850	.323	.242	.410	3	-	9.5
7/16 - 14UNC		T2527	T2527S	T2527C	H7	3.157	.591	1.850	.323	.242	.410	3	-	9.5
7/16 - 14UNC		T252A	T252AS	T252AC	H11	3.157	.591	1.850	.323	.242	.410	3	-	9.5
7/16 - 20UNF		T2543	T2543S	T2543C	H3	3.157	.472	1.850	.323	.242	.410	3	-	10.0
7/16 - 20UNF		T2545	T2545S	T2545C	H5	3.157	.472	1.850	.323	.242	.410	3	-	10.0
7/16 - 20UNF		T2547	T2547S	T2547C	H7	3.157	.472	1.850	.323	.242	.410	3	-	10.0
7/16 - 20UNF		T254A	T254AS	T254AC	H11	3.157	.472	1.850	.323	.242	.410	3	-	10.0
1/2 - 13UNC		T2563	T2563S	T2563C	H3	3.374	.630	2.067	.367	.275	.440	3	-	11.0
1/2 - 13UNC		T2565	T2565S	T2565C	H5	3.374	.630	2.067	.367	.275	.440	3	-	11.0
1/2 - 13UNC		T2567	T2567S	T2567C	H7	3.374	.630	2.067	.367	.275	.440	3	-	11.0
1/2 - 13UNC		T256A	T256AS	T256AC	H11	3.374	.630	2.067	.367	.275	.440	3	-	11.0
1/2 - 20UNF		T2582	T2582S	T2582C	H2	3.374	.472	2.067	.367	.275	.440	3	-	11.6
1/2 - 20UNF		T2583	T2583S	T2583C	H3	3.374	.472	2.067	.367	.275	.440	3	-	11.6
1/2 - 20UNF		T2585	T2585S	T2585C	H5	3.374	.472	2.067	.367	.275	.440	3	-	11.6
1/2 - 20UNF		T2587	T2587S	T2587C	H7	3.374	.472	2.067	.367	.275	.440	3	-	11.6
1/2 - 20UNF		T258A	T258AS	T258AC	H11	3.374	.472	2.067	.367	.275	.440	3	-	11.6

▶ Steam Oxide is not recommended for Aluminum and Aluminum alloys.

◎ : 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	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	○	◎	◎	◎	◎	◎	◎	◎	◎	○		◎	◎	◎	◎	◎	◎	◎		

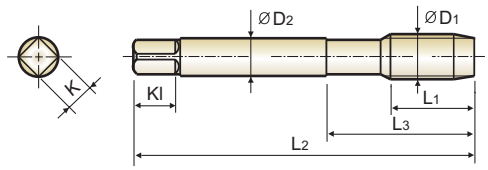
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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
Recommended			◎			◎	◎	◎													

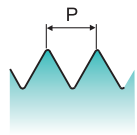
HSS-E **COMBO TAP**

SERIES **T5** **T5-S** **T5-C**

Spiral Flute Tap for Multi-Purpose



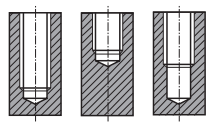




Material groups **MU** | HSS-E | M/MF | USCTI 302A | 2P~3P | Bright | Steam Oxide | TiCN | R40 p.C44

Thread Depth / Hole Type

2.5×D



Unit : Inch

Size	Pitch	EDP No.			Limit	Overall Length	Thread Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute	Tapping Drill Diameter (Ød1)	
D1	P	Bright	Steam Oxide	TiCN		L2	L1	L3	D2	K	Kl		Inch	Metric
M2	x 0.4	T5133	T5133S	T5133C	D3	.437	1.75	.476	.141	.110	.190	2	-	1.6
M2.2	x 0.45	T5153	T5153S	T5153C	D3	.437	1.75	.476	.141	.110	.190	2	-	1.75
M2.3	x 0.4	T5193	T5193S	T5193C	D3	.437	1.75	.476	.141	.110	.190	2	-	1.9
M2.5	x 0.45	T5173	T5173S	T5173C	D3	.500	1.81	.539	.141	.110	.190	2	-	2.1
M2.6	x 0.45	T5493	T5493S	T5493C	D3	.500	1.81	.539	.141	.110	.190	2	-	2.15
M3	x 0.5	T520A	T520AS	T520AC	D11	1.937	.197	.646	.141	.110	.190	3	-	2.5
M3	x 0.5	T5203	T5203S	T5203C	D3	1.937	.197	.646	.141	.110	.190	3	-	2.5
M3.5	x 0.6	T522A	T522AS	T522AC	D11	2.000	.276	.709	.141	.110	.190	3	-	2.9
M3.5	x 0.6	T5224	T5224S	T5224C	D4	2.000	.276	.709	.141	.110	.190	3	-	2.9
M4	x 0.7	T524A	T524AS	T524AC	D11	2.126	.276	.768	.168	.131	.250	3	-	3.4
M4	x 0.7	T5244	T5244S	T5244C	D4	2.126	.276	.768	.168	.131	.250	3	-	3.4
M5	x 0.8	T528A	T528AS	T528AC	D11	2.374	.354	.933	.194	.152	.250	3	-	4.3
M5	x 0.8	T5284	T5284S	T5284C	D4	2.374	.354	.933	.194	.152	.250	3	-	4.3
M6	x 1.0	T531A	T531AS	T531AC	D11	2.500	.433	1.000	.255	.191	.310	3	-	5.1
M6	x 1.0	T5315	T5315S	T5315C	D5	2.500	.433	1.000	.255	.191	.310	3	-	5.1
M7	x 1.0	T534A	T534AS	T534AC	D11	2.720	.433	1.126	.318	.238	.380	3	-	6.1
M7	x 1.0	T5345	T5345S	T5345C	D5	2.720	.433	1.126	.318	.238	.380	3	-	6.1
M8	x 1.25	T536A	T536AS	T536AC	D11	2.720	.472	1.126	.318	.238	.380	3	-	6.9
M8	x 1.25	T5365	T5365S	T5365C	D5	2.720	.472	1.126	.318	.238	.380	3	-	6.9
M8	x 1.0	T537A	T537AS	T537AC	D11	2.720	.433	1.126	.318	.238	.380	3	-	7.1
M8	x 1.0	T5375	T5375S	T5375C	D5	2.720	.433	1.126	.318	.238	.380	3	-	7.1
M10	x 1.5	T542A	T542AS	T542AC	D11	2.937	.512	1.252	.381	.286	.440	3	-	8.7
M10	x 1.5	T5426	T5426S	T5426C	D6	2.937	.512	1.252	.381	.286	.440	3	-	8.7
M10	x 1.25	T543A	T543AS	T543AC	D11	2.937	.472	1.252	.381	.286	.440	3	-	8.9
M10	x 1.25	T5435	T5435S	T5435C	D5	2.937	.472	1.252	.381	.286	.440	3	-	8.9

NEXT PAGE ▶

- ▶ Coating(TiN, TiAlN or Hardslick) is available on your request.
- ▶ Coating Codes for Combo Tap
  Bright Finish No. + N(TiN), F(TiAlN), H(Hardslick)
- ▶ Steam Oxide is not recommended for Aluminum and Aluminum alloys.

◎ : Excellent ○ : Good

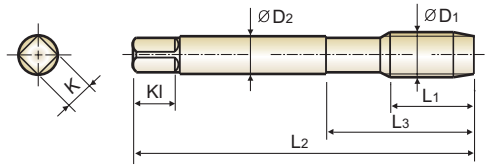
ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	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	○	◎	◎	◎	◎	◎	◎	◎	◎	○		◎	◎	◎	◎	◎	◎	◎		

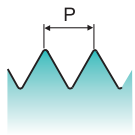
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	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
Recommended			◎			◎	◎	◎													

HSS-E **COMBO TAP**

Spiral Flute Tap for Multi-Purpose







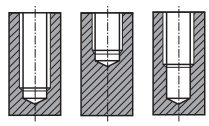
Material groups **MU**

HSS-E | M/MF | USCTI 302A | 2P~3P | Bright | Steam Oxide | TiCN | R40

p.C44

Thread Depth / Hole Type

2.5×D



Unit : Inch

Size	Pitch	EDP No.			Limit	Overall Length	Thread Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute	Tapping Drill Diameter (Ød1)	
D1	P	Bright	Steam Oxide	TiCN		L2	L1	L3	D2	K	Kl		Inch	Metric
M10 x	1.0	**T544A**	**T544AS**	**T544AC**	D11	2.937	.433	1.252	.381	.286	.440	3	-	9.1
M10 x	1.0	**T5445**	**T5445S**	**T5445C**	D5	2.937	.433	1.252	.381	.286	.440	3	-	9.1
M12 x	1.75	**T550A**	**T550AS**	**T550AC**	D11	3.374	.591	2.067	.367	.275	.440	3	-	10.5
M12 x	1.75	**T5506**	**T5506S**	**T5506C**	D6	3.374	.591	2.067	.367	.275	.440	3	-	10.5
M12 x	1.50	**T551A**	**T551AS**	**T551AC**	D11	3.374	.591	2.067	.367	.275	.440	3	-	10.7
M12 x	1.50	**T5516**	**T5516S**	**T5516C**	D6	3.374	.591	2.067	.367	.275	.440	3	-	10.7
M12 x	1.25	**T552A**	**T552AS**	**T552AC**	D11	3.374	.551	2.067	.367	.275	.440	3	-	10.9
M12 x	1.25	**T5525**	**T5525S**	**T5525C**	D5	3.374	.551	2.067	.367	.275	.440	3	-	10.9

▶ Coating(TiN, TiAlN or Hardslick) is available on your request.
▶ Coating Codes for Combo Tap
Bright Finish No. + N(TiN), F(TiAlN), H(Hardslick)
▶ Steam Oxide is not recommended for Aluminum and Aluminum alloys.

◎ : Excellent ○ : Good

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

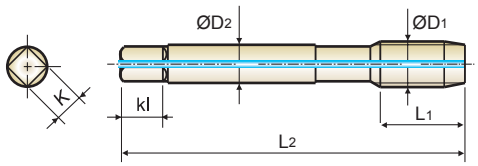
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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
Recommended			◎			◎	◎	◎													

HSS-E **COMBO TAP**

T6 SERIES
T6-N SERIES

Spiral Flute Tap for Multi-Purpose

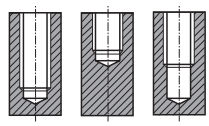




with Internal Coolant

Material groups **MU** | HSS-E | UNC UNF | USCTI 302A | 2P~3P | Bright | TiN | R40 | p.C44

Thread Depth / Hole Type
2.5×D



Unit : Inch

Size D1	T.P.I	EDP No. Bright	EDP No. TiN	Limit	Overall Length L2	Thread Length L1	Neck Length L3	Shank Diameter D2	Square Size K	Square Length Kl	No. of Flute	Tapping Drill Diameter (Ød1) Inch	Tapping Drill Diameter (Ød1) Metric
1/4	- 20UNC	**T6405**	**T6405N**	H5	2.500	.433	1.000	.255	.191	.310	3	-	5.2
1/4	- 28UNF	**T6424**	**T6424N**	H4	2.500	.354	1.000	.255	.191	.310	3	-	5.5
5/16	- 18UNC	**T6445**	**T6445N**	H5	2.720	.472	1.126	.318	.238	.380	3	-	6.7
5/16	- 24UNF	**T6464**	**T6464N**	H4	2.720	.394	1.126	.318	.238	.380	3	-	7.0
3/8	- 16UNC	**T6485**	**T6485N**	H5	2.937	.551	1.252	.381	.286	.440	3	-	8.1
3/8	- 24UNF	**T6504**	**T6504N**	H4	2.937	.394	1.252	.381	.286	.440	3	-	8.6
7/16	- 14UNC	**T6525**	**T6525N**	H5	3.157	.591	1.850	.323	.242	.410	3	-	9.5
7/16	- 20UNF	**T6545**	**T6545N**	H5	3.157	.472	1.850	.323	.242	.410	3	-	10.0
1/2	- 13UNC	**T6565**	**T6565N**	H5	3.374	.630	2.067	.367	.275	.440	3	-	11.0
1/2	- 20UNF	**T6585**	**T6585N**	H5	3.374	.472	2.067	.367	.275	.440	3	-	11.6

▶ Coating(TiCN, TiAlN or Hardslick) or Surface Treatment(Steam Oxide) is available on your request.
▶ Coating Codes for Combo Tap
Bright Finish No. + C(TiCN), F(TiAlN), H(Hardslick), S(Steam Oxide)

◎ : Excellent ○ : Good

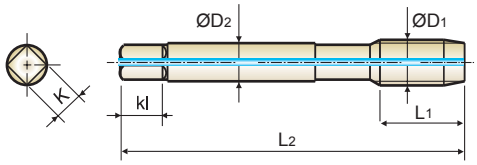
ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	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	○	◎	◎	◎	◎	◎	◎	◎	◎	○		◎	◎	◎	◎	◎	◎	◎		

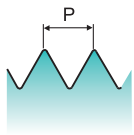
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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
Recommended			◎			◎	◎	◎													

HSS-E **COMBO TAP**

Spiral Flute Tap for Multi-Purpose





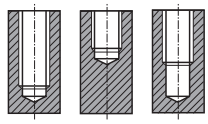


with Internal Coolant

Material groups **MU** | HSS-E | M | USCTI 302A | 2P~3P | Bright | TiN | R40 | p.C44

Thread Depth / Hole Type

2.5×D



Unit : Inch

Size	Pitch	EDP No.		Limit	Overall Length	Thread Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute	Tapping Drill Diameter (Ød1)	
D1	P	Bright	TiN		L2	L1	L3	D2	K	Kl		Inch	Metric
M6 x	1.0	**T8315**	**T8315N**	D5	2.500	.433	1.000	.255	.191	.310	3	-	5.1
M8 x	1.25	**T8365**	**T8365N**	D5	2.720	.472	1.126	.318	.238	.380	3	-	6.9
M10 x	1.5	**T8426**	**T8426N**	D6	2.937	.512	1.252	.381	.286	.440	3	-	8.7
M12 x	1.75	**T8506**	**T8506N**	D6	3.374	.591	2.067	.367	.275	.440	3	-	10.5

▶ Coating(TiCN, TiAlN or Hardslick) or Surface Treatment(Steam Oxide) is available on your request.
▶ Coating Codes for Combo Tap
Bright Finish No. + C(TiCN), F(TiAlN), H(Hardslick), S(Steam Oxide)

◎ : Excellent ○ : Good

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	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			
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
Recommended			◎			◎	◎	◎													

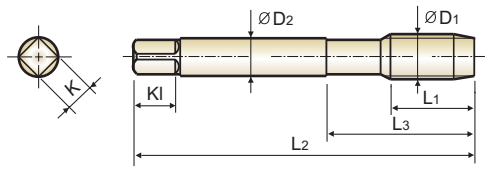
T7 SERIES
T7-C SERIES

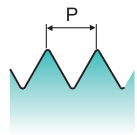
HSS-E **COMBO TAP**

Spiral Flute Tap for Multi-Purpose



Short Chamfer





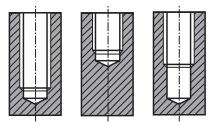
Material groups **MU**

HSS-E | UNC UNF | USCTI 302A | 1P~2P | Bright | TiCN | R40

p.C44

Thread Depth / Hole Type

2.5×D



Unit : Inch

Size D1	T.P.I	EDP No. Bright	EDP No. TiCN	Limit	Overall Length L2	Thread Length L1	Neck Length L3	Shank Diameter D2	Square Size K	Square Length Kl	No. of Flute	Tapping Drill Diameter (Ød1) Inch	Tapping Drill Diameter (Ød1) Metric
#1	64UNC	T7042	T7042C	H2	.374	1.69	.413	.141	.110	.190	2	-	1.5
#1	72UNF	T7062	T7062C	H2	.374	1.69	.413	.141	.110	.190	2	-	1.5
#2	56UNC	T7082	T7082C	H2	.157	1.75	.157	.141	.110	.190	2	-	1.8
#2	64UNF	T7102	T7102C	H2	.157	1.75	.157	.141	.110	.190	2		
#3	48UNC	T7122	T7122C	H2	.197	1.81	.197	.141	.110	.190	2	-	2.0
#3	56UNF	T7142	T7142C	H2	.197	1.81	.197	.141	.110	.190	2		
#4	40UNC	T7162	T7162C	H2	1.874	.236	.563	.141	.110	.190	2	-	2.3
#4	48UNF	T7182	T7182C	H2	1.874	.236	.563	.141	.110	.190	2	3/32	-
#5	40UNC	T7202	T7202C	H2	1.937	.236	.626	.141	.110	.190	3	-	2.6
#5	44UNF	T7222	T7222C	H2	1.937	.236	.626	.141	.110	.190	3	-	2.7
#6	32UNC	T7243	T7243C	H3	2.000	.276	.689	.141	.110	.190	3	-	2.8
#6	40UNF	T7262	T7262C	H2	2.000	.276	.689	.141	.110	.190	3	-	2.9
#8	32UNC	T7283	T7283C	H3	2.126	.276	.752	.168	.131	.250	3	-	3.4
#8	36UNF	T7302	T7302C	H2	2.126	.276	.752	.168	.131	.250	3	-	3.5
#10	24UNC	T7323	T7323C	H3	2.374	.354	.906	.194	.152	.250	3	-	3.9
#10	32UNF	T7343	T7343C	H3	2.374	.276	.906	.194	.152	.250	3	-	4.1
#12	24UNC	T7363	T7363C	H3	2.374	.354	.906	.220	.165	.280	3	-	4.5
#12	28UNF	T7383	T7383C	H3	2.374	.276	.906	.220	.165	.280	3	-	4.7
1/4	20UNC	T7405	T7405C	H5	2.500	.433	1.000	.255	.191	.310	3	-	5.2
1/4	28UNF	T7424	T7424C	H4	2.500	.354	1.000	.255	.191	.310	3	-	5.5
5/16	18UNC	T7445	T7445C	H5	2.720	.472	1.126	.318	.238	.380	3	-	6.7
5/16	24UNF	T7464	T7464C	H4	2.720	.394	1.126	.318	.238	.380	3	-	7.0
3/8	16UNC	T7485	T7485C	H5	2.937	.551	1.252	.381	.286	.440	3	-	8.1
3/8	24UNF	T7504	T7504C	H4	2.937	.394	1.252	.381	.286	.440	3	-	8.6
7/16	14UNC	T7525	T7525C	H5	3.157	.591	1.850	.323	.242	.410	3	-	9.5
7/16	20UNF	T7545	T7545C	H5	3.157	.472	1.850	.323	.242	.410	3	-	10.0
1/2	13UNC	T7565	T7565C	H5	3.374	.630	2.067	.367	.275	.440	3	-	11.0
1/2	20UNF	T7585	T7585C	H5	3.374	.472	2.067	.367	.275	.440	3	-	11.6

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

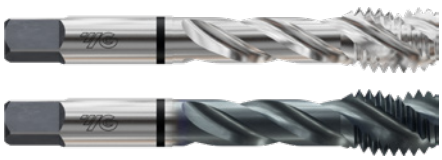
◎ : Excellent ○ : Good

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

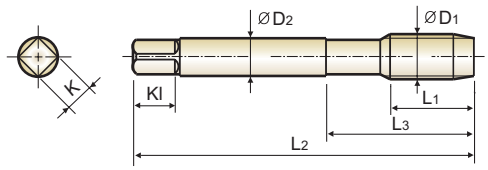
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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
Recommended			◎			◎	◎	◎													

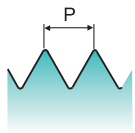
HSS-E **COMBO TAP**

Spiral Flute Tap for Multi-Purpose



Short Chamfer

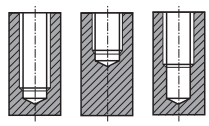




Material groups **MU** | HSS-E | M/MF | USCTI 302A | 1P~2P | Bright | TiCN | R40 | p.C44

Thread Depth / Hole Type

2.5×D



Unit : Inch

Size	Pitch	EDP No.		Limit	Overall Length	Thread Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute	Tapping Drill Diameter (Ød1)	
D1	P	Bright	TiCN		L2	L1	L3	D2	K	Kl		Inch	Metric
M2 x	0.4	**T9133**	**T9133C**	D3	.437	1.75	.476	.141	.110	.190	2	-	1.6
M2.2 x	0.45	**T9153**	**T9153C**	D3	.437	1.75	.476	.141	.110	.190	2	-	1.75
M2.3 x	0.4	**T9193**	**T9193C**	D3	.437	1.75	.476	.141	.110	.190	2	-	1.9
M2.5 x	0.45	**T9173**	**T9173C**	D3	.500	1.81	.539	.141	.110	.190	2	-	2.1
M2.6 x	0.45	**T9493**	**T9493C**	D3	.500	1.81	.539	.141	.110	.190	2	-	2.15
M3 x	0.5	**T9203**	**T9203C**	D3	1.937	.197	.646	.141	.110	.190	3	-	2.5
M3.5 x	0.6	**T9224**	**T9224C**	D4	2.000	.276	.709	.141	.110	.190	3	-	2.9
M4 x	0.7	**T9244**	**T9244C**	D4	2.126	.276	.768	.168	.131	.250	3	-	3.4
M5 x	0.8	**T9284**	**T9284C**	D4	2.374	.354	.933	.194	.152	.250	3	-	4.3
M6 x	1.0	**T9315**	**T9315C**	D5	2.500	.433	1.000	.255	.191	.310	3	-	5.1
M7 x	1.0	**T9345**	**T9345C**	D5	2.720	.433	1.126	.318	.238	.380	3	-	6.1
M8 x	1.25	**T9365**	**T9365C**	D5	2.720	.472	1.126	.318	.238	.380	3	-	6.9
M8 x	1.0	**T9375**	**T9375C**	D5	2.720	.433	1.126	.318	.238	.380	3	-	7.1
M10 x	1.5	**T9426**	**T9426C**	D6	2.937	.512	1.252	.381	.286	.440	3	-	8.7
M10 x	1.25	**T9435**	**T9435C**	D5	2.937	.472	1.252	.381	.286	.440	3	-	8.9
M12 x	1.75	**T9506**	**T9506C**	D6	3.374	.591	2.067	.367	.275	.440	3	-	10.5
M12 x	1.25	**T9525**	**T9525C**	D5	3.374	.551	2.067	.367	.275	.440	3	-	10.9

▶ Coating(TiN, TiAlN or Hardslick) or Surface Treatment(Steam Oxide) is available on your request.
▶ Coating Codes for Combo Tap
Bright Finish No. + N(TiN), F(TiAlN), H(Hardslick), S(Steam Oxide)

◎ : Excellent ○ : Good

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

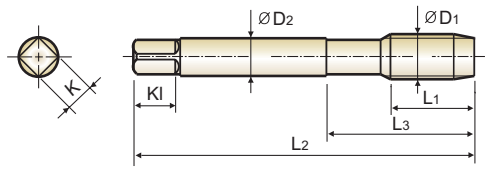
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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
Recommended			◎			◎	◎	◎													

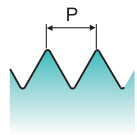
HSS-E **COMBO TAP**

SERIES **T4** **T4-S** **T4-C**

Spiral Point Tap for Multi-Purpose





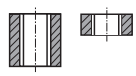


Material groups **MU**

HSS-E | UNC UNF | USCTI 302A | 4P~5P | Bright | Steam Oxide | TiCN

p.C44

Thread Depth / Hole Type



3.0×D

Unit : Inch

Size D1	T.P.I	EDP No. Bright	Steam Oxide	TiCN	Limit	Overall Length L2	Thread Length L1	Neck Length L3	Shank Diameter D2	Square Size K	Square Length Kl	No. of Flute	Tapping Drill Diameter (Ød1) Inch	Metric
#1 - 64UNC		**T4042**	**T4042S**	**T4042C**	H2	.374	1.69	.413	.141	.110	.190	2	-	1.5
#1 - 72UNF		**T4062**	**T4062S**	**T4062C**	H2	.374	1.69	.413	.141	.110	.190	2	-	1.5
#2 - 56UNC		**T4082**	**T4082S**	**T4082C**	H2	1.752	.256	.433	.141	.110	.190	2	-	1.8
#3 - 48UNC		**T4122**	**T4122S**	**T4122C**	H2	1.811	.295	.492	.141	.110	.190	2	-	2.0
#4 - 40UNC		**T4162**	**T4162S**	**T4162C**	H2	1.874	.335	.563	.141	.110	.190	2	-	2.3
#4 - 40UNC		**T4163**	**T4163S**	**T4163C**	H3	1.874	.335	.563	.141	.110	.190	2	-	2.3
#4 - 40UNC		**T4164**	**T4164S**	**T4164C**	H4	1.874	.335	.563	.141	.110	.190	2	-	2.3
#4 - 40UNC		**T4165**	**T4165S**	**T4165C**	H5	1.874	.335	.563	.141	.110	.190	2	-	2.3
#4 - 48UNF		**T4182**	**T4182S**	**T4182C**	H2	1.874	.335	.563	.141	.110	.190	2	3/32	-
#5 - 40UNC		**T4202**	**T4202S**	**T4202C**	H2	1.937	.374	.626	.141	.110	.190	3	-	2.6
#5 - 44UNF		**T4222**	**T4222S**	**T4222C**	H2	1.937	.374	.626	.141	.110	.190	3	-	2.7
#6 - 32UNC		**T4243**	**T4243S**	**T4243C**	H3	2.000	.413	.689	.141	.110	.190	3	-	2.8
#6 - 32UNC		**T4242**	**T4242S**	**T4242C**	H2	2.000	.413	.689	.141	.110	.190	3	-	2.8
#6 - 32UNC		**T4244**	**T4244S**	**T4244C**	H4	2.000	.413	.689	.141	.110	.190	3	-	2.8
#6 - 32UNC		**T4245**	**T4245S**	**T4245C**	H5	2.000	.413	.689	.141	.110	.190	3	-	2.8
#6 - 32UNC		**T4246**	**T4246S**	**T4246C**	H6	2.000	.413	.689	.141	.110	.190	3	-	2.8
#6 - 32UNC		**T4247**	**T4247S**	**T4247C**	H7	2.000	.413	.689	.141	.110	.190	3	-	2.8
#6 - 32UNC		**T424A**	**T424AS**	**T424AC**	H11	2.000	.413	.689	.141	.110	.190	3	-	2.8
#6 - 40UNF		**T4262**	**T4262S**	**T4262C**	H2	2.000	.413	.689	.141	.110	.190	3	-	2.9
#8 - 32UNC		**T4283**	**T4283S**	**T4283C**	H3	2.126	.453	.752	.168	.131	.250	3	-	3.4
#8 - 32UNC		**T4282**	**T4282S**	**T4282C**	H2	2.126	.453	.752	.168	.131	.250	3	-	3.4
#8 - 32UNC		**T4284**	**T4284S**	**T4284C**	H4	2.126	.453	.752	.168	.131	.250	3	-	3.4
#8 - 32UNC		**T4285**	**T4285S**	**T4285C**	H5	2.126	.453	.752	.168	.131	.250	3	-	3.4
#8 - 32UNC		**T4286**	**T4286S**	**T4286C**	H6	2.126	.453	.752	.168	.131	.250	3	-	3.4
#8 - 32UNC		**T4287**	**T4287S**	**T4287C**	H7	2.126	.453	.752	.168	.131	.250	3	-	3.4
#8 - 32UNC		**T428A**	**T428AS**	**T428AC**	H11	2.126	.453	.752	.168	.131	.250	3	-	3.4

▶ Steam Oxide is not recommended for Aluminum and Aluminum alloys.

NEXT PAGE ▶

◎ : Excellent ○ : Good

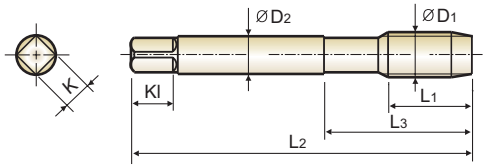
ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	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	○	◎	◎	◎	◎	◎	◎	◎	◎	○		◎	◎	◎	◎	◎	◎	◎		

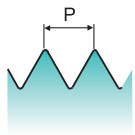
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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
Recommended			◎			◎	◎	◎													

HSS-E **COMBO TAP**

Spiral Point Tap for Multi-Purpose







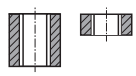
Material groups **MU**

HSS-E | UNC UNF | USCTI 302A | 4P~5P | Bright | Steam Oxide | TiCN

p.C44

Thread Depth / Hole Type

3.0×D



Unit : Inch

Size D1	T.P.I	EDP No. Bright	Steam Oxide	TiCN	Limit	Overall Length L2	Thread Length L1	Neck Length L3	Shank Diameter D2	Square Size K	Square Length Kl	No. of Flute	Tapping Drill Diameter (Ød1) Inch	Metric
#8 - 36UNF		**T4302**	**T4302S**	**T4302C**	H2	2.126	.453	.752	.168	.131	.250	3	-	3.5
#10 - 24UNC		**T4323**	**T4323S**	**T4323C**	H3	2.374	.531	.906	.194	.152	.250	3	-	3.9
#10 - 24UNC		**T4325**	**T4325S**	**T4325C**	H5	2.374	.531	.906	.194	.152	.250	3	-	3.9
#10 - 24UNC		**T432A**	**T432AS**	**T432AC**	H11	2.374	.531	.906	.194	.152	.250	3	-	3.9
#10 - 32UNF		**T4343**	**T4343S**	**T4343C**	H3	2.374	.531	.906	.194	.152	.250	3	-	4.1
#10 - 32UNF		**T4342**	**T4342S**	**T4342C**	H2	2.374	.531	.906	.194	.152	.250	3	-	4.1
#10 - 32UNF		**T4344**	**T4344S**	**T4344C**	H4	2.374	.531	.906	.194	.152	.250	3	-	4.1
#10 - 32UNF		**T4345**	**T4345S**	**T4345C**	H5	2.374	.531	.906	.194	.152	.250	3	-	4.1
#10 - 32UNF		**T4346**	**T4346S**	**T4346C**	H6	2.374	.531	.906	.194	.152	.250	3	-	4.1
#10 - 32UNF		**T4347**	**T4347S**	**T4347C**	H7	2.374	.531	.906	.194	.152	.250	3	-	4.1
#10 - 32UNF		**T434A**	**T434AS**	**T434AC**	H11	2.374	.531	.906	.194	.152	.250	3	-	4.1
#12 - 24UNC		**T4363**	**T4363S**	**T4363C**	H3	2.374	.571	.906	.220	.165	.280	3	-	4.5
#12 - 28UNF		**T4383**	**T4383S**	**T4383C**	H3	2.374	.571	.906	.220	.165	.280	3	-	4.7
1/4 - 20UNC		**T4403**	**T4403S**	**T4403C**	H3	2.500	.591	1.000	.255	.191	.310	3	-	5.2
1/4 - 20UNC		**T4405**	**T4405S**	**T4405C**	H5	2.500	.591	1.000	.255	.191	.310	3	-	5.2
1/4 - 20UNC		**T4402**	**T4402S**	**T4402C**	H2	2.500	.591	1.000	.255	.191	.310	3	-	5.2
1/4 - 20UNC		**T4407**	**T4407S**	**T4407C**	H7	2.500	.591	1.000	.255	.191	.310	3	-	5.2
1/4 - 20UNC		**T440A**	**T440AS**	**T440AC**	H11	2.500	.591	1.000	.255	.191	.310	3	-	5.2
1/4 - 28UNF		**T4423**	**T4423S**	**T4423C**	H3	2.500	.591	1.000	.255	.191	.310	3	-	5.5
1/4 - 28UNF		**T4424**	**T4424S**	**T4424C**	H4	2.500	.591	1.000	.255	.191	.310	3	-	5.5
1/4 - 28UNF		**T4422**	**T4422S**	**T4422C**	H2	2.500	.591	1.000	.255	.191	.310	3	-	5.5
1/4 - 28UNF		**T4425**	**T4425S**	**T4425C**	H5	2.500	.591	1.000	.255	.191	.310	3	-	5.5
1/4 - 28UNF		**T4426**	**T4426S**	**T4426C**	H6	2.500	.591	1.000	.255	.191	.310	3	-	5.5
1/4 - 28UNF		**T4427**	**T4427S**	**T4427C**	H7	2.500	.591	1.000	.255	.191	.310	3	-	5.5
1/4 - 28UNF		**T442A**	**T442AS**	**T442AC**	H11	2.500	.591	1.000	.255	.191	.310	3	-	5.5
5/16 - 18UNC		**T4443**	**T4443S**	**T4443C**	H3	2.720	.669	1.126	.318	.238	.380	3	-	6.7

▶ Steam Oxide is not recommended for Aluminum and Aluminum alloys.

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

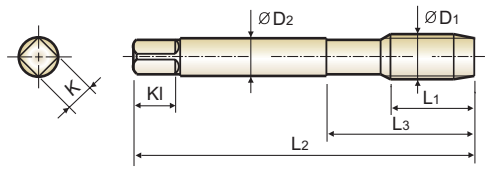
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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
Recommended			◎			◎	◎	◎													

HSS-E **COMBO TAP**

SERIES **T4** **T4-S** **T4-C**

Spiral Point Tap for Multi-Purpose





Material groups **MU**

HSS-E | UNC UNF | USCTI 302A | 4P~5P | Bright | Steam Oxide | TiCN

p.C44

Thread Depth / Hole Type

3.0×D

Unit : Inch

Size	T.P.I	EDP No.			Limit	Overall Length	Thread Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute	Tapping Drill Diameter (Ød1)	
D1		Bright	Steam Oxide	TiCN		L2	L1	L3	D2	K	Kl		Inch	Metric
5/16 -	18UNC	T4445	T4445S	T4445C	H5	2.720	.669	1.126	.318	.238	.380	3	-	6.7
5/16 -	18UNC	T4447	T4447S	T4447C	H7	2.720	.669	1.126	.318	.238	.380	3	-	6.7
5/16 -	18UNC	T444A	T444AS	T444AC	H11	2.720	.669	1.126	.318	.238	.380	3	-	6.7
5/16 -	24UNF	T4463	T4463S	T4463C	H3	2.720	.669	1.126	.318	.238	.380	3	-	7.0
5/16 -	24UNF	T4465	T4465S	T4465C	H5	2.720	.669	1.126	.318	.238	.380	3	-	7.0
5/16 -	24UNF	T4462	T4462S	T4462C	H2	2.720	.669	1.126	.318	.238	.380	3	-	7.0
5/16 -	24UNF	T4464	T4464S	T4464C	H4	2.720	.669	1.126	.318	.238	.380	3	-	7.0
5/16 -	24UNF	T4466	T4466S	T4466C	H6	2.720	.669	1.126	.318	.238	.380	3	-	7.0
5/16 -	24UNF	T4467	T4467S	T4467C	H7	2.720	.669	1.126	.318	.238	.380	3	-	7.0
5/16 -	24UNF	T446A	T446AS	T446AC	H11	2.720	.669	1.126	.318	.238	.380	3	-	7.0
3/8 -	16UNC	T4483	T4483S	T4483C	H3	2.937	.748	1.252	.381	.286	.440	3	-	8.1
3/8 -	16UNC	T4485	T4485S	T4485C	H5	2.937	.748	1.252	.381	.286	.440	3	-	8.1
3/8 -	16UNC	T4487	T4487S	T4487C	H7	2.937	.748	1.252	.381	.286	.440	3	-	8.1
3/8 -	16UNC	T448A	T448AS	T448AC	H11	2.937	.748	1.252	.381	.286	.440	3	-	8.1
3/8 -	24UNF	T4503	T4503S	T4503C	H3	2.937	.748	1.252	.381	.286	.440	3	-	8.6
3/8 -	24UNF	T4504	T4504S	T4504C	H4	2.937	.748	1.252	.381	.286	.440	3	-	8.6
3/8 -	24UNF	T4502	T4502S	T4502C	H2	2.937	.748	1.252	.381	.286	.440	3	-	8.6
3/8 -	24UNF	T4505	T4505S	T4505C	H5	2.937	.748	1.252	.381	.286	.440	3	-	8.6
3/8 -	24UNF	T4506	T4506S	T4506C	H6	2.937	.748	1.252	.381	.286	.440	3	-	8.6
3/8 -	24UNF	T4507	T4507S	T4507C	H7	2.937	.748	1.252	.381	.286	.440	3	-	8.6
3/8 -	24UNF	T450A	T450AS	T450AC	H11	2.937	.748	1.252	.381	.286	.440	3	-	8.6
7/16 -	14UNC	T4523	T4523S	T4523C	H3	3.157	.866	1.437	.323	.242	.410	3	-	9.5
7/16 -	14UNC	T4525	T4525S	T4525C	H5	3.157	.866	1.437	.323	.242	.410	3	-	9.5
7/16 -	14UNC	T4527	T4527S	T4527C	H7	3.157	.866	1.437	.323	.242	.410	3	-	9.5
7/16 -	14UNC	T452A	T452AS	T452AC	H11	3.157	.866	1.437	.323	.242	.410	3	-	9.5
7/16 -	20UNF	T4543	T4543S	T4543C	H3	3.157	.866	1.437	.323	.242	.410	3	-	10.0

▶ Steam Oxide is not recommended for Aluminum and Aluminum alloys.

NEXT PAGE ▶

◎ : Excellent ○ : Good

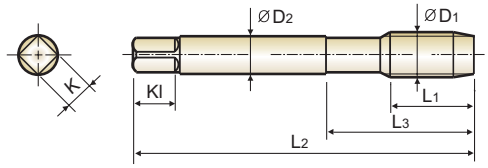
ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	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	○	◎	◎	◎	◎	◎	◎	◎	◎	○		◎	◎	◎	◎	◎	◎	◎		

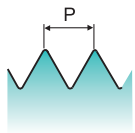
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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
Recommended			◎			◎	◎	◎													

HSS-E **COMBO TAP**

Spiral Point Tap for Multi-Purpose





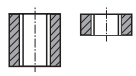


Material groups **MU**

HSS-E | UNC UNF | USCTI 302A | 4P~5P | Bright | Steam Oxide | TiCN

p.C44

Thread Depth / Hole Type



3.0×D

Unit : Inch

Size D1	T.P.I	EDP No. Bright	Steam Oxide	TiCN	Limit	Overall Length L2	Thread Length L1	Neck Length L3	Shank Diameter D2	Square Size K	Square Length Kl	No. of Flute	Tapping Drill Diameter (Ød1) Inch	Metric
7/16 -	20UNF	**T4545**	**T4545S**	**T4545C**	H5	3.157	.866	1.437	.323	.242	.410	3	-	10.0
7/16 -	20UNF	**T4547**	**T4547S**	**T4547C**	H7	3.157	.866	1.437	.323	.242	.410	3	-	10.0
7/16 -	20UNF	**T454A**	**T454AS**	**T454AC**	H11	3.157	.866	1.437	.323	.242	.410	3	-	10.0
1/2 -	13UNC	**T4565**	**T4565S**	**T4565C**	H5	3.374	.984	1.657	.367	.275	.440	3	-	11.0
1/2 -	13UNC	**T4563**	**T4563S**	**T4563C**	H3	3.374	.984	1.657	.367	.275	.440	3	-	11.0
1/2 -	13UNC	**T4567**	**T4567S**	**T4567C**	H7	3.374	.984	1.657	.367	.275	.440	3	-	11.0
1/2 -	13UNC	**T456A**	**T456AS**	**T456AC**	H11	3.374	.984	1.657	.367	.275	.440	3	-	11.0
1/2 -	20UNF	**T4585**	**T4585S**	**T4585C**	H5	3.374	.984	1.657	.367	.275	.440	3	-	11.6
1/2 -	20UNF	**T4582**	**T4582S**	**T4582C**	H2	3.374	.984	1.657	.367	.275	.440	3	-	11.6
1/2 -	20UNF	**T4583**	**T4583S**	**T4583C**	H3	3.374	.984	1.657	.367	.275	.440	3	-	11.6
1/2 -	20UNF	**T4587**	**T4587S**	**T4587C**	H7	3.374	.984	1.657	.367	.275	.440	3	-	11.6
1/2 -	20UNF	**T458A**	**T458AS**	**T458AC**	H11	3.374	.984	1.657	.367	.275	.440	3	-	11.6

▶ Steam Oxide is not recommended for Aluminum and Aluminum alloys.

◎ : 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	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	○	◎	◎	◎	◎	◎	◎	◎	◎	○		◎	◎	◎	◎	◎	◎	◎		

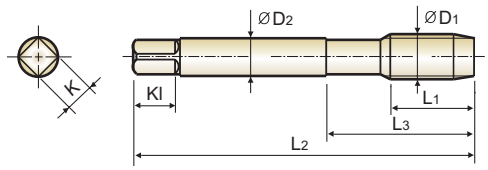
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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
Recommended			◎			◎	◎	◎													

HSS-E **COMBO TAP**

SERIES **T3** **T3-S** **T3-C**

Spiral Point Tap for Multi-Purpose





Thread Depth / Hole Type

3.0×D

Material groups **MU** | HSS-E | M/MF | USCTI 302A | 4P~5P | Bright | Steam Oxide | TiCN

p.C44

Unit : Inch

Size	Pitch	EDP No.			Limit	Overall Length	Thread Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute	Tapping Drill Diameter (Ød1)	
D1	P	Bright	Steam Oxide	TiCN		L2	L1	L3	D2	K	Kl		Inch	Metric
M2 x	0.4	T3133	T3133S	T3133C	D3	.437	1.75	.476	.141	.110	.190	2	-	1.6
M2.2 x	0.45	T3153	T3153S	T3153C	D3	.437	1.75	.476	.141	.110	.190	2	-	1.75
M2.3 x	0.4	T3193	T3193S	T3193C	D3	.437	1.75	.476	.141	.110	.190	2	-	1.9
M2.5 x	0.45	T3173	T3173S	T3173C	D3	.500	1.81	.539	.141	.110	.190	2	-	2.1
M2.6 x	0.45	T3493	T3493S	T3493C	D3	.500	1.81	.539	.141	.110	.190	2	-	2.15
M3 x	0.5	T3203	T3203S	T3203C	D3	1.937	.374	.646	.141	.110	.190	3	-	2.5
M3 x	0.5	T320A	T320AS	T320AC	D11	1.937	.374	.646	.141	.110	.190	3	-	2.5
M3.5 x	0.6	T3224	T3224S	T3224C	D4	2.000	.413	.709	.141	.110	.190	3	-	2.9
M3.5 x	0.6	T322A	T322AS	T322AC	D11	2.000	.413	.709	.141	.110	.190	3	-	2.9
M4 x	0.7	T3244	T3244S	T3244C	D4	2.126	.453	.768	.168	.131	.250	3	-	3.4
M4 x	0.7	T324A	T324AS	T324AC	D11	2.126	.453	.768	.168	.131	.250	3	-	3.4
M5 x	0.8	T3284	T3284S	T3284C	D4	2.374	.531	.933	.194	.152	.250	3	-	4.3
M5 x	0.8	T328A	T328AS	T328AC	D11	2.374	.531	.933	.194	.152	.250	3	-	4.3
M6 x	1.0	T3315	T3315S	T3315C	D5	2.500	.591	1.000	.255	.191	.310	3	-	5.1
M6 x	1.0	T331A	T331AS	T331AC	D11	2.500	.591	1.000	.255	.191	.310	3	-	5.1
M7 x	1.0	T3345	T3345S	T3345C	D5	2.720	.669	1.126	.318	.238	.380	3	-	6.1
M7 x	1.0	T334A	T334AS	T334AC	D11	2.720	.669	1.126	.318	.238	.380	3	-	6.1
M8 x	1.25	T3365	T3365S	T3365C	D5	2.720	.669	1.126	.318	.238	.380	3	-	6.9
M8 x	1.25	T336A	T336AS	T336AC	D11	2.720	.669	1.126	.318	.238	.380	3	-	6.9
M8 x	1.0	T3375	T3375S	T3375C	D5	2.720	.669	1.126	.318	.238	.380	3	-	7.1
M8 x	1.0	T337A	T337AS	T337AC	D11	2.720	.669	1.126	.318	.238	.380	3	-	7.1
M10 x	1.0	T3445	T3445S	T3445C	D5	2.937	.748	1.252	.381	.286	.440	3	-	9.1
M10 x	1.0	T344A	T344AS	T344AC	D11	2.937	.748	1.252	.381	.286	.440	3	-	9.1
M10 x	1.5	T3426	T3426S	T3426C	D6	2.937	.748	1.252	.381	.286	.440	3	-	8.7
M10 x	1.5	T342A	T342AS	T342AC	D11	2.937	.748	1.252	.381	.286	.440	3	-	8.7
M10 x	1.25	T3435	T3435S	T3435C	D5	2.937	.748	1.252	.381	.286	.440	3	-	8.9

▶ Steam Oxide is not recommended for Aluminum and Aluminum alloys.

NEXT PAGE ▶

◎ : Excellent ○ : Good

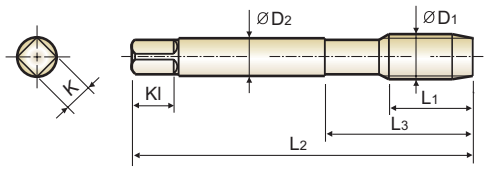
ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	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		
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
Recommended			◎			◎	◎	◎													

HSS-E **COMBO TAP**

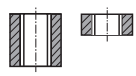
Spiral Point Tap for Multi-Purpose





Thread Depth / Hole Type

3.0×D



Material groups **MU**

HSS-E | M/MF | USCTI 302A | 4P~5P | Bright | Steam Oxide | TiCN

p.C44

Unit : Inch

Size	Pitch	EDP No.			Limit	Overall Length	Thread Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute	Tapping Drill Diameter (Ød1)	
D1	P	Bright	Steam Oxide	TiCN		L2	L1	L3	D2	K	Kl		Inch	Metric
M10 x	1.25	**T343A**	**T343AS**	**T343AC**	D11	2.937	.748	1.252	.381	.286	.440	3	-	8.9
M12 x	1.5	**T3516**	**T3516S**	**T3516C**	D6	3.374	.984	1.657	.367	.275	.440	3	-	10.7
M12 x	1.5	**T351A**	**T351AS**	**T351AC**	D11	3.374	.984	1.657	.367	.275	.440	3	-	10.7
M12 x	1.75	**T3506**	**T3506S**	**T3506C**	D6	3.374	.984	1.657	.367	.275	.440	3	-	10.5
M12 x	1.75	**T350A**	**T350AS**	**T350AC**	D11	3.374	.984	1.657	.367	.275	.440	3	-	10.5
M12 x	1.25	**T3525**	**T3525S**	**T3525C**	D5	3.374	.984	1.657	.367	.275	.440	3	-	10.9
M12 x	1.25	**T352A**	**T352AS**	**T352AC**	D11	3.374	.984	1.657	.367	.275	.440	3	-	10.9

▶ Steam Oxide is not recommended for Aluminum and Aluminum alloys.

◎ : Excellent ○ : Good

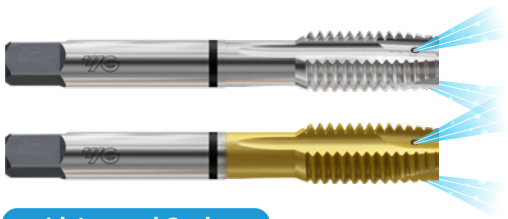
ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	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			
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
Recommended			◎			◎	◎	◎													

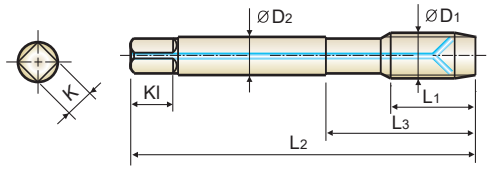
HSS-E **COMBO TAP**

TB SERIES
TB-N SERIES

Spiral Point Tap for Multi-Purpose



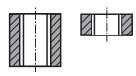
with Internal Coolant



Material groups **MU** | HSS-E | UNC UNF | USCTI 302A | 4P~5P | Bright | TiN

p.C44

Thread Depth / Hole Type



3.0×D

Unit : Inch

Size D1	T.P.I	EDP No. Bright	EDP No. TiN	Limit	Overall Length L2	Thread Length L1	Neck Length L3	Shank Diameter D2	Square Size K	Square Length Kl	No. of Flute	Tapping Drill Diameter (Ød1) Inch	Tapping Drill Diameter (Ød1) Metric
1/4 -	20UNC	**TB405**	**TB405N**	H5	2.500	.591	1.000	.255	.191	.310	3	-	5.2
1/4 -	28UNF	**TB424**	**TB424N**	H4	2.500	.591	1.000	.255	.191	.310	3	-	5.5
5/16 -	18UNF	**TB445**	**TB445N**	H5	2.720	.669	1.126	.318	.238	.380	3	-	6.7
5/16 -	24UNF	**TB464**	**TB464N**	H4	2.720	.669	1.126	.318	.238	.380	3	-	7.0
3/8 -	16UNC	**TB485**	**TB485N**	H5	2.937	.748	1.252	.381	.286	.440	3	-	8.1
3/8 -	24UNF	**TB504**	**TB504N**	H4	2.937	.748	1.252	.381	.286	.440	3	-	8.6
7/16 -	14UNC	**TB525**	**TB525N**	H5	3.157	.866	1.437	.323	.242	.410	3	-	9.5
7/16 -	20UNF	**TB545**	**TB545N**	H5	3.157	.866	1.437	.323	.242	.410	3	-	10.0
1/2 -	13UNC	**TB565**	**TB565N**	H5	3.374	.984	1.657	.367	.275	.440	3	-	11.0
1/2 -	20UNF	**TB585**	**TB585N**	H5	3.374	.984	1.657	.367	.275	.440	3	-	11.6

▶ Coating(TiCN, TiAlN or Hardslick) or Surface Treatment(Steam Oxide) is available on your request.
▶ Coating Codes for Combo Tap
Bright Finish No. + N(TiN), F(TiAlN), H(Hardslick), S(Steam Oxide)

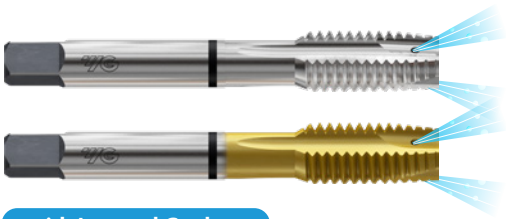
◎ : Excellent ○ : Good

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

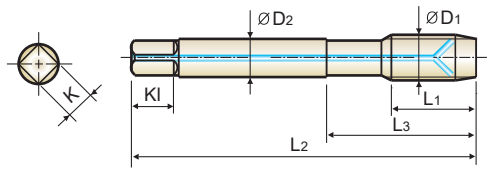
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	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
Recommended			◎			◎	◎	◎													

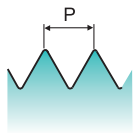
HSS-E **COMBO TAP**

Spiral Point Tap for Multi-Purpose



with Internal Coolant

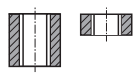




Material groups **MU** | HSS-E | M | USCTI 302A | 4P~5P | Bright | TiN

p.C44

Thread Depth / Hole Type



3.0×D

Unit : Inch

Size	Pitch	EDP No.		Limit	Overall Length	Thread Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute	Tapping Drill Diameter (Ød1)	
D1	P	Bright	TiN		L2	L1	L3	D2	K	Kl		Inch	Metric
M6 x	1.0	**TH315**	**TH315N**	D5	2.500	.591	1.000	.255	.191	.310	3	-	5.1
M8 x	1.25	**TH365**	**TH365N**	D5	2.720	.669	1.126	.318	.238	.380	3	-	6.9
M10 x	1.5	**TH426**	**TH426N**	D6	2.937	.748	1.252	.381	.286	.440	3	-	8.7
M12 x	1.75	**TH506**	**TH506N**	D6	3.374	.984	1.657	.367	.275	.440	3	-	10.5

▶ Coating(TiCN, TiAlN or Hardslick) or Surface Treatment(Steam Oxide) is available on your request.
▶ Coating Codes for Combo Tap
Bright Finish No. + C(TiCN), F(TiAlN), H(Hardslick), S(Steam Oxide)

◎ : Excellent ○ : Good

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	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			
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
Recommended			◎			◎	◎	◎													

HSS-E **COMBO TAP**

RECOMMENDED CUTTING CONDITIONS

					Spiral Flute			Spiral Point		
					T2, T5 T6, T7 T8, T9	T2-S, T5-S	T2-C, T5-C T6-N, T7-C T8-N, T9-C	T3, T4 TB, TH	T3-S, T4-S	T3-C, T4-C TB-N, TH-N
ISO	VDI 3323	Material Description	HB	HRc	Vc (in/min.)					
P	1	Non-alloy steel	125		25-50	25-50	50-80	25-50	25-50	50-80
	2		190	13	25-50	25-50	50-80	25-50	25-50	50-80
	3		250	25	25-50	25-50	50-80	25-50	25-50	50-80
	4		270	28	6-30	6-30	10-35	6-30	6-30	10-35
	5		300	32	6-30	6-30	10-35	6-30	6-30	10-35
	6	Low alloy steel	180	10	6-30	6-30	10-35	6-30	6-30	10-35
	7		275	29	6-30	6-30	10-35	6-30	6-30	10-35
	8		300	32	6-30	6-30	10-35	6-30	6-30	10-35
	9		350	38	6-30	6-30	10-35	6-30	6-30	10-35
	10	High alloyed steel, and tool steel	200	15	6-30	6-30	10-35	6-30	6-30	10-35
M	12	Stainless steel	200	15	12-35	12-35	20-50	12-35	12-35	20-50
	13		240	23	12-35	12-35	20-50	12-35	12-35	20-50
	14		180	10	12-15	12-15	12-15	12-15	12-15	12-15
K	15	Grey cast iron	180	10	35-50	35-50	50-65	35-50	35-50	50-65
	16		260	26	35-50	35-50	50-65	35-50	35-50	50-65
	17	Nodular cast iron	160	3	12-45	12-45	25-55	12-45	12-45	25-55
	18		250	25	12-45	12-45	25-55	12-45	12-45	25-55
N	23	Aluminum-cast, alloyed	75		40-65	-	45-90	40-65	-	45-90
	26	Copper and Copper Alloys (Bronze / Brass)	110		30-65	30-65	30-65	30-65	30-65	30-65
	27		90		30-65	30-65	30-65	30-65	30-65	30-65
	28		100		30-65	30-65	30-65	30-65	30-65	30-65

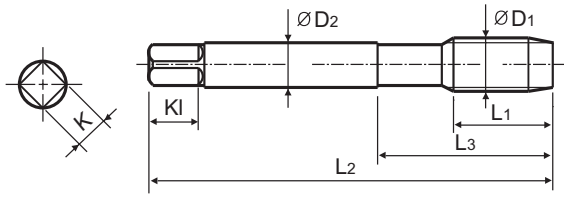
HSS-PM **YG TAP Chip Breaker**

TTF21 SERIES

SPIRAL FLUTE TAPS with CHIP BREAKER

DIN / ANSI

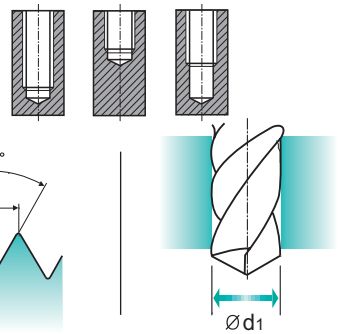




- YG Tap Chip Breaker provides a solution to solve the productivity problem caused by long chips.
- Particularly suitable for machining non-alloy steel, low alloy steel, high alloy steel, and tool steel.

Thread Depth / Hole Type

2.0×D



Material groups **VG** | HSS PM | UNC UNF | H | 60° | 2P~3P | TiN | R15

p.C53

Unit : inch

SIZE ØD1	TPI	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Flute Z	Tapping Drill Diameter(Ød1) Inch	Metric
#8	- 32UNC	**TTF21282R**	H2	.311	2.48	.827	.168	.131	.236	3	-	3.4
#8	- 32UNC	**TTF21283R**	H3	.311	2.48	.827	.168	.131	.236	3	-	3.4
#8	- 36UNF	**TTF21302R**	H2	.280	2.48	.827	.168	.131	.236	3	-	3.5
#10	- 24UNC	**TTF21323R**	H3	.417	2.76	.976	.194	.152	.236	3	-	3.9
#10	- 32UNF	**TTF21342R**	H2	.311	2.76	.976	.194	.152	.236	3	-	4.1
#10	- 32UNF	**TTF21343R**	H3	.311	2.76	.976	.194	.152	.236	3	-	4.1
#12	- 24UNC	**TTF21363R**	H3	.417	3.15	1.177	.220	.165	.268	3	-	4.5
#12	- 28UNF	**TTF21383R**	H3	.358	3.15	1.177	.220	.165	.268	3	-	4.7
1/4	- 20UNC	**TTF21403R**	H3	.500	3.15	1.177	.255	.191	.310	3	-	5.2
1/4	- 20UNC	**TTF21405R**	H5	.500	3.15	1.177	.255	.191	.310	3	-	5.2
1/4	- 28UNF	**TTF21423R**	H3	.358	3.15	1.177	.255	.191	.310	3	-	5.5
1/4	- 28UNF	**TTF21424R**	H4	.358	3.15	1.177	.255	.191	.310	3	-	5.5
5/16	- 18UNC	**TTF21443R**	H3	.555	3.54	1.378	.318	.238	.380	3	-	6.7
5/16	- 18UNC	**TTF21445R**	H5	.555	3.54	1.378	.318	.238	.380	3	-	6.7
5/16	- 24UNF	**TTF21463R**	H3	.417	3.54	1.378	.318	.238	.380	3	-	7.0
5/16	- 24UNF	**TTF21464R**	H4	.417	3.54	1.378	.318	.238	.380	3	-	7.0
3/8	- 16UNC	**TTF21483R**	H3	.626	3.94	1.535	.381	.286	.440	3	-	8.1
3/8	- 16UNC	**TTF21485R**	H5	.626	3.94	1.535	.381	.286	.440	3	-	8.1
3/8	- 24UNF	**TTF21503R**	H3	.417	3.94	1.535	.381	.286	.440	3	-	8.6
3/8	- 24UNF	**TTF21504R**	H4	.417	3.94	1.535	.381	.286	.440	3	-	8.6
7/16	- 14UNC	**TTF21523R**	H3	.713	3.94	1.713	.323	.242	.394	3	-	9.5
7/16	- 14UNC	**TTF21525R**	H5	.713	3.94	1.713	.323	.242	.394	3	-	9.5
7/16	- 20UNF	**TTF21543R**	H3	.500	3.94	1.713	.323	.242	.394	3	-	10.0
7/16	- 20UNF	**TTF21545R**	H5	.500	3.94	1.713	.323	.242	.394	3	-	10.0

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	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			
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
Recommended																					

HSS-PM **YG TAP Chip Breaker**

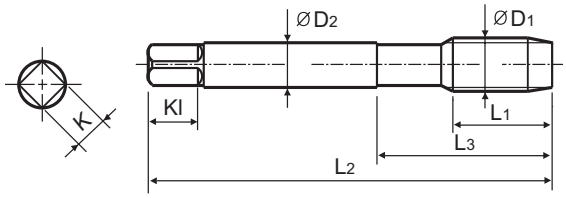
TTF21 SERIES

SPIRAL FLUTE TAPS with CHIP BREAKER

DIN / ANSI

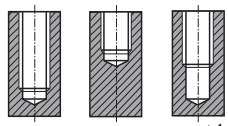


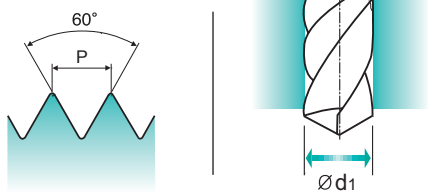
- YG Tap Chip Breaker provides a solution to solve the productivity problem caused by long chips.
- Particularly suitable for machining non-alloy steel, low alloy steel, high alloy steel, and tool steel.



Thread Depth / Hole Type

2.0×D





Material groups **VG** | HSS PM | UNC UNF | H | 60° | 2P~3P | TiN | R15

p.C53

Unit : inch

SIZE ØD1	TPI	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Flute Z	Tapping Drill Diameter(Ød1) Inch	Metric
1/2	- 13UNC	**TTF21563R**	H3	.768	4.33	1.933	.367	.275	.440	3	-	11.0
1/2	- 13UNC	**TTF21565R**	H5	.768	4.33	1.933	.367	.275	.440	3	-	11.0
1/2	- 20UNF	**TTF21583R**	H3	.500	3.94	1.933	.367	.275	.440	3	-	11.6
1/2	- 20UNF	**TTF21585R**	H5	.500	3.94	1.933	.367	.275	.440	3	-	11.6

◎ : 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	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			
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
Recommended																					

HSS-PM **YG TAP Chip Breaker**

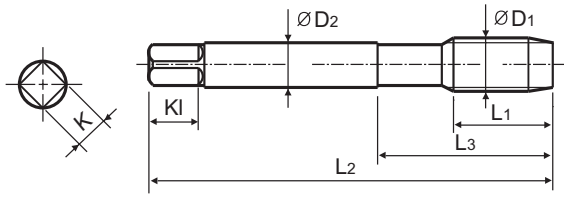
TTF18 SERIES

SPIRAL FLUTE TAPS with CHIP BREAKER

DIN / ANSI

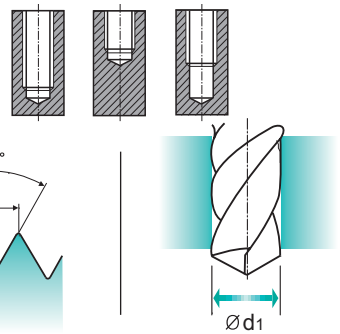


- YG Tap Chip Breaker provides a solution to solve the productivity problem caused by long chips.
- Particularly suitable for machining non-alloy steel, low alloy steel, high alloy steel, and tool steel.



Thread Depth / Hole Type

2.0×D



Material groups **VG** | HSS PM | M/MF | D | 60° | 2P~3P | TiN | R15

p.C53

Unit : inch

SIZE ØD1	TPI	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Flute Z	Tapping Drill Diameter(Ød1) Inch	Metric
M4 x 0.7		TTF18244R	D4	.276	2.48	.823	.168	.191	.310	3	-	3.4
M5 x 0.8		TTF18284R	D4	.315	2.76	.988	.194	.191	.310	3	-	4.3
M6 x 1.0		TTF18315R	D5	.394	3.15	1.177	.255	.191	.310	3	-	5.1
M8 x 1.25		TTF18365R	D5	.512	3.54	1.378	.318	.238	.380	3	-	6.1
M8 x 1.0		TTF18375R	D5	.394	3.54	1.378	.318	.238	.380	3	-	6.9
M9 x 1.25		TTF18395R	D5	.512	3.54	1.378	.381	.286	.440	3	-	7.9
M9 x 1.0		TTF18405R	D5	.394	3.54	1.378	.381	.286	.440	3	-	8.1
M10 x 1.5		TTF18426R	D6	.591	3.94	1.535	.381	.286	.440	3	-	8.7
M10 x 1.25		TTF18435R	D5	.512	3.94	1.535	.381	.286	.440	3	-	8.9
M10 x 1.0		TTF18445R	D5	.394	3.54	1.378	.381	.286	.440	3	-	9.1
M12 x 1.75		TTF18506R	D6	.709	4.33	1.933	.367	.275	.440	3	-	10.5
M12 x 1.5		TTF18516R	D6	.591	3.94	1.933	.367	.275	.440	3	-	10.7
M12 x 1.25		TTF18525R	D5	.512	3.94	1.933	.367	.275	.440	3	-	10.9

◎ : 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	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			
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
Recommended																					

HSS-PM **YG TAP Chip Breaker**

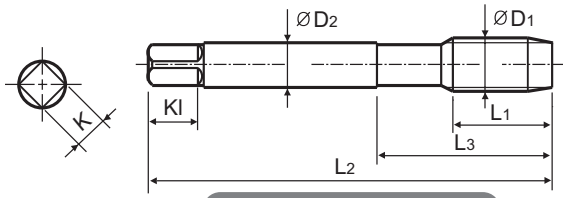
TTF22 SERIES

SPIRAL FLUTE TAPS with CHIP BREAKER

DIN / ANSI



- YG Tap Chip Breaker provides a solution to solve the productivity problem caused by long chips.
- Particularly suitable for machining non-alloy steel, low alloy steel, high alloy steel, and tool steel.



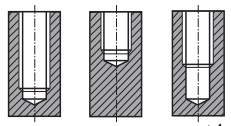
Short Chamfer

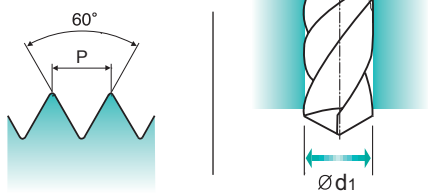
Material groups **VG** | HSS PM | UNC UNF | H | 60° | 1.5P~2P | TiN | R15

p.C53

Thread Depth / Hole Type

2.0×D





Unit : inch

SIZE ØD1	TPI	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Flute Z	Tapping Drill Diameter(Ød1) Inch	Metric
#8	- 32UNC	TTF22282R	H2	.311	2.48	.827	.168	.131	.236	3	-	3.4
#8	- 32UNC	TTF22283R	H3	.311	2.48	.827	.168	.131	.236	3	-	3.4
#8	- 36UNF	TTF22302R	H2	.280	2.48	.827	.168	.131	.236	3	-	3.5
#10	- 24UNC	TTF22323R	H3	.417	2.76	.976	.194	.152	.236	3	-	3.9
#10	- 32UNF	TTF22342R	H2	.311	2.76	.976	.194	.152	.236	3	-	4.1
#10	- 32UNF	TTF22343R	H3	.311	2.76	.976	.194	.152	.236	3	-	4.1
#12	- 24UNC	TTF22363R	H3	.417	3.15	1.177	.220	.165	.268	3	-	4.5
#12	- 28UNF	TTF22383R	H3	.358	3.15	1.177	.220	.165	.268	3	-	4.7
1/4	- 20UNC	TTF22403R	H3	.500	3.15	1.177	.255	.191	.310	3	-	5.2
1/4	- 20UNC	TTF22405R	H5	.500	3.15	1.177	.255	.191	.310	3	-	5.2
1/4	- 28UNF	TTF22423R	H3	.358	3.15	1.177	.255	.191	.310	3	-	5.5
1/4	- 28UNF	TTF22424R	H4	.358	3.15	1.177	.255	.191	.310	3	-	5.5
5/16	- 18UNC	TTF22443R	H3	.555	3.54	1.378	.318	.238	.380	3	-	6.7
5/16	- 18UNC	TTF22445R	H5	.555	3.54	1.378	.318	.238	.380	3	-	6.7
5/16	- 24UNF	TTF22463R	H3	.417	3.54	1.378	.318	.238	.380	3	-	7.0
5/16	- 24UNF	TTF22464R	H4	.417	3.54	1.378	.318	.238	.380	3	-	7.0
3/8	- 16UNC	TTF22483R	H3	.626	3.94	1.535	.381	.286	.440	3	-	8.1
3/8	- 16UNC	TTF22485R	H5	.626	3.94	1.535	.381	.286	.440	3	-	8.1
3/8	- 24UNF	TTF22503R	H3	.417	3.94	1.535	.381	.286	.440	3	-	8.6
3/8	- 24UNF	TTF22504R	H4	.417	3.94	1.535	.381	.286	.440	3	-	8.6
7/16	- 14UNC	TTF22523R	H3	.713	3.94	1.713	.323	.242	.394	3	-	9.5
7/16	- 14UNC	TTF22525R	H5	.713	3.94	1.713	.323	.242	.394	3	-	9.5
7/16	- 20UNF	TTF22543R	H3	.500	3.94	1.713	.323	.242	.394	3	-	10.0
7/16	- 20UNF	TTF22545R	H5	.500	3.94	1.713	.323	.242	.394	3	-	10.0

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	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			
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
Recommended																					

HSS-PM **YG TAP Chip Breaker**

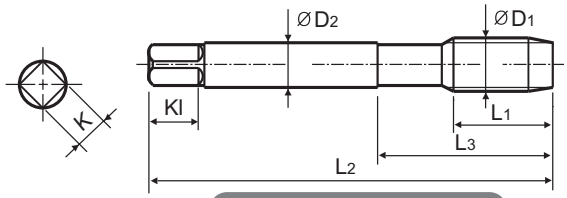
TTF22SERIES

SPIRAL FLUTE TAPS with CHIP BREAKER

DIN / ANSI



- YG Tap Chip Breaker provides a solution to solve the productivity problem caused by long chips.
- Particularly suitable for machining non-alloy steel, low alloy steel, high alloy steel, and tool steel.



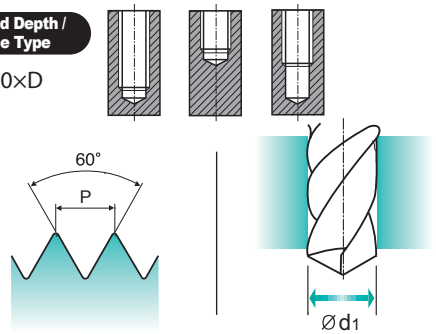
Short Chamfer

Material groups **VG** | HSS PM | UNC UNF | H | 60° | 1.5P~2P | TiN | R15

p.C53

Thread Depth / Hole Type

2.0×D



Unit : inch

SIZE ØD1	TPI	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Flute Z	Tapping Drill Diameter(Ød1) Inch	Metric
1/2	- 13UNC	**TTF22563R**	H3	.768	4.33	1.933	.367	.275	.440	3	-	11.0
1/2	- 13UNC	**TTF22565R**	H5	.768	4.33	1.933	.367	.275	.440	3	-	11.0
1/2	- 20UNF	**TTF22583R**	H3	.500	3.94	1.933	.367	.275	.440	3	-	11.6
1/2	- 20UNF	**TTF22585R**	H5	.500	3.94	1.933	.367	.275	.440	3	-	11.6

◎ : 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	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			
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
Recommended																					

HSS-PM **YG TAP Chip Breaker**

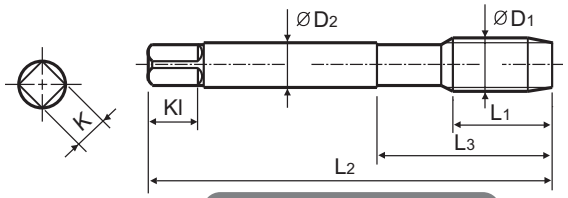
TTF19 SERIES

SPIRAL FLUTE TAPS with CHIP BREAKER

DIN / ANSI



- YG Tap Chip Breaker provides a solution to solve the productivity problem caused by long chips.
- Particularly suitable for machining non-alloy steel, low alloy steel, high alloy steel, and tool steel.



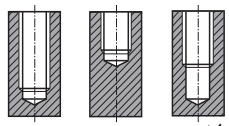
Short Chamfer

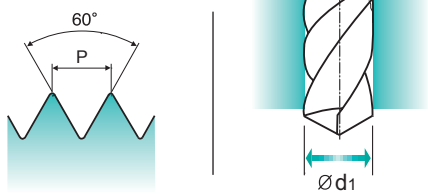
Material groups **VG** | HSS PM | M/MF | D | 60° | 1.5P~2P | TiN | R15

p.C53

Thread Depth / Hole Type

2.0×D





Unit : inch

SIZE ØD1	TPI	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Flute Z	Tapping Drill Diameter(Ød1) Inch	Metric
M4	x 0.7	**TTF19244R**	D4	.276	2.48	.823	.168	.191	.310	3	-	3.4
M5	x 0.8	**TTF19284R**	D4	.315	2.76	.988	.194	.191	.310	3	-	4.3
M6	x 1.0	**TTF19315R**	D5	.394	3.15	1.177	.255	.191	.310	3	-	5.1
M8	x 1.25	**TTF19365R**	D5	.512	3.54	1.378	.318	.238	.380	3	-	6.1
M9	x 1.25	**TTF19395R**	D5	.512	3.54	1.378	.381	.286	.440	3	-	7.9
M10	x 1.5	**TTF19426R**	D6	.591	3.94	1.535	.381	.286	.440	3	-	8.7
M10	x 1.25	**TTF19435R**	D5	.512	3.94	1.535	.381	.286	.440	3	-	8.9
M10	x 1.0	**TTF19445R**	D5	.394	3.54	1.378	.381	.286	.440	3	-	9.1
M12	x 1.75	**TTF19506R**	D6	.709	4.33	1.933	.367	.275	.440	3	-	10.5
M12	x 1.5	**TTF19516R**	D6	.591	3.94	1.933	.367	.275	.440	3	-	10.7
M12	x 1.25	**TTF19525R**	D5	.512	3.94	1.933	.367	.275	.440	3	-	10.9

◎ : 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	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			
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
Recommended																					

HSS-PM **YG TAP Chip Breaker**

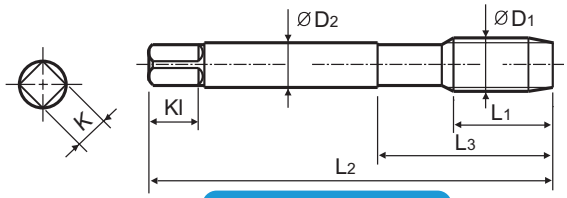
TTF23 SERIES

SPIRAL FLUTE TAPS with CHIP BREAKER

DIN / ANSI



- YG Tap Chip Breaker provides a solution to solve the productivity problem caused by long chips.
- Particularly suitable for machining non-alloy steel, low alloy steel, high alloy steel, and tool steel.



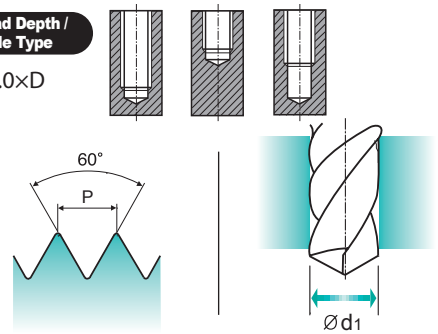
with Internal Coolant

Material groups **VG** | HSS PM | UNC UNF | H | 60° | 2P~3P | TiN | R15

p.C53

Thread Depth / Hole Type

2.0×D



Unit : inch

SIZE ØD1	TPI	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Flute Z	Tapping Drill Diameter(Ød1) Inch	Metric
1/4	20UNC	TTF23403R	H3	.500	3.15	1.177	.255	.191	.310	3	-	5.2
1/4	20UNC	TTF23405R	H5	.500	3.15	1.177	.255	.191	.310	3	-	5.2
1/4	28UNF	TTF23423R	H3	.358	3.15	1.177	.255	.191	.310	3	-	5.5
1/4	28UNF	TTF23424R	H4	.358	3.15	1.177	.255	.191	.310	3	-	5.5
5/16	18UNC	TTF23443R	H3	.555	3.54	1.378	.318	.238	.380	3	-	6.7
5/16	18UNC	TTF23445R	H5	.555	3.54	1.378	.318	.238	.380	3	-	6.7
5/16	24UNF	TTF23463R	H3	.417	3.54	1.378	.318	.238	.380	3	-	7.0
5/16	24UNF	TTF23464R	H4	.417	3.54	1.378	.318	.238	.380	3	-	7.0
3/8	16UNC	TTF23483R	H3	.626	3.94	1.535	.381	.286	.440	3	-	8.1
3/8	16UNC	TTF23485R	H5	.626	3.94	1.535	.381	.286	.440	3	-	8.1
3/8	24UNF	TTF23503R	H3	.417	3.94	1.535	.381	.286	.440	3	-	8.6
3/8	24UNF	TTF23504R	H4	.417	3.94	1.535	.381	.286	.440	3	-	8.6
7/16	14UNC	TTF23523R	H3	.713	3.94	1.713	.323	.242	.394	3	-	9.5
7/16	14UNC	TTF23525R	H5	.713	3.94	1.713	.323	.242	.394	3	-	9.5
7/16	20UNF	TTF23543R	H3	.500	3.94	1.713	.323	.242	.394	3	-	10.0
7/16	20UNF	TTF23545R	H5	.500	3.94	1.713	.323	.242	.394	3	-	10.0
1/2	13UNC	TTF23563R	H3	.768	4.33	1.933	.367	.275	.440	3	-	11.0
1/2	13UNC	TTF23565R	H5	.768	4.33	1.933	.367	.275	.440	3	-	11.0
1/2	20UNF	TTF23583R	H3	.500	3.94	1.933	.367	.275	.440	3	-	11.6
1/2	20UNF	TTF23585R	H5	.500	3.94	1.933	.367	.275	.440	3	-	11.6

◎ : 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	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			
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
Recommended																					

HSS-PM **YG TAP Chip Breaker**

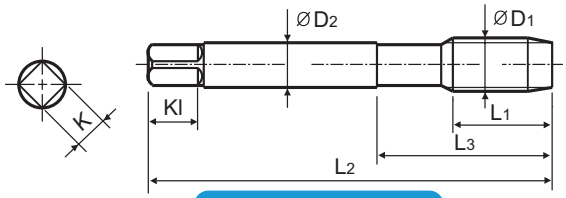
TTF20 SERIES

SPIRAL FLUTE TAPS with CHIP BREAKER

DIN / ANSI



- YG Tap Chip Breaker provides a solution to solve the productivity problem caused by long chips.
- Particularly suitable for machining non-alloy steel, low alloy steel, high alloy steel, and tool steel.



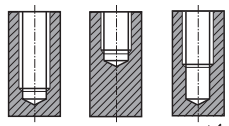
with Internal Coolant

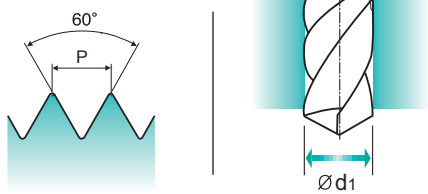
Material groups **VG** | HSS PM | M/MF | D | 60° | 2P~3P | TiN | R15

p.C53

Thread Depth / Hole Type

2.0×D





Unit : inch

SIZE ØD1	TPI	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Flute Z	Tapping Drill Diameter(Ød1) Inch	Metric
M6 x	1.0	TTF20315R	D5	.394	3.15	1.177	.255	.191	.310	3	-	5.1
M8 x	1.25	TTF20365R	D5	.512	3.54	1.378	.318	.238	.380	3	-	6.1
M8 x	1.0	TTF20375R	D5	.394	3.54	1.378	.318	.238	.380	3	-	6.9
M9 x	1.25	TTF20395R	D5	.512	3.54	1.378	.381	.286	.440	3	-	7.9
M9 x	1.0	TTF20405R	D5	.394	3.54	1.378	.381	.286	.440	3	-	8.1
M10 x	1.5	TTF20426R	D6	.591	3.94	1.535	.381	.286	.440	3	-	8.7
M10 x	1.25	TTF20435R	D5	.512	3.94	1.535	.381	.286	.440	3	-	8.9
M10 x	1.0	TTF20445R	D5	.394	3.54	1.378	.381	.286	.440	3	-	9.1
M12 x	1.75	TTF20506R	D6	.709	4.33	1.933	.367	.275	.440	3	-	10.5
M12 x	1.5	TTF20516R	D6	.591	3.94	1.933	.367	.275	.440	3	-	10.7
M12 x	1.25	TTF20525R	D5	.512	3.94	1.933	.367	.275	.440	3	-	10.9

◎ : 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	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			
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
Recommended																					

HSS-PM **YG TAP Chip Breaker** RECOMMENDED CUTTING CONDITIONS

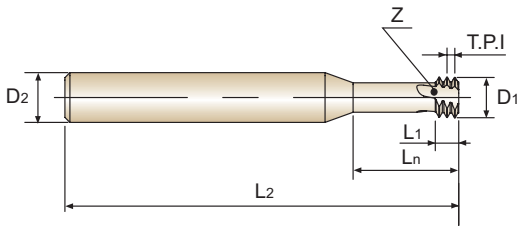
					Spiral Flute	Spiral Point
					TTF18, TTF19, TTF21, TTF22	TTF20, TTF23
ISO	VDI 3323	Material Description	HB	HRc	Vc (in/min.)	
P	1	Non-alloy steel	125		23-39	23-45
	2		190	13	23-39	23-45
	3		250	25	13-26	13-30
	6	Low alloy steel	180	10	23-39	23-45
	7		275	29	23-39	23-45
	8		300	32	13-26	13-30
	9		350	38	13-26	13-30
	10	High alloyed steel, and tool steel	200	15	20-30	20-35
	11		325	35	13-26	13-30

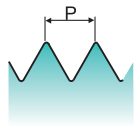
SOLID CARBIDE **THREAD MILL**

L12DE SERIES

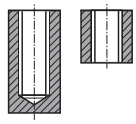
Solid Carbide Miniature Thread Mill for Unified Internal Thread - ANSI B 1.1 UN







Hole Type



Material groups MU | CARBIDE | PLAIN | 60° | R15 | TiAlN

p.C56

Unit : Inch

SIZE	Pitch	EDP No.	Cutter Diameter	Shank Diameter	Thread Length	Neck Length	Overall Length	No. of Flute
	T.P.I	TiAlN	D_1	D_2	L_1	L_n	L_2	Z
#1	64	**L12DE040**	.055	.250	.047	.165	2.500	3
#2	56	**L12DE080**	.065	.250	.054	.197	2.500	3
#3	48	**L12DE120**	.075	.250	.063	.236	2.500	3
#4	40	**L12DE160**	.083	.250	.075	.236	2.500	3
#8	36	**L12DE300**	.130	.250	.083	.343	2.500	3
#6	32	**L12DE240**	.100	.250	.094	.292	2.500	3
#8	32	**L12DE280**	.126	.250	.094	.394	2.500	3
#10	32	**L12DE340**	.150	.250	.094	.406	2.500	3
1/4	28	**L12DE420**	.207	.250	.107	.520	2.500	3
#10	24	**L12DE320**	.141	.250	.125	.402	2.500	3
5/16	24	**L12DE460**	.263	.312	.125	.650	2.500	3
1/4	20	**L12DE400**	.192	.250	.150	.528	2.500	3
7/16	20	**L12DE540**	.360	.375	.150	.906	2.500	4
5/16	18	**L12DE440**	.242	.312	.167	.650	2.500	3
3/8	16	**L12DE480**	.264	.375	.188	.752	2.500	3
7/16	14	**L12DE520**	.354	.375	.214	.917	2.500	4
1/2	13	**L12DE560**	.407	.500	.231	1.080	3.000	4
9/16	12	**L12DE600**	.465	.500	.250	1.240	3.500	4

◎ : 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**	**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		
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
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	○				

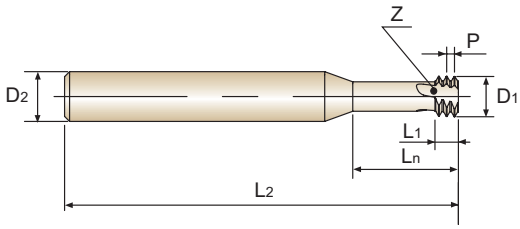
SOLID CARBIDE **THREAD MILL**

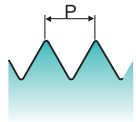
L12DD SERIES

Solid Carbide Miniature Thread Mill for Metric Internal Thread - DIN 13

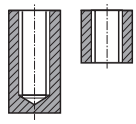
M







Hole Type



Material groups **MU** | CARBIDE | PLAIN | 60° | R15 | TiAlN

p.C56

Unit : Inch

SIZE	Pitch	EDP No.	Cutter Diameter	Shank Diameter	Thread Length	Neck Length	Overall Length	No. of Flute
	P	TiAlN	D1	D2	L1	Ln	L2	Z
M1.6	0.35	**L12DD090**	.047	.125	.041	.134	2.500	3
M2	0.40	**L12DD130**	.061	.250	.047	.165	2.500	3
M2.2	0.45	**L12DD150**	.065	.250	.053	.181	2.500	3
M2.5	0.45	**L12DD170**	.077	.250	.053	.205	2.500	3
M3	0.50	**L12DD200**	.094	.250	.059	.244	2.500	3
M3.5	0.60	**L12DD220**	.108	.250	.071	.287	2.500	3
M4	0.70	**L12DD240**	.124	.250	.083	.327	2.500	3
M4.5	0.75	**L12DD260**	.133	.250	.089	.369	2.500	3
M5	0.80	**L12DD280**	.159	.250	.094	.409	2.500	3
M6	1.00	**L12DD310**	.189	.250	.118	.492	2.500	3
M8	1.25	**L12DD360**	.256	.312	.148	.654	2.500	3
M10	1.50	**L12DD420**	.323	.375	.177	.819	2.500	4
M12	1.75	**L12DD500**	.371	.375	.207	.984	2.500	4

◎ : 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	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			
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
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	○				

SOLID CARBIDE **THREAD MILL** RECOMMENDED CUTTING CONDITIONS

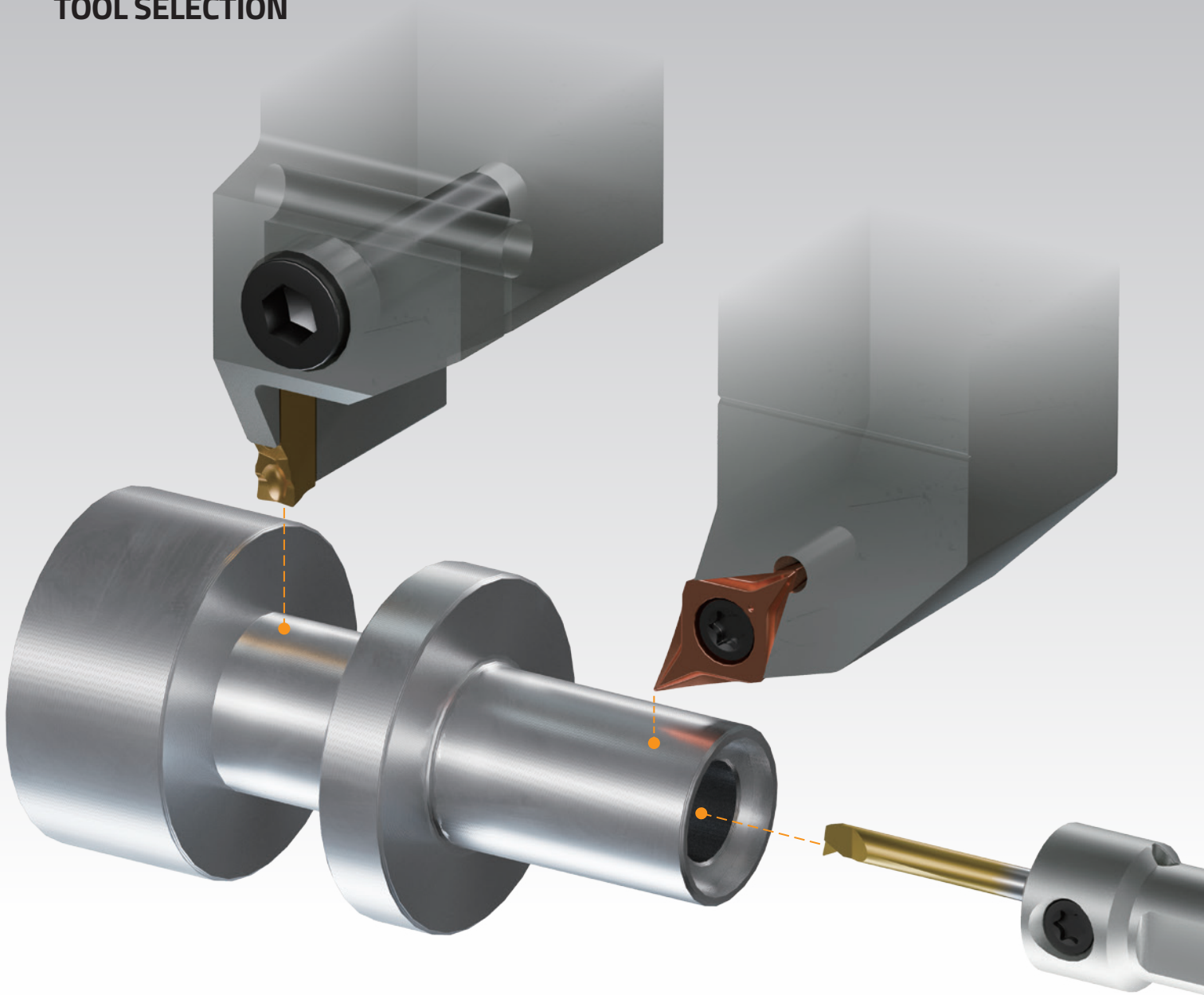
					L12DD, L12DE
ISO	VDI 3323	Material Description	HB	HRc	Vc (in/min.)
P	1	Non-alloy steel	125		220-380
	2		190	13	220-380
	3		250	25	220-380
	4		270	28	220-350
	5		300	32	220-300
	6	Low alloy steel	180	10	220-350
	7		275	29	220-350
	8		300	32	200-300
	9		350	38	200-300
	10	High alloyed steel, and tool steel	200	15	220-350
	11		325	35	220-350
M	12	Stainless steel	200	15	200-250
	13		240	23	200-250
	14		180	10	180-220
K	15	Grey cast iron	180	10	300-500
	16		260	26	300-500
	17	Nodular cast iron	160	3	280-450
	18		250	25	250-400
	19	Malleable cast iron	130		250-400
	20		230	21	280-450
N	21	Aluminum-wrought alloy	60		400-1000
	22		100		400-900
	23	Aluminum-cast, alloyed	75		300-900
	24		90		300-900
	25		130		350-800
	26	Copper and Copper Alloys (Bronze / Brass)	110		400-700
	27		90		350-700
	28		100		300-600
	29	Non Metallic Materials			350-700
	30				350-700
S	31	Heat Resistant Super Alloys	200	15	150-250
	32		280	30	130-200
	33		250	25	100-160
	34		350	38	100-160
	35		320	34	120-180
	36	Titanium Alloys	400 Rm		80-200
	37		1050 Rm		80-120

YG

TOOL SOLUTIONS FOR INDUSTRIES



SMALL PARTS MACHINING
TOOL SELECTION



TURNING

for Small parts Machining

TURNING INSERT

P M K N S H : Excellent
P M K N S H : Good

Work Material	Item	Chip Breaker	Coating	Grade	Page
N	 CCGT CCMT	AL	Uncoated DLC	YG10 YG100	D6
P M S		SF	PVD Cermet	YG303, YG211, YG213, YG214, YG401, YG411 YT100	
M S		MF	CVD PVD	YG2025, YG2035 YG211, YG213, YG214, YG401, YG411	
P M S		MM	CVD PVD	YG2025, YG2035 YG211, YG213, YG214, YG401, YG411	
P M K		PF	Cermet CVD	YT100, YT100G YG3115, YG3125, YG3030	D7
P M K		PM	Cermet CVD	YT100, YT100G YG3115, YG3030	
P		UF	CVD	YG3010, YG3115, YG3020, YG3125, YG3030	
P		UG	CVD PVD	YG3010, YG3115, YG3020, YG3125, YG3030 YG211, Y214	
N	 DCGT DCMT	AL	Uncoated DLC	YG10 YG100	D8
P M S		SF	PVD Cermet	YG303, YG211, YG213, YG214, YG401, YG411 YG100G	
M S		MF	CVD PVD	YG2025, YG2035 YG211, YG213, YG214, YG401, YG411	
P M S		MM	PVD CVD	YG211, YG213, YG214, YG401, YG411 YG2025, YG2035	
P M K		PF	Cermet CVD	YT100, YT100G YG3115, YG3125, YG3030	D9
P M K		PM	Cermet CVD	YT100, YT100G YG3115, YG3125, YG3030	
P		UF	CVD PVD	YG3010, YG3115, YG3020, YG3125, YG3030 YG211, YG213, YG214	
P		UG	CVD PVD	YG3010, YG3115, YG3020, YG3125, YG3030 YG211, YG213, YG214, YG401	
N	 TCGT TCMT	AL	Uncoated DLC	YG10 YG100	D10
M S		MF	CVD PVD	YG2025, YG2035 YG211, YG213, YG214, YG401, YG411	
P M S		MM	CVD PVD	YG2025, YG2035 YG211, YG213, YG214, YG401, YG411	
P M K		PF	Cermet CVD	YT100, YT100G YG3115, YG3030	
P M K		PM	Cermet CVD	YT100, YT100G YG3115, YG3030	
P		UF	CVD PVD	YG3010, YG3115, YG3020, YG3125, YG3030 YG211, YG213, YG214	D11
P		UG	CVD PVD	YG3010, YG3115, YG3020, YG3125, YG3030 YG211, YG214	
P M K	 TPMT	PSF	Cermet	YT100	D11

TURNING INSERT

P M K N S H : Excellent
P M K N S H : Good

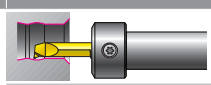
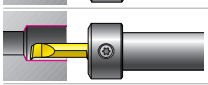
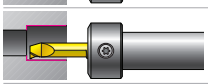
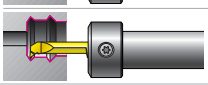
Work Material	Item	Chip Breaker	Coating	Grade	Page
P M S	 VBGT VBMT	SF	PVD	YG303, YG214, YG401, YG411	D12
M S		MF	CVD PVD	YG3115, YG2025, YG2035 YG211, YG213, YG214, YG401, YG411	
P M S		MM	CVD PVD	YG2025, YG2035 YG211, YG213, YG214, YG401, YG411	
P M K		PF	Cermet CVD	YT100, YT100G YG3115, YG3125, YG3030	
P M K		PM	Cermet CVD	YT100, YT100G YG3115, YG3030	
P		UF	CVD	YG3010, YG3115, YG3020, YG3125, YG3030	D13
P		UG	CVD PVD	YG3010, YG3115, YG3020, YG3125, YG3030 YG211, YG214	
N	 VCGT VCMT	AL	Uncoated DLC	YG10 YG100	D14
P M S		SF	PVD Cermet	YG303, YG211, YG213, YG214, YG401, YG411 YG100G	
M S		MF	CVD PVD	YG2025, YG2035 YG211, YG213, YG214, YG401, YG411	
P M S		MM	CVD	YG2025, YG2035,	
P M K		PF	Cermet CVD	YT100, YT100G YG3115, YG3030	
P M K		PM	CVD	YG3115, YG3125, YG3030	
P		UF	CVD	YG3010, YG3115, YG3020, YG3125, YG3030	D15
P		UG	CVD PVD	YG3010, YG3115, YG3020, YG3125, YG3030 YG211	

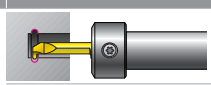
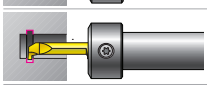
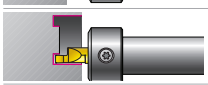
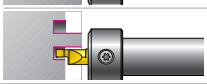
PARTING & GROOVING

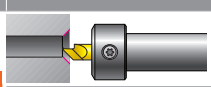
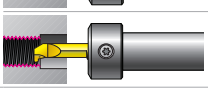
P M K N S H : Excellent
P M K N S H : Good

Work Material	Item	Chip Breaker	Coating	Size Range	Grade	Page
P M K S	 **Parting & Grooving Inserts**	- P -N	PVD	.079 .118	YG602/ YG603	D16

SOLID MINIATURE TURNING for SMALL BORE

Work Material	Item		KAPR (˚)	DCON mm (inch)	Grade	Page
P M K S		**BP** Boring & Profiling	98˚	4 (.157) 6 (.236)	YG812	D17
		**BO** Boring with Chipbreaker	98˚			D18
		**BF** 90˚Boring	90˚			D19
		**PR** Profiling	98˚			D20

Work Material	Item			CW inch	DCON mm (inch)	Grade	Page
P M K S		**GR**	Grooving Round	.039 - .079	4 (.157) 6 (.236)	YG812	D21
		**GS**	Grooving Square	.031 - .079			D22
		**FI**	Face Grooving Internal	.039 - .118			D23
		**FE**	Face Grooving External	.039 - .118			D23

Work Material	Item		WF inch	DCON mm (inch)	Grade	Page
P M K S	 **CH** Chamfering		.020-.043	4 (.157) 6 (.236)	YG812	D24
	 **TH** Threading		.079-.116			D24

Item	$DCON_{WS}$ mm (inch)	$DCON_{MS}$ inch	Grade	Page
 **Holder**	4 (.157) 6 (.236)	.500-1.000	YG812	D25

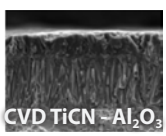
Recommended cutting conditions : D26-25

Product Overview

Turning Grades

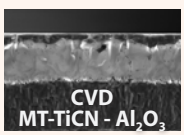
Turning Grades		P Steel				M Stainless steel			K Cast iron			N Non-ferrous		S Superalloys		
		P10	P20	P30	P40	M10	M20	M30	K10	K20	K30	N10	N20	S10	S20	S20
CVD	YG3010	3010								3010						
	YG3115		3115													
	YG3125		3125													
	YG3020		3020													
	YG3030		3030													
	YG2025						2025									
	YG2035							2035								
PVD	YG211					211										
	YG213						213									
	YG303		303				303								303	
	YG214							214							214	
	YG401													401		
	YG411													411		
Cermet	YT100		YT100				YT100			YT100						
	YT100G		YT100G				YT100G			YT100G						
DLC	YG100												100			
-	YG10												10			

YG3010
P05 - P20
K15 - K35



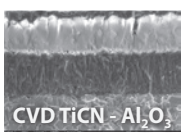
First choice for Finishing Steels, and Ductile Cast iron
- Finishing and light machining of steel under in stable condition
- New Al_2O_3 coating technology and excellent surface smoothness increase wear resistance and chipping resistance

YG3115
P15 - P25



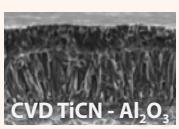
First choice grade for high cutting speed in Steels
- Suitable for mass production due to stable and predictable tool life
- Minimizing built up edge due to new post surface treatment in mild steels, low carbon steel and low carbon alloy steel.
- Best choice for both continuous as well as interrupted cuts

YG3125
P20 - P30



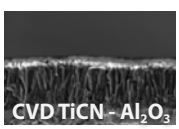
Recommended first grade for steel
- New substrates with a unique combination of good toughness and plastic deformation resistance
- General Machining on steel

YG3020
P15 - P30



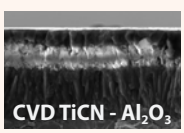
First Choice Grade for General Steel Application
- Substrate especially designed for good toughness
- Excellent surface smoothness increases wear resistance and reliability

YG3030
P20 - P35



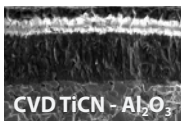
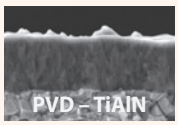
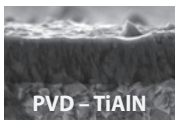
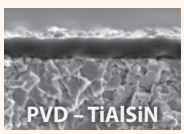
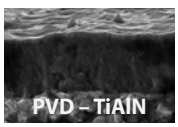
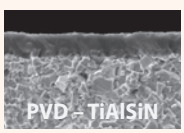
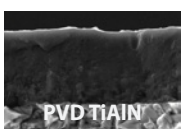
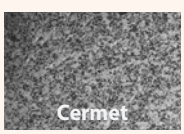
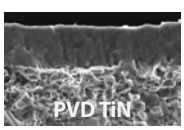
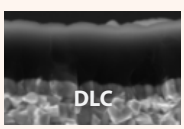
Interrupted Cutting of Steel and Stainless steel
- Substrate for heavy roughing in mild steel and low carbon alloy steel
- New Al2O3 technology and optimized surface treatment achieves a good balance between wear resistance and chipping resistance

YG2025
M15 - M35



CVD grade for High Cutting Speed for Stainless steel
- Utilizing a new carbide substrate and new coating
- Excellent combination of wear resistance and chipping resistance
- Minimized built up edge due to post surface treatment

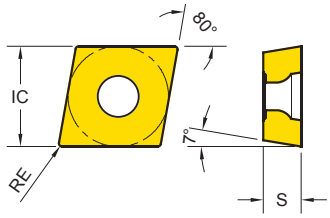
Turning Grades

YG2035 M30 - M40		**CVD Coated Grade for stainless steel at Low Cutting Speed** • Substrate withstands heavy interruption, while the coating provides the wear resistance needed for a long tool life • Smooth surface resists build-up edge, even at low cutting speeds
YG211 M05 - M25		**High wear Resistance Grade for Stainless steel** • Finishing Stainless steel
YG213 M20 - M35		**First Choice Grade on Low Cutting Speed of Stainless steel** • First choice on Stainless steel for Low cutting speed • For Medium to low cutting speed
YG303 P20 - P35 M20 - M35 S20 - S35		**For Universal Grade in Small Parts Machining** • Delivers high machining stability through a specialized substrate composition • Features a dense, multi-layer coating tailored for repetitive machining
YG214 M30 - M40 S25 - S30		**Heavy Interrupted cut for Stainless steel** • For Heavy Interrupted cut on Stainless steel • Minimize risk of Mechanical fracture or Chipping
YG401 S10 - S20		**PVD Turning Grade for HRSA** • Highly heat-resistant TiAlSiN structure for excellent wear resistance • Greatly improved film coating realizes excellent boundary defect resistance • Top coating layer provides a smooth surface and lubricant effect
YG411 S05 - S15		**PVD Turning Grade on High Cutting Speed for HRSA** • Specialized cemented carbide substrate with excellent resistance to plastic deformation • Strong edge stability provides reliable tool life when machining heat-resistant alloys at high speeds • High-Al content coating provides superior oxidation resistance when machining heat-resistant alloys
YT100 P10 - P20 M10 - M20 K10 - K20		**New Generation Cermet Grade** • Enhanced wear resistance & chipping resistance • Excellent fracture resistance • Superior surface finish with special edge preparation
YT100G P5 - P20 M5 - M20 K5 - K20		**PVD-coated Cermet grade for turning** • Outstanding wear resistance and a low coefficient of friction enable high-speed turning of steels, stainless steels, and cast irons with extended tool life
YG100 N05 - N25		**First Choice Grade for Aluminum with DLC Coating** • Submicron carbide for high wear resistance • DLC coating minimizes Built Up Edge tendency. • Improve tool life in sticky non-ferrous alloy
YG10 N05 - N25		**Uncoated Grade for General Aluminum** • Substrate consisted of submicron carbide for high wear resistance • Shining surface to prevent built up edge

Turning Inserts - Positive

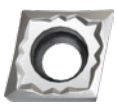
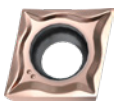
Recommended cutting conditions : D26

CCGT / CCMT (80° Rhombic)



Series	IC	S
CC.. 21.5	.250	.094
CC.. 32.5	.375	.156

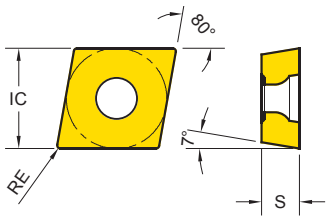
EDP 2200..

CCGT CCMT		Designation	RE	Fn (In/rev.)	Ap (In)	CVD							PVD						Cermet		Uncoated	DLC
						YG3010	YG3115	YG3020	YG3125	YG3030	YG2025	YG2035	YG211	YG213	YG303	YG214	YG401	YG411	YT100	YT100G	YG10	YG100
-AL	 Aluminum	CCGT21.50.5-AL	.008	.000-.005	.002-.118																1398	
		CCGT21.51-AL	.016	.001-.006	.004-.118																1320	1278
		CCGT32.50.5-AL	.008	.001-.008	.002-.118																0339	0340
		CCGT32.51-AL	.016	.001-.012	.004-.197																0081	0330
		CCGT32.52-AL	.031	.001-.020	.004-.197																0082	0331
-SF	 HRSA Finishing	CCGT21.50-SF	.004	.001-.006	.004-.059										4268	2341	2065	4045				
		CCGT21.50.5-SF	.008	.001-.006	.004-.059								2020	2048	4269	2080	2066	4046				
		CCGT21.51-SF	.016	.001-.008	.004-.094								2084	2085	4270	2086	2067	4047	4267			
		CCGT32.50-SF	.004	.001-.006	.004-.098								2087	2088	4271	2339	2071	4048				
		CCGT32.50.5-SF	.008	.001-.006	.004-.098								2089	2090	4272	2340	2072	4049				
		CCGT32.51-SF	.016	.001-.008	.004-.098								2091	2092	4273	2093	2073	4050				
		CCGT32.52-SF	.031	.001-.010	.004-.098								2094	2095	4274	2096	2074	4051				
-MF	 Stainless steel Finishing	CCMT21.50.5-MF	.008	.002-.006	.003-.079						2795	3673	2834	2835		2836		4086				
		CCMT21.51-MF	.016	.002-.010	.004-.079						2796	3674	2726	2723			2833	4087				
		CCMT21.52-MF	.031	.003-.011	.005-.079								2352	2439		2440	2351	4088				
		CCMT32.50.5-MF	.008	.002-.006	.003-.079						2501	3677	2002	2003		2004	2028	4089				
		CCMT32.51-MF	.016	.002-.010	.004-.079						2502	3678	1589	1590		1947	2029	4090				
		CCMT32.52-MF	.031	.003-.012	.006-.079						2503	3680	1957	1958		1959	1943	4091				
		CCMT32.53-MF	.047	.004-.013	.008-.079													4092				
-MM	 Stainless steel Medium	CCMT21.51-MM	.016	.002-.007	.012-.094						2811	3675						4052				
		CCMT21.52-MM	.031	.003-.009	.031-.094						2812	3676										
		CCMT32.51-MM	.016	.003-.010	.010-.118						2514	3679	1591	1592		1946	2039	4053				
		CCMT32.52-MM	.031	.004-.012	.020-.118						2515	3681	1887	1888		1956	1944	4054				
		CCMT32.53-MM	.047	.005-.014	.039-.118						2813	3682										

Turning Inserts - Positive

Recommended cutting conditions : D26

CCGT / CCMT (80˚ Rhombic)



Series	IC	S
CC.. 21.5	.250	.094
CC.. 32.5	.375	.156

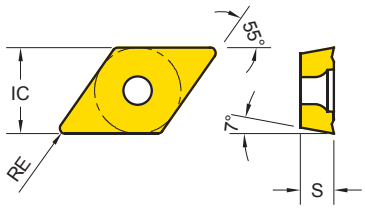
EDP 2200..

CCGT CCMT		Designation	RE	Fn (In/rev.)	Ap (In)	CVD							PVD						Cermet		Uncoated	DLC
						YG3010	YG3115	YG3020	YG3125	YG3030	YG2025	YG2035	YG211	YG213	YG303	YG214	YG401	YG411	YT100	YT100G	YG10	YG100
-PF	 Finishing	CCMT21.50.5-PF	.008	.002-.006	.003-.079		2892		4302	2955									2782	3613		
		CCMT21.51-PF	.016	.002-.010	.004-.079		2893			2956									2710	3607		
		CCMT32.50.5-PF	.008	.002-.006	.003-.079		2878			2939									2541	3586		
		CCMT32.51-PF	.016	.002-.010	.004-.079		2879			2940									2542	3587		
		CCMT32.52-PF	.031	.003-.012	.006-.079		2880			2941									2543	3588		
		CCMT32.53-PF	.047	.004-.013	.008-.079														3142	3622		
-PM	 Medium	CCMT21.51-PM	.016	.002-.007	.010-.094		2917			2981									2784	3615		
		CCMT21.52-PM	.031	.003-.009	.031-.094		2918			2982									2785	3616		
		CCMT32.51-PM	.016	.003-.010	.010-.118		2908			2971									2554	3598		
		CCMT32.52-PM	.031	.004-.012	.020-.118		2909			2972									2555	3599		
		CCMT32.53-PM	.047	.005-.014	.039-.118		2919			2983												
-UF	 Finishing	CCMT21.51-UF	.016	.002-.008	.020-.079	0163	2365	0164	3195	0165												
		CCMT32.51-UF	.016	.002-.010	.020-.079	0169	2371	0170	3197	0171												
		CCMT32.52-UF	.031	.002-.010	.039-.079	0964	2578	0951	3333	0953												
-UG	 General	CCMT21.51-UG	.016	.004-.010	.020-.079		2357	0167	3196	0168			2224			1900						
		CCMT21.52-UG	.031	.004-.010	.031-.079		2378	0683	3301	0684			2225			1901						
		CCMT32.51-UG	.016	.006-.012	.020-.098		2206	0173	3198	0174			0883			1586						
		CCMT32.52-UG	.031	.006-.012	.031-.098	0150	2180	0151	3191	0152			1908			1902						

Turning Inserts - Positive

Recommended cutting conditions : D26

DCGT / DCMT (55˚ Rhombic)



Series	IC	S
DC.. 21.5	.250	.094
DC.. 32.5	.375	.156

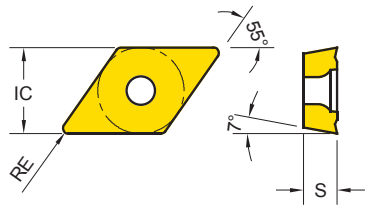
EDP 2200..

DCGT DCMT	Designation	RE	Fn (In/rev.)	Ap (In)	CVD							PVD						Cermet		Uncoated	DLC
					YG3010	YG3115	YG3020	YG3125	YG3030	YG2025	YG2035	YG211	YG213	YG303	YG214	YG401	YG411	YT100	YT100G	YG10	YG100
-AL Aluminum	DCGT21.50.5-AL	.008	.000-.008	.002-.118																1399	
	DCGT21.51-AL	.016	.001-.012	.004-.157																1400	3562
	DCGT32.50-AL	.004	.000-.012	.002-.157																2100	2101
	DCGT32.50.5-AL	.008	.001-.012	.002-.157																0341	0342
	DCGT32.51-AL	.016	.001-.020	.004-.197																0083	0332
	DCGT32.52-AL	.031	.001-.020	.004-.197																0084	0333
-SF HRSA Finishing	DCGT21.50-SF	.004	.001-.006	.004-.059										4275	2342	2068	4055				
	DCGT21.50.5-SF	.008	.001-.006	.004-.059										4276	2343	2069	4056				
	DCGT21.51-SF	.016	.001-.008	.004-.059									2338	4277	2344	2070	4057				
	DCGT32.50-SF	.004	.000-.002	.004-.098										4278	2345	2075	4058		4303		
	DCGT32.50.5-SF	.008	.001-.006	.004-.098								0559	0560	4279	1478	1474	4059				
	DCGT32.51-SF	.016	.001-.008	.004-.098								1460	1473	4280	1479	1463	4060				
	DCGT32.52-SF	.031	.001-.008	.004-.098										4281	2346	2076	4061				
	DCMT32.51-SF	.016	.001-.006	.004-.059								1111	1112		1172	1332					
-MF Stainless steel Finishing	DCMT21.50.5-MF	.008	.002-.006	.002-.059						2799	3703					3988	4093				
	DCMT21.51-MF	.016	.002-.007	.003-.059						2504	3704	1978	1979		1980	2030	4094				
	DCMT32.50.5-MF	.008	.002-.006	.003-.079						2505	3707	2005	2006		2007	2031	4095				
	DCMT32.51-MF	.016	.002-.010	.004-.079						2506	3708	1885	1886		1927	2032	4096				
	DCMT32.52-MF	.031	.003-.012	.006-.079						2507	3710	1963	1964		1965	2033	4097				
-MM Stainless steel Medium	DCMT21.51-MM	.016	.002-.007	.008-.091						2516	3705	1999	2000		2001	2040	4062				
	DCMT21.52-MM	.031	.003-.010	.020-.091						2817	3706		4300								
	DCMT32.51-MM	.016	.002-.007	.010-.118						2517	3709	1990	1991		1992	2041	4063				
	DCMT32.52-MM	.031	.003-.010	.020-.118						2518	3711	1984	1985		1986	2042	4064				
	DCMT32.53-MM	.047	.005-.014	.047-.118						2818	3712										

Turning Inserts - Positive

Recommended cutting conditions : D26

DCGT / DCMT (55˚ Rhombic)



Series	IC	S
DC.. 21.5	.250	.094
DC.. 32.5	.375	.156

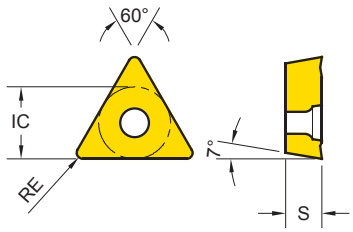
EDP 2200..

DCGT DCMT	Designation	RE	Fn (In/rev.)	Ap (In)	CVD							PVD						Cermet		Uncoated	DLC
					YG3010	YG3115	YG3020	YG3125	YG3030	YG2025	YG2035	YG211	YG213	YG303	YG214	YG401	YG411	YT100	YT100G	YG10	YG100
-PF Finishing	DCMT21.50.5-PF	.008	.002-.006	.002-.059		2896			2959									2783	3614		
	DCMT21.51-PF	.016	.002-.007	.003-.059		2881			2942									2544	3589		
	DCMT32.50.5-PF	.008	.002-.006	.003-.079		2882			2943									2545	3005		
	DCMT32.51-PF	.016	.002-.010	.004-.079		2862		3825	2944									2546	3590		
	DCMT32.52-PF	.031	.003-.008	.006-.079		2883		3627	2945									2547	3591		
-PM Medium	DCMT21.51-PM	.016	.003-.012	.008-.091		2910			2973									2556	3600		
	DCMT21.52-PM	.031	.003-.010	.020-.091		2923		3385	2987												
	DCMT32.51-PM	.016	.002-.007	.010-.118		2911			2974									2557	3601		
	DCMT32.52-PM	.031	.003-.010	.020-.118		2851		4249	2975									2558	3602		
	DCMT32.53-PM	.047	.005-.014	.047-.118		2924			2988												
-UF Finishing	DCMT21.51-UF	.016	.002-.008	.020-.079	0207	2397	0208	3209	0209			1909			1903						
	DCMT32.51-UF	.016	.002-.010	.020-.079	0213	2208	0214	3211	0215			1044	1043		1910						
	DCMT32.52-UF	.031	.002-.010	.039-.079	0219	1897	0220	3213	0221												
-UG General	DCMT21.51-UG	.016	.004-.010	.020-.079	0210	2391	0211	3210	0212			2190									
	DCMT21.52-UG	.031	.004-.010	.031-.079	0484	2386	0717	3309	1136												
	DCMT32.51-UG	.016	.006-.012	.020-.098		2209	0217	3212	0218			1699	1520		1522	1521					
	DCMT32.52-UG	.031	.006-.012	.031-.098		2215	0223	3214	0224			1935									
	DCMT32.53-UG	.047	.006-.014	.059-.118		2605		3393													

Turning Inserts - Positive

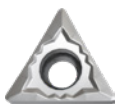
Recommended cutting conditions : D26

TCGT / TCMT (Triangle)



Series	IC	S
TC.. 1.81.5	.219	.094
TC.. 21.5	.250	.094
TC.. 32.5	.375	.156

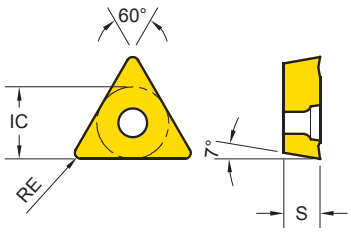
EDP 2200..

TCGT TCMT		Designation	RE	Fn (In/rev.)	Ap (In)	CVD							PVD						Cermet		Uncoated	DLC
						YG3010	YG3115	YG3020	YG3125	YG3030	YG2025	YG2035	YG211	YG213	YG303	YG214	YG401	YG411	YT100	YT100G	YG10	YG100
-AL	 Aluminum	TCGT21.51-AL	.016	.001-.012	.004-.157																1333	
		TCGT32.50.5-AL	.008	.001-.012	.002-.197																0343	0344
		TCGT32.51-AL	.016	.001-.016	.004-.217																0085	0334
		TCGT32.52-AL	.031	.001-.020	.004-.217																0086	0335
-MF	 Stainless steel Finishing	TCMT21.50.5-MF	.008	.002-.006	.004-.067						2804	3755										
		TCMT21.51-MF	.016	.003-.008	.008-.067						2805	3756					2565	4099				
		TCMT21.52-MF	.031	.003-.010	.012-.067						2806	3758					2566	4100				
		TCMT32.51-MF	.016	.002-.010	.004-.079						2508	3760	1981	1982		1983	2034	4101				
		TCMT32.52-MF	.031	.003-.012	.006-.079						2509	3762	1966	1967		1968	2026	4102				
-MM	 Stainless steel Medium	TCMT21.51-MM	.016	.002-.007	.010-.087						2824	3757										
		TCMT21.52-MM	.031	.004-.010	.020-.087						2825	3759										
		TCMT32.51-MM	.016	.003-.010	.010-.118						2520	3761	1993	1994		1995	2043	4072				
		TCMT32.52-MM	.031	.004-.012	.020-.118						2521	3763	1952	1953		1954	1955	4073				
		TCMT32.53-MM	.047	.005-.014	.035-.118						2826	3764										
-PF	 Medium	TCMT21.50.5-PF	.008	.002-.006	.004-.067		2901			2964												
		TCMT21.51-PF	.016	.003-.008	.008-.067		2902			2965									2711	3608		
		TCMT21.52-PF	.031	.003-.010	.012-.067		2903			2966												
		TCMT32.51-PF	.016	.002-.010	.004-.079		2884			2946									2548	3592		
		TCMT32.52-PF	.031	.003-.012	.006-.079		2885			2947									2549	3593		
-PM	 Medium	TCMT21.51-PM	.016	.002-.007	.010-.087		2931			2995												
		TCMT21.52-PM	.031	.004-.010	.020-.087		2932			2996												
		TCMT32.51-PM	.016	.003-.010	.010-.118		2913			2977									2559	3603		
		TCMT32.52-PM	.031	.004-.012	.020-.118		2914			2978									2560	3604		
		TCMT32.53-PM	.047	.005-.014	.035-.118		2933			2997												

Turning Inserts - Positive

Recommended cutting conditions : D26

TCGT / TCMT (Triangle)

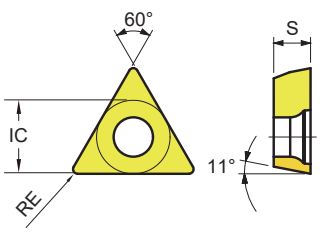


Series	IC	S
TC.. 1.81.5	.219	.094
TC.. 21.5	.250	.094
TC.. 32.5	.375	.156

EDP 2200..

TCGT TCMT	Designation	RE	Fn (In/rev.)	Ap (In)	CVD							PVD						Cermet		Uncoated	DLC
					YG3010	YG3115	YG3020	YG3125	YG3030	YG2025	YG2035	YG211	YG213	YG303	YG214	YG401	YG411	YT100	YT100G	YG10	YG100
-UF Finishing	TCMT1.81.51-UF	.016	.002-.008	.020-.059		3162			3164												
	TCMT21.51-UF	.016	.002-.008	.020-.079	0395	2384	0396	3263	1196			1033	1034		1645						
	TCMT32.51-UF	.016	.002-.010	.020-.079	0397	2377	0398	3264	1046			1906			1905						
	TCMT32.52-UF	.031	.002-.010	.031-.079		2369	0625	3299	1045												
-UG General	TCMT1.81.51-UG	.016	.004-.010	.020-.059		3165			3167												
	TCMT1.81.52-UG	.031	.004-.010	.031-.059		3168			3170												
	TCMT21.51-UG	.016	.004-.010	.020-.079	0264	2642	0265	3228	0266			2240									
	TCMT21.52-UG	.031	.004-.010	.031-.079		2362	0715	3308	1204												
	TCMT32.51-UG	.016	.006-.012	.020-.098	0267	2379	0268	3229	0269												
	TCMT32.52-UG	.031	.006-.012	.031-.098		2175	0157	3193	0158			2241			1907						

TPMT (Triangle)



Series	IC	S
TP.. 22	.250	.125

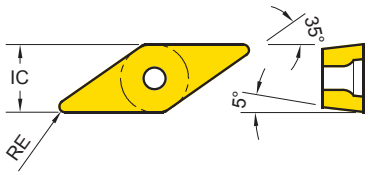
EDP 2200..

TPMT	Designation	RE	Fn (In/rev.)	Ap (In)	CVD							PVD						Cermet		Uncoated	DLC
					YG3010	YG3115	YG3020	YG3125	YG3030	YG2025	YG2035	YG211	YG213	YG303	YG214	YG401	YG411	YT100	YT100G	YG10	YG100
-PSF Finishing	TPMT221-PSF	.016																3563			

Turning Inserts - Positive

Recommended cutting conditions : D26

VBGT / VBMT (35˚ Rhombic)



Series	IC	S
VB.. 22	.250	.125
VB.. 33	.375	.187

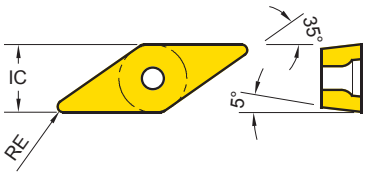
EDP 2200..

VBGT VBMT	Designation	RE	Fn (In/rev.)	Ap (In)	CVD							PVD						Cermet		Uncoated	DLC
					YG3010	YG3115	YG3020	YG3125	YG3030	YG2025	YG2035	YG211	YG213	YG303	YG214	YG401	YG411	YT100	YT100G	YG10	YG100
SF HRSA Finishing	VBGT220-SF	.004	.000-.008	.004-.059										4282	2432		4074				
	VBGT220.5-SF	.008	.001-.008	.004-.059										4283	2433		4075				
	VBGT221-SF	.016	.002-.008	.008-.059										4284	2358		4076				
	VBGT331-SF	.016	.002-.008	.008-.079										4285		2350	4077				
	VBGT332-SF	.031	.002-.008	.016-.079										4286		3172	4078				
MF Stainless steel Finishing	VBMT221-MF	.016	.002-.008	.004-.067						2807	3775		3822				4103				
	VBMT222-MF	.031	.003-.009	.012-.067						2808	3777										
	VBMT330.5-MF	.008	.002-.006	.004-.079						2510	3779	2008	2009		2010	2036	4104				
	VBMT331-MF	.016	.002-.008	.008-.079		2842				2511	3780	1960	1961		1962	2037	4105				
	VBMT332-MF	.031	.003-.011	.012-.079						2512	3782	2011	2012		2013	2038	4106				
MM Stainless steel Medium	VBMT221-MM	.016	.002-.007	.010-.087						2827	3776										
	VBMT222-MM	.031	.003-.009	.020-.087						2828	3778						4079				
	VBMT331-MM	.016	.003-.008	.010-.106						2522	3781	1996	1997		1998	2044	4080				
	VBMT332-MM	.031	.003-.011	.020-.106						2523	3783	1987	1988		1989	2045	4081				
PF Cermet Medium	VBMT221-PF	.016	.002-.008	.004-.067		2904		3628	2967									2854	3618		
	VBMT222-PF	.031	.003-.009	.012-.067		2905			2968												
	VBMT330.5-PF	.008	.002-.006	.004-.079		2886			2948									2550	3594		
	VBMT331-PF	.016	.002-.008	.008-.079		2863		3629	2949									2551	3595		
	VBMT332-PF	.031	.003-.011	.012-.079		2887			2950									2552	3596		
PM Cermet Medium	VBMT221-PM	.016	.002-.007	.010-.087		2934			2998												
	VBMT222-PM	.031	.003-.009	.020-.087		2935			2999									2855	3619		
	VBMT331-PM	.016	.003-.008	.010-.106		2915			2979									2561	3605		
	VBMT332-PM	.031	.003-.011	.020-.106		2916			2980									2562	3606		

Turning Inserts - Positive

Recommended cutting conditions : D26

VBGT / VBMT (35˚ Rhombic)



Series	IC	S
VB.. 22	.250	.125
VB.. 33	.375	.187

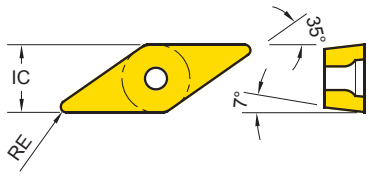
EDP 2200..

VBGT VBMT	Designation	RE	Fn (In/rev.)	Ap (In)	CVD							PVD						Cermet		Uncoated	DLC
					YG3010	YG3115	YG3020	YG3125	YG3030	YG2025	YG2035	YG211	YG213	YG303	YG214	YG401	YG411	YT100	YT100G	YG10	YG100
UF Finishing	VBMT221-UF	.016	.002-.006	.004-.031	2165	2697															
	VBMT222-UF	.031	.002-.006	.016-.039	2166	2698															
	VBMT331-UF	.016	.002-.010	.020-.079	0294	2364	0295	3238	0296												
	VBMT332-UF	.031	.002-.010	.031-.079		2216	0301	3240	0302												
UG General	VBMT331-UG	.016	.006-.012	.020-.098	0297	2181	0298	3239	0299			2191			1936						
	VBMT332-UG	.031	.006-.012	.031-.098		2211	0304	3241	0305			2192			1937						

Turning Inserts - Positive

Recommended cutting conditions : D26

VCGT / VCMT (35˚ Rhombic)



Series	IC	S
VC.. 22	.250	.125
VC.. 33	.375	.187

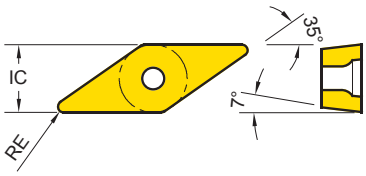
EDP 2200..

VCGT VCMT	Designation	RE	Fn (In/rev.)	Ap (In)	CVD							PVD						Cermet		Uncoated	DLC
					YG3010	YG3115	YG3020	YG3125	YG3030	YG2025	YG2035	YG211	YG213	YG303	YG214	YG401	YG411	YT100	YT100G	YG10	YG100
AL Aluminum	VCGT220-AL	.004	.001-.006	.002-.118																1041	2102
	VCGT220.5-AL	.008	.001-.008	.002-.118																1042	1353
	VCGT221-AL	.016	.001-.010	.004-.157																1518	1519
	VCGT330.5-AL	.008	.001-.012	.002-.197																0417	0418
	VCGT331-AL	.016	.001-.016	.004-.197																0087	0336
	VCGT332-AL	.031	.001-.020	.004-.197																0419	0420
	VCGT333-AL	.047	.001-.020	.004-.197																2081	2082
SF HRSA Finishing	VCGT220-SF	.004	.000-.008	.004-.059										4287	2347	2077	4082				
	VCGT220.5-SF	.008	.001-.008	.004-.059								1475	1476	4288	1480	1481	4083		4263		
	VCGT221-SF	.016	.002-.008	.008-.059									3845	4289	2348	2078	4084				
	VCGT222-SF	.031	.002-.008	.016-.059										4290	2349	2079	4085				
	VCGT330.5-SF	.008	.001-.008	.004-.079															4264		
	VCGT331-SF	.016	.002-.008	.008-.079															4265		
MF Stainless steel Finishing	VCMT221-MF	.016	.002-.008	.004-.067						2513	3784	2014	2015		2016	2035	4107				
	VCMT331-MF	.016	.002-.008	.008-.079						2809	3786										
	VCMT332-MF	.031	.003-.011	.012-.079						2810	3788										
MM Stainless steel Medium	VCMT221-MM	.016	.002-.007	.010-.087						2829	3785										
	VCMT331-MM	.016	.003-.008	.010-.106						2830	3787										
	VCMT332-MM	.031	.003-.011	.020-.106						2831	3789										
PF Finishing	VCMT221-PF	.016	.002-.008	.004-.067		2888			2951									2553	3597		
	VCMT331-PF	.016	.002-.008	.008-.079		2906			2969												
	VCMT332-PF	.031	.003-.011	.012-.079		2907			2970												
PM Medium	VCMT221-PM	.016	.002-.007	.010-.087		2936		4250	3000												
	VCMT331-PM	.016	.003-.008	.010-.106		2937			3001												
	VCMT332-PM	.031	.003-.011	.020-.106		2938			3002												

Turning Inserts - Positive

Recommended cutting conditions : D26

VCGT / VCMT (35˚ Rhombic)



Series	IC	S
VC.. 22	.250	.125
VC.. 33	.375	.187

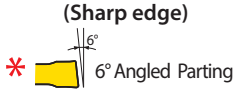
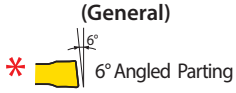
EDP 2200..

VCGT VCMT	Designation	RE	Fn (In/rev.)	Ap (In)	CVD							PVD						Cermet		Uncoated	DLC
					YG3010	YG3115	YG3020	YG3125	YG3030	YG2025	YG2035	YG211	YG213	YG303	YG214	YG401	YG411	YT100	YT100G	YG10	YG100
UF  Finishing	VCMT331-UF	.016	.002-.010	.020-.079	0716	2385	0421	3270	0955												
	VCMT332-UF	.031	.002-.010	.039-.079	0557	2699	0558	3289													
UG  General	VCMT331-UG	.016	.004-.008	.012-.098								2258									
	VCMT332-UG	.031	.006-.012	.031-.098	0946	2422	0422	3271	0956			2259									

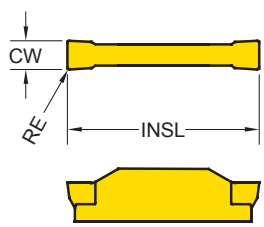
Parting & Grooving

Recommended cutting conditions : D27

TDP / TDN Parting & Grooving Inserts

TD.		EDP No.		Designation	RE (In)	Parting & Grooving	
		YG602	YG603			Fn (In/rev.)	CDX (In)
-P	 Parting & Grooving (Sharp edge)	52000012	52000078	TDP 2002	.008	.002-.005	.748
		52000029	52000076	TDP 3002	.008	.002-.006	.748
	 Parting & Grooving Right Hand Shown (Sharp edge)  * 6° Angled Parting	52000045	52000085	*TDPR 2002 - 6	.008	.001-.003	.748
		52000048	52000089	*TDPR 3002 - 6	.008	.002-.005	.748
-N	 Parting & Grooving Right Hand Shown (General)  * 6° Angled Parting	52000043	52000083	*TDNR 2002 - 6	.008	.002-.006	.748
		52000040	52000087	*TDNR 3002 - 6	.008	.002-.007	.748

* CDX : Cutting Depth Maximum



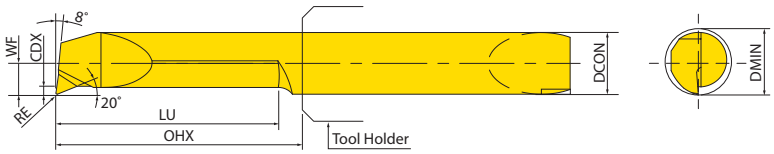
Series	INSL	CW
TD * 2	.787	.079
TD * 3	.787	.118

SOLID MINIATURE TURNING for **SMALL BORE**

Recommended cutting conditions : D27

BP - Boring & Profiling - Boring Tool





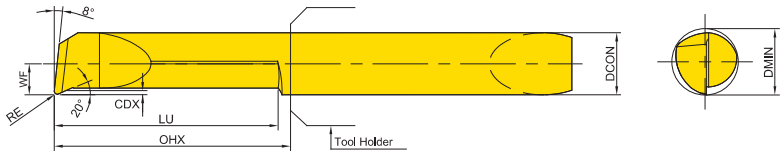
KAPR	DCON mm(inch)	Designation	EDP	Inch(in)						
				DMIN	LU	RE	CDX	WF	OHX	OAL
98°	4 (.157)	NCBP4R - 10.04 - 005 - YG812	NCBP04R1004005T	.039	.16	.002	.004	.018	.51	1.10
		NCBP4R - 10.04 - 010 - YG812	NCBP04R1004010T	.039	.16	.004	.004	.018	.51	1.10
		NCBP4R - 10.06 - 005 - YG812	NCBP04R1006005T	.039	.24	.002	.004	.018	.51	1.10
		NCBP4R - 10.06 - 010 - YG812	NCBP04R1006010T	.039	.24	.004	.004	.018	.51	1.10
		NCBP4R - 17.06 - 005 - YG812	NCBP04R1706005T	.067	.24	.002	.008	.028	.51	1.10
		NCBP4R - 17.06 - 010 - YG812	NCBP04R1706010T	.067	.24	.004	.008	.028	.51	1.10
		NCBP4R - 17.09 - 005 - YG812	NCBP04R1709005T	.067	.35	.002	.008	.028	.51	1.10
		NCBP4R - 17.09 - 010 - YG812	NCBP04R1709010T	.067	.35	.004	.008	.028	.51	1.10
		NCBP4R - 22.06 - 005 - YG812	NCBP04R2206005T	.087	.24	.002	.008	.037	.51	1.10
		NCBP4R - 22.06 - 010 - YG812	NCBP04R2206010T	.087	.24	.004	.008	.037	.51	1.10
		NCBP4R - 22.09 - 005 - YG812	NCBP04R2209005T	.087	.35	.002	.008	.037	.51	1.10
		NCBP4R - 22.09 - 010 - YG812	NCBP04R2209010T	.087	.35	.004	.008	.037	.51	1.10
		NCBP4R - 22.13 - 010 - YG812	NCBP04R2213010T	.087	.51	.004	.008	.037	.71	1.30
		NCBP4R - 27.10 - 005 - YG812	NCBP04R2710005T	.106	.39	.002	.008	.047	.51	1.10
		NCBP4R - 27.10 - 015 - YG812	NCBP04R2710015T	.106	.39	.006	.008	.047	.51	1.10
		NCBP4R - 27.15 - 005 - YG812	NCBP04R2715005T	.106	.59	.002	.008	.047	.71	1.30
		NCBP4R - 27.15 - 015 - YG812	NCBP04R2715015T	.106	.59	.006	.008	.047	.71	1.30
		NCBP4R - 32.10 - 015 - YG812	NCBP04R3210015T	.126	.39	.006	.008	.057	.51	1.10
		NCBP4R - 32.15 - 015 - YG812	NCBP04R3215015T	.126	.59	.006	.008	.057	.71	1.30
		NCBP4R - 32.20 - 005 - YG812	NCBP04R3220005T	.126	.79	.002	.008	.057	.91	1.50
		NCBP4R - 32.20 - 015 - YG812	NCBP04R3220015T	.126	.79	.006	.008	.057	.91	1.50
		NCBP4R - 42.10 - 015 - YG812	NCBP04R4210015T	.165	.39	.006	.012	.077	.51	1.10
		NCBP4R - 42.15 - 005 - YG812	NCBP04R4215005T	.165	.59	.002	.012	.077	.71	1.30
		NCBP4R - 42.15 - 015 - YG812	NCBP04R4215015T	.165	.59	.006	.012	.077	.71	1.30
		NCBP4R - 42.20 - 005 - YG812	NCBP04R4220005T	.165	.79	.002	.012	.077	.91	1.50
		NCBP4R - 42.20 - 015 - YG812	NCBP04R4220015T	.165	.79	.006	.012	.077	.91	1.50
		NCBP4R - 42.25 - 005 - YG812	NCBP04R4225005T	.165	.98	.002	.012	.077	1.10	1.69
		NCBP4R - 42.25 - 015 - YG812	NCBP04R4225015T	.165	.98	.006	.012	.077	1.10	1.69
	6 (.236)	NCBP6R - 62.15 - 020 - YG812	NCBP06R6215020T	.244	.59	.008	.020	.116	.71	1.69
		NCBP6R - 62.20 - 020 - YG812	NCBP06R6220020T	.244	.79	.008	.020	.116	.91	1.89
		NCBP6R - 62.25 - 020 - YG812	NCBP06R6225020T	.244	.98	.008	.020	.116	1.10	2.09
		NCBP6R - 62.30 - 020 - YG812	NCBP06R6230020T	.244	1.18	.008	.020	.116	1.30	2.28
		NCBP6R - 62.35 - 020 - YG812	NCBP06R6235020T	.244	1.38	.008	.020	.116	1.50	2.48
		NCBP6R - 62.40 - 020 - YG812	NCBP06R6240020T	.244	1.57	.008	.020	.116	1.69	2.68

SOLID MINIATURE TURNING for SMALL BORE

Recommended cutting conditions : D27

BO - Boring with Chip Breaker - Boring Tool





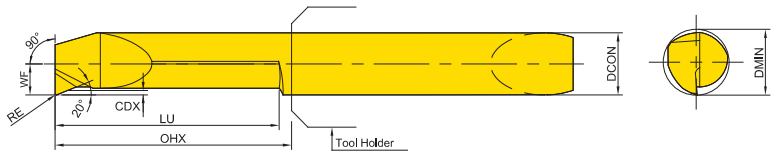
KAPR	DCON mm(inch)	Designation	EDP	Inch(in)						
				DMIN	LU	RE	CDX	WF	OHX	OAL
98°	4 (.157)	NCBO4R - 10.06 - 005 - YG812	NCBO04R1006005T	.039	.24	.002	.004	.018	.51	1.10
		NCBO4R - 10.06 - 010 - YG812	NCBO04R1006010T	.039	.24	.004	.004	.018	.51	1.10
		NCBO4R - 17.09 - 005 - YG812	NCBO04R1709005T	.067	.35	.002	.008	.028	.51	1.10
		NCBO4R - 17.09 - 010 - YG812	NCBO04R1709010T	.067	.35	.004	.008	.028	.51	1.10
		NCBO4R - 22.09 - 005 - YG812	NCBO04R2209005T	.087	.35	.002	.008	.037	.51	1.10
		NCBO4R - 22.09 - 010 - YG812	NCBO04R2209010T	.087	.35	.004	.008	.037	.51	1.10
		NCBO4R - 22.13 - 010 - YG812	NCBO04R2213010T	.087	.51	.004	.008	.037	.71	1.30
		NCBO4R - 27.15 - 005 - YG812	NCBO04R2715005T	.106	.59	.002	.008	.047	.71	1.30
		NCBO4R - 27.15 - 015 - YG812	NCBO04R2715015T	.106	.59	.006	.008	.047	.71	1.30
		NCBO4R - 32.15 - 015 - YG812	NCBO04R3215015T	.126	.59	.006	.008	.057	.71	1.30
		NCBO4R - 32.20 - 005 - YG812	NCBO04R3220005T	.126	.79	.002	.008	.057	.91	1.50
		NCBO4R - 32.20 - 015 - YG812	NCBO04R3220015T	.126	.79	.006	.008	.057	.91	1.50
		NCBO4R - 42.20 - 005 - YG812	NCBO04R4220005T	.165	.79	.002	.012	.077	.91	1.50
		NCBO4R - 42.20 - 015 - YG812	NCBO04R4220015T	.165	.79	.006	.012	.077	.91	1.50
		NCBO4R - 42.25 - 005 - YG812	NCBO04R4225005T	.165	.98	.002	.012	.077	1.10	1.69
		NCBO4R - 42.25 - 015 - YG812	NCBO04R4225015T	.165	.98	.006	.012	.077	1.10	1.69
	6 (.236)	NCBO6R - 62.15 - 020 - YG812	NCBO06R6215020T	.244	.59	.008	.020	.116	.81	1.69
		NCBO6R - 62.25 - 020 - YG812	NCBO06R6225020T	.244	.98	.008	.020	.116	1.10	2.09
		NCBO6R - 62.30 - 020 - YG812	NCBO06R6230020T	.244	1.18	.008	.020	.116	1.30	2.28
		NCBO6R - 62.35 - 020 - YG812	NCBO06R6235020T	.244	1.38	.008	.020	.116	1.50	2.48
		NCBO6R - 62.40 - 020 - YG812	NCBO06R6240020T	.244	1.57	.008	.020	.116	1.69	2.68

SOLID MINIATURE TURNING for **SMALL BORE**

Recommended cutting conditions : D27

BF - 90° Boring - Boring Tool





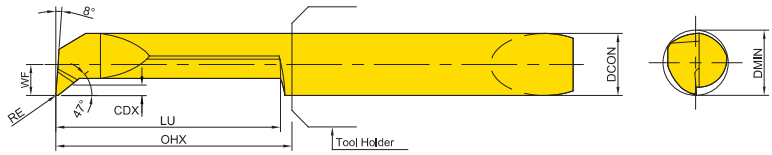
KAPR	DCON mm(inch)	Designation	EDP	Inch(in)						
				DMIN	LU	RE	CDX	WF	OHX	OAL
90°	4 (.157)	NCBF4R - 10.04 - 010 - YG812	NCBF04R1004010T	.039	.16	.004	.004	.018	.51	1.10
		NCBF4R - 10.06 - 010 - YG812	NCBF04R1006010T	.039	.24	.004	.004	.018	.51	1.10
		NCBF4R - 17.06 - 010 - YG812	NCBF04R1706010T	.067	.24	.004	.008	.028	.51	1.10
		NCBF4R - 17.09 - 010 - YG812	NCBF04R1709010T	.067	.35	.004	.008	.028	.51	1.10
		NCBF4R - 22.06 - 010 - YG812	NCBF04R2206010T	.087	.24	.004	.008	.037	.51	1.10
		NCBF4R - 22.09 - 010 - YG812	NCBF04R2209010T	.087	.35	.004	.008	.037	.51	1.10
		NCBF4R - 22.13 - 010 - YG812	NCBF04R2213010T	.087	.51	.004	.008	.037	.71	1.30
		NCBF4R - 27.10 - 015 - YG812	NCBF04R2710015T	.106	.39	.006	.008	.047	.51	1.10
		NCBF4R - 27.15 - 015 - YG812	NCBF04R2715015T	.106	.59	.006	.008	.047	.71	1.30
		NCBF4R - 32.10 - 015 - YG812	NCBF04R3210015T	.126	.39	.006	.008	.057	.51	1.10
		NCBF4R - 32.15 - 015 - YG812	NCBF04R3215015T	.126	.59	.006	.008	.057	.71	1.30
		NCBF4R - 32.20 - 015 - YG812	NCBF04R3220015T	.126	.79	.006	.008	.057	.91	1.50
		NCBF4R - 42.10 - 015 - YG812	NCBF04R4210015T	.165	.39	.006	.012	.077	.51	1.10
		NCBF4R - 42.15 - 015 - YG812	NCBF04R4215015T	.165	.59	.006	.012	.077	.71	1.30
		NCBF4R - 42.20 - 015 - YG812	NCBF04R4220015T	.165	.79	.006	.012	.077	.91	1.50
		NCBF4R - 42.25 - 015 - YG812	NCBF04R4225015T	.165	.98	.006	.012	.077	1.10	1.69
	6 (.236)	NCBF6R - 62.15 - 020 - YG812	NCBF06R6215020T	.244	.59	.008	.020	.116	.71	1.69
		NCBF6R - 62.20 - 020 - YG812	NCBF06R6220020T	.244	.79	.008	.020	.116	.91	1.89
		NCBF6R - 62.25 - 020 - YG812	NCBF06R6225020T	.244	.98	.008	.020	.116	1.10	2.09
		NCBF6R - 62.30 - 020 - YG812	NCBF06R6230020T	.244	1.18	.008	.020	.116	1.30	2.28
		NCBF6R - 62.35 - 020 - YG812	NCBF06R6235020T	.244	1.38	.008	.020	.116	1.50	2.48
		NCBF6R - 62.40 - 020 - YG812	NCBF06R6240020T	.244	1.57	.008	.020	.116	1.69	2.68

SOLID MINIATURE TURNING for SMALL BORE

Recommended cutting conditions : D27

PR - Profiling - Boring Tool





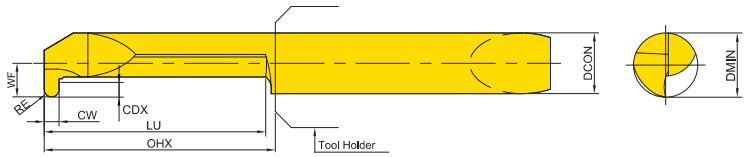
KAPR	DCON mm(inch)	Designation	EDP	Inch(in)						
				DMIN	LU	RE	CDX	WF	OHX	OAL
98°	4 (.157)	NCPR4R - 10.04 - 010 - YG812	NCPR04R1004010T	.039	.16	.004	.004	.018	.51	1.10
		NCPR4R - 10.06 - 010 - YG812	NCPR04R1006010T	.039	.24	.004	.004	.018	.51	1.10
		NCPR4R - 17.06 - 010 - YG812	NCPR04R1706010T	.067	.24	.004	.008	.028	.51	1.10
		NCPR4R - 17.09 - 010 - YG812	NCPR04R1709010T	.067	.35	.004	.008	.028	.51	1.10
		NCPR4R - 22.06 - 010 - YG812	NCPR04R2206010T	.087	.24	.004	.016	.037	.51	1.10
		NCPR4R - 22.09 - 010 - YG812	NCPR04R2209010T	.087	.35	.004	.016	.037	.51	1.10
		NCPR4R - 22.13 - 010 - YG812	NCPR04R2213010T	.087	.51	.004	.016	.037	.71	1.30
		NCPR4R - 27.10 - 015 - YG812	NCPR04R2710015T	.106	.39	.006	.020	.047	.51	1.10
		NCPR4R - 27.15 - 015 - YG812	NCPR04R2715015T	.106	.59	.006	.020	.047	.71	1.30
		NCPR4R - 32.10 - 015 - YG812	NCPR04R3210015T	.126	.39	.006	.024	.057	.51	1.10
		NCPR4R - 32.15 - 015 - YG812	NCPR04R3215015T	.126	.59	.006	.024	.057	.71	1.30
		NCPR4R - 32.20 - 015 - YG812	NCPR04R3220015T	.126	.79	.006	.024	.057	.91	1.50
		NCPR4R - 42.10 - 015 - YG812	NCPR04R4210015T	.165	.39	.006	.031	.077	.51	1.10
		NCPR4R - 42.15 - 015 - YG812	NCPR04R4215015T	.165	.59	.006	.031	.077	.71	1.30
		NCPR4R - 42.20 - 015 - YG812	NCPR04R4220015T	.165	.79	.006	.031	.077	.91	1.50
		NCPR4R - 42.25 - 015 - YG812	NCPR04R4225015T	.165	.98	.006	.031	.077	1.10	1.69
	6 (.236)	NCPR6R - 62.15 - 020 - YG812	NCPR06R6215020T	.244	.59	.008	.071	.116	.71	1.69
		NCPR6R - 62.20 - 020 - YG812	NCPR06R6220020T	.244	.79	.008	.071	.116	.91	1.89
		NCPR6R - 62.25 - 020 - YG812	NCPR06R6225020T	.244	.98	.008	.071	.116	1.10	2.09
		NCPR6R - 62.30 - 015 - YG812	NCPR06R6230015T	.244	1.18	.006	.071	.116	1.30	2.28
		NCPR6R - 62.30 - 020 - YG812	NCPR06R6230020T	.244	1.18	.008	.071	.116	1.30	2.28
		NCPR6R - 62.35 - 020 - YG812	NCPR06R6235020T	.244	1.38	.008	.071	.116	1.50	2.48
		NCPR6R - 62.40 - 020 - YG812	NCPR06R6240020T	.244	1.57	.008	.071	.116	1.69	2.68

SOLID MINIATURE TURNING for **SMALL BORE**

Recommended cutting conditions : D27

GR - Grooving Round - Boring Tool





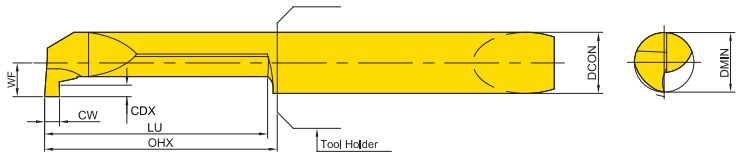
DCON (mm)	Designation	EDP	Inch(in)							
			DMIN	LU	RE	CW	CDX	WF	OHX	OAL
4 (.157)	NCGR4R - 42.15 - 10x08 - YG812	NCGR04R4215100T	.165	.59	.020	.039	.031	.077	.71	1.30
	NCGR4R - 42.15 - 12x08 - YG812	NCGR04R4215120T	.165	.59	.023	.046	.031	.077	.71	1.30
	NCGR4R - 42.15 - 15x08 - YG812	NCGR04R4215150T	.165	.59	.030	.059	.039	.077	.71	1.30
	NCGR4R - 42.15 - 16x08 - YG812	NCGR04R4215160T	.165	.59	.032	.064	.039	.077	.71	1.30
6 (.236)	NCGR6R - 62.25 - 10x18 - YG812	NCGR06R6225100T	.244	.98	.020	.039	.071	.116	1.10	2.09
	NCGR6R - 62.25 - 15x18 - YG812	NCGR06R6225150T	.244	.98	.030	.059	.071	.116	1.10	2.09
	NCGR6R - 62.25 - 16x18 - YG812	NCGR06R6225160T	.244	.98	.030	.064	.031	.116	1.10	2.09
	NCGR6R - 62.25 - 20x18 - YG812	NCGR06R6225200T	.244	.98	.039	.079	.071	.116	1.10	2.09

SOLID MINIATURE TURNING for SMALL BORE

Recommended cutting conditions : D27

GS - Grooving Square - Boring Tool





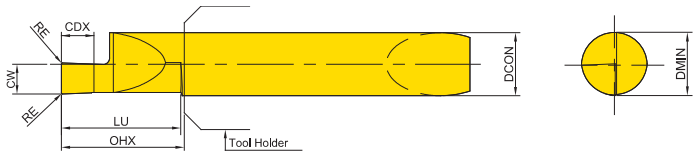
DCON (mm)	Designation	EDP	Inch(in)						
			DMIN	LU	CW	CDX	WF	OHX	OAL
4 (.157)	NCGS4R - 42.10 - 079x08 - YG812	NCGS04R4210079T	.165	.39	.031	.031	.077	.51	1.50
	NCGS4R - 42.15 - 079x08 - YG812	NCGS04R4215079T	.165	.59	.031	.031	.077	.71	1.69
	NCGS4R - 42.20 - 079x08 - YG812	NCGS04R4220079T	.165	.79	.031	.031	.077	.91	1.89
	NCGS4R - 42.10 - 100x08 - YG812	NCGS04R4210100T	.165	.39	.039	.031	.077	.51	1.50
	NCGS4R - 42.15 - 100x08 - YG812	NCGS04R4215100T	.165	.59	.039	.031	.077	.71	1.69
	NCGS4R - 42.20 - 100x08 - YG812	NCGS04R4220100T	.165	.79	.039	.031	.077	.91	1.89
6 (.236)	NCGS6R - 62.10 - 079x18 - YG812	NCGS06R6210079T	.244	.39	.031	.071	.116	.51	1.50
	NCGS6R - 62.15 - 079x18 - YG812	NCGS06R6215079T	.244	.59	.031	.071	.116	.71	1.69
	NCGS6R - 62.25 - 079x18 - YG812	NCGS06R6225079T	.244	.98	.031	.071	.116	1.10	2.09
	NCGS6R - 62.35 - 079x18 - YG812	NCGS06R6235079T	.244	1.38	.031	.071	.116	1.50	2.48
	NCGS6R - 62.10 - 100x18 - YG812	NCGS06R6210100T	.244	.39	.039	.071	.116	.51	1.50
	NCGS6R - 62.15 - 100x18 - YG812	NCGS06R6215100T	.244	.59	.039	.071	.116	.71	1.69
	NCGS6R - 62.25 - 100x18 - YG812	NCGS06R6225100T	.244	.98	.039	.071	.116	1.10	2.09
	NCGS6R - 62.35 - 100x18 - YG812	NCGS06R6235100T	.244	1.38	.039	.071	.116	1.50	2.48
	NCGS6R - 62.10 - 117x18 - YG812	NCGS06R6210117T	.244	.39	.046	.071	.116	.51	1.50
	NCGS6R - 62.15 - 117x18 - YG812	NCGS06R6215117T	.244	.59	.046	.071	.116	.71	1.69
	NCGS6R - 62.25 - 117x18 - YG812	NCGS06R6225117T	.244	.98	.046	.071	.116	1.10	2.09
	NCGS6R - 62.35 - 117x18 - YG812	NCGS06R6235117T	.244	1.38	.046	.071	.116	1.50	2.48
	NCGS6R - 62.10 - 150x18 - YG812	NCGS06R6210150T	.244	.39	.059	.071	.116	.51	1.50
	NCGS6R - 62.15 - 150x18 - YG812	NCGS06R6215150T	.244	.59	.059	.071	.116	.71	1.69
	NCGS6R - 62.25 - 150x18 - YG812	NCGS06R6225150T	.244	.98	.059	.071	.116	1.10	2.09
	NCGS6R - 62.35 - 150x18 - YG812	NCGS06R6235150T	.244	1.38	.059	.071	.116	1.50	2.48
	NCGS6R - 62.10 - 157x18 - YG812	NCGS06R6210157T	.244	.39	.062	.071	.116	.51	1.50
	NCGS6R - 62.15 - 157x18 - YG812	NCGS06R6215157T	.244	.59	.062	.071	.116	.71	1.69
	NCGS6R - 62.25 - 157x18 - YG812	NCGS06R6225157T	.244	.98	.062	.071	.116	1.10	2.09
	NCGS6R - 62.35 - 157x18 - YG812	NCGS06R6235157T	.244	1.38	.062	.071	.116	1.50	2.48
	NCGS6R - 62.10 - 198x18 - YG812	NCGS06R6210198T	.244	.39	.078	.071	.116	.51	1.50
	NCGS6R - 62.15 - 198x18 - YG812	NCGS06R6215198T	.244	.59	.078	.071	.116	.71	1.69
	NCGS6R - 62.25 - 198x18 - YG812	NCGS06R6225198T	.244	.98	.078	.071	.116	1.10	2.09
	NCGS6R - 62.30 - 198x18 - YG812	NCGS06R6230198T	.244	1.18	.078	.071	.116	1.30	2.28
	NCGS6R - 62.10 - 200x18 - YG812	NCGS06R6210200T	.244	.39	.079	.071	.116	.51	1.50
	NCGS6R - 62.15 - 200x18 - YG812	NCGS06R6215200T	.244	.59	.079	.071	.116	.71	1.69
	NCGS6R - 62.25 - 200x18 - YG812	NCGS06R6225200T	.244	.98	.079	.071	.116	1.10	2.09

SOLID MINIATURE TURNING for **SMALL BORE**

Recommended cutting conditions : D27

FI - Face Grooving Internal - Boring Tool

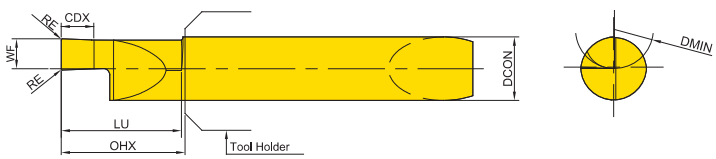




DCON (mm)	Designation	EDP	Inch(in)							
			DMIN	LU	RE	CW	CDX	WF	OHX	OAL
6 (.236)	NCFI6R - 62.15 - 10x20 - YG812	NCFI06R6215010T	.244	.59	.004	.039	.079	.116	.71	1.69
	NCFI6R - 62.15 - 15x30 - YG812	NCFI06R6215015T	.244	.59	.004	.059	.118	.116	.71	1.69
	NCFI6R - 62.15 - 20x40 - YG812	NCFI06R6215020T	.244	.59	.004	.079	.157	.116	.71	1.69
	NCFI6R - 62.15 - 25x50 - YG812	NCFI06R6215025T	.244	.59	.004	.098	.197	.116	.71	1.69
	NCFI6R - 62.15 - 30x60 - YG812	NCFI06R6215030T	.244	.59	.004	.118	.236	.116	.71	1.69

FE - Face Grooving External - Boring Tool





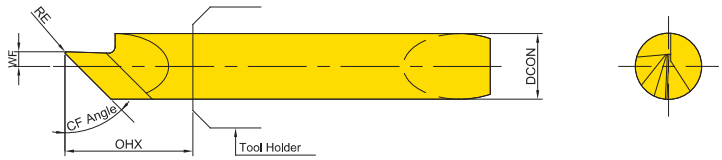
DCON (mm)	Designation	EDP	Inch(in)							
			DMIN	LU	RE	CW	CDX	WF	OHX	OAL
6 (.236)	NCFE6R - 62.15 - 10x20 - YG812	NCFE06R6215010T	.244	.59	.004	.039	.079	.116	.71	1.69
	NCFE6R - 62.15 - 15x30 - YG812	NCFE06R6215015T	.244	.59	.004	.059	.118	.116	.71	1.69
	NCFE6R - 62.15 - 20x40 - YG812	NCFE06R6215020T	.244	.59	.004	.079	.157	.116	.71	1.69
	NCFE6R - 62.15 - 25x50 - YG812	NCFE06R6215025T	.244	.59	.004	.098	.197	.116	.71	1.69
	NCFE6R - 62.15 - 30x60 - YG812	NCFE06R6215030T	.244	.59	.004	.118	.236	.116	.71	1.69

SOLID MINIATURE TURNING for SMALL BORE

Recommended cutting conditions : D27

CH - Chamfering - Boring Tool

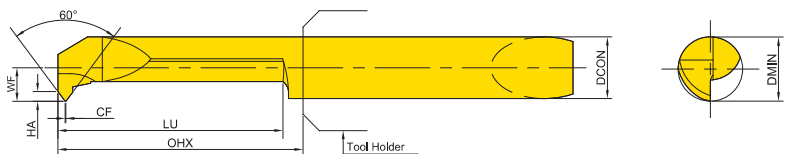




KAPR	DCON mm(inch)	Designation	EDP	Inch(in)					
				DMIN	RE	CDX	WF	OHX	OAL
45°	6 (.236)	NCCH6R - 10.03 - 45 - YG812	NCCH06R103045T	.039	.008	.14	.043	.51	1.50
60°		NCCH6R - 10.04 - 60 - YG812	NCCH06R103060T	.039	.008	.16	.020	.51	1.50

TH - Threading - Boring Tool





* P-60 : Partial Profile, 60°

DCON mm(inch)	Designation	EDP	Inch(in)							
			DMIN	LU	Pitch		WF	HA	CF	OHX	OAL
4 (.157)	NCTH04R-42.15-050-P-60-YG812	NCTV04R4215050T	.165	.591	36	48	.079	.018	.002	.709	1.299
	NCTH04R-42.15-075-P-60-YG812	NCTV04R4215075T	.165	.591	24	36	.093	.026	.003	.709	1.299
	NCTH04R-42.15-100-P-60-YG812	NCTV04R4215100T	.165	.591	20	24	.089	.031	.004	.709	1.299
6 (.236)	NCTH06R-62.15-100-P-60-YG812	NCTV06R6215100T	.244	.591	20	24	.116	.031	.004	.807	1.693
	NCTH06R-62.15-125-P-60-YG812	NCTV06R6215125T	.244	.591	16	20	.091	.038	.005	.807	1.693
	NCTH06R-62.15-150-P-60-YG812	NCTV06R6215150T	.244	.591	14	16	.116	.045	.006	.807	1.693

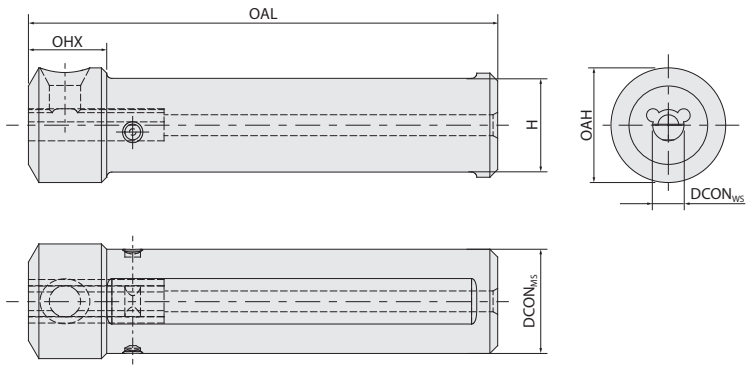
SOLID MINIATURE TURNING for **SMALL BORE**

Recommended cutting conditions : D27

Boring ToolHolder







Scale	Insert Size ($DCON_{WS}$)	Designation	EDP	$DCON_{MS}$	OAL	H	OAH	OHX
Metric / Inch	4 (.157)	NCHI-0500.4i	ZBR0400500	.500	2.756	.421	.624	.551
		NCHI-0625.4i	ZBR0400625	.625	2.953	.546	.687	
		NCHI-0750.4i	ZBR0400750	.750	4.331	.671	.750	
		NCHI - 20.4	ZBR0400020	20 mm	90	18	20	14
		NCHI - 22.4	ZBR0400022	22 mm	110	20	22	
		NCHI-1000.4i	ZBR0401000	1.000	4.331	.906	1.000	.551
	6 (.236)	NCHI-0500.6i	ZBR0600500	.500	2.756	.421	.663	.551
		NCHI-0625.6i	ZBR0600625	.625	2.953	.546	.726	
		NCHI-0750.6i	ZBR0600750	.750	4.331	.671	.827	
		NCHI - 20.6	ZBR0600020	20 mm	90	18	22	14
		NCHI - 22.6	ZBR0600022	22 mm	110	20	22	
		NCHI-1000.6i	ZBR0601000	1.000	4.331	.906	1.000	.551

Infomation	Screw	Wrench
Description	-	TPWFTP15
EDP	TP156075	18000003

INDEXABLE INSERTS

RECOMMENDED CUTTING CONDITIONS

Turning

Cutting Speed			Vc (SFM)															
ISO	VDI	Sub Group	YG3010		YG3015		YG3115		YG3125		YG3020		YG3030		YG2025		YG2035	
			Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
P	1~5	Non-Alloyed Steel	755	1476	656	1411	591	1640	492	1312	525	1247	427	1148	-	-	-	-
	6~9	Low-Alloyed Steel	591	1247	492	1148	558	1476	427	1148	459	1050	427	919	-	-	-	-
	10~11	High-Alloyed Steel	197	656	295	591	197	984	197	919	197	427	230	361	-	-	-	-
M	12~13	Ferritic & Martensitic	-	-	-	-	-	-	-	-	-	-	-	-	558	722	328	656
	14	Austenitic Stainless Steel	-	-	-	-	-	-	-	-	-	-	-	-	492	656	328	591
K	15~16	Grey Cast Iron	394	984	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	17~18	Nodular Cast Iron	394	919	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N	21~30	Non-Ferrous Metals (Al)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S	31~37	Superalloys & Titanium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H	38~41	Hard Materials	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Turning

Cutting Speed			Vc (SFM)																	
ISO	VDI	Sub Group	YG211		YG213		YG303		YG214		YG401		YG411		YT100		YT100G		YG100		YG10	
			Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
P	1~5	Non-Alloyed Steel	-	-	-	-	80	200	-	-	-	-	-	-	492	1575	558	1640	-	-	-	-
	6~9	Low-Alloyed Steel	-	-	-	-	70	180	-	-	-	-	-	-	525	1575	591	1640	-	-	-	-
	10~11	High-Alloyed Steel	-	-	-	-	60	120	-	-	-	-	-	-	230	591	328	755	-	-	-	-
M	12~13	Ferritic & Martensitic	558	886	394	591	60	160	328	492	-	-	-	-	492	919	558	984	-	-	-	-
	14	Austenitic Stainless Steel	492	755	131	525	40	140	328	492	-	-	-	-	427	853	492	919	-	-	-	-
K	15~16	Grey Cast Iron	-	-	-	-	-	-	-	-	-	-	-	-	427	1476	492	1509	-	-	-	-
	17~18	Nodular Cast Iron	-	-	-	-	-	-	-	-	-	-	-	-	328	1312	427	1378	-	-	-	-
N	21~30	Non-Ferrous Metals (Al)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	820	3937	820	2625
S	31~37	Superalloys & Titanium	98	328	98	230	20	40	98	164	98	295	98	328	-	-	-	-	-	-	-	-
H	38~41	Hard Materials	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Parting & Grooving

Cutting Speed			Vc (SFM)			
ISO	VDI	Sub Group	YG602		YG603	
			Min	Max	Min	Max
P	1~5	Non-Alloyed Steel	394	591	-	-
	6~9	Low-Alloyed Steel	328	459	-	-
	10~11	High-Alloyed Steel	262	361	-	
M	12~13	Ferritic & Martensitic	230	525	164	295
	14	Austenitic Stainless Steel	180	459	131	262
K	15~16	Grey Cast Iron	361	607	-	-
	17~18	Nodular Cast Iron	361	459	-	-
N	21~30	Non-Ferrous Metals (Al)	820	1444	-	-
S	31~37	Superalloys & Titanium	82	148	-	-
H	38~41	Hard Materials	82	164	-	-

Nanocut

YG812 GRADE			Cutting Speed		Feed per Revolution (Fn)	
ISO	VDI	Sub Group	Vc (SFM)		Fn (inch/rev.)	
			Min	Max	Min	Max
P	1~5	Non-Alloyed Steel	558	656	.0006	.0010
	6~9	Low-Alloyed Steel	312	525	.0006	.0010
	10~11	High-Alloyed Steel	279	312	.0006	.0010
M	12~13	Ferritic & Martensitic	344	459	.0006	.0010
	14	Austenitic Stainless Steel	312	427	.0006	.0010
K	15~16	Grey Cast Iron	459	623	.0006	.0010
	17~18	Nodular Cast Iron	459	623	.0006	.0010
N	21~30	Non-Ferrous Metals (Al)	-	-	-	-
S	31~37	Superalloys & Titanium	33	246	.0006	.0010
H	38~41	Hard Materials	-	-	-	-

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