MILLING TOOLS

CBN END MILLS
i-Xmills, CARBIDE INSERT END MILLS
i-SMART, MODULAR CARBIDE HEAD END MILLS
X5070 NANO SOLID CARBIDE END MILLS
4G MILL SOLID CARBIDE END MILLS
X-POWER SOLID CARBIDE END MILLS
JET-POWER SOLID CARBIDE & HSS-PM END MILLS
TitaNox-POWER SOLID CARBIDE END MILLS
V7 PLUS A SOLID CARBIDE END MILLS
V7 Mill INOX SOLID CARBIDE END MILLS
ALU-POWER HPC SOLID CARBIDE END MILLS
ALU-POWER SOLID CARBIDE & HSS-PM END MILLS
D-POWER GRAPHITE DIAMOND COATED SOLID CARBIDE END MILLS
D-POWER CFRP DIAMOND COATED SOLID CARBIDE END MILLS
SOLID CARBIDE ROUTERS CFRP
STANDARD CARBIDE END MILLS
ONLY ONE COATED PM60 END MILLS
SINE-POWER HSS END MILLS
TANK-POWER HSS-PM END MILLS
COBALT & HSS END MILLS
TECHNICAL DATA

YG-1 CO., LTD.

Contents
MILLING TOOLS

CBN END MILLS

CARBIDE INSERTEND MILLS

SOLID CARBIDE END MILLS

HSS END MILLS

TECHNICAL DATA

YG-1 CO., LTD.

CBN END MILLS
Machining High Hardened Steels up to HRc70 / Mirror Finish — CBN END MILLS

i-Xmills, CARBIDE INSERT END MILLS
Available for General Steels(~HRc50), Hardened Steels(up to HRc65) and Graphite — i-Xmill END MILLS

i-Smart, MODULAR CARBIDE HEAD END MILLS
Exchangeable Modular Head for Semi-finishing and finishing on Pre-Hardened Steels up to HRc55 — i-SMART MODULAR TYPE END MILLS

X5070 NANO SOLID CARBIDE END MILLS
High Hardened Steels HRc45 to HRc70 / High Speed Machining / Dry Cutting — X5070 END MILLS

4G MILL SOLID CARBIDE END MILLS
High Speed Cutting for Pre-Hardened Steels up to HRc55 — 4G MILL END MILLS

X-POWER SOLID CARBIDE END MILLS
Medium Steels to High Hardened Steels up to HRc70 — X-POWER END MILLS

JET-POWER SOLID CARBIDE & HSS-PM END MILLS
Exotic materials like Stainless Steels, Nickel alloys and Titanium — JET-POWER END MILLS

TitaNox-POWER SOLID CARBIDE END MILLS
High Speed Machining for Exotic Materials:Titanium, Inconel and Stainless Steels — TitaNox -POWER END MILLS

V7 PLUS A SOLID CARBIDE END MILLS
Silent Cutting of Steels up to HRc40 / Designed as Unequal Leads — V7 PLUS A END MILLS

V7 Mill INOX SOLID CARBIDE END MILLS
Stainless Steels in Heavy and Silent Cutting Materials up to HRc40
Designed as Variable Leads / YG-1's Patent — V7 MILL INOX END MILLS

ALU-POWER HPC SOLID CARBIDE END MILLS
Aluminum, Non-Ferrous and Non-Metallic Materials / Heavy Cutting — ALU-POWER HPC END MILLS

ALU-POWER SOLID CARBIDE & HSS-PM END MILLS
Aluminium Alloys and Silent Cutting / Mirror Surface — ALU-POWER END MILLS

D-POWER GRAPHITE DIAMOND COATED SOLID CARIDE END MILLS
Diamond Coated Carbide End Mills for Graphite — D-POWER GRAPHITE END MILLS

D-POWER CFRP DIAMOND COATED SOLID CARBIDE END MILLS
Diamond Coated Carbide End Mills for composite materials including CFRP, GFRP — D-POWER CFRP END MILLS

SOLID CARBIDE ROUTERS CFRP
For composite materials including CFRP, GFRP — ROUTERS CFRP

STANDARD CARBIDE END MILLS
General Purpose / Any Coating Available — STANDARD CARBIDE END MILLS

ONLY ONE COATED PM60 END MILLS
The optimal solution for unstable cutting condition — ONLY ONE COATED PM60 END MILLS

SINE-POWER HSS END MILLS
High Performance HSS Rougher for Titanium and Titanium Alloys — SINE -POWER END MILLS

TANK-POWER HSS-PM END MILLS
Next Generation of Powdered Metal End Mills / Higher Edge Strength & Feed Rates — TANK-POWER END MILLS

COBALT & HSS END MILLS
General Purpose / Non-coated / Any Coating Available — STANDARD COBALT & HSS END MILLS

TECHNICAL DATA — TECHNICAL DATA

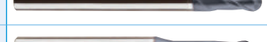
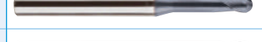
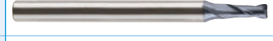
◎ : Excellent ○ : Good

	ITEM	MODEL	DESCRIPTION	PAGE	P							M	K	N		
					Carbon Steels		Alloy Steels		Tool Steels		Hardened Steels	Stainless Steels	Cast Iron	Aluminum	Graphite	
					~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc35~	HRc50~	~HRc28	~HRc35	~HRc8		
INCH																
i-Xmill	XB1A		i-Xmill BALL INSERT FOR GENERAL PURPOSE	**598**	◎	○	◎	○	◎	○		○	○	○		
	XB2C		i-Xmill BALL INSERT FOR HARDENED STEEL		○	◎	○	◎	○	◎	◎		◎			
	XB1D		i-Xmill BALL INSERT FOR GRAPHITE		○		○		○					○	◎	
	ZBT / ZBS		i-Xmill BALL HOLDERS - STEEL	**599**												
	ZBC		i-Xmill BALL HOLDERS - CARBIDE	**600**												
	XR1A		i-Xmill CORNER RADIUS INSERTS FOR GENERAL PURPOSE	**601**	◎	○	◎	○	◎	○		○	○	○		
	XR2A		i-Xmill CORNER RADIUS INSERTS FOR HARDENED STEEL		○	◎	○	◎	○	◎	◎		◎			
	XR1D		i-Xmill CORNER RADIUS INSERTS FOR GRAPHITE		○		○		○					○	◎	
	ZRT / ZRS		i-Xmill CORNER RADIUS HOLDERS - STEEL	**602**												
METRIC																
i-Xmill	XB1N		i-Xmill BALL INSERT FOR GENERAL PURPOSE	**603**	◎	○	◎	○	◎	○		○	○	○		
	XB2N		i-Xmill BALL INSERT FOR HARDENED STEEL		○	◎	○	◎	○	◎	◎		◎			
	XBAD		i-Xmill BALL INSERT FOR GRAPHITE		○		○		○					○	◎	
	ZBT / ZBS		i-Xmill BALL HOLDERS - STEEL	**604**												
	ZBC		i-Xmill BALL HOLDERS - CARBIDE	**605**												
	XRAA		i-Xmill CORNER RADIUS INSERTS FOR GENERAL PURPOSE	**606**	◎	○	◎	○	◎	○		○	○	○		
	XRBA		i-Xmill CORNER RADIUS INSERTS FOR HARDENED STEEL		○	◎	○	◎	○	◎	◎		◎			
	XRAD		i-Xmill CORNER RADIUS INSERTS FOR GRAPHITE		○		○		○					○	◎	
	ZRT / ZRS		i-Xmill CORNER RADIUS HOLDERS - STEEL	**608**												
			ASSEMBLY RECOMMENDATIONS	**609**												
			RECOMMENDED CUTTING CONDITIONS	**610**												

◎ : Excellent ○ : Good

	ITEM	MODEL	DESCRIPTION	SIZE RANGE		PAGE	P					H	M	K	N					S	
				MIN	MAX		Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
							~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
i-Smart	XGMF15		CARBIDE MODULAR HEAD, 2 FLUTE BALL NOSE	R3/16	R5/8	**616**	○	◎	◎	◎	○			○							
	XGMF17		CARBIDE MODULAR HEAD, 4 FLUTE BALL NOSE	R3/16	R5/8	**617**	○	◎	◎	◎	○			○							
	XGMF20		CARBIDE MODULAR HEAD, 4 FLUTE MULTIPLE HELIX CORNER RADIUS	D3/8	D1-1/4	**618**	◎	◎	◎	◎	○			○							
	XGMF25		CARBIDE MODULAR HEAD, 4 FLUTE MULTIPLE HELIX	D3/8	D1-1/4	**619**	◎	◎	◎	◎	○		○	○							
	XGMF29		CARBIDE MODULAR HEAD, 6 FLUTE 45° HELIX	D3/8	D1-1/4	**620**	◎	◎	◎	◎	○			○							

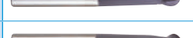
◎ : Excellent ○ : Good

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE MIN	SIZE RANGE MAX	PAGE	P Carbon Steels ~HB225	P Alloy Steels HB225~325	P Prehardened Steels HRc30~40	P Hardened Steels HRc40~45	P Hardened Steels HRc45~55	H High Hardened Steels HRc55~70	M Stainless Steels	K Cast Iron	N Copper	N Graphite	N Aluminum	N Acrylic	N CFRP	S Titanium	S High Temperature Alloy
CBN	ESB94		2Flute	30°	Metric	Ball	R0.2	R1.5	**592**					◎	◎									
	ESD02		2Flute	0°	Metric	Radius	D0.5	D2.0	**593**					◎	◎									
X5070	G826	High Feed End Mill 	4Flute	0°	Inch	Radius	D1/8	D1/2	**630**			○	○	◎	◎									
	G8A43		2Flute	30°	Inch	Ball	R1/64	R1/4	**631**			○	○	◎	◎									
	G850		4Flute	30°	Inch	Radius	D1/16	D3/4	**632**			○	○	◎	◎									
	G851		6&8Flute	45°	Inch	Radius	D1/4	D1	**633**			○	○	◎	◎									
	G859	High Feed End Mill 	4Flute	0°	Metric	Radius	D2.0	D16.0	**634**			○	○	◎	◎									
	G854	High Feed End Mill 	4Flute	0°	Metric	Radius	D2.0	D16.0	**635**			○	○	◎	◎									
	G8A46		2Flute	30°	Metric	Ball for Rib	R0.05	R2.0	**636**			○	○	◎	◎									
	G8A54		2Flute	30°	Metric	Ball for Rib	R0.25	R1.0	**640**			○	○	◎	◎									
	G8A28		2Flute	30°	Metric	Ball	R0.05	R6.0	**641**			○	○	◎	◎									
	G8A38		2Flute	30°	Metric	Stub Ball with Extended Neck	R0.5	R12.5	**642**			○	○	◎	◎									
	G8A53		2Flute	30°	Metric	Miniature Ball	R0.2	R1.0	**643**			○	○	◎	◎									
	G8A59		3Flute	30°	Metric	Ball	R1.5	R10.0	**644**			○	○	◎	◎									
	G8A36		2Flute	30°	Metric	Stub Radius with Extended Neck	D0.3	D20.0	**645**			○	○	◎	◎									
	G8A50		2Flute	30°	Metric	Miniature Radius	D0.3	D2.0	**647**			○	○	◎	◎									
	G8A47		4Flute	30°	Metric	Radius	D3.0	D12.0	**648**			○	○	◎	◎									
	G8A37		4Flute	30°	Metric	Stub Radius with Extended Neck	D1.0	D20.0	**649**			○	○	◎	◎									
	G8A39		6Flute	45°	Metric	Radius	D6.0	D20.0	**650**			○	○	◎	◎									
4G Mill	GMF15		2Flute	30°	Inch	Ball	R.002	R3/8	**666**	○	◎	◎	◎	○			○							
	GMF16		2Flute	30°	Inch	Ball with Neck	R.004	R1/4	**668**	○	◎	◎	◎	○			○							
	GMF17		4Flute	30°	Inch	Ball	R1/16	R1/4	**671**	○	◎	◎	◎	○			○							
	GMF18		2Flute	30°	Inch	Radius	D3/64	D3/4	**672**	◎	◎	◎	◎	○			○							
	GMF19		2Flute	30°	Inch	Radius with Neck	D.008	D3/4	**675**	◎	◎	◎	◎	○			○							
	GMF20		4Flute	27°/30°	Inch	Radius	D3/64	D3/4	**681**	◎	◎	◎	◎	○			○							
	GMF21		4Flute	27°/30°	Inch	Radius with Neck	D3/64	D3/4	**683**	◎	◎	◎	◎	○			○							
	GMF22		2Flute	30°	Inch	with Neck	D.008	D1/2	**688**	◎	◎	◎	◎	○		○	○							
	GMF23		2Flute	30°	Inch	Square	D.004	D.120	**691**	◎	◎	◎	◎	○			○							

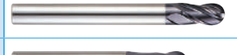
◎ : Excellent ○ : Good

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE MIN	SIZE RANGE MAX	PAGE	P: Carbon Steels ~HB225	P: Alloy Steels HB225~325	P: Prehardened Steels HRc30~40	P: Hardened Steels HRc40~45	P: Hardened Steels HRc45~55	H: High Hardened Steels HRc55~70	M: Stainless Steels	K: Cast Iron	N: Copper	N: Graphite	N: Aluminum	N: Acrylic	N: CFRP	S: Titanium	S: High Temperature Alloy
4G Mill	GMF24		2Flute	30°	Inch	Long Square	D3/64	D3/4	**694**	◎	◎	◎	◎	○		○	○							
	GMF25		4Flute	27°/30°	Inch	Square	D3/64	D3/4	**696**	◎	◎	◎	◎	○		○	○							
	GMF26		4Flute	35°/38°	Inch	Square	D3/64	D3/4	**697**	○	◎	◎	◎	○			○							
	GMF27		4Flute	30°	Inch	Long Square	D3/64	D1	**698**	◎	◎	◎	◎	○			○							
	GMF28		4Flute	30°	Inch	with Neck	D3/64	D1/2	**700**	◎	◎	◎	◎	○		○	○							
	GMF29		6Flute	45°	Inch	Square	D1/4	D3/4	**701**	◎	◎	◎	◎	○			○							
	G907 G928		4&5Flute	44°/45°	Inch	Stub Roughing Radius	D1/4	D1	**702**	◎	◎	◎	○			○	◎	○						
	G908 G929		4&5Flute	44°/45°	Inch	Regular Roughing Radius	D1/4	D1	**703**	◎	◎	◎	○			○	◎	○						
	G909 G930		4&5Flute	44°/45°	Inch	Extended Reach Roughing Radius	D1/4	D3/4	**704**	◎	◎	◎	○			○	◎	○						
	SEMD98		2Flute	30°	Metric	Ball	R0.05	R12.5	**705**	○	◎	◎	◎	○			○							
	SEM846		2Flute	30°	Metric	Long Neck Ball	R0.05	R6.0	**710**	○	◎	◎	◎	○			○							
	SEM846		2Flute	30°	Metric	Long Neck Ball (6mm Shank)	R0.25	R1.0	**718**	○	◎	◎	◎	○			○							
	SEMD99		2Flute	30°	Metric	Radius	D0.2	D20.0	**721**	◎	◎	◎	◎	○			○							
	SEME61		2Flute	30°	Metric	Long Neck Radius	D0.2	D20.0	**727**	◎	◎	◎	◎	○			○							
	SEME01		4Flute	27°/30°	Metric	Radius	D1.0	D20.0	**742**	◎	◎	◎	◎	○			○							
	SEME64		4Flute	27°/30°	Metric	Long Neck Radius	D1.0	D20.0	**747**	◎	◎	◎	◎	○			○							
	SEME35		2Flute	30°	Metric	Square	D0.1	D25.0	**759**	◎	◎	◎	◎	○		○	○							
	SEME70		2Flute	30°	Metric	Long Square	D1.0	D25.0	**764**	◎	◎	◎	◎	○			○							
	SEM845		2Flute	30°	Metric	Long Neck Square	D0.1	D12.0	**769**	◎	◎	◎	◎	○		○	○							
	SEME36		4Flute	27°/30°	Metric	Square	D0.8	D25.0	**776**	◎	◎	◎	◎	○		○	○							
	SEME71		4Flute	35°/38°	Metric	Square	D1.0	D20.0	**778**	○	◎	◎	◎	○			○							
	SEME72		4Flute	30°	Metric	Long Square	D1.0	D25.0	**781**	◎	◎	◎	◎	○			○							
	SEME73		4Flute	30°	Metric	Long Neck Square	D1.0	D12.0	**786**	◎	◎	◎	◎	○		○	○							
	SEME75		6Flute	45°	Metric	Square	D6.0	D20.0	**790**	◎	◎	◎	◎	○			○							
	G9D75 G9D67		4&5Flute	44°/45°	Metric	Short Radius	D6.0	D20.0	**791**	◎	◎	◎	○			○	◎	○						
	G9D76 G9D68		4&5Flute	44°/45°	Metric	Long Radius	D6.0	D20.0	**792**	◎	◎	◎	○			○	◎	○						
	G9D77 G9D69		4&5Flute	44°/45°	Metric	Long Reach Radius	D6.0	D20.0	**793**	◎	◎	◎	○			○	◎	○						
	GAE53		4&5Flute	M-Helix	Metric	Short Radius	D6.0	D20.0	**794**	◎	◎	○				◎	◎	○						

◎ : Excellent ○ : Good

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE MIN	SIZE RANGE MAX	PAGE	P: Carbon Steels ~HB225	P: Alloy Steels HB225~325	P: Prehardened Steels HRc30~40	P: Hardened Steels HRc40~45	P: Hardened Steels HRc45~55	H: High Hardened Steels HRc55~70	M: Stainless Steels	K: Cast Iron	N: Copper	N: Graphite	N: Aluminum	N: Acrylic	N: CFRP	S: Titanium	S: High Temperature Alloy
X-POWER	EM154		2Flute	30°	Inch	Regular	D1/16	D1	**856**	○	◎	◎	◎	○		○	○							
	EM206		2Flute	30°	Inch	Long	D1/8	D1	**856**	○	◎	◎	◎	○		○	○							
	EM959		2Flute	30°	Inch	Miniature	D.016	D.062	**857**	○	◎	◎	◎	○			○							
	EM153		4Flute	30°	Inch	Regular	D1/16	D1	**858**	○	◎	◎	◎	○		○	○							
	EM207		4Flute	30°	Inch	Long	D1/8	D1	**858**	○	◎	◎	◎	○			○							
	EM636		2Flute	30°	Inch	Short Radius	D1/16	D1/2	**859**	○	◎	◎	◎	○										
	EM639		4Flute	30°	Inch	Short Radius	D1/16	D1/2	**859**	○	◎	◎	◎	○		○	○							
	EM637		2Flute	30°	Inch	Regular Radius	D1/16	D1/2	**860**	○	◎	◎	◎	○										
	EM649		4Flute	30°	Inch	Regular Radius	D1/16	D1/2	**860**	○	◎	◎	◎	○		○	○							
	EM211		2Flute	30°	Inch	Long Radius	D1/4	D1/2	**861**	○	◎	◎	◎											
	EM212		4Flute	30°	Inch	Long Radius	D1/4	D1/2	**861**	○	◎	◎	◎	○		○	○							
	EM102		4Flute	45°	Inch	Long	D3/8	D7/8	**862**	○	◎	◎	◎	○		○	○							
	EM103		4Flute	45°	Inch	Long Reach Radius	D3/8	D7/8	**863**	○	◎	◎	◎	○		○	○							
	EM965		4Flute	55°	Inch	Stub Radius	D1/4	D1/2	**864**	○	◎	◎	◎	○		○	○							
	EM208		6&8Flute	45°	Inch	Long	D1/4	D1	**865**	○	◎	◎	◎	○			○							
	EM218		6&8Flute	45°	Inch	Extra Long	D1/4	D1	**865**	○	◎	◎	◎	○			○							
	EM668		6&8Flute	45°	Inch	Long Radius	D1/4	D3/4	**866**	○	◎	◎	◎	○			○							
	EM209		2Flute	30°	Inch	Long Ball	R1/64	R1/2	**867**	○	◎	◎	◎	○	○		○							
	EM210		4Flute	30°	Inch	Long Ball	R1/16	R1/2	**867**	○	◎	◎	◎	○	○		○							
	EM961		2Flute	30°	Inch	Medium Ball	R1/16	R1/2	**868**	○	◎	◎	◎	○	○		○							
	EM962		2Flute	30°	Inch	Long Reach Ball	R3/64	R3/8	**869**	○	◎	◎	◎	○	○		○							
	EM960		2Flute	30°	Inch	Miniature Ball	R.012	R.031	**870**	○	◎	◎	◎	○			○							
	EM109		2Flute	15°	Inch	Stub Ball	R1/64	R1/4	**871**				○	◎	◎									
	EM963		2Flute	30°	Inch	Ball with Taper Neck	R1/32	R1/4	**872**	○	◎	◎	◎	○	○		○							
	EM979		2Flute	30°	Inch	Ball with Pencil Neck	R3/32	R1/4	**873**	○	◎	◎	◎	○	○		○							
	EM084		2Flute	30°	Inch	Long Ball	R1/16	R5/16	**875**	○	◎	◎	◎	○	○		○							
	EM093		4Flute	30°	Inch	Long Ball	R1/16	R5/16	**876**	○	◎	◎	◎	○	○		○							
	EM096		2Flute	30°	Inch	Long Ball	R1/16	R5/16	**877**	○	◎	◎	◎	○	○		○							

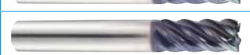
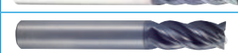
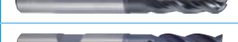
◎ : Excellent ○ : Good

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE MIN	SIZE RANGE MAX	PAGE	P Carbon Steels ~HB225	P Alloy Steels HB225~325	P Prehardened Steels HRc30~40	P Hardened Steels HRc40~45	P Hardened Steels HRc45~55	H High Hardened Steels HRc55~70	M Stainless Steels	K Cast Iron	N Copper	N Graphite	N Aluminum	N Acrylic	N CFRP	S Titanium	S High Temperature Alloy
X-POWER	EM097		4Flute	30°	Inch	Long Ball	R1/16	R5/16	**878**	○	◎	◎	◎	○	○		○							
	EM666		3~5Flute	20°	Inch	Stub Roughing	D1/4	D1	**879**	○	◎	◎	◎	○		○	○							
	EM156		3~5Flute	20°	Inch	Long Roughing	D1/4	D1	**879**	○	◎	◎	◎	○		○	○							
	EM662		3~5Flute	20°	Inch	Long Roughing Ball	R1/8	R1/2	**880**	○	◎	◎	◎	○			○							
	EM966		2Flute	30°	Inch	Rib	D1/32	D1/8	**881**	○	◎	◎	◎	○			○							
	EM967		2Flute	30°	Inch	Ball for Rib	R1/64	R1/16	**882**	○	◎	◎	◎	○			○							
	EM810		2Flute	30°	Metric	Short	D1.0	D25.0	**883**	○	◎	◎	◎	○		○	○							
	EM816		2Flute	30°	Metric	Long	D2.0	D25.0	**884**	○	◎	◎	◎	○		○	○							
	EM811		4Flute	30°	Metric	Short	D2.0	D25.0	**885**	○	◎	◎	◎	○		○	○							
	EM817		4Flute	30°	Metric	Long	D2.0	D25.0	**886**	○	◎	◎	◎	○			○							
	EM895		3Flute	38°	Metric	Short	D1.0	D20.0	**887**	○	◎	◎	◎	○		○	○							
	EM810		2Flute	30°	Metric	Miniature	D0.4	D1.5	**888**	○	◎	◎	◎	○			○							
	EM818		2Flute	30°	Metric	Long Radius	D3.0	D20.0	**889**	○	◎	◎	◎	○										
	EM819		4Flute	30°	Metric	Long Radius	D3.0	D20.0	**889**	○	◎	◎	◎	○		○	○							
	EM905		4Flute	45°	Metric	Short Radius	D10.0	D22.0	**890**	○	◎	◎	◎	○		○	○							
	EM839		4Flute	30°	Metric	Stub Radius	D2.0	D16.0	**891**	○	◎	◎	◎	○			○							
	EM812		6&8Flute	45°	Metric	Long	D6.0	D25.0	**892**	○	◎	◎	◎	○			○							
	EM834		6&8Flute	45°	Metric	Extra Long	D6.0	D25.0	**892**	○	◎	◎	◎	○			○							
	EM835		6Flute	45°	Metric	Long Radius	D6.0	D20.0	**893**	○	◎	◎	◎	○			○							
	EM897		6Flute	45°	Metric	Stub Radius	D6.0	D12.0	**894**	○	◎	◎	◎	○			○							
	EM876		2Flute	30°	Metric	Long Ball	R0.5	R12.5	**895**	○	◎	◎	◎	○	○		○							
	EM813 EM823		2Flute	30°	Metric	Long Ball	R0.5	R12.5	**896**	○	◎	◎	◎	○	○		○							
	EM815 EM825		4Flute	30°	Metric	Long Ball	R0.5	R12.5	**896**	○	◎	◎	◎	○	○		○							
	EM899		2Flute	30°	Metric	Medium Ball	R1.5	R12.5	**897**	○	◎	◎	◎	○	○		○							
	EM838		2Flute	30°	Metric	Long Reach Ball	R1.0	R10.0	**898**	○	◎	◎	◎	○	○		○							
	EM865		2Flute	30°	Metric	Miniature Ball	R0.3	R0.75	**899**	○	◎	◎	◎	○			○							
	EM868		2Flute	15°	Metric	Stub Ball	R0.5	R12.5	**900**				○	◎	◎									
	EM902		2Flute	30°	Metric	Ball with Taper Neck	R0.5	R6.0	**901**	○	○	◎	◎	○										

◎ : Excellent ○ : Good

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE MIN	SIZE RANGE MAX	PAGE	P: Carbon Steels ~HB225	P: Alloy Steels HB225~325	P: Prehardened Steels HRc30~40	P: Hardened Steels HRc40~45	P: Hardened Steels HRc45~55	H: High Hardened Steels HRc55~70	M: Stainless Steels	K: Cast Iron	N: Copper	N: Graphite	N: Aluminum	N: Acrylic	N: CFRP	S: Titanium	S: High Temperature Alloy
X-POWER	EM669		2Flute	30°	Metric	Long Ball	R1.5	R8.0	**902**	○	◎	◎	◎	○	○		○							
	EM673		4Flute	30°	Metric	Long Ball	R2.5	R8.0	**903**	○	◎	◎	◎	○	○		○							
	EM863		2Flute	30°	Metric	Long Ball	R1.5	R8.0	**904**	○	◎	◎	◎	○	○		○							
	EM864		4Flute	30°	Metric	Long Ball	R2.5	R8.0	**905**	○	◎	◎	◎	○	○		○							
	EM832		3~5Flute	20°	Metric	Short Roughing	D6.0	D25.0	**906**	○	◎	◎	◎	○		○	○							
	EM814		3~5Flute	20°	Metric	Long Roughing	D6.0	D25.0	**907**	○	◎	◎	◎	○		○	○							
	EM833		3&4Flute	20°	Metric	Long Roughing Ball	R3.0	R10.0	**908**	○	◎	◎	◎	○		○	○							
	EM837		2Flute	30°	Metric	Taper	D2.0	D8.0	**909**	○	◎	◎	◎	○			○							
	EM883		2Flute	30°	Metric	Rib	D0.8	D3.0	**910**	○	◎	◎	◎	○			○							
	EM886		2Flute	30°	Metric	Ball for Rib	R0.3	R2.0	**911**	○	◎	◎	◎	○			○							
JET-POWER	EH108		3&4Flute	50°	Inch	Regular	D1/8	D1	**938**	○	◎	◎	○			◎	○						○	○
	EE882		6Flute	35°	Inch	Regular	D3/4	D1-1/2	**939**	○	◎	◎	○			◎							◎	○
	E5075 E5105		3Flute	35°	Inch	Stub Radius	D1/8	D1	**940**	○	◎	○				◎	○							
	E5074 E5104		3Flute	35°	Inch	Regular Radius	D1/8	D1	**941**	○	◎	○				◎	○							
	EH094		3~5Flute	30°	Inch	Stub Roughing	D1/4	D1	**942**	○	◎	◎	○			◎							◎	○
	EH095		3~5Flute	30°	Inch	Long Roughing	D1/4	D1	**943**	○	◎	◎	○			◎							◎	○
	EH969		3~6Flute	45°	Inch	Long Roughing	D3/16	D1	**944**	○	◎	◎	○			◎							◎	○
	EH970		4~6Flute	45°	Inch	Long Reach Roughing	D1/4	D3/4	**945**	○	◎	◎	○			◎							◎	○
	EH830		3&4Flute	50°	Metric	Long Square	D6.0	D25.0	**946**	○	◎	◎	○			◎							◎	○
	EE515		4&6Flute	30°	Metric	Short Square	D3.0	D25.0	**947**	○	◎	◎	○			◎							◎	○
	EH852		3&5Flute	30°	Metric	Short Roughing	D6.0	D25.0	**948**	○	◎	◎	○			◎							◎	○
	EH831		3&5Flute	30°	Metric	Long Roughing	D6.0	D25.0	**949**	○	◎	◎	○			◎							◎	○
	EH917		4&6Flute	45°	Metric	Short Roughing	D6.0	D20.0	**950**	○	◎	◎	○			◎							◎	○
	EH919		3&6Flute	45°	Metric	Long Roughing	D4.0	D25.0	**951**	○	◎	◎	○			◎							◎	○
	EH921		4&6Flute	45°	Metric	Long Reach Roughing	D6.0	D20.0	**952**	○	◎	◎	○			◎							◎	○
TitaNox-POWER	UGMG42		4Flute	43°/45°	Inch	Radius with Double Core	D1/4	D1	**960**	○	○	○				◎	○						◎	○
	UGMG43		4Flute	43°/45°	Inch	Radius with Double Core	D3/8	D1	**962**	○	○	○				◎	○						◎	○
	UGMH12		5Flute	43°/44°/45°	Inch	Square	D1/8	D1-1/4	**963**	○	○	○				◎	○						◎	○

◎ : Excellent ○ : Good

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE MIN	SIZE RANGE MAX	PAGE	P Carbon Steels ~HB225	P Alloy Steels HB225~325	P Prehardened Steels HRc30~40	P Hardened Steels HRc40~45	P Hardened Steels HRc45~55	H High Hardened Steels HRc55~70	M Stainless Steels	K Cast Iron	N Copper	N Graphite	N Aluminum	N Acrylic	N CFRP	S Titanium	S High Temperature Alloy
TitaNox-POWER	UGMG32		5Flute	43°/44°/45°	Inch	Chamfer	D1/8	D1	**963**	○	○	○				◎	○						◎	○
	UGMG34		5Flute	43°/44°/45°	Inch	Corner Radius	D1/8	D1-1/4	**963**	○	○	○				◎	○						◎	○
	UGMH06		5Flute	43°/44°/45°	Inch	Square with Neck	D1/8	D1	**966**	○	○	○				◎	○						◎	○
	UGMH07		5Flute	43°/44°/45°	Inch	Radius with Neck	D1/8	D1	**966**	○	○	○				◎	○						◎	○
	GMG40		4Flute	43°/45°	Metric	Radius with Neck	D6.0	D25.0	**968**	○	○	○				◎	○						◎	○
	GMG24 GMG26		5Flute	43°/44°/45°	Metric	Chamfer with Neck	D6.0	D25.0	**969**	○	○	○				◎	○						◎	○
	GMG28 GMG30		5Flute	43°/44°/45°	Metric	Radius with Neck	D6.0	D25.0	**970**	○	○	○				◎	○						◎	○
V7 PLUS A	UGMF68		4Flute	35°/37°	Inch	Square	D1/8	D1	**982**	◎	◎	◎	○			◎	◎						○	○
	UGMF76		4Flute	35°/37°	Inch	Chamfer	D1/4	D1	**982**	◎	◎	◎	○			◎	◎						○	○
	UGMF70		4Flute	35°/37°	Inch	Corner Radius	D1/8	D1	**982**	◎	◎	◎	○			◎	◎						○	○
	UGMG53		4Flute	35°/37°	Inch	Ball	D1/8	D1	**982**	◎	◎	◎	○			◎	◎						○	○
	UGMF69		4Flute	35°/37°	Inch	Square	D11/32	D1	**985**	◎	◎	◎	○			◎	◎						○	○
	UGMF77		4Flute	35°/37°	Inch	Chamfer	D3/8	D1	**985**	◎	◎	◎	○			◎	◎						○	○
	UGMF71		4Flute	35°/37°	Inch	Corner Radius	D3/8	D1	**985**	◎	◎	◎	○			◎	◎						○	○
	UGMG54		4Flute	35°/37°	Inch	Ball	D11/32	D1	**985**	◎	◎	◎	○			◎	◎						○	○
	UGMF72		4Flute	35°/37°	Inch	Square with Neck	D1/8	D1	**987**	◎	◎	◎	○			◎	◎						○	○
	UGMF74		4Flute	35°/37°	Inch	Radius with Neck	D1/8	D1	**987**	◎	◎	◎	○			◎	◎						○	○
	UGMH10		4Flute	35°/37°	Inch	Ball with Neck	D1/8	D1	**987**	◎	◎	◎	○			◎	◎						○	○
	UGMF73		4Flute	35°/37°	Inch	Square with Neck	D3/8	D1	**990**	◎	◎	◎	○			◎	◎						○	○
	UGMF75		4Flute	35°/37°	Inch	Radius with Neck	D3/8	D1	**990**	◎	◎	◎	○			◎	◎						○	○
	UGMG20		6Flute	45°	Inch	Square	D1/4	D1	**991**	◎	◎	◎	○			◎	◎						○	○
	UGMG22		6Flute	45°	Inch	Corner Radius	D1/4	D1	**991**	◎	◎	◎	○			◎	◎						○	○
	UGMG21		6Flute	45°	Inch	Square	D3/8	D1	**993**	◎	◎	◎	○			◎	◎						○	○
	UGMG23		6Flute	45°	Inch	Corner Radius	D3/8	D1	**993**	◎	◎	◎	○			◎	◎						○	○
	UGMH08		6Flute	45°	Inch	Square with Neck	D1/4	D1	**994**	○	◎	◎	○			◎	◎						○	○
	UGMH09		6Flute	45°	Inch	Radius with Neck	D1/4	D1	**994**	◎	◎	◎	○			◎	◎						○	○
	GMF52 GMF56		4Flute	35°/37°	Metric	Chamfer	D3.0	D25.0	**996**	◎	◎	◎	○			◎	◎						○	○
	GMF54 GMF58		4Flute	35°/37°	Metric	Corner Radius	D3.0	D25.0	**996**	◎	◎	◎	○			◎	◎						○	○

◎ : Excellent ○ : Good

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE MIN	SIZE RANGE MAX	PAGE	P Carbon Steels ~HB225	P Alloy Steels HB225~325	P Prehardened Steels HRc30~40	P Hardened Steels HRc40~45	P Hardened Steels HRc45~55	H High Hardened Steels HRc55~70	M Stainless Steels	K Cast Iron	N Copper	N Graphite	N Aluminum	N Acrylic	N CFRP	S Titanium	S High Temperature Alloy
V7 PLUS A	GMG55		4Flute	35°/37°	Metric	Ball	D3.0	D25.0	**996**	◎	◎	◎	○			◎	◎						○	○
	GMF53 GMF57		4Flute	35°/37°	Metric	Chamfer	D3.0	D25.0	**998**	◎	◎	◎	○			◎	◎						○	○
	GMF55 GMF59		4Flute	35°/37°	Metric	Corner Radius	D3.0	D25.0	**998**	◎	◎	◎	○			◎	◎						○	○
	GMG56		4Flute	35°/37°	Metric	Ball	D3.0	D25.0	**998**	◎	◎	◎	○			◎	◎						○	○
	GMF60		4Flute	35°/37°	Metric	Chamfer with Neck	D3.0	D20.0	**1000**	◎	◎	◎	○			◎	◎						○	○
	GMF62		4Flute	35°/37°	Metric	Radius with Neck	D3.0	D20.0	**1000**	◎	◎	◎	○			◎	◎						○	○
	GMF61		4Flute	35°/37°	Metric	Chamfer with Neck	D3.0	D20.0	**1002**	◎	◎	◎	○			◎	◎						○	○
	GMF63		4Flute	35°/37°	Metric	Radius with Neck	D3.0	D20.0	**1002**	◎	◎	◎	○			◎	◎						○	○
	GMG12 GMG14		6Flute	45°	Metric	Square	D6.0	D25.0	**1004**	○	◎	◎	○			◎	◎						○	○
	GMG16 GMG18		6Flute	45°	Metric	Corner Radius	D6.0	D25.0	**1004**	◎	◎	◎	○			◎	◎						○	○
	GMG13 GMG15		6Flute	45°	Metric	Square	D6.0	D25.0	**1005**	◎	◎	◎	○			◎	◎						○	○
	GMG17 GMG19		6Flute	45°	Metric	Corner Radius	D6.0	D25.0	**1005**	◎	◎	◎	○			◎	◎						○	○
V7 Mill INOX	EMC75 EMD60		4Flute	Sinusoidal	Inch	Stub Square	D1/8	D1	**1020**	◎	○	○				◎							◎	○
	EMC76 EMD61		4Flute	Sinusoidal	Inch	Stub Radius	D1/8	D1	**1021**	◎	○	○				◎							◎	○
	EMB12 EMB37		4Flute	Sinusoidal	Inch	Regular Square	D1/8	D1	**1022**	◎	○	○				◎							◎	○
	EMB13 EMB38		4Flute	Sinusoidal	Inch	Regular Radius	D1/8	D1	**1023**	◎	○	○				◎							◎	○
	EMB20		4Flute	Sinusoidal	Inch	Extended Long Reach	D1/4	D1	**1024**	◎	○	○				◎							◎	○
	EMB78 EMB79		4Flute	Sinusoidal	Inch	Regular Ball	R1/16	R1/2	**1025**	◎	○	○				◎							◎	○
	EMB76 EMB77		5Flute	Sinusoidal	Inch	Regular Square	D1/4	D1	**1026**	◎	○	○				◎							◎	○
	EMB41 EMB42		4Flute	Sinusoidal	Metric	Short Square	D3.0	D20.0	**1027**	◎	○	○				◎							◎	○
	EMB43 EMB44		4Flute	Sinusoidal	Metric	Short Radius	D3.0	D20.0	**1028**	◎	○	○				◎							◎	○
	EMB14 EMB39		4Flute	Sinusoidal	Metric	Regular Square	D3.0	D25.0	**1029**	◎	○	○				◎							◎	○
	EMB15 EMB40		4Flute	Sinusoidal	Metric	Regular Radius	D3.0	D25.0	**1030**	◎	○	○				◎							◎	○
	EMB74 EMB75		4Flute	Sinusoidal	Metric	Regular Ball	R1.5	R12.5	**1031**	◎	○	○				◎							◎	○
	EMB72 EMB73		5Flute	Sinusoidal	Metric	Regular Square	D6.0	D25.0	**1032**	◎	○	○				◎							◎	○
ALU-POWER HPC	JAG95		3Flute	37°	Inch	Square	D1/8	D1	**1038**											◎				
	JAG97		3Flute	37°	Inch	Corner Radius	D1/8	D1	**1038**											◎				
	E5G95		3Flute	37°	Inch	Square	D1/8	D1	**1040**											◎				

◎ : Excellent ○ : Good

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE MIN	SIZE RANGE MAX	PAGE	P: Carbon Steels ~HB225	P: Alloy Steels HB225~325	P: Prehardened Steels HRc30~40	P: Hardened Steels HRc40~45	P: Hardened Steels HRc45~55	H: High Hardened Steels HRc55~70	M: Stainless Steels	K: Cast Iron	N: Copper	N: Graphite	N: Aluminum	N: Acrylic	N: CFRP	S: Titanium	S: High Temperature Alloy
ALU-POWER HPC	E5G97		3Flute	37°	Inch	Corner Radius	D1/8	D1	**1040**											◎				
	JAG96		3Flute	37°	Inch	Square with Neck	D1/4	D1	**1042**											◎				
	JAG98		3Flute	37°	Inch	Radius with Neck	D1/4	D1	**1042**											◎				
	E5G96		3Flute	37°	Inch	Square with Neck	D1/4	D1	**1043**											◎				
	E5G98		3Flute	37°	Inch	Radius with Neck	D1/4	D1	**1043**											◎				
ALU-POWER	E5253		2Flute	42°	Inch	Regular	D1/4	D1	**1052**											◎				
	E5254		2Flute	42°	Inch	Regular	D1/16	D1	**1053**											◎				
	E5976		2Flute	37°	Inch	with Extended Neck	D1/4	D1	**1054**											◎				
	E5980		3Flute	45°	Inch	Stub Square	D1/8	D1	**1055**											◎				
	E5981		3Flute	45°	Inch	Regular Square	D1/8	D1	**1056**											◎				
	E5983		3Flute	45°	Inch	Regular Radius	D1/2	D1	**1056**											◎				
	E5982		3Flute	45°	Inch	Long Square	D1/4	D1	**1057**											◎				
	E5984		3Flute	45°	Inch	Long Radius	D1/2	D1	**1057**											◎				
	E5E44		3Flute	30°	Inch	Roughing	D1/4	D1	**1058**											◎				
	E5E98		3Flute	30°	Inch	Roughing with Neck	D1/4	D1	**1058**											◎				
	E5E45		3Flute	30°	Inch	Roughing Ball	D1/4	D1	**1059**											◎				
	E5977		3Flute	37°	Inch	with Extended Neck	D1/4	D1	**1060**											◎				
	E5985		3Flute	37°	Inch	Radius with Extended Neck	D1/2	D1	**1061**											◎				
	E5973		2Flute	30°	Inch	Radius with Neck	D5/32	D3/4	**1062**											◎				
	E5974		3Flute	50°	Inch	Stub Ball with Neck	R1/8	R3/8	**1063**											◎				
	E5978		2Flute	37°	Inch	Long Reach Ball	R1/8	R1/2	**1064**											◎				
	E5975		3Flute	40°	Inch	Long Ball with Neck	R3/64	R5/16	**1065**											◎				
	E5522 EG522		2Flute	45°	Metric	Long Square	D3.0	D20.0	**1066**											◎				
	EG930		2Flute	25°	Metric	Stub Radius	D2.0	D20.0	**1067**											◎				
	EG909		2Flute	30°	Metric	Stub Radius with Extended Neck	D4.0	D20.0	**1068**											◎				
	EG910		2Flute	50°	Metric	Stub Ball with Extended Neck	R3.0	R10.0	**1069**											◎				
	EG908		3Flute	40°	Metric	Stub Ball with Extended Neck	R1.0	R8.0	**1070**											◎				
	EK191		3Flute	42°	Inch	Regular Roughing	D1/2	D2	**1071**											◎				

◎ : Excellent ○ : Good

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE MIN	SIZE RANGE MAX	PAGE	P Carbon Steels ~HB225	P Alloy Steels HB225~325	P Prehardened Steels HRc30~40	P Hardened Steels HRc40~45	P Hardened Steels HRc45~55	H High Hardened Steels HRc55~70	M Stainless Steels	K Cast Iron	N Copper	N Graphite	N Aluminum	N Acrylic	N CFRP	S Titanium	S High Temperature Alloy
ALU-POWER	EK191		3Flute	42°	Inch	Regular Radius Roughing	D3/4	D1-1/4	**1071**											◎				
	EK226		3Flute	42°	Inch	Medium Roughing	D3/4	D2	**1072**											◎				
	EK226		3Flute	42°	Inch	Medium Radius Roughing	D3/4	D1-1/4	**1072**											◎				
	EK192		3Flute	42°	Inch	Long Roughing	D1/2	D2	**1073**											◎				
	EK192		3Flute	42°	Inch	Long Radius Roughing	D3/4	D1-1/4	**1074**											◎				
	EK196		3Flute	42°	Inch	Regular Ball Roughing	R1/4	R5/8	**1075**											◎				
	EK193 EK132		3Flute	42°	Inch	Regular, Medium & Long Radius	D1/2	D1-1/2	**1076**											◎				
	EP922		3Flute	42°	Metric	Short Roughing	D12.0	D32.0	**1078**											◎				
	EP924		3Flute	42°	Metric	Long Roughing	D12.0	D32.0	**1079**											◎				
D-POWER GRAPHITE	EI107		4(2)Flute	30°	Inch	Regular Square	D1/64	D1/2	**1094**										◎	○				
	EI099		2Flute	30°	Inch	Regular Ball	R.0391	R1/4	**1095**										◎	○				
	EI106		4Flute	30°	Inch	Regular Ball	R.0391	R1/4	**1095**										◎	○				
	EI971		2Flute	30°	Inch	Long Ball	R.0391	R1/4	**1096**										◎	○				
	EI972		2Flute	30°	Inch	Long Reach Ball	R.0391	R5/32	**1097**										◎	○				
	EIB07		4Flute	30°	Inch	Regular Ball with Extended Neck	R.0156	R.0625	**1098**										◎	○				
	EIB05		4Flute	30°	Inch	Regular Radius	D1/16	D1/2	**1099**										◎	○				
	EIB06		4Flute	30°	Inch	Regular Radius with Extended Neck	D1/32	D3/8	**1100**										◎	○				
	EI880		2Flute	30°	Metric	Short Ball	R1.0	R6.0	**1101**										◎	○				
	EI881		3Flute	30°	Metric	Short Ball	R1.0	R6.0	**1101**										◎	○				
	EI451		2Flute	30°	Metric	Long Ball	R1.0	R6.0	**1102**										◎	○				
	EI450		2Flute	30°	Metric	Long Reach Ball	R1.0	R4.0	**1103**										◎	○				
D-POWER CFRP	GUG82		4&8Flute	20°/20°	Inch	-	D1/4	D1/2	**1110**										○			◎		
	GUG83		4Flute	15°	Inch	-	D1/4	D1/2	**1111**										○			◎		
ROUTERS	RTI105		-	-	Inch	-	D1/4	D1/2	**1116**													◎		
CARBIDE	UGMF90		2Flute	30°	Inch	Regular Square	D1/8	D1	**1124**	◎	◎	◎				○	○	○		○				
	E5020		2Flute	30°	Inch	Regular Square	D1/32	D1	**1125**	◎	◎	◎				○	○	○		○				
	UGMF89		4Flute	30°	Inch	Square	D1/16	D1	**1126**	◎	◎	◎				○	○	○		○				
	E5021		4Flute	30°	Inch	Regular Square	D1/16	D1	**1127**	◎	◎	◎				○	○	○		○				

◎ : Excellent ○ : Good

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE MIN	SIZE RANGE MAX	PAGE	P Carbon Steels ~HB225	P Alloy Steels HB225~325	P Prehardened Steels HRc30~40	P Hardened Steels HRc40~45	P Hardened Steels HRc45~55	H High Hardened Steels HRc55~70	M Stainless Steels	K Cast Iron	N Copper	N Graphite	N Aluminum	N Acrylic	N CFRP	S Titanium	S High Temperature Alloy
CARBIDE	E5244		2Flute	30°	Inch	Stub Square	D1/16	D3/4	**1128**	◎	◎	◎				○	○	○		○				
	UGMGF57		4Flute	30°	Inch	Square	D1/16	D3/4	**1129**	◎	◎	◎				○	○	○		○				
	E5245		4Flute	30°	Inch	Stub Square	D1/16	D3/4	**1130**	◎	◎	◎				○	○	○		○				
	E5011		2Flute	30°	Inch	Long Square	D1/8	D1	**1131**	◎	◎	◎				○	○	○		○				
	E5012		4Flute	30°	Inch	Long Square	D1/8	D1	**1131**	◎	◎	◎				○	○	○		○				
	UGMGF58		4Flute	30°	Inch	Long Square	D1/8	D1	**1132**	◎	◎	◎				○	○	○		○				
	E5026		2Flute	30°	Inch	Extra Long Square	D1/8	D1	**1133**	◎	◎	◎				○	○	○		○				
	UGMGF59		4Flute	30°	Inch	Extra Long Square	D1/8	D1	**1134**	◎	◎	◎				○	○	○		○				
	E5065		4Flute	30°	Inch	Extra Long Square	D1/8	D1	**1135**	◎	◎	◎				○	○	○		○				
	E5022		2Flute	30°	Inch	Stub Double	D1/32	D1/2	**1136**	◎	◎	◎				○	○	○		○				
	E5023		4Flute	30°	Inch	Stub Double	D1/16	D1/2	**1137**	◎	◎	◎				○	○	○		○				
	E5025		2Flute	30°	Inch	Regular Double	D1/8	D1/2	**1138**	◎	◎	◎				○	○	○		○				
	E5024		4Flute	30°	Inch	Regular Double	D1/8	D1/2	**1138**	◎	◎	◎				○	○	○		○				
	E5249		2Flute	30°	Inch	Regular Ball	R1/16	R1/2	**1139**	◎	◎	◎	○				○	○		○				
	E5250		4Flute	30°	Inch	Regular Ball	R1/16	R1/2	**1139**	◎	◎	◎	○				○	○		○				
	UGMF91		4Flute	30°	Inch	Regular Ball	R1/16	R1/2	**1140**	◎	◎	◎	○				○	○		○				
	E5014		2Flute	45°	Inch	Long Ball	R1/16	R1/2	**1141**	◎	◎	◎	○				○	○		○				
	E5060		4Flute	30°	Inch	Long Ball	R1/16	R1/2	**1141**	◎	◎	◎	○				○	○		○				
	E5018		2Flute	30°	Inch	Extra Long Ball	R1/16	R1/2	**1142**	◎	◎	◎	○				○	○		○				
	E5062		4Flute	30°	Inch	Extra Long Ball	R1/16	R1/2	**1143**	◎	◎	◎	○			○	○	○		○				
	E5251 E5252		2&4Flute	30°	Inch	Stub Ball Double	R7/64	R1/4	**1144**	◎	◎	◎	○			◎	○	○					○	○
	E5216		4Flute	30°	Inch	Regular Radius	D1/8	D1	**1145**	◎	◎	◎	○			◎	○	○					○	○
	E5069		5Flute	45°	Inch	Regular Radius	D1/4	D1	**1147**	◎	◎	◎	○			◎	○	○					○	○
	E5243		3Flute	45°	Inch	Regular	D1/8	D1	**1148**	◎	◎	◎	○			◎	○	○					○	○
	E5059		3Flute	50°	Inch	Stub	D1/4	D3/4	**1149**	◎	◎	◎	○			◎	○	○					○	○
	E5246		3Flute	60°	Inch	Regular	D1/8	D1	**1150**	◎	◎	◎	○			◎	○	○					○	○
	E5066		5Flute	45°	Inch	Stub	D1/8	D1	**1151**	◎	◎	◎	○			◎	○	○					○	○
	E5067		5Flute	45°	Inch	Regular	D1/8	D1	**1152**	◎	◎	◎	○			◎	○	○					○	○

◎ : Excellent ○ : Good

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE MIN	SIZE RANGE MAX	PAGE	P: Carbon Steels ~HB225	P: Alloy Steels HB225~325	P: Prehardened Steels HRc30~40	P: Hardened Steels HRc40~45	P: Hardened Steels HRc45~55	H: High Hardened Steels HRc55~70	M: Stainless Steels	K: Cast Iron	N: Copper	N: Graphite	N: Aluminum	N: Acrylic	N: CFRP	S: Titanium	S: High Temperature Alloy
CARBIDE	E5068		5Flute	45°	Inch	Long Square	D1/4	D1	**1152**	◎	◎	◎	○			◎	○	○					○	○
	E5073		5Flute	45°	Inch	Extra Long Square	D5/16	D1	**1154**	◎	◎	◎	○			◎	○	○					○	○
	E5058		6Flute	40°	Inch	Regular Square	D3/16	D3/4	**1155**	◎	◎	◎	○			◎	○	○					○	○
	E5056 E5057		5Flute	45°	Inch	Stub & Regular Roughing	D3/8	D1	**1156**	○	◎	◎	○			◎							○	
	E5077		3Flute	30°	Inch	Taper	D3/32	D1/4	**1157**	◎	◎	◎				○	○	○		○				
	E5078		3Flute	30°	Inch	Taper Ball	R.047	R.125	**1158**	◎	◎	◎				○	○	○		○				
	EH527		2Flute	30°	Metric	Long	D3.5	D20.0	**1159**	◎	◎	◎	○			○	○	○		○				
	EH540		4Flute	30°	Metric	Long	D3.5	D20.0	**1160**	◎	◎	◎	○			○	○	○		○				
	EH882		3Flute	35°	Metric	Radius	D3.0	D20.0	**1161**	◎	◎	◎	○				○	◎		◎				
ONLY ONE	GYG64		2Flute	30°	Inch	Square	D1/8	D1	**1174**	◎	◎	○	○			◎	◎	○						
	GYG67		4Flute	30°	Inch	Ball	R1/16	R1/2	**1175**	◎	◎	○	○			◎	◎	○						
	GYG65		4Flute	30°	Inch	Square	D1/8	D1	**1176**	◎	◎	○	○			◎	◎	○						
	GYG66		4Flute	M-Helix	Inch	Square	D1/8	D1	**1177**	◎	◎	○	○			◎	◎	○						
	GYG69		4&5Flute	M-Helix	Inch	Roughing Radius	D1/4	D1	**1178**	◎	◎	○	○			◎	◎	○						
	GYG68		3-6Flute	30°	Inch	Roughing	D1/4	D1-1/4	**1179**	◎	◎	○	○			◎	◎	○						
	GYG70		3-6Flute	30°	Inch	Roughing	D1/4	D1-1/4	**1180**	◎	◎	○	○			◎	◎	○						
SINE-POWER	E2F64		4&6Flute	35°	Inch	Square	D3/4	D2	**1190**														◎	
TANK-POWER	E9983		2Flute	30°	Inch	Regular Square	D1/8	D1	**1196**	◎	◎	◎				◎	◎	○						
	E9984		2Flute	30°	Inch	Regular Double Square	D1/8	D1	**1197**	◎	◎	◎				◎	◎	○						
	E9985		4Flute	30°	Inch	Regular Square	D1/8	D1	**1198**	◎	◎	◎				◎	◎	○						
	E9986		4Flute	30°	Inch	Regular Double Square	D1/8	D1	**1199**	◎	◎	◎				◎	◎	○						
	E9988		3&4Flute	60°	Inch	Regular Square	D1/4	D1	**1200**	◎	◎	◎				◎	◎	○						
	E9992		2Flute	30°	Inch	Regular Ball	R1/16	R1/2	**1201**	◎	◎	◎				◎	◎	○						
	E9990		3~6Flute	30°	Inch	Regular Roughing	D1/4	D1-1/4	**1202**	◎	◎	◎				◎	◎	○						
	E9991		3~6Flute	30°	Inch	Regular Roughing	D1/4	D1-1/4	**1203**	◎	◎	◎				◎	◎	○						
	E9A86		3~6Flute	30°	Inch	Long Roughing	D5/16	D1-1/4	**1204**	◎	◎	◎				◎	◎	○						
	E9A87		3~6Flute	30°	Inch	Long Roughing	D5/16	D1-1/4	**1205**	◎	◎	◎				◎	◎	○						
	E9921		5~6Flute	35°	Inch	Long Roughing with Neck	D1/2	D1-1/4	**1206**	◎	◎	◎				◎	◎	○						

◎ : Excellent ○ : Good

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE MIN	SIZE RANGE MAX	PAGE	P Carbon Steels ~HB225	P Alloy Steels HB225~325	P Prehardened Steels HRc30~40	P Hardened Steels HRc40~45	P Hardened Steels HRc45~55	H High Hardened Steels HRc55~70	M Stainless Steels	K Cast Iron	N Copper	N Graphite	N Aluminum	N Acrylic	N CFRP	S Titanium	S High Temperature Alloy
COBALT & HSS	E2030 E1030		2Flute	30°	Inch	Regular Square	D1/8	D2	**1219**	◎	◎	○						○		○				
	E2080 E1080		2Flute	30°	Inch	Long Square	D1/4	D2	**1221**	◎	◎	○						○		○				
	E2033 E1033		2Flute	30°	Inch	Extended Square	D1/8	D1-1/4	**1222**	◎	◎	○						○		○				
	E2050 E1050		2Flute	30°	Inch	Regular Double Square	D1/8	D1	**1223**	◎	◎	○						○		○				
	E2110 E1110		2Flute	30°	Inch	Regular Ball	R1/16	R1	**1225**	◎	◎	○						○		○				
	E2111 E1111		2Flute	30°	Inch	Extended Ball	R1/16	R1/2	**1226**	◎	◎	○						○		○				
	E2112 E1112		2Flute	30°	Inch	Regular Ball Double	R1/16	R1/2	**1227**	◎	◎	○						○		○				
	E2031 E1031		4Flute	30°	Inch	Regular Square	D1/8	D1	**1228**	◎	◎	○						○		○				
	E2032 E1032		6Flute	30°	Inch	Regular Square	D5/8	D2	**1230**	◎	◎	○						○						
	E2034 E1034		4Flute	30°	Inch	Long Square	D1/4	D1	**1231**	◎	◎	○						○		○				
	E2035 E1035		6Flute	30°	Inch	Long Square	D1-1/8	D2	**1231**	◎	◎	○						○						
	E2036 E1036		4Flute	30°	Inch	Extra Long Square	D1/4	D1	**1232**	◎	◎	○						○		○				
	E2037 E1037		6Flute	30°	Inch	Extra Long Square	D1-1/4	D2	**1232**	◎	◎	○						○						
	E2051 E1051		4Flute	30°	Inch	Regular Double Square	D1/8	D1	**1233**	◎	◎	○						○		○				
	E2031 E1031		4Flute	30°	Inch	Regular Square	D3/4	D1	**1235**	◎	◎	○						○		○				
	E2032 E1032		6&8Flute	30°	Inch	Regular Square	D1-1/8	D2	**1235**	◎	◎	○						○						
	E2020		4Flute	30°	Inch	Regular Ball	R1/16	R1	**1236**	◎	◎	○						○		○				
	E2021		4Flute	30°	Inch	Long Ball	R1/8	R1/2	**1237**	◎	◎	○						○		○				
	E2069		4Flute	30°	Inch	Regular Ball Double	R1/16	R1/2	**1238**	◎	◎	○						○		○				
	E2039 E1039		4Flute	30°	Inch	Regular Square	D1/8	D1-1/2	**1239**	◎	◎	○						○		○				
	E2042 E1042		6Flute	30°	Inch	Regular Square	D1/2	D2	**1241**	◎	◎	○						○						
	E2039 E2042		4~8Flute	30°	Inch	Medium Square	D1	D2	**1242**	◎	◎	○						○		○				
	E2040 E1040		4Flute	30°	Inch	Long Square	D1/4	D1-1/2	**1243**	◎	◎	○						○		○				
	E2162 E1162		6Flute	30°	Inch	Long Square	D1/2	D2	**1243**	◎	◎	○						○						
	E2041 E1041		4Flute	30°	Inch	Extra Long Square	D1/4	D1-1/4	**1244**	◎	◎	○						○		○				
	E2175 E1175		6Flute	30°	Inch	Extra Long Square	D1/2	D2	**1244**	◎	◎	○						○						
	E2053 E1053		4Flute	30°	Inch	Regular Double Square	D1/8	D1	**1245**	◎	◎	○						○		○				
	E2100 E1100		6Flute	30°	Inch	Regular with Combination	D2	D2	**1247**	◎	◎	○						○						

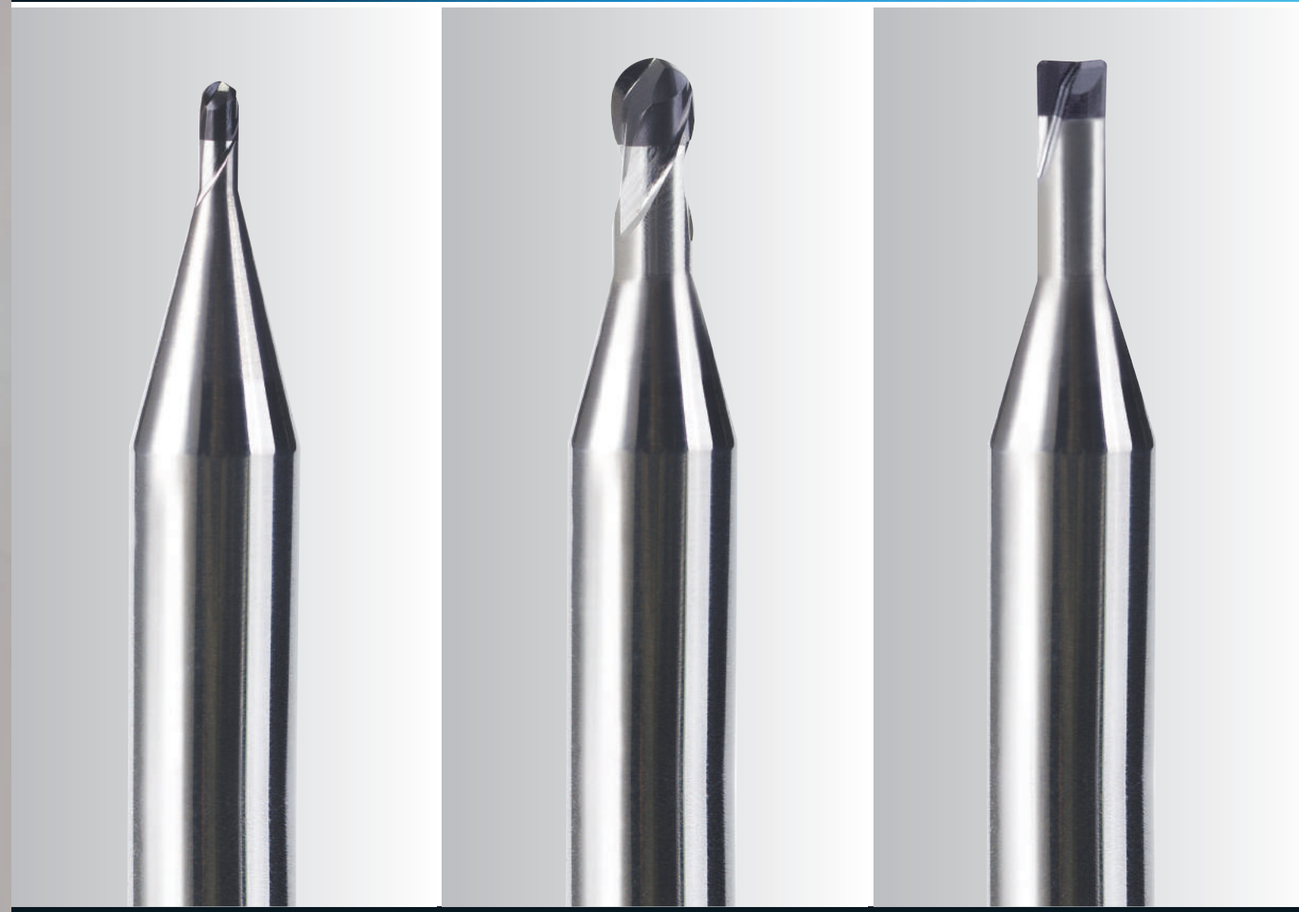
◎ : Excellent ○ : Good

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE MIN	SIZE RANGE MAX	PAGE	P Carbon Steels ~HB225	P Alloy Steels HB225~325	P Prehardened Steels HRc30~40	P Hardened Steels HRc40~45	P Hardened Steels HRc45~55	H High Hardened Steels HRc55~70	M Stainless Steels	K Cast Iron	N Copper	N Graphite	N Aluminum	N Acrylic	N CFRP	S Titanium	S High Temperature Alloy
COBALT & HSS	E2001 E1001		2Flute	30° & 39°	Inch	Miniature Stub Double	D1/32	D3/16	**1248**	◎	◎	○						○		○				
	E2003 E1003		2Flute	30° & 39°	Inch	Miniature Regular Double	D1/32	D3/16	**1249**	◎	◎	○						○		○				
	E2005 E1005		2Flute	30° & 39°	Inch	Miniature Long Double	D1/16	D3/16	**1250**	◎	◎	○						○		○				
	E2002 E1002		4Flute	30° & 39°	Inch	Miniature Stub Double	D1/16	D3/16	**1251**	◎	◎	○						○		○				
	E2004 E1004		4Flute	30° & 39°	Inch	Miniature Regular Double	D1/16	D3/16	**1252**	◎	◎	○						○		○				
	E2006 E1006		4Flute	30° & 39°	Inch	Miniature Long Double	D1/16	D3/16	**1253**	◎	◎	○						○		○				
	E2008 E1008		2Flute	30° & 39°	Inch	Miniature Stub Ball Double	R1/32	R3/32	**1254**	◎	◎	○						○		○				
	E2013 E1013		2Flute	30° & 39°	Inch	Miniature Regular Ball Double	R1/64	R3/32	**1255**	◎	◎	○						○		○				
	E2015 E1015		2Flute	30° & 39°	Inch	Miniature Long Ball Double	R1/32	R3/32	**1256**	◎	◎	○						○		○				
	E1070		2Flute	42°	Inch	Regular & Medium Square	D1/4	D2	**1257**	○										◎				
	E1071		2Flute	42°	Inch	Long Square	D1/4	D2	**1258**	○										◎				
	E1072		2Flute	42°	Inch	Extra Long Square	D1/4	D1-1/2	**1258**	○										◎				
	E2086		4~5Flute	30°	Inch	Stub Roughing	D1/4	D1	**1259**	◎	◎	○						○		○				
	E2085		3~5Flute	30°	Inch	Regular Roughing	D1/4	D1	**1260**	◎	◎	○						○		○				
	E2079		3~6Flute	30°	Inch	Regular Roughing	D1/4	D2	**1261**	◎	◎	○						○		○				
	E2077		4~6Flute	30°	Inch	Long Roughing	D1/2	D2	**1262**	◎	◎	○						○		○				
	E2086		3Flute	30°	Inch	Stub Roughing	D1/4	D1	**1263**	◎	◎	○						○		○				
	E2170		3~8Flute	30°	Inch	Regular Roughing	D1/4	D2	**1264**	◎	◎	○						○		○				
	E2171		5~8Flute	30°	Inch	Medium Roughing	D1	D2	**1265**	◎	◎	○						○		○				
	E2172		4~8Flute	30°	Inch	Long Roughing	D1/2	D2	**1266**	◎	◎	○						○		○				
	E2241		3Flute	30°	Inch	Stub Roughing	D1/4	D1	**1267**	◎	◎	○						○		○				
	E2195		4~6Flute	30°	Inch	Regular Roughing	D1/2	D1-1/2	**1268**	◎	◎	○						○		○				
	E2197		4~6Flute	30°	Inch	Long Roughing	D1/2	D1-1/2	**1268**	◎	◎	○						○		○				
	E2193 E2125		3~6Flute	30°	Inch	Regular & Long Roughing	R1/8	R3/4	**1269**	◎	◎	○						○		○				
	E2248		4~8Flute	30°	Inch	Regular Roughing&Finishing	D1/4	D2	**1270**	◎	◎	○						○		○				
	E2191		3Flute	37°	Inch	Regular Roughing	D1/4	D1-1/2	**1271**	◎	◎	○						○		◎				
	E2226 E2192		3Flute	37°	Inch	Medium & Long Roughing	D1/2	D1-1/2	**1272**	◎	◎	○						○		◎				
	E2163 E1163		2Flute	15°	Inch	Keyway	D1/8	D1	**1273**	◎	◎	○						○		○				

◎ : Excellent ○ : Good

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE MIN	SIZE RANGE MAX	PAGE	P Carbon Steels ~HB225	P Alloy Steels HB225~325	P Prehardened Steels HRc30~40	P Hardened Steels HRc40~45	P Hardened Steels HRc45~55	H High Hardened Steels HRc55~70	M Stainless Steels	K Cast Iron	N Copper	N Graphite	N Aluminum	N Acrylic	N CFRP	S Titanium	S High Temperature Alloy
COBALT & HSS	E2120 E2121		3&4Flute	60°	Inch	Regular Square	D1/4 D7/8	D3/4 D2	**1274**	◎	◎	○						○						
	E2160		3Flute	30°	Inch	Short Square	D1/16	D1/4	**1275**	◎	◎	○						○		○				
	E2161		3Flute	30°	Inch	Long Square	D1/16	D1/4	**1275**	◎	◎	○						○		○				
	E2237 E1237		4Flute	0°	Inch	Corner Rounding	D1/4	D5/8	**1276**	◎	◎	○						○		○				
	E2482 E1482		4Flute	30°	Inch	Regular Square	D2.0 (.0787)	D45.0 (1.772)	**1277**	◎	◎	○						○		○				
	E2483 E1483		2Flute	30°	Inch	Regular Square	D2.0 (.0787)	D45.0 (1.772)	**1278**	◎	◎	○						○		○				

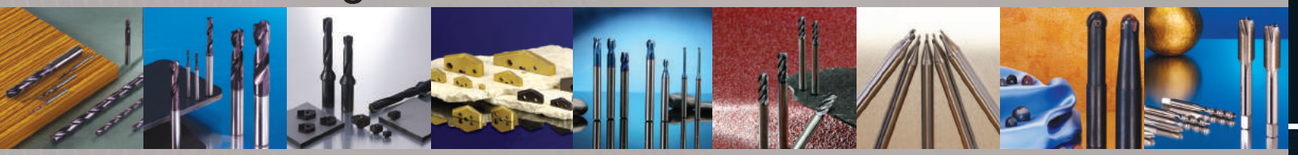
Being the best through innovation



CBN (Cubic Boron Nitride) END MILLS

- Cubic Boron Nitride, Machining High Hardened Steels up to HRc70, Mirror Finish

Global Cutting Tool Leader **YG-1**



ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
ESB94		CBN, 2 FLUTE BALL NOSE	R0.2	R1.5	592
ESD02		CBN, 2 FLUTE CORNER RADIUS	D0.5	D2.0	593
		RECOMMENDED CUTTING CONDITIONS			594

◎ : Excellent ○ : Good

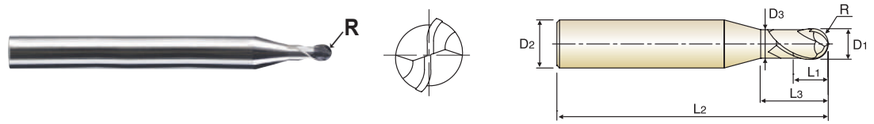
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
				◎	◎									
				◎	◎									

CBN END MILLS

ESB94 SERIES PLAIN SHANK

CBN, 2 FLUTE BALL NOSE

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



CBN | 2 | 30° | R ±0.005 | PLAIN P.594

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R (±0.005)	D1		D2	L1	L3	L2	D3
ESB94004012	R0.2	**0.4**	**.0157**	4	0.3	1.2	50	0.37
ESB94005015	R0.25	**0.5**	**.0197**	4	0.4	1.5	50	0.46
ESB94006015	R0.3	**0.6**	**.0236**	4	0.5	1.5	50	0.56
ESB94008020	R0.4	**0.8**	**.0315**	4	0.6	2	50	0.76
ESB94010025	R0.5	**1.0**	**.0394**	4	0.6	2.5	50	0.95
ESB94010040	R0.5	**1.0**	**.0394**	4	0.6	4	50	0.95
ESB94010060	R0.5	**1.0**	**.0394**	4	0.6	6	50	0.95
ESB94012030	R0.6	**1.2**	**.0472**	4	0.8	3	50	1.15
ESB94015030	R0.75	**1.5**	**.0591**	4	0.95	3	50	1.45
ESB94015040	R0.75	**1.5**	**.0591**	4	0.95	4	50	1.45
ESB94015060	R0.75	**1.5**	**.0591**	4	0.95	6	50	1.45
ESB94020050	R1.0	**2.0**	**.0787**	4	1.2	5	50	1.95
ESB94020060	R1.0	**2.0**	**.0787**	4	1.2	6	50	1.95
ESB94030060	R1.5	**3.0**	**.1181**	4	1.8	6	50	2.85

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

◎ : Excellent ○ : Good

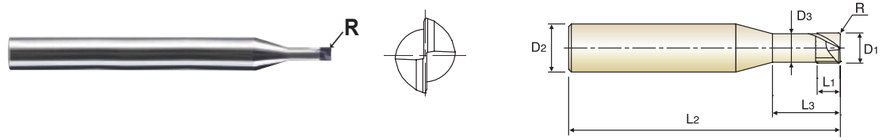
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
				◎	◎									

CBN END MILLS

ESD02 SERIES PLAIN SHANK

CBN, 2 FLUTE CORNER RADIUS

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



CBN | 2 | 0° | R ±0.005 | PLAIN P.594

Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R (±0.005)	D1		D2	L1	L3	L2	D3
ESD02005052	R0.05	**0.5**	**.0197**	4	0.3	2	50	0.46
ESD02005053	R0.05	**0.5**	**.0197**	4	0.3	3	50	0.46
ESD02010053	R0.05	**1.0**	**.0394**	4	0.7	3	50	0.95
ESD02010055	R0.05	**1.0**	**.0394**	4	0.7	5	50	0.95
ESD02010103	R0.1	**1.0**	**.0394**	4	0.7	3	50	0.95
ESD02010105	R0.1	**1.0**	**.0394**	4	0.7	5	50	0.95
ESD02015105	R0.1	**1.5**	**.0591**	4	1.0	5	50	1.45
ESD02015108	R0.1	**1.5**	**.0591**	4	1.0	8	50	1.45
ESD02015205	R0.2	**1.5**	**.0591**	4	1.0	5	50	1.45
ESD02015208	R0.2	**1.5**	**.0591**	4	1.0	8	50	1.45
ESD02020106	R0.1	**2.0**	**.0787**	4	1.2	6	50	1.95
ESD02020100	R0.1	**2.0**	**.0787**	4	1.2	10	50	1.95
ESD02020206	R0.2	**2.0**	**.0787**	4	1.2	6	50	1.95
ESD02020200	R0.2	**2.0**	**.0787**	4	1.2	10	50	1.95

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
				◎	◎									

CBN END MILLS

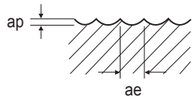
RECOMMENDED CUTTING CONDITIONS

CBN, 2 FLUTE BALL NOSE

ESB94 SERIES

MATERIAL	P		H	
	HARDENED STEELS		HIGH HARDENED STEELS	
HARDNESS	HRc50 ~ HRc60		HRc60 ~ HRc70	
DIAMETER	RPM	FEED	RPM	FEED
R0.2 × 0.4	50,000	47.2	50,000	47.2
R0.25 × 0.5	50,000	59.1	50,000	59.1
R0.3 × 0.6	50,000	78.7	50,000	78.7
R0.4 × 0.8	50,000	78.7	50,000	78.7
R0.5 × 1.0	50,000	118.1	50,000	118.1
R0.6 × 1.2	50,000	118.1	50,000	118.1
R0.75 × 1.5	50,000	118.1	50,000	118.1
R1.0 × 2.0	40,000	126.0	32,000	98.4
R1.5 × 3.0	26,500	82.7	21,500	66.9

ap : R0.2 ~ R0.4 =0.005mm
R0.5 ~ R1.5 =0.01mm
ae : R0.2 ~ R0.4 =0.005mm
R0.5 ~ R1.5 =0.01 mm

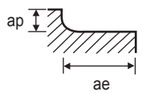


RPM = rev./min.
FEED = inch/min.

CBN, 2 FLUTE CORNER RADIUS

ESD02 SERIES

MATERIAL	P				H			
	HARDENED STEELS				HIGH HARDENED STEELS			
HARDNESS	HRc50 ~ HRc60				HRc60 ~ HRc70			
DIAMETER	RPM	FEED	DEPTH OF CUT		RPM	FEED	DEPTH OF CUT	
			ae[mm]	ap[mm]			ae[mm]	ap[mm]
0.5	50,000	27.6	0.10	0.01	50,000	21.7	0.06	0.005
1.0	43,000	39.4	0.20	0.01	30,000	27.6	0.10	0.10
1.5	30,000	39.4	0.40	0.02	19,000	27.6	0.20	0.20
2.0	22,000	35.4	0.60	0.03	14,000	31.5	0.30	0.30



RPM = rev./min.
FEED = inch/min.

CARBIDE INSERT & HOLDER

Being the best through innovation







i-Xmill

- Available for General Steels(~HRc50) Hardened Steels (up to HRc65) and Graphite

◎ : Excellent ○ : Good

ITEM	MODEL	DESCRIPTION	PAGE	P							M	K	N		
				Carbon Steels		Alloy Steels		Tool Steels		Hardened Steels	Stainless Steels	Cast Iron	Aluminum	Graphite	
				~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc35~	HRc50~	~HRc28	~HRc35	~HRc8		
INCH															
XB1A		i-Xmill BALL INSERT FOR GENERAL PURPOSE		◎	○	◎	○	◎	○		○	○	○		
XB2C		i-Xmill BALL INSERT FOR HARDENED STEEL	**598**	○	◎	○	◎	○	◎	◎		◎			
XB1D		i-Xmill BALL INSERT FOR GRAPHITE		○		○		○					○	◎	
ZBT / ZBS		i-Xmill BALL HOLDERS - STEEL	**599**												
ZBC		i-Xmill BALL HOLDERS - CARBIDE	**600**												
XR1A		i-Xmill CORNER RADIUS INSERTS FOR GENERAL PURPOSE		◎	○	◎	○	◎	○		○	○	○		
XR2A		i-Xmill CORNER RADIUS INSERTS FOR HARDENED STEEL	**601**	○	◎	○	◎	○	◎	◎		◎			
XR1D		i-Xmill CORNER RADIUS INSERTS FOR GRAPHITE		○		○		○					○	◎	
ZRT / ZRS		i-Xmill CORNER RADIUS HOLDERS - STEEL	**602**												
METRIC															
XB1N		i-Xmill BALL INSERT FOR GENERAL PURPOSE		◎	○	◎	○	◎	○		○	○	○		
XB2N		i-Xmill BALL INSERT FOR HARDENED STEEL	**603**	○	◎	○	◎	○	◎	◎		◎			
XBAD		i-Xmill BALL INSERT FOR GRAPHITE		○		○		○					○	◎	
ZBT / ZBS		i-Xmill BALL HOLDERS - STEEL	**604**												
ZBC		i-Xmill BALL HOLDERS - CARBIDE	**605**												
XRAA		i-Xmill CORNER RADIUS INSERTS FOR GENERAL PURPOSE		◎	○	◎	○	◎	○		○	○	○		
XRBA		i-Xmill CORNER RADIUS INSERTS FOR HARDENED STEEL	**606**	○	◎	○	◎	○	◎	◎		◎			
XRAD		i-Xmill CORNER RADIUS INSERTS FOR GRAPHITE		○		○		○					○	◎	
ZRT / ZRS		i-Xmill CORNER RADIUS HOLDERS - STEEL	**608**												
		ASSEMBLY RECOMMENDATIONS	**609**												
		RECOMMENDED CUTTING CONDITIONS	**610**												

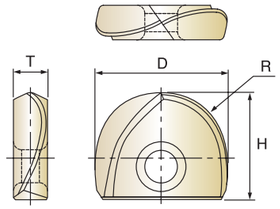
i-Xmill END MILLS

XB1A SERIES
XB2C SERIES XB1D SERIES

i-Xmill BALL INSERTS

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





cutting conditions : p.610

Unit : Inch

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

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

◎ : Excellent ○ : Good

	P							M	K	N	
	Carbon Steels		Alloy Steels		Tool Steels		Hardened Steels	Stainless Steels	Cast Iron	Aluminum	Graphite
	~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc35~	HRc50~	~HRc28	~HRc35	~HRc8	
XB1A	◎	○	◎	○	◎	○		○	○	○	
XB2C	○	◎	○	◎	○	◎	◎		◎		
XB1D	○		○		○					○	◎

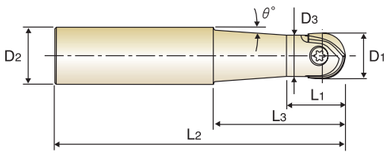
i-Xmill END MILLS

ZBT SERIES
ZBS SERIES

i-Xmill BALL HOLDERS - STEEL

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





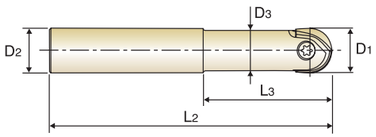
Taper neck Type

Unit : Inch

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

● Need to use T Handle : TWH600 (See page 52)





Straight neck Type

Unit :Inch

EDP No.	Mill Diameter	Shank Diameter	Length Below Shank	Overall Length	Neck Diameter	Length Type	Wrench No.	Screw No.
	D1	D2	L3	L2	D3			
ZBS1032	1/2	1/2	1-3/8	3-1/2	7/16	Short	TWF10	TX1210
ZBS2032			2-3/16	4-3/8		Regular		
ZBS1040	5/8	5/8	1-3/8	3-3/4	9/16	Short	TWF15	TX1615
ZBS2040			2-9/16	5		Regular		
ZBS1048	3/4	3/4	1-9/16	4-3/8	43/64	Short	■ TWB20	TX2020
ZBS2048			3	6		Regular		
ZBS1100	1	1	1-3/4	5	29/32	Short	■ TWB25	TX2525
ZBS2100			3-9/16	6-3/4		Regular		
ZBS1116	1-1/4	1-1/4	2-1/4	5-1/2	1-1/16	Short	■ TWB30	TX3030
ZBS2116			4-3/8	7-3/4		Regular		

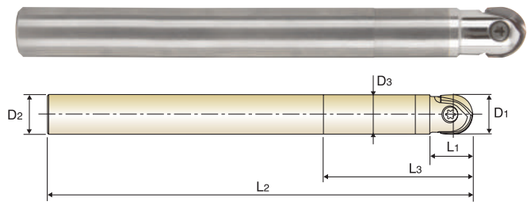
● Need to use T Handle : TWH600 (See page 52)

i-Xmill END MILLS

ZBC SERIES

i-Xmill BALL HOLDERS - CARBIDE

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



Unit : Inch

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Length Type	Wrench No.	Screw No.
ZBCB020	5/16	5/16	1/2	1-9/16	5-1/8	19/64	Long	TWF07	TX0807
ZBCB024	3/8	3/8	5/8	2	5-1/2	23/64	Long	TWF08	TX1008
ZBCB032	1/2	1/2	11/16	2-3/8	5-15/16	31/64	Long	TWF10	TX1210
ZBCB040	5/8	5/8	13/16	3-3/16	7-15/16	39/64	Long	TWF15	TX1615
ZBCD040					9-7/8				
ZBCB048	3/4	3/4	1	3-3/16	7-15/16	47/64	Long	● TWB20	TX2020
ZBCC048				4	9-7/8				
ZBCB100	1	1	1-3/16	4-3/4	9-7/8	63/64	Long	● TWB25	TX2525
ZBCB116	1-1/4	1-1/4	1-9/16	5-15/16	11-7/8	1-15/64	Long	● TWB30	TX3030

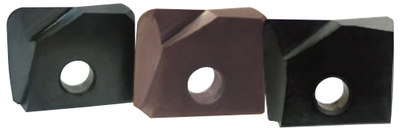
● Need to use T Handle : TWH600 (See page 52)

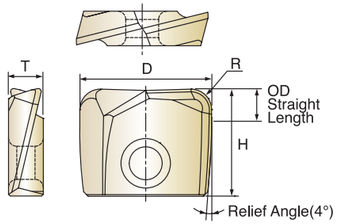
i-Xmill END MILLS

XR1A SERIES
XR2A SERIES
XR1D SERIES

i-Xmill CORNER RADIUS INSERTS

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





cutting conditions : p.611

Unit : Inch

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

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

◎ : Excellent ○ : Good

	P							M	K	N		
	Carbon Steels		Alloy Steels		Tool Steels		Hardened Steels	Stainless Steels	Cast Iron	Aluminum	Graphite
	~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc35~	HRc50~	~HRc28	~HRc35	~HRc8	
XR1A	◎	○	◎	○	◎	○		○	○	○	
XR2A	○	◎	○	◎	○	◎	◎		◎		
XR1D	○		○		○					○	◎

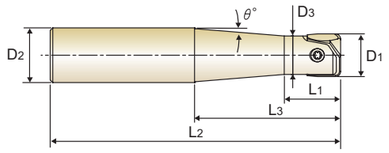
i-Xmill END MILLS

ZRT SERIES
ZRS SERIES

i-Xmill CORNER RADIUS HOLDERS - STEEL

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



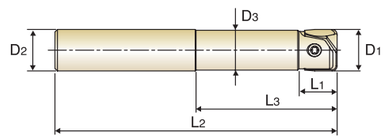


Taper neck Type

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Interference Angle	Length Type	Wrench No.	Screw No.
	D1	D2	L1	L3	L2	D3	θ°			
ZRT1032	5/16	1/2	13/32	7/8	4	17/64	13° 58'	Regular	TWF07	TX0807
ZRT2032				2	5-1/8		4° 12'	Long		
ZRT2410	3/8	1/2	17/32	1	4	5/16	9° 27'	Regular	TWF08	TX1008
ZRT2420				2	5-15/16		3° 6'	Long		
ZRT3220	1/2	5/8	5/8	2-3/8	6-5/16	27/64	3° 19'	Long	TWF10	TX1210





Straight neck Type

Unit :Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Length Type	Wrench No.	Screw No.
	D1	D2	L1	L3	L2	D3			
ZRS1032	1/2	1/2	17/32	1-3/16	4-3/8	7/16	Regular	TWF10	TX1210
ZRS1040	5/8	5/8	5/8	2	5-1/8	19/32	Regular	TWF15	TX1615
ZRS2040				2-9/16	6-1/2		Intermediate		
ZRS1048	3/4	3/4	23/32	2-3/8	5-1/2	23/32	Regular	● TWB20	TX2020
ZRS2048				3-1/8	7-1/8		Intermediate		
ZRS1100	1	1	29/32	2-3/4	5-15/16	31/32	Regular	● TWB25	TX2525
ZRS2100				3-9/16	8		Intermediate		
ZRS1116	1-1/4	1-1/4	1-1/8	3-1/8	6-5/16	1-7/32	Regular	● TWB30	TX3030
ZRS2116				4	8-11/16		Intermediate		

● Need to use T Handle : TWH600 (See page 52)

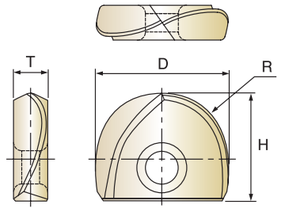
i-Xmill END MILLS

XB1N SERIES
XB2N SERIES
XBAD SERIES

i-Xmill BALL INSERTS

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





cutting conditions : p.610

Unit : mm

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

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

◎ : Excellent ○ : Good

	P							M	K	N		
	Carbon Steels		Alloy Steels		Tool Steels		Hardened Steels	Stainless Steels	Cast Iron	Aluminum	Graphite
	~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc35~	HRc50~	~HRc28	~HRc35	~HRc8	
XB1N	◎	○	◎	○	◎	○		○	○	○	
XB2N	○	◎	○	◎	○	◎	◎		◎		
XBAD	○		○		○					○	◎

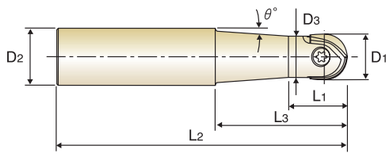
i-Xmill END MILLS

ZBT SERIES
ZBS SERIES

i-Xmill BALL HOLDERS - STEEL

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





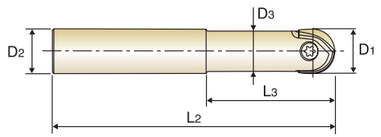
Taper neck Type

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Interference Angle θ°	Length Type	Wrench No.	Screw No.
ZBT0801	8.0	12	12	35	90	7.2	4° 43′	Short	TWF07	TX0807
ZBT0802			25	55	110		3° 37′	Regular		
ZBT1001	10.0	12	15	35	90	9	2° 51′	Short	TWF08	TX1008
ZBT1002			30	55	110		2° 17′	Regular		
ZBT1201	12.0	16	17	55	110	10.5	3° 23′	Short	TWF10	TX1210
ZBT1601	16.0	20	20	65	125	14.5	2° 51′	Short	TWF15	TX1615
ZBT2001	20.0	25	25	75	145	18	3° 26′	Short	● TWB20	TX2020
ZBT2501	25.0	32	30	90	170	22.5	4° 03′	Short	● TWB25	TX2525
ZBT3001	30.0 32.0	32	40	110	195	27	1° 38′	Short	● TWB30	TX3030

● Need to use T Handle : TWH600 (See page 52)





Straight neck Type

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Length Type	Wrench No.	Screw No.
ZBS1201	12.0	12	35	90	10.5	Short	TWF10	TX1210
ZBS1202			55	110		Regular		
ZBS1601	16.0	16	35	95	14.5	Short	TWF15	TX1615
ZBS1602			65	125		Regular		
ZBS2001	20.0	20	40	110	18	Short	● TWB20	TX2020
ZBS2002			75	145		Regular		
ZBS2501	25.0	25	45	125	22.5	Short	● TWB25	TX2525
ZBS2502			90	170		Regular		
ZBS3001	30.0	32	55	140	27	Short	● TWB30	TX3030
ZBS3002	32.0		110	195		Regular		

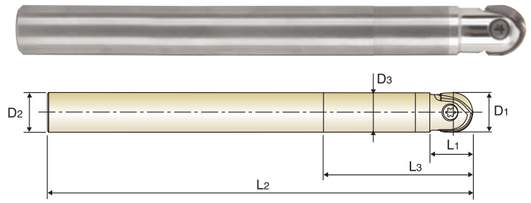
● Need to use T Handle : TWH600 (See page 52)

i-Xmill END MILLS

ZBC SERIES

i-Xmill BALL HOLDERS - CARBIDE

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



Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Length Type	Wrench No.	Screw No.
ZBC1080	8.0	8	12	25	130	7.7	Long	TWF07	TX0807
ZBC1100	10.0	10	15	30	140	9.7	Long	TWF08	TX1008
ZBC1120	12.0	12	17	35	150	11.7	Long	TWF10	TX1210
ZBC1160	16.0	16	20	50	200	15.7	Long	TWF15	TX1615
ZBC1200	20.0	20	25	60	200	19.7	Long	● TWB20	TX2020
ZBC1250	25.0	25	30	75	200	24.7	Long	● TWB25	TX2525
ZBC1320	30.0 32.0	32	40	90	250	29.7	Long	● TWB30	TX3030

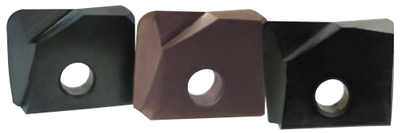
● Need to use T Handle : TWH600 (See page 52)

i-Xmill END MILLS

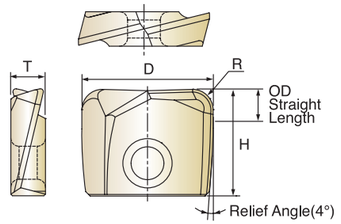
XRAA SERIES XRBA SERIES XRAD SERIES

i-Xmill CORNER RADIUS INSERTS

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



cutting conditions : p.611



Unit : mm

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

▶ NEXT PAGE

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

◎ : Excellent ○ : Good

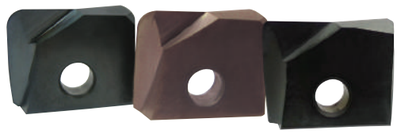
	P							M	K	N		
	Carbon Steels		Alloy Steels		Tool Steels		Hardened Steels	Stainless Steels	Cast Iron	Aluminum	Graphite	
	~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc35~	HRc50~	~HRc28	~HRc35	~HRc8		
XRAA	◎	○	◎	○	◎	○		○	○	○		
XRBA	○	◎	○	◎	○	◎	◎		◎			
XRAD	○		○		○					○	◎	

i-Xmill END MILLS

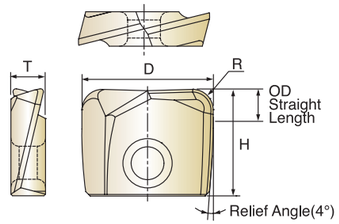
XRAA SERIES XRBA SERIES XRAD SERIES

i-Xmill CORNER RADIUS INSERTS

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- The various and wide cutting range makes it possible to machine over the roughing and finishing.
- Special coating makes high hardness with high thermal stability against oxidation.
- Three Types of Inserts are available
  - For General Purpose (~HRc50)
  - For Hardened Mat erial (HRc40~HRc65)
  - For Graphite



cutting conditions : p.611



Unit : mm

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

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

◎ : Excellent ○ : Good

	P							M	K	N		
	Carbon Steels		Alloy Steels		Tool Steels		Hardened Steels	Stainless Steels	Cast Iron	Aluminum	Graphite	
	~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc35~	HRc50~	~HRc28	~HRc35	~HRc8		
XRAA	◎	○	◎	○	◎	○		○	○	○		
XRBA	○	◎	○	◎	○	◎	◎		◎			
XRAD	○		○		○					○	◎	

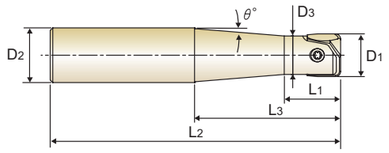
i-Xmill END MILLS

ZRT SERIES
ZRS SERIES

i-Xmill CORNER RADIUS HOLDERS - STEEL

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



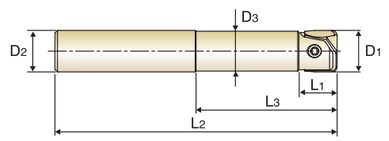


Taper neck Type

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Interference Angle θ°	Length Type	Wrench No.	Screw No.
ZRT8011	8.0	12	10	22	100	6.7	9°	Regular	TWF07	TX0807
ZRT8021				50	130		2° 43'	Long		
ZRT1001	10.0	12	13	25	100	8.6	4° 45'	Regular	TWF08	TX1008
ZRT1002				50	150		1° 32'	Long		
ZRT1202	12.0 13.0	16	15	60	160	10.2	2° 32'	Long	TWF10	TX1210





Straight neck Type

Unit : mm

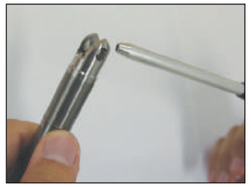
EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Length Type	Wrench No.	Screw No.
ZRS1120	12.0 13.0	12	13	30	110	11	Regular	TWF10	TX1210
ZRS1160	16.0	16	15	50	130	15	Regular	TWF15	TX1615
ZRS2160	17.0			65	165		Intermediate		
ZRS1200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

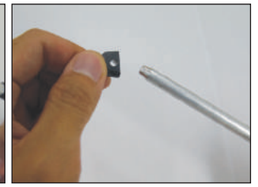
● Need to use T Handle : TWH600 (See page 52)

i-Xmill END MILLS

RECOMMENDED CUTTING CONDITIONS

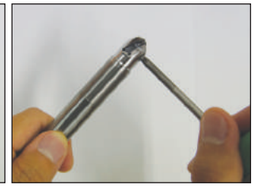
ASSEMBLY OF *i*-Xmill





◀ Make sure to clean the insert and insert seat.



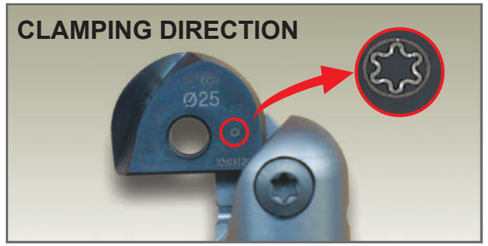


◀ Slide the insert into the slot of the holder.
Tighten the screw using anti-seize compound.

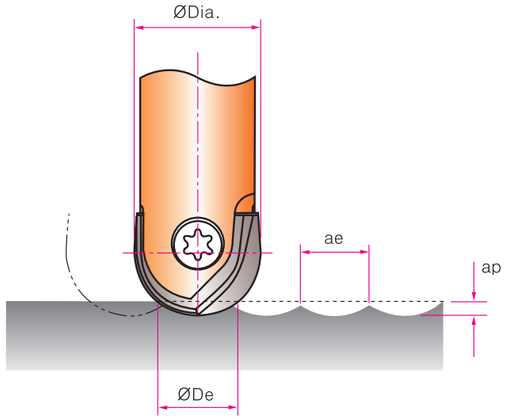
SIZE ØD	CLAMPING TORQUE [in • lbs]
Ø5/16 (Ø8)	9.0
Ø3/8 (Ø10)	13.5
Ø1/2 (Ø12~Ø13)	22.5
Ø5/8 (Ø16~Ø17)	31.5
Ø3/4 (Ø20~Ø21)	44.5
Ø1 (Ø25~Ø26)	53.0
Ø1-1/4 (Ø30~Ø32)	58.0

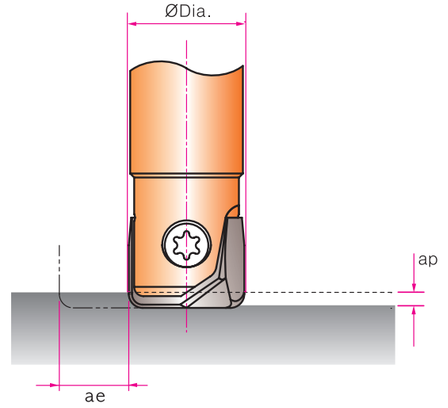
* When the screw is worn out, please change the new screw.
* Please tighten up the screw with recommended torque. (Please refer to the table)
* Don't press down the insert, when the screw is tightened.

CLAMPING DIRECTION



CUTTING CONDITION





RPM = revolution per minute (rev/min)
SFM = surface feet per minute (ft/min)
Dia. = diameter of insert (inch)
IPR = feed rate (inch/rev)
IPM = inch per minute penetration rate
De = effective tool diameter (inch)
ap = axial depth of cut (inch)
ae = radial depth of cut (inch)

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

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

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

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

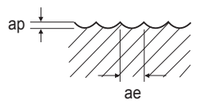
i-Xmill END MILLS — RECOMMENDED CUTTING CONDITIONS

i-Xmill BALL INSERTS

XB1A, XB2C, XB1N, XB2N SERIES

WORK MATERIAL		P							
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS			
HARDNESS	HB	~280				280~380			
	HRc	~30				30~40			
STRENGTH	N/mm²	~1000				1000~1250			
i-Xmill TYPE		XB1A, XB1N				XB1A, XB1N			
CUTTING CONDITION Roughing~Finishing		RPM [rev/min]	Feed (IPM) [inch/min]	Vc (SFM) [ft/min]	fz [inch/t]	RPM [rev/min]	Feed (IPM) [inch/min]	Vc (SFM) [ft/min]	fz [inch/t]
Ø5/16(Ø8)		6370~12730	100~200	525~1050	.008~.008	4770~11140	80~180	394~919	.008~.008
Ø3/8(Ø10)		5090~11460	80~180	525~1181	.008~.008	3820~9550	60~150	394~984	.008~.008
Ø1/2(Ø12, Ø13)		4240~10080	70~160	525~1247	.008~.008	3180~9280	50~150	394~1148	.008~.008
Ø5/8(Ø16, Ø17)		3180~9550	60~230	525~1575	.010~.012	2390~7560	50~180	394~1247	.010~.012
Ø3/4(Ø20, Ø21)		2550~9230	50~290	525~1903	.010~.016	1910~6680	40~210	394~1378	.010~.016
Ø1(Ø25, Ø26)		2040~7640	40~300	525~1969	.010~.020	1530~6110	30~240	394~1575	.010~.020
Ø1-1/4(Ø30, Ø32)		1700~7430	30~350	525~2297	.010~.024	1270~5840	30~280	394~1804	.010~.024

P								N			
DIE TOOL STEELS PRE-HARDENED				HARDENED STEELS				GRAPHITE			
380~480				480~740							
40~50				50~65							
1250~1500				1500~							
XB1A, XB1N XB2C, XB2N				XB2C, XB2N				XB1D, XBAD			
RPM [rev/min]	Feed (IPM) [inch/min]	Vc (SFM) [ft/min]	fz [inch/t]	RPM [rev/min]	Feed (IPM) [inch/min]	Vc (SFM) [ft/min]	fz [inch/t]	RPM [rev/min]	Feed (IPM) [inch/min]	Vc (SFM) [ft/min]	fz [inch/t]
3980~8750	50~140	328~722	.006~.008	3180~7160	30~110	262~591	.004~.008	11940~15920	190~250	984~1312	.008~.008
3180~8280	40~130	328~853	.006~.008	2550~6370	20~100	262~656	.004~.008	9550~12730	150~200	984~1312	.008~.008
2650~7430	30~120	328~919	.006~.008	2120~5840	20~90	262~722	.004~.008	7960~10610	130~170	984~1312	.008~.008
1990~6960	30~160	328~1148	.008~.012	1590~5170	20~120	262~853	.006~.012	5970~7960	120~190	984~1312	.010~.012
1590~6370	30~200	328~1312	.008~.016	1270~5090	20~160	262~1050	.006~.016	4770~7640	110~210	984~1575	.012~.014
1270~5730	20~230	328~1476	.008~.020	1020~4580	10~180	262~1181	.006~.020	3820~7130	110~220	984~1837	.014~.016
1060~5310	20~250	328~1640	.008~.024	850~4240	10~200	262~1312	.006~.024	3180~6900	100~270	984~2133	.016~.020



ae : Roughing - 0.1 x D
Finishing - Under Ø1/2 : 0.01
Under Ø3/4 : 0.012
From Ø3/4 : 0.016

ap : Roughing - Under Ø5/8 : 0.025 x D
From Ø5/8 : 0.05 x D
Finishing - 0.004

▶ Recommend to reduce the feed rate to 70 ~ 85% when you use long (long & intermediate Type Holder)

RPM = rev./min.
FEED = inch/min.

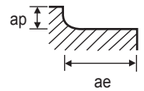
i-Xmill END MILLS — RECOMMENDED CUTTING CONDITIONS

i-Xmill CORNER RADIUS INSERTS

XR1A, XR2A, XRAA, XRBA SERIES

WORK MATERIAL		P							
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS			
HARDNESS	HB	~280				280~380			
	HRc	~30				30~40			
STRENGTH	N/mm²	~1000				1000~1250			
i-Xmill TYPE		XR1A, XRAA				XR1A, XRAA			
CUTTING CONDITION Roughing~Finishing		RPM [rev/min]	Feed (IPM) [inch/min]	Vc (SFM) [ft/min]	fz [inch/t]	RPM [rev/min]	Feed (IPM) [inch/min]	Vc (SFM) [ft/min]	fz [inch/t]
Ø5/16(Ø8)		6370~11940	100~140	525~984	.008~.006	4770~11140	80~130	394~919	.008~.006
Ø3/8(Ø10)		5090~9550	80~110	525~984	.008~.006	3820~8910	60~110	394~919	.008~.006
Ø1/2(Ø12,Ø13)		4240~7960	70~90	525~984	.008~.006	3180~7430	50~90	394~919	.008~.006
Ø5/8(Ø16,Ø17)		3180~5970	60~90	525~984	.010~.008	2390~5570	50~90	394~919	.010~.008
Ø3/4(Ø20,Ø21)		2550~4770	50~80	525~984	.010~.008	1910~4460	40~70	394~919	.010~.008
Ø1(Ø25,Ø26)		2040~3820	40~60	525~984	.010~.008	1530~3570	30~60	394~919	.010~.008
Ø1-1/4(Ø30,Ø32)		1700~3180	30~50	525~984	.010~.008	1270~2970	30~50	394~919	.010~.008

P								N			
DIE TOOL STEELS PRE-HARDENED				HARDENED STEELS				GRAPHITE			
380~480				480~740							
40~50				50~65							
1250~1500				1500~							
XR1A, XRAA XR2A, XRBA				XR2A, XRBA				XR1D, XRAD			
RPM [rev/min]	Feed (IPM) [inch/min]	Vc (SFM) [ft/min]	fz [inch/t]	RPM [rev/min]	Feed (IPM) [inch/min]	Vc (SFM) [ft/min]	fz [inch/t]	RPM [rev/min]	Feed (IPM) [inch/min]	Vc (SFM) [ft/min]	fz [inch/t]
3980~11140	40~52	328~919	.005~.002	3180~7160	25~34	262~722	.004~.002	11940~15920	190~250	984~1312	.008~.008
3180~8910	30~42	328~919	.005~.002	2550~6370	20~28	262~722	.004~.002	9550~12730	150~200	984~1312	.008~.008
2650~7430	25~35	328~919	.005~.002	2120~5840	18~24	262~722	.004~.002	7960~10610	130~170	984~1312	.008~.008
1990~5570	24~34	328~919	.006~.003	1590~5170	18~22	262~722	.006~.002	5970~7960	90~130	984~1312	.008~.008
1590~4460	20~26	328~919	.006~.003	1270~5090	15~18	262~722	.006~.002	4770~6370	90~130	984~1312	.010~.010
1270~3570	15~20	328~919	.006~.003	1020~4580	12~14	262~722	.006~.002	3820~5090	80~100	984~1312	.010~.010
1060~2970	14~18	328~919	.006~.003	850~4240	10~12	262~722	.006~.002	3180~4240	60~80	984~1312	.010~.010

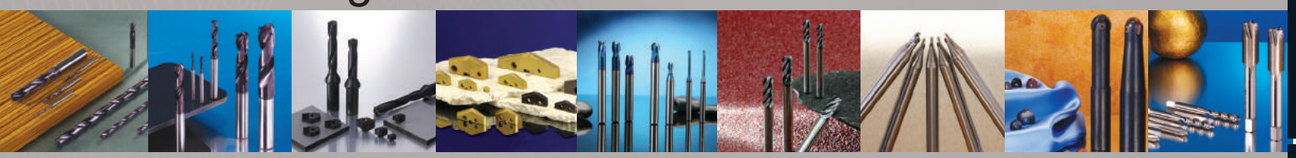


ae : Roughing - 0.1 x D
Finishing - 0.008

ap : Roughing - Under Ø5/8 : 0.025 x D
From Ø5/8 : 0.05 x D
Finishing - Under Ø5/8 : 0.004
From Ø5/8 : 0.008

▶ Recommend to reduce the feed rate to 70 ~ 85% when you use long (long & intermediate Type Holder)

Global Cutting Tool Leader **YG-1**



CARBIDE MODULAR HEAD & HOLDER



i-Smart
MODULAR CARBIDE HEAD END MILLS

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

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
XGMF15		CARBIDE MODULAR HEAD, 2 FLUTE BALL NOSE	R3/16	R5/8	616
XGMF17		CARBIDE MODULAR HEAD, 4 FLUTE BALL NOSE	R3/16	R5/8	617
XGMF20		CARBIDE MODULAR HEAD, 4 FLUTE MULTIPLE HELIX CORNER RADIUS	D3/8	D1-1/4	618
XGMF25		CARBIDE MODULAR HEAD, 4 FLUTE MULTIPLE HELIX	D3/8	D1-1/4	619
XGMF29		CARBIDE MODULAR HEAD, 6 FLUTE 45° HELIX	D3/8	D1-1/4	620
ZMC		CARBIDE HOLDER, STRAIGHT NECK TYPE			621
ZMS		STEEL HOLDER, STRAIGHT NECK TYPE			622
ZMT		STEEL HOLDER, TAPER NECK TYPE			623
		RECOMMENDED CUTTING CONDITIONS			624

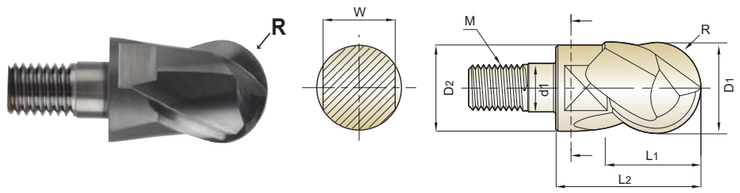
◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							
○	◎	◎	◎	○			○							
◎	◎	◎	◎	○			○							
◎	◎	◎	◎	○		○	○							
◎	◎	◎	◎	○			○							

i-Smart END MILLS

XGMF15 SERIES

CARBIDE MODULAR HEAD, 2 FLUTE BALL NOSE



MG | 2 | 30° | R ±.0004 | P.624

Unit: Inch

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

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

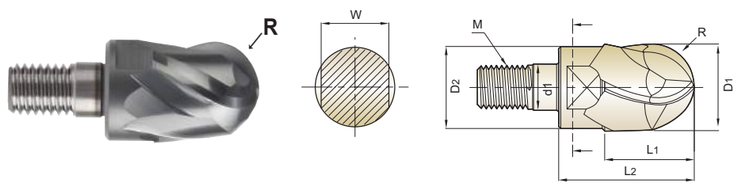
◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

i-Smart END MILLS

XGMF17 SERIES

CARBIDE MODULAR HEAD, 4 FLUTE BALL NOSE



MG | 4 | 30° | R ±.0004 | P.624

Unit: Inch

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

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

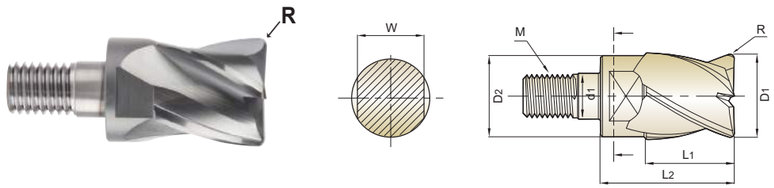
◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

i-Smart END MILLS

XGMF20 SERIES

CARBIDE MODULAR HEAD, 4 FLUTE MULTIPLE HELIX CORNER RADIUS



MG | 4 | 27°/30° | R ±.0008 | P.625

Unit: Inch

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

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

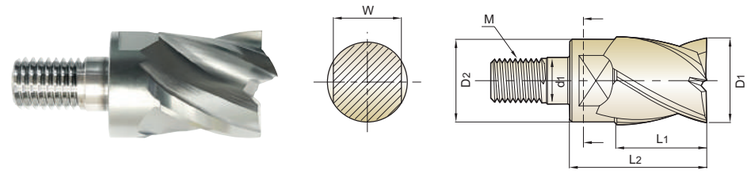
◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○				○							

i-Smart END MILLS

XGMF25 SERIES

CARBIDE MODULAR HEAD, 4 FLUTE MULTIPLE HELIX



MG | 4 | 27°/30° | P.625

Unit: Inch

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

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

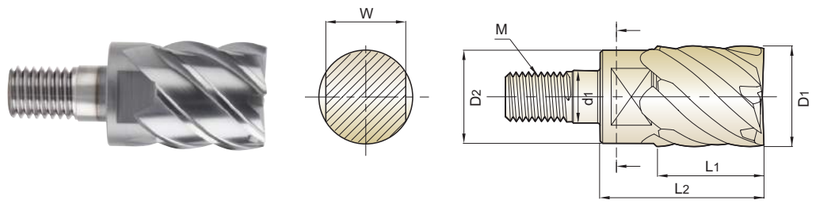
◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

i-Smart END MILLS

XGMF29 SERIES

CARBIDE MODULAR HEAD, 6 FLUTE 45º HELIX



MG 6 45° P.626

Unit: Inch

EDP No.	Mill Diameter	Neck Diameter	Length of Cut	Length Below Shank	Coupling Diameter	Wrench Width	Thread	Wrench
	D_1	D_2	L_1	L_2	d_1	W	M	
XGMF29024	3/8	.351	3/8	.689	.256	.315	M6	SPIS0810
XGMF29032	1/2	.469	1/2	.835	.256	.394	M6	SPIS0810
XGMF29040	5/8	.591	5/8	1.004	.335	.512	M8	SPIS1300
XGMF29048	3/4	.711	3/4	1.144	.413	.669	M10	SPIS1700
XGMF29100	1	.961	1	1.472	.492	.866	M12	SPIS2200
XGMF29116	1-1/4	1.221	1-1/4	1.772	.669	1.063	M16	SPIS2700

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

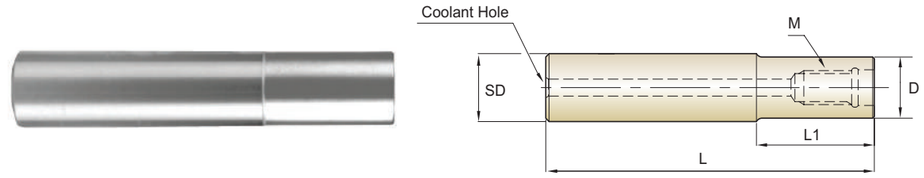
◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

i-Smart END MILLS

ZMC SERIES

CARBIDE HOLDER, STRAIGHT NECK TYPE



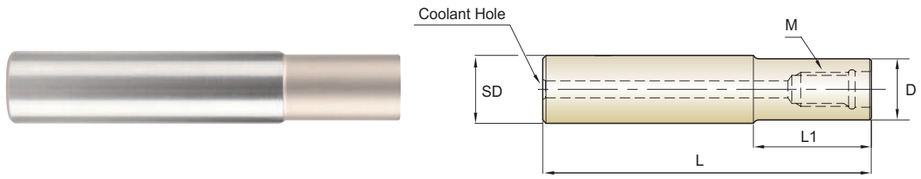
Unit: Inch

EDP No.	Mill Diameter	Shank Diameter	Overall Length	Neck Length	Neck Diameter	Thread Size	Wrench No.	Coolant Hole
		SD	L	L_1	D	M		
ZMC024A024	3/8	3/8	2-3/4	25/32	23/64	M6	SPIS0810	5/64
ZMC024B024			3-15/16	1-37/64				
ZMC024C024			5-1/8	2-3/4				
ZMC032A032	1/2	1/2	3-1/8	25/32	29/64	M6	SPIS0810	5/64
ZMC032B032			3-15/16	1-37/64				
ZMC032C032			5-1/8	2-3/4				
ZMC040A040	5/8	5/8	3-15/16	1-37/64	19/32	M8	SPIS1300	1/8
ZMC040B040			5-7/8	3-5/32				
ZMC040C040			7-7/8	4-23/32				
ZMC048A048	3/4	3/4	3-15/16	1-37/64	45/64	M10	SPIS1700	5/32
ZMC048B048			5-7/8	3-5/32				
ZMC048C048			7-7/8	4-23/32				
ZMC048D048			9-13/16	6-19/64				
ZMC100A100	1	1	5-7/8	2-3/4	61/64	M12	SPIS2200	13/64
ZMC100B100			7-7/8	3-15/16				
ZMC100C100			9-13/16	5-29/32				
ZMC100D100			11-13/16	7-7/8				
ZMC116A116	1-1/4	1-1/4	5-7/8	2-3/4	1-9/64	M16	SPIS2700	15/64
ZMC116B116			7-7/8	4-23/32				
ZMC116C116			9-13/16	5-29/32				
ZMC116D116			11-13/16	7-7/8				
ZMC116E116			13-3/4	9-27/32				

i-Smart END MILLS

ZMS SERIES

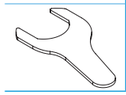
STEEL HOLDER, STRAIGHT NECK TYPE



Unit: Inch

EDP No.	Mill Diameter	Shank Diameter	Overall Length	Neck Length	Neck Diameter	Thread Size	Coolant Hole
		SD	L	L_1	D	M	
ZMS024A024	3/8	3/8	2-3/4	25/32	23/64	M6	1/8
ZMS032A032	1/2	1/2	3-35/64	1-3/16	29/64	M6	1/8
ZMS040A040	5/8	5/8	3-15/16	1-3/16	19/32	M8	5/32
ZMS048A048	3/4	3/4	3-15/16	1-3/16	45/64	M10	13/64
ZMS100A100	1	1	4-17/32	1-37/64	61/64	M12	13/64
ZMS116A116	1-1/4	1-1/4	4-59/64	1-37/64	1-9/64	M16	15/64

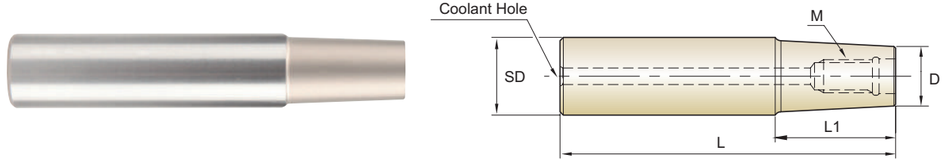
Wrench

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

i-Smart END MILLS

ZMT SERIES

STEEL HOLDER, TAPER NECK TYPE



Unit: Inch

EDP No.	Mill Diameter	Shank Diameter	Overall Length	Neck Length	Neck Diameter	Thread Size	Coolant Hole
		SD	L	L_1	D	M	
ZMT024A032	3/8	1/2	3-15/16	1-31/32	23/64	M6	1/8
ZMT032A040	1/2	5/8	5-1/8	2-3/4	29/64	M6	1/8
ZMT040A048	5/8	3/4	5-29/32	3-35/64	19/32	M8	5/32
ZMT048A100	3/4	1	6-11/16	3-15/16	45/64	M10	13/64
ZMT100A116	1	1-1/4	7-7/8	4-21/64	61/64	M12	13/64
ZMT116A116	1-1/4	1-1/4	7-7/8	4-21/64	1-9/64	M16	15/64

Wrench

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

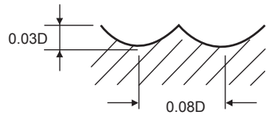
i-Smart END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE MODULAR HEAD, 2 FLUTE BALL NOSE

XGMF15 SERIES

MATERIAL	P											
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS	~ HRc35				HRc35~ HRc45				HRc45~ HRc55			
STRENGTH	~ 1100N/mm²				1110 ~ 1500N/mm²				1500 ~ 2000N/mm²			
DIAMETER	RPM	Feed (IPM)	Vc (SFM)	fz	RPM	Feed (IPM)	Vc (SFM)	fz	RPM	Feed (IPM)	Vc (SFM)	fz
R3/16 ×3/8	5860	91.7	575	.008	5610	77.0	551	.007	4720	59.5	463	.006
R1/4 ×1/2	4200	65.8	550	.008	4050	55.7	530	.007	3390	42.3	444	.006
R5/16 ×5/8	3370	63.2	551	.009	3240	52.4	530	.008	2720	40.6	445	.007
R3/8 ×3/4	2800	58.3	550	.010	2710	48.4	532	.009	2270	37.2	446	.008
R1/2 ×1	2100	46.5	550	.011	2020	42.5	529	.011	1700	32.5	445	.010
R1-1/8×1-1/4	1680	38.0	550	.011	1620	36.5	530	.011	1360	28.5	445	.010

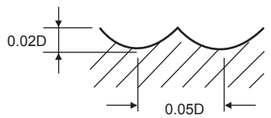


RPM = rev./min. FEED = inch/min.
Vc = ft/min. fz = inch/tooth

CARBIDE MODULAR HEAD, 4 FLUTE BALL NOSE

XGMF17 SERIES

MATERIAL	P											
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS	~ HRc35				HRc35~ HRc45				HRc45~ HRc55			
STRENGTH	~ 1100N/mm²				1110 ~ 1500N/mm²				1500 ~ 2000N/mm²			
DIAMETER	RPM	Feed (IPM)	Vc (SFM)	fz	RPM	Feed (IPM)	Vc (SFM)	fz	RPM	Feed (IPM)	Vc (SFM)	fz
R3/16 ×3/8	9600	189.8	942	.005	7720	142.5	758	.005	6990	118.7	686	.004
R1/4 ×1/2	7200	158.5	942	.006	5790	118.7	758	.005	5230	89.4	685	.004
R5/16 ×5/8	5760	138.2	942	.006	4630	92.6	758	.005	4180	66.9	684	.004
R3/8 ×3/4	4800	134.4	942	.007	3860	92.6	758	.006	3480	69.6	683	.005
R1/2 ×1	3600	115.2	942	.008	2890	69.4	757	.006	2610	52.2	683	.005
R1-1/8×1-1/4	2880	103.7	942	.009	2310	64.7	756	.007	2090	50.2	684	.006



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

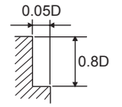
i-Smart END MILLS

RECOMMENDED CUTTING CONDITIONS

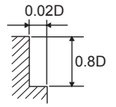
CARBIDE MODULAR HEAD, 4 FLUTE MULTIPLE HELIX CORNER RADIUS

XGMF20 SERIES

MATERIAL	P											
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS	~ HRc35				HRc35~ HRc45				HRc45~ HRc55			
STRENGTH	~ 1100N/mm²				1110 ~ 1500N/mm²				1500 ~ 2000N/mm²			
RPM	RPM	Feed (IPM)	Vc (SFM)	fz	RPM	Feed (IPM)	Vc (SFM)	fz	RPM	Feed (IPM)	Vc (SFM)	fz
3/8	5300	19.1	520	.001	3440	15	338	.001	2120	7.1	208	.001
1/2	3900	13.4	511	.001	2630	11.8	344	.001	1590	5.1	208	.001
5/8	3100	11.0	507	.001	2120	9.1	347	.001	1290	4.5	211	.001
3/4	2600	9.5	511	.001	1720	7.5	338	.001	1050	3.7	206	.001
1	1950	11.7	511	.002	1290	7.7	338	.002	780	4.7	204	.002
1-1/4	1560	9.4	511	.002	1030	6.2	337	.002	620	3.7	203	.002



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

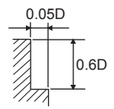


RPM = rev./min. FEED = inch/min.
Vc = ft/min. fz = inch/tooth

CARBIDE MODULAR HEAD, 4 FLUTE MULTIPLE HELIX

XGMF25 SERIES

MATERIAL	P												M			
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS				STAINLESS STEELS			
HARDNESS	~ HRc35				HRc35~ HRc45				HRc45~ HRc55							
STRENGTH	~ 1100N/mm²				1110 ~ 1500N/mm²				1500 ~ 2000N/mm²							
DIAMETER	RPM	Feed (IPM)	Vc (SFM)	fz	RPM	Feed (IPM)	Vc (SFM)	fz	RPM	Feed (IPM)	Vc (SFM)	fz	RPM	Feed (IPM)	Vc (SFM)	fz
3/8	4280	26.5	420	.002	2620	13	257	.001	1780	3.9	175	.001	2200	13	216	.001
1/2	3240	20.7	424	.002	1980	9.9	259	.001	1370	3.2	179	.001	1610	9.5	211	.001
5/8	2770	17.6	453	.002	1710	8.5	280	.001	1140	2.5	187	.001	1390	8.3	227	.001
3/4	2200	13.9	432	.002	1400	7	275	.001	890	1.8	175	.001	1100	6.4	216	.001
1	1650	16.5	432	.003	1050	6.3	275	.002	680	1.6	178	.001	820	4.9	215	.002
1-1/4	1320	13.2	432	.003	835	5.0	273	.002	530	1.5	173	.001	655	3.9	214	.002



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

i-Smart END MILLS

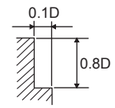
RECOMMENDED CUTTING CONDITIONS

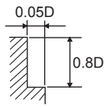
CARBIDE MODULAR HEAD, 6 FLUTE 45º HELIX

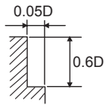
XGMF29 SERIES

NORMAL SPEED

MATERIAL	P											
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS	~ HRc35				HRc35~ HRc45				HRc45~ HRc55			
STRENGTH	~ 1100N/mm²				1110 ~ 1500N/mm²				1500 ~ 2000N/mm²			
DIAMETER	RPM	Feed (IPM)	Vc (SFM)	fz	RPM	Feed (IPM)	Vc (SFM)	fz	RPM	Feed (IPM)	Vc (SFM)	fz
3/8	3705	86.8	364	.004	2560	59.5	251	.004	1105	9.1	108	.001
1/2	2780	58.5	364	.004	1950	40.7	255	.003	840	6.3	110	.001
5/8	2225	44.7	364	.003	1565	31.2	256	.003	670	4.6	110	.001
3/4	1850	37.2	363	.003	1280	25.4	251	.003	545	4.1	107	.001
1	1390	33.4	364	.004	960	23.0	251	.004	420	3.8	110	.002
1-1/4	1110	26.6	363	.004	770	18.5	252	.004	330	3.0	108	.002



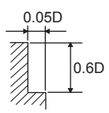


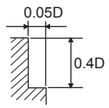


RPM = rev./min.
FEED = inch/min.
Vc = ft/min.
fz = inch/tooth

HIGH SPEED

MATERIAL	P							
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				HARDENED STEELS			
HARDNESS	~ HRc50				HRc50~ HRc60			
STRENGTH	1750N/mm²				1750 ~ 2080N/mm²			
DIAMETER	RPM	Feed (IPM)	Vc (SFM)	fz	RPM	Feed (IPM)	Vc (SFM)	fz
3/8	11005	260.0	1080	.004	5555	132.3	545	.004
1/2	8330	175.4	1090	.004	4180	87.7	547	.003
5/8	6670	133.9	1091	.003	3340	67.0	547	.003
3/4	5555	112.4	1091	.003	2785	54.2	547	.003
1	4165	100.0	1090	.004	2090	50.2	547	.004
1-1/4	3330	79.9	1090	.004	1670	40.1	547	.004

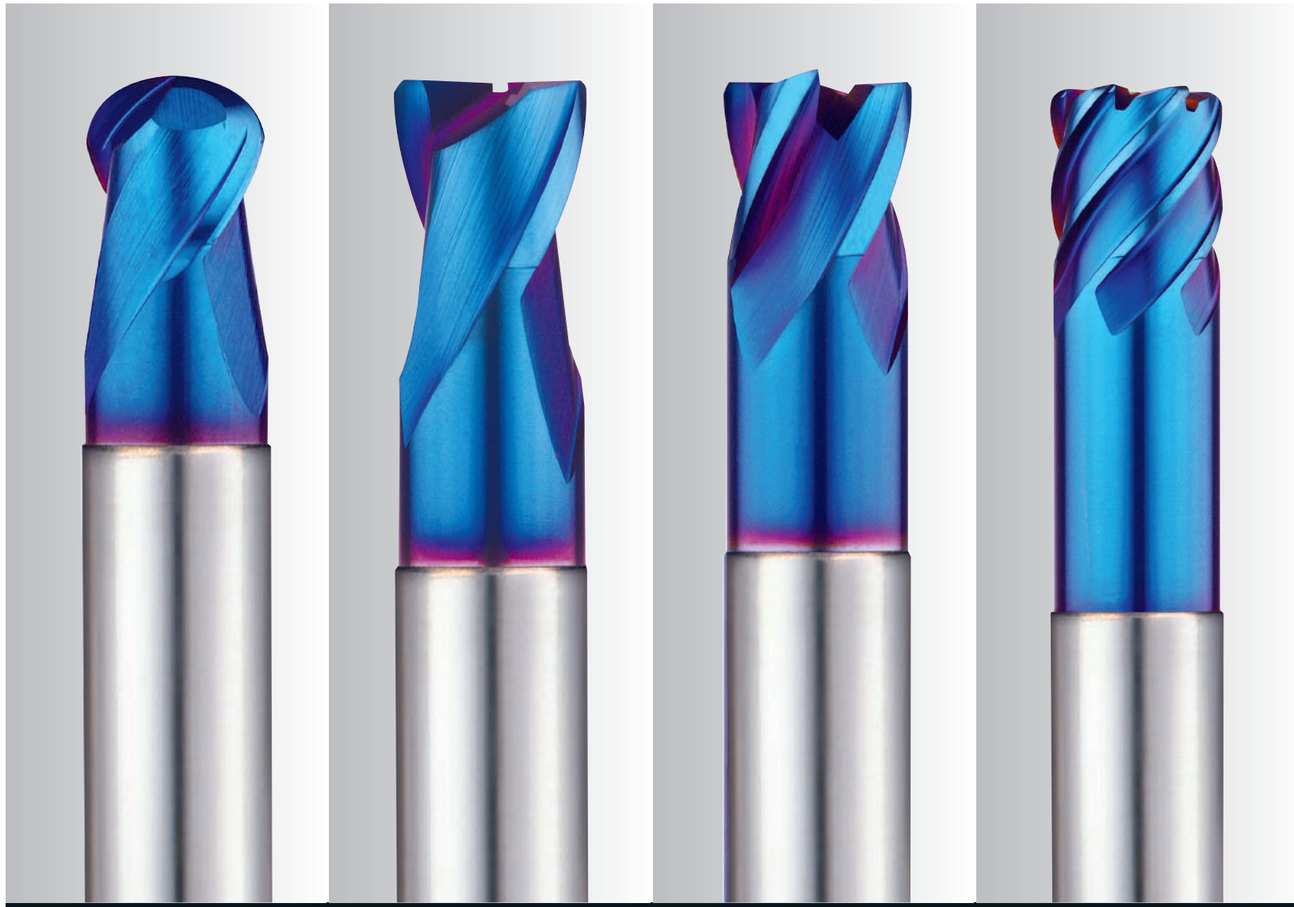




RPM = rev./min.
FEED = inch/min.
Vc = ft/min.
fz = inch/tooth

CARBIDE

Being the best through innovation



X5070 END MILLS

- High Hardened Steels HRc45 to HRc70, High Speed Machining, Dry Cutting

SOLID CARBIDE X5070 END MILLS

◎ : Excellent ○ : Good

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE	P: Carbon Steels ~HRc20	P: Alloy Steels HRc20~30	P: Prehardened Steels HRc30~40	P: Hardened Steels HRc40~45	P: Hardened Steels HRc45~55	H: High Hardened Steels HRc55~70	M: Stainless Steels	K: Cast Iron	N: Copper	N: Graphite	N: Aluminum	N: Acrylic	N: CFRP	S: Titanium	S: High Temperature Alloy
INCH																				
G826	High Feed End Mill 	CARBIDE, 4FLUTE STUB LENGTH CORNER RADIUS HIGH FEED ◆	D1/8	D1/2	**630**			○	○	◎	◎									
G8A43		CARBIDE, 2 FLUTE STUB LENGTH BALL NOSE with EXTENDED NECK ◆	R1/64	R1/4	**631**			○	○	◎	◎									
G850		CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS with EXTENDED NECK ◆	D1/16	D3/4	**632**			○	○	◎	◎									
G851		CARBIDE, 6&8 FLUTE 45°HELIX CORNER RADIUS ◆	D1/4	D1	**633**			○	○	◎	◎									
METRIC		◆ U.S.A Stock																		
G859	High Feed End Mill 	CARBIDE, 4FLUTE STUB LENGTH CORNER RADIUS HIGH FEED ◇	D2.0	D16.0	**634**			○	○	◎	◎									
G854	High Feed End Mill 	CARBIDE, 4FLUTE STUB LENGTH CORNER RADIUS HIGH FEED ◇	D2.0	D16.0	**635**			○	○	◎	◎									
G8A46		CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING ◇	R0.05	R2.0	**636**			○	○	◎	◎									
G8A54		CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING ◇	R0.25	R1.0	**640**			○	○	◎	◎									
G8A28		CARBIDE, 2 FLUTE BALL NOSE ◇	R0.05	R6.0	**641**			○	○	◎	◎									
G8A38		CARBIDE, 2 FLUTE STUB LENGTH BALL NOSE with EXTENDED NECK ◇	R0.5	R12.5	**642**			○	○	◎	◎									
G8A53		CARBIDE, 2 FLUTE MINIATURE BALL NOSE ◇	R0.2	R1.0	**643**			○	○	◎	◎									
G8A59		CARBIDE, 3 FLUTE BALL NOSE ◇	R1.5	R10.0	**644**			○	○	◎	◎									
G8A36		CARBIDE, 2 FLUTE STUB LENGTH CORNER RADIUS with EXTENDED NECK ◇	D0.3	D20.0	**645**			○	○	◎	◎									
G8A50		CARBIDE, 2 FLUTE MINIATURE CORNER RADIUS ◇	D0.3	D2.0	**647**			○	○	◎	◎									
G8A47		CARBIDE, 4 FLUTE CORNER RADIUS with EXTENDED NECK ◇	D3.0	D12.0	**648**			○	○	◎	◎									
G8A37		CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS with EXTENDED NECK ◇	D1.0	D20.0	**649**			○	○	◎	◎									
G8A39		CARBIDE, 6 FLUTE 45°HELIX CORNER RADIUS with EXTENDED NECK ◇	D6.0	D20.0	**650**			○	○	◎	◎									
		RECOMMENDED CUTTING CONDITIONS			**651**															

◇ Call for Availability

X5070 END MILLS

G826 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS HIGH FEED

- Excellent wear resistance at heavy feed rates on high hardened material.
- Designed with reduced clearance angles and short flutes for strength.
- High hardness & heat resistance coating for long life in dry applications.



NG | 4 | BLUE | PLAIN | R ±.0002 | P.651

High Feed End Mill

◆ U.S.A Stock

Unit : Inch

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

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

Mill Dia. Tolerance (inch)	Corner Radius Tolerance (inch)	Shank Dia. Tolerance
0~-.0008	±.0002	h6

◎ : Excellent ○ : Good

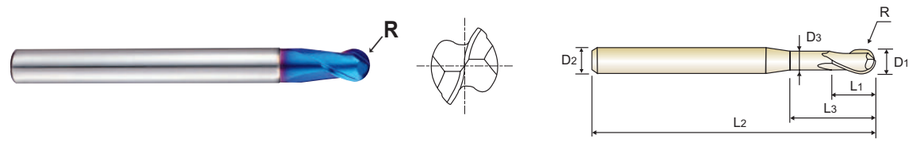
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

X5070 END MILLS

G8A43 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE STUB CUT LENGTH BALL NOSE with EXTENDED NECK

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting due to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Designed for high precision milling operation.
- Higher wear-resistance.



NG | 2 | BLUE | 30° | R ±.0002 | R ±.0004 | PLAIN | P.652

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

◆ U.S.A Stock

Unit : Inch

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

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

Size	Radius Tolerance (Inch)	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to Ø1/4	±.0002	0~-.0005	h6
over Ø1/4	±.0004	0~-.0006	

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

X5070 END MILLS

G850 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUSwith EXTENDED NECK

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting due to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Deep slotting is possible by reduced neck.
- Corner radius for preventing the chipping in high speed machining.
- Higher wear-resistance.



NG | 4 | BLUE | 30° | R ±.0002 | PLAIN

P.653

◆ U.S.A Stock

Unit : Inch

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

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

Size	Corner Radius Tolerance (Inch)	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to Ø1/4	±.0002	0~-.0005	h6
over Ø1/4	±.0004	0~-.0006	

◎ : Excellent ○ : Good

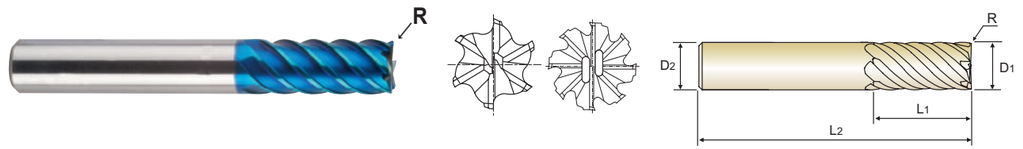
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Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

X5070 END MILLS

G851 SERIES PLAIN SHANK

CARBIDE, 6&8 FLUTE 45° HELIX CORNER RADIUS

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting due to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Deep slotting is possible by reduced neck.
- Corner radius for preventing the chipping in high speed machining.
- Higher wear-resistance.



NG | 6&8 | BLUE | 45° | R ±.0002 | PLAIN

P.653

◆ U.S.A Stock

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
	R	D1	D2	L1	L2	
G85116	R.02	1/4	1/4	1/2	2-1/4	6
G85120	R.02	5/16	5/16	3/4	2-1/2	6
G85125	R.03	3/8	3/8	7/8	2-7/8	6
G85133	R.03	1/2	1/2	1	3-1/4	6
G85140	R.03	5/8	5/8	1-1/4	3-5/8	6
G85141	R.06	5/8	5/8	1-1/4	3-5/8	6
G85148	R.03	3/4	3/4	1-1/2	4-1/8	8
G85149	R.06	3/4	3/4	1-1/2	4-1/8	8
G85164	R.03	1	1	1-3/4	4-1/4	8
G85165	R.06	1	1	1-3/4	4-1/4	8
G85167	R.03	1	1	4-1/8	7	8
G85168	R.06	1	1	4-1/8	7	8

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

Size	Corner Radius Tolerance (Inch)	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to Ø1/4	±.0002	0~-.0005	h6
over Ø1/4	±.0004	0~-.0006	

◎ : Excellent ○ : Good

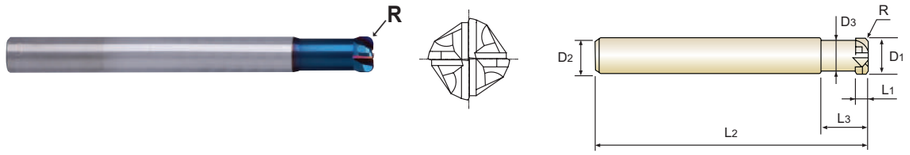
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

X5070 END MILLS

G859 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS HIGH FEED

- Excellent wear resistance at heavy feed rates on high hardened material.
- Designed with reduced clearance angles and short flutes for strength.
- High hardness & heat resistance coating for long life in dry applications.



NG | 4 | BLUE | PLAIN | R ±0.005 | P.654

High Feed End Mill

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R	D1		D2	L1	L3	L2	D3
G859020	R0.5	2.0	.0787	6	1	6	50	1.8
G859030	R0.5	3.0	.1181	6	1.2	8	50	2.8
G859040	R0.5	4.0	.1575	6	1.5	10	50	3.8
G859060	R0.5	6.0	.2362	6	2.5	12	60	5.4
G859061	R1.0	6.0	.2362	6	2.5	12	60	5.4
G859081	R1.0	8.0	.3150	8	3.5	16	60	7.2
G859082	R2.0	8.0	.3150	8	3.5	16	60	7.2
G859101	R1.0	10.0	.3937	10	4	20	70	9
G859102	R2.0	10.0	.3937	10	4	20	70	9
G859122	R2.0	12.0	.4724	12	5	25	80	11
G859123	R3.0	12.0	.4724	12	5	25	80	11
G859163	R3.0	16.0	.6299	16	6.5	30	90	15

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

Mill Dia. Tolerance (inch)	Corner Radius Tolerance (inch)	Shank Dia. Tolerance
0 ~ -.0008	±.0002	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

X5070 END MILLS

G854 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS HIGH FEED

- Excellent wear resistance at heavy feed rates on high hardened material.
- Designed with reduced clearance angles and short flutes for strength.
- High hardness & heat resistance coating for long life in dry applications.



NG | 4 | BLUE | PLAIN | R ±0.005 | P.654

High Feed End Mill

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R	D1		D2	L1	L3	L2	D3
G854020	R0.5	2.0	.0787	6	1	6	70	1.8
G854030	R0.5	3.0	.1181	6	1.2	8	70	2.8
G854040	R0.5	4.0	.1575	6	1.5	10	70	3.8
G854050	R1.0	5.0	.1969	6	2	10	70	4.6
G854060	R0.5	6.0	.2362	6	2.5	12	90	5.4
G854061	R1.0	6.0	.2362	6	2.5	12	90	5.4
G854062	R1.5	6.0	.2362	6	2.5	12	90	5.4
G854081	R1.0	8.0	.3150	8	3.5	16	100	7.2
G854082	R2.0	8.0	.3150	8	3.5	16	100	7.2
G854101	R1.0	10.0	.3937	10	4	20	100	9
G854102	R2.0	10.0	.3937	10	4	20	100	9
G854122	R2.0	12.0	.4724	12	5	25	110	11
G854123	R3.0	12.0	.4724	12	5	25	110	11
G854163	R3.0	16.0	.6299	16	6.5	30	130	15

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

Mill Dia. Tolerance (inch)	Corner Radius Tolerance (inch)	Shank Dia. Tolerance
0 ~ -.0008	±.0002	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

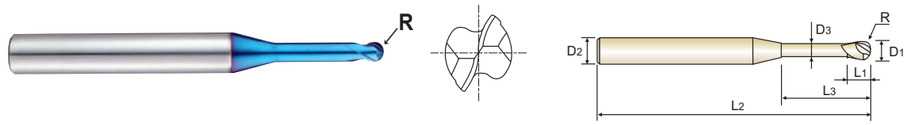
CARBIDE
HSS
CBN END MILLS
i-Xmill END MILLS
i-SMART MODULAR TYPE END MILLS
X5070 END MILLS
4G MILL END MILLS
X-POWER END MILLS
JET-POWER END MILLS
TitaNox -POWER END MILLS
V7 PLUS A END MILLS
V7 MILL INOX END MILLS
ALU-POWER HPC END MILLS
ALU-POWER END MILLS
D-POWER GRAPHITE END MILLS
D-POWER CFRP END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

X5070 END MILLS

G8A46 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Designed for high precision milling operation.
- Higher wear-resistance.



NG | 2 | BLUE | 30° | R ±0.005 | PLAIN

P.655

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R (±0.005)	D1		D2	L1	L3	L2	D3
G8A46805	R0.05	0.1	.0039	4	0.1	0.3	45	0.085
G8A46806	R0.05	0.1	.0039	4	0.1	0.5	45	0.085
G8A46002	R0.1	0.2	.0079	4	0.2	0.5	45	0.17
G8A46977	R0.1	0.2	.0079	4	0.2	1	45	0.17
G8A46958	R0.1	0.2	.0079	4	0.2	1.5	45	0.17
G8A46003	R0.15	0.3	.0118	4	0.3	1	45	0.27
G8A46959	R0.15	0.3	.0118	4	0.3	2	45	0.27
G8A46986	R0.15	0.3	.0118	4	0.3	3	45	0.27
G8A46004	R0.2	0.4	.0157	4	0.4	1	45	0.37
G8A46960	R0.2	0.4	.0157	4	0.4	2	45	0.37
G8A46961	R0.2	0.4	.0157	4	0.4	3	45	0.37
G8A46981	R0.2	0.4	.0157	4	0.4	4	45	0.37
G8A46987	R0.2	0.4	.0157	4	0.4	5	45	0.37
G8A46005	R0.25	0.5	.0197	4	0.4	2	45	0.45
G8A46804	R0.25	0.5	.0197	4	0.4	2.5	45	0.45
G8A46962	R0.25	0.5	.0197	4	0.4	4	45	0.45
G8A46963	R0.25	0.5	.0197	4	0.4	6	45	0.45
G8A46964	R0.25	0.5	.0197	4	0.4	8	45	0.45
G8A46957	R0.3	0.6	.0236	4	0.5	2	45	0.55
G8A46988	R0.3	0.6	.0236	4	0.5	3	45	0.55
G8A46915	R0.3	0.6	.0236	4	0.5	4	45	0.55
G8A46989	R0.3	0.6	.0236	4	0.5	5	45	0.55

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

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

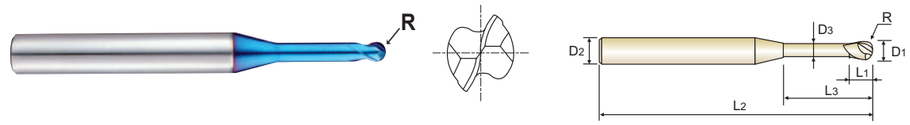
CARBIDE
HSS
CBN END MILLS
i-Xmill END MILLS
i-SMART MODULAR TYPE END MILLS
X5070 END MILLS
4G MILL END MILLS
X-POWER END MILLS
JET-POWER END MILLS
TitaNox -POWER END MILLS
V7 PLUS A END MILLS
V7 MILL INOX END MILLS
ALU-POWER HPC END MILLS
ALU-POWER END MILLS
D-POWER GRAPHITE END MILLS
D-POWER CFRP END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

X5070 END MILLS

G8A46 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Designed for high precision milling operation.
- Higher wear-resistance.



NG | 2 | BLUE | 30° | R ±0.005 | PLAIN

P.655

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R (±0.005)	D1		D2	L1	L3	L2	D3
G8A46916	R0.3	0.6	.0236	4	0.5	6	45	0.55
G8A46917	R0.3	0.6	.0236	4	0.5	8	45	0.55
G8A46990	R0.3	0.6	.0236	4	0.5	10	45	0.55
G8A46918	R0.4	0.8	.0315	4	0.6	2	45	0.75
G8A46919	R0.4	0.8	.0315	4	0.6	4	45	0.75
G8A46008	R0.4	0.8	.0315	4	0.6	6	45	0.75
G8A46901	R0.4	0.8	.0315	4	0.6	8	45	0.75
G8A46965	R0.4	0.8	.0315	4	0.6	10	45	0.75
G8A46920	R0.5	1.0	.0394	4	0.8	3	45	0.95
G8A46921	R0.5	1.0	.0394	4	0.8	4	45	0.95
G8A46923	R0.5	1.0	.0394	4	0.8	5	45	0.95
G8A46010	R0.5	1.0	.0394	4	0.8	6	45	0.95
G8A46924	R0.5	1.0	.0394	4	0.8	7	45	0.95
G8A46902	R0.5	1.0	.0394	4	0.8	8	45	0.95
G8A46925	R0.5	1.0	.0394	4	0.8	9	45	0.95
G8A46903	R0.5	1.0	.0394	4	0.8	10	45	0.95
G8A46904	R0.5	1.0	.0394	4	0.8	12	45	0.95
G8A46926	R0.5	1.0	.0394	4	0.8	14	50	0.95
G8A46927	R0.5	1.0	.0394	4	0.8	16	50	0.95
G8A46966	R0.5	1.0	.0394	4	0.8	20	55	0.95
G8A46982	R0.6	1.2	.0472	4	1.0	6	45	1.15
G8A46012	R0.6	1.2	.0472	4	1.0	8	45	1.15

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

▶ NEXT PAGE

◎ : Excellent ○ : Good

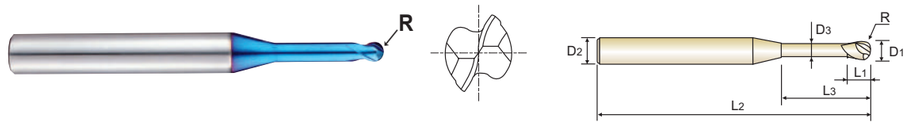
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

X5070 END MILLS

G8A46 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Designed for high precision milling operation.
- Higher wear-resistance.



NG | 2 | BLUE | 30° | R ±0.005 | PLAIN

P.655

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R (±0.005)	D1		D2	L1	L3	L2	D3
G8A46983	R0.6	1.2	.0472	4	1.0	10	45	1.15
G8A46905	R0.6	1.2	.0472	4	1.0	12	45	1.15
G8A46930	R0.75	1.5	.0472	4	1.2	6	45	1.45
G8A46015	R0.75	1.5	.0472	4	1.2	8	45	1.45
G8A46931	R0.75	1.5	.0472	4	1.2	10	45	1.45
G8A46906	R0.75	1.5	.0472	4	1.2	12	45	1.45
G8A46992	R0.75	1.5	.0472	4	1.2	14	50	1.45
G8A46907	R0.75	1.5	.0472	4	1.2	16	50	1.45
G8A46932	R0.75	1.5	.0472	4	1.2	20	55	1.45
G8A46939	R1.0	2.0	.0787	4	1.6	4	45	1.95
G8A46940	R1.0	2.0	.0787	4	1.6	6	45	1.95
G8A46020	R1.0	2.0	.0787	4	1.6	8	45	1.95
G8A46941	R1.0	2.0	.0787	4	1.6	10	45	1.95
G8A46942	R1.0	2.0	.0787	4	1.6	12	50	1.95
G8A46943	R1.0	2.0	.0787	4	1.6	14	50	1.95
G8A46909	R1.0	2.0	.0787	4	1.6	16	50	1.95
G8A46993	R1.0	2.0	.0787	4	1.6	18	55	1.95
G8A46910	R1.0	2.0	.0787	4	1.6	20	55	1.95
G8A46944	R1.0	2.0	.0787	4	1.6	22	60	1.95
G8A46945	R1.0	2.0	.0787	4	1.6	25	60	1.95
G8A46967	R1.0	2.0	.0787	4	1.6	30	70	1.95
G8A46948	R1.5	3.0	.1181	6	2.4	12	50	2.85

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▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

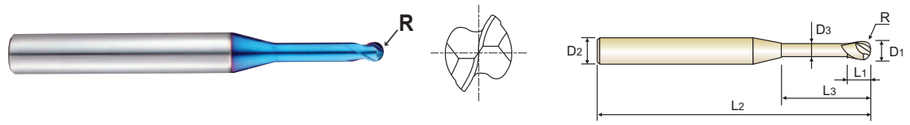
CARBIDE
HSS
CBN END MILLS
i-Xmill END MILLS
i-SMART MODULAR TYPE END MILLS
X5070 END MILLS
4G MILL END MILLS
X-POWER END MILLS
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ALU-POWER HPC END MILLS
ALU-POWER END MILLS
D-POWER GRAPHITE END MILLS
D-POWER CFRP END MILLS
ROUTERS CFRP
STANDARD CARBIDE END MILLS
ONLY ONE COATED PM60 END MILLS
SINE -POWER END MILLS
TANK-POWER END MILLS
STANDARD COBALT & HSS END MILLS
TECHNICAL DATA

X5070 END MILLS

G8A46 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Designed for high precision milling operation.
- Higher wear-resistance.



NG | 2 | BLUE | 30° | R ±0.005 | PLAIN

P.655

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R (±0.005)	D1		D2	L1	L3	L2	D3
G8A46984	R1.5	3.0	.1181	6	2.4	14	55	2.85
G8A46030	R1.5	3.0	.1181	6	2.4	16	55	2.85
G8A46985	R1.5	3.0	.1181	6	2.4	18	60	2.85
G8A46911	R1.5	3.0	.1181	6	2.4	20	60	2.85
G8A46968	R1.5	3.0	.1181	6	2.4	25	65	2.85
G8A46969	R1.5	3.0	.1181	6	2.4	30	70	2.85
G8A46970	R1.5	3.0	.1181	6	2.4	35	80	2.85
G8A46950	R2.0	4.0	.1575	6	3.2	12	60	3.85
G8A46040	R2.0	4.0	.1575	6	3.2	16	60	3.85
G8A46912	R2.0	4.0	.1575	6	3.2	20	65	3.85
G8A46913	R2.0	4.0	.1575	6	3.2	25	70	3.85
G8A46971	R2.0	4.0	.1575	6	3.2	30	70	3.85
G8A46972	R2.0	4.0	.1575	6	3.2	35	80	3.85
G8A46973	R2.0	4.0	.1575	6	3.2	40	90	3.85
G8A46974	R2.0	4.0	.1575	6	3.2	45	90	3.85
G8A46975	R2.0	4.0	.1575	6	3.2	50	100	3.85

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Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.012	h6

◎ : Excellent ○ : Good

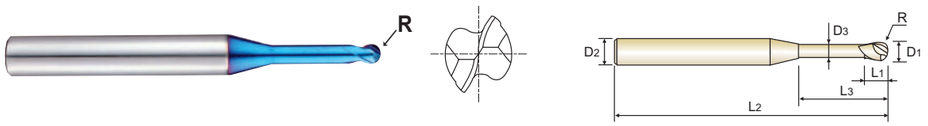
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

X5070 END MILLS

G8A54 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Designed for high precision milling operation.
- Higher wear-resistance.



NG | 2 | BLUE | 30° | R ±0.005 | PLAIN

P.655

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R (±0.005)	D1		D2	L1	L3	L2	D3
G8A54005	R0.25	0.5	.0197	6	0.5	1.5	50	0.45
G8A54901	R0.25	0.5	.0197	6	0.5	3.3	50	0.45
G8A54006	R0.3	0.6	.0236	6	0.6	2	50	0.55
G8A54902	R0.3	0.6	.0236	6	0.6	4	50	0.55
G8A54008	R0.4	0.8	.0315	6	0.8	2.5	50	0.75
G8A54903	R0.4	0.8	.0315	6	0.8	5.5	50	0.75
G8A54010	R0.5	1.0	.0394	6	1	3.3	50	0.95
G8A54904	R0.5	1.0	.0394	6	1	6.7	50	0.95
G8A54905	R0.5	1.0	.0394	6	1	12	50	0.95
G8A54012	R0.6	1.2	.0472	6	1.2	4.4	50	1.15
G8A54906	R0.6	1.2	.0472	6	1.2	8	50	1.15
G8A54015	R0.75	1.5	.0591	6	1.5	5	50	1.45
G8A54907	R0.75	1.5	.0591	6	1.5	9.7	50	1.45
G8A54908	R0.75	1.5	.0591	6	1.5	15	50	1.45
G8A54020	R1.0	2.0	.0787	6	2	6	50	1.95
G8A54909	R1.0	2.0	.0787	6	2	13	50	1.95
G8A54910	R1.0	2.0	.0787	6	2	20	60	1.95

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

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.012	h6

◎ : Excellent ○ : Good

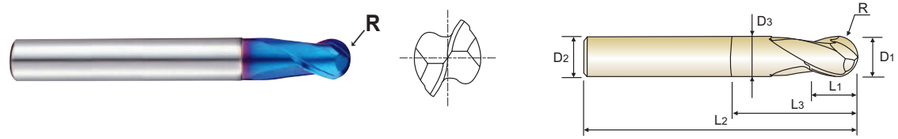
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

X5070 END MILLS

G8A28 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE BALL NOSE

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Designed for high precision milling operation.
- Higher wear-resistance.



NG | 2 | BLUE | 30° | R ±0.005 (R0.5~R3) | R ±0.010 (R3.5~R6) | PLAIN

P.658

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R	D1		D2	L1	L3	L2	D3
G8A28001	R0.05	0.1	.0039	4	0.2	-	40	-
G8A28002	R0.1	0.2	.0079	4	0.3	-	40	-
G8A28003	R0.15	0.3	.0118	4	0.5	-	40	-
G8A28004	R0.2	0.4	.0157	4	0.6	-	40	-
G8A28005	R0.25	0.5	.0197	4	0.7	-	40	-
G8A28006	R0.3	0.6	.0236	4	0.9	-	40	-
G8A28007	R0.35	0.7	.0276	4	1.1	-	40	-
G8A28008	R0.4	0.8	.0315	4	1.2	-	40	-
G8A28009	R0.45	0.9	.0354	4	1.4	-	40	-
G8A280104S	R0.5	1.0	.0394	4	1.5	3	50	0.95
G8A28010	R0.5	1.0	.0394	6	1.5	3	50	0.95
G8A280154S	R0.75	1.5	.0591	4	2	4	50	1.45
G8A28015	R0.75	1.5	.0591	6	2	4	50	1.45
G8A280204S	R1.0	2.0	.0787	4	2.5	5	50	1.95
G8A28020	R1.0	2.0	.0787	6	2.5	5	50	1.95
G8A280254S	R1.25	2.5	.0984	4	3	7	50	2.4
G8A28025	R1.25	2.5	.0984	6	3	7	50	2.4
G8A28030	R1.5	3.0	.1181	6	4	10	60	2.85
G8A28035	R1.75	3.5	.1378	6	4.5	10	60	3.35
G8A28040	R2.0	4.0	.1575	6	5	10	60	3.85
G8A28045	R2.25	4.5	.1772	6	5.5	10	60	4.35
G8A28050	R2.5	5.0	.1969	6	6	12	60	4.85
G8A28055	R2.75	5.5	.2165	6	6.5	12	60	5.35
G8A28060	R3.0	6.0	.2362	6	7	15	60	5.85
G8A28903	R3.0	6.0	.2362	6	9	30	90	5.85
G8A28901	R4.0	8.0	.3150	8	9	15	60	7.7
G8A28080	R4.0	8.0	.3150	8	9	15	80	7.7
G8A28904	R4.0	8.0	.3150	8	12	30	100	7.7
G8A28902	R5.0	10.0	.3937	10	11	25	60	9.7
G8A28100	R5.0	10.0	.3937	10	11	25	80	9.7
G8A28905	R5.0	10.0	.3937	10	15	30	100	9.7
G8A28120	R6.0	12.0	.4724	12	14	25	80	11.7

Size	Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to R3	±0.005	0~-0.012	h6
over R3	±0.010	0~-0.015	

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

◎ : Excellent ○ : Good

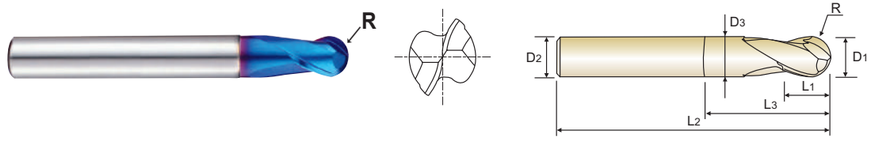
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

X5070 END MILLS

G8A38 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE STUB LENGTH BALL NOSE with EXTENDED NECK

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting due to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Designed for high precision milling operation.
- Higher wear-resistance.



NG | 2 | BLUE | 30° | R ±0.005 (R0.5~R3) | R ±0.010 (R3.5~R12.5) | PLAIN | P.658

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R	D1		D2	L1	L3	L2	D3
G8A38010	R0.5	1.0	.0394	4	1	2.2	50	0.95
G8A38012	R0.6	1.2	.0472	4	1.2	2.6	50	1.15
G8A38015	R0.75	1.5	.0591	4	1.5	3	50	1.45
G8A380204S	R1.0	2.0	.0787	4	2	4	50	1.95
G8A38020	R1.0	2.0	.0787	6	2	4	50	1.95
G8A38030	R1.5	3.0	.1181	6	3	6	60	2.85
G8A38040	R2.0	4.0	.1575	6	4	8	70	3.85
G8A38050	R2.5	5.0	.1969	6	5	10	80	4.85
G8A38060	R3.0	6.0	.2362	6	6	12	90	5.85
G8A38070	R3.5	7.0	.2756	8	7	14	90	6.7
G8A38080	R4.0	8.0	.3150	8	8	16	100	7.7
G8A38090	R4.5	9.0	.3543	10	9	18	100	8.7
G8A38100	R5.0	10.0	.3937	10	10	20	100	9.7
G8A38120	R6.0	12.0	.4724	12	12	24	110	11.7
G8A38140	R7.0	14.0	.5512	14	14	28	110	13.7
G8A38160	R8.0	16.0	.6299	16	16	32	140	15.7
G8A38180	R9.0	18.0	.7087	18	18	36	140	17.7
G8A38200	R10.0	20.0	.7874	20	20	40	160	19.7
G8A38250	R12.5	25.0	.9843	25	25	50	180	24.7

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

Size	Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to R3	±0.005	0~-0.012	h6
over R3	±0.010	0~-0.015	

◎ : Excellent ○ : Good

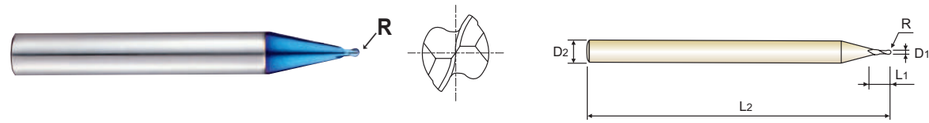
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

X5070 END MILLS

G8A53 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE MINIATURE BALL NOSE

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Designed for high precision milling operation.
- Higher wear-resistance.



NG | 2 | BLUE | 30° | R ±0.005 | PLAIN | P.658

◇ Call for Availability

Unit : mm

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

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

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.012	h6

◎ : Excellent ○ : Good

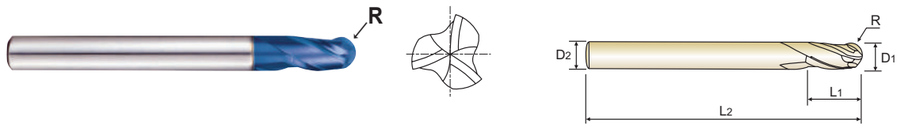
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

X5070 END MILLS

G8A59 SERIES PLAIN SHANK

CARBIDE, 3 FLUTE BALL NOSE

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Designed for high precision milling operation.
- Higher wear-resistance.



NG | 3 | BLUE | 30° | R ±0.005 (R1.5~R3) | R ±0.010 (R4~R10) | PLAIN | P.655

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
		Metric	Inch			
	R	D_1		D_2	L_1	L_2
G8A59030	R1.5	3.0	.1181	6	8	60
G8A59040	R2.0	4.0	.1575	6	8	70
G8A59050	R2.5	5.0	.1969	6	10	80
G8A59060	R3.0	6.0	.2362	6	12	90
G8A59080	R4.0	8.0	.3150	8	14	100
G8A59100	R5.0	10.0	.3937	10	18	100
G8A59120	R6.0	12.0	.4724	12	22	110
G8A59160	R8.0	16.0	.6299	16	30	140
G8A59200	R10.0	20.0	.7874	20	38	160

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

Size	Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to R3	±0.005	0~-0.012	h6
over R3	±0.010	0~-0.015	

◎ : Excellent ○ : Good

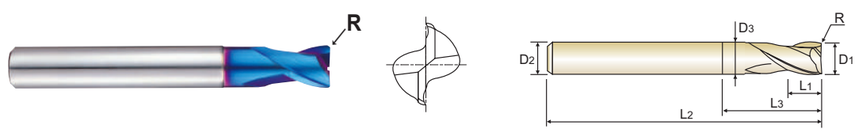
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

X5070 END MILLS

G8A36 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE STUB LENGTH CORNER RADIUS with EXTENDED NECK

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting due to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Deep slotting is possible by reduced neck.
- Corner radius for preventing the chipping in high speed machining.
- Higher wear-resistance.



NG | 2 | BLUE | 30° | R ±0.010 (Ø0.3~Ø6) | R ±0.015 (Ø8~Ø20) | PLAIN | P.656~657

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R	D_1		D_2	L_1	L_3	L_2	D_3
G8A36003	-	0.3	.0118	3	0.45	-	40	-
G8A36004	-	0.4	.0157	3	0.6	-	40	-
G8A36005	R0.05	0.5	.0197	3	0.7	-	40	-
G8A36907	R0.05	0.5	.0197	4	1	-	40	-
G8A36006	R0.05	0.6	.0236	3	0.9	-	40	-
G8A36908	R0.05	0.6	.0236	4	1.2	-	40	-
G8A36909	R0.05	0.7	.0276	4	1.4	-	40	-
G8A36008	R0.05	0.8	.0315	3	1.2	-	40	-
G8A36910	R0.05	0.8	.0315	4	1.6	-	40	-
G8A36911	R0.05	0.9	.0354	4	2	-	40	-
G8A36010	R0.1	1.0	.0394	3	1.5	-	40	-
G8A36901	R0.1	1.0	.0394	4	1.5	-	40	-
G8A36903	R0.1	1.0	.0394	6	1.5	-	40	-
G8A36015	R0.1	1.5	.0591	3	2.2	-	40	-
G8A36904	R0.1	1.5	.0591	6	2.2	-	40	-
G8A36020	R0.1	2.0	.0787	3	3	6	40	1.95
G8A36902	R0.1	2.0	.0787	4	3	6	40	1.95
G8A36905	R0.1	2.0	.0787	6	3	6	40	1.95
G8A36025	R0.1	2.5	.0984	3	4	6	40	2.4
G8A36906	R0.1	2.5	.0984	6	4	6	40	2.4

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

▶ NEXT PAGE

◎ : Excellent ○ : Good

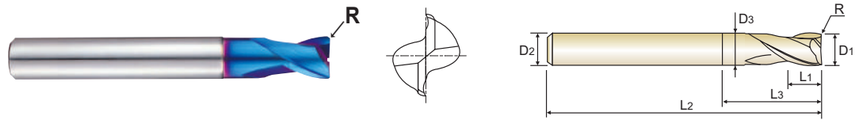
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

X5070 END MILLS

G8A36 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE STUB LENGTH CORNER RADIUS with EXTENDED NECK

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting due to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Deep slotting is possible by reduced neck.
- Corner radius for preventing the chipping in high speed machining.
- Higher wear-resistance.



NG | 2 | BLUE | 30° | R ±0.010 (Ø0.3~Ø6) | R ±0.015 (Ø8~Ø20) | PLAIN

P.656~657

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R	D1		D2	L1	L3	L2	D3
G8A36030	R0.1	3.0	.1181	6	4	7	45	2.85
G8A36035	R0.1	3.5	.1378	6	5	9	45	3.35
G8A36040	R0.1	4.0	.1575	6	5	9	45	3.85
G8A36045	R0.1	4.5	.1772	6	6	10	45	4.35
G8A36050	R0.2	5.0	.1969	6	6	11	50	4.85
G8A36060	R0.2	6.0	.2362	6	7	14	50	5.85
G8A36080	R0.2	8.0	.3150	8	9	18	60	7.7
G8A36100	R0.2	10.0	.3937	10	12	25	75	9.7
G8A36120	R0.3	12.0	.4724	12	15	30	75	11.7
G8A36160	R0.3	16.0	.6299	16	18	38	90	15.7
G8A36200	R0.3	20.0	.7874	20	24	45	100	19.7

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

Size	Corner Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	±0.010	0~-0.012	h6
over Ø6	±0.015	0~-0.015	

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

X5070 END MILLS

G8A50 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE MINIATURE CORNER RADIUS

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Deep slotting is possible by reduced neck.
- Corner radius for preventing the chipping in high speed machining.
- Higher wear-resistance.



NG | 2 | BLUE | 30° | R ±0.010 | PLAIN

P.659

◇ Call for Availability

Unit : mm

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

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

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.012	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

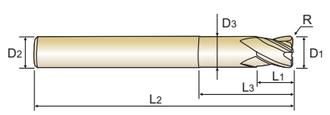
X5070 END MILLS

G8A47 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE CORNER RADIUS with EXTENDED NECK

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Deep slotting is possible by reduced neck.
- Corner radius for preventing the chipping in high speed machining.
- Higher wear-resistance.





NG | 4 | BLUE | 30° | R ±0.010 Ø1~Ø6 | R ±0.015 Ø8~Ø12 | PLAIN

P.659

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter Metric	Mill Diameter Inch	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R	D1		D2	L1	L3	L2	D3
G8A47916	R0.3	3.0	.1181	6	4	12	55	2.85
G8A47917	R0.3	3.0	.1181	6	4	16	55	2.85
G8A47918	R0.3	3.0	.1181	6	4	20	55	2.85
G8A47030	R0.5	3.0	.1181	6	4	10	55	2.85
G8A47901	R0.5	3.0	.1181	6	4	16	55	2.85
G8A47902	R0.5	3.0	.1181	6	4	20	55	2.85
G8A47919	R0.3	4.0	.1575	6	5	12	55	3.85
G8A47920	R0.3	4.0	.1575	6	5	16	55	3.85
G8A47921	R0.3	4.0	.1575	6	5	20	55	3.85
G8A47040	R0.5	4.0	.1575	6	5	12	55	3.85
G8A47903	R0.5	4.0	.1575	6	5	16	55	3.85
G8A47904	R0.5	4.0	.1575	6	5	20	55	3.85
G8A47922	R1.0	4.0	.1575	6	5	12	55	3.85
G8A47060	R0.5	6.0	.2362	6	7	20	60	5.85
G8A47905	R1.0	6.0	.2362	6	7	20	60	5.85
G8A47906	R1.5	6.0	.2362	6	7	20	60	5.85
G8A47910	R0.5	8.0	.3150	8	9	25	60	7.7
G8A47080	R1.0	8.0	.3150	8	9	25	60	7.7
G8A47907	R1.5	8.0	.3150	8	9	25	60	7.7
G8A47913	R2.0	8.0	.3150	8	9	25	60	7.7
G8A47911	R0.5	10.0	.3937	10	11	32	70	9.7
G8A47100	R1.0	10.0	.3937	10	11	32	70	9.7
G8A47908	R1.5	10.0	.3937	10	11	32	70	9.7
G8A47914	R2.0	10.0	.3937	10	11	32	70	9.7
G8A47912	R0.5	12.0	.4724	12	12	38	80	11.7
G8A47120	R1.0	12.0	.4724	12	12	38	80	11.7
G8A47909	R1.5	12.0	.4724	12	12	38	80	11.7
G8A47915	R2.0	12.0	.4724	12	12	38	80	11.7

Size	Corner Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	±0.010	0~-0.012	h6
over Ø6	±0.015	0~-0.015	

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

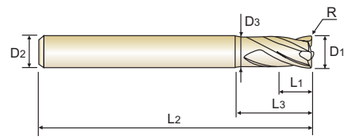
X5070 END MILLS

G8A37 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS with EXTENDED NECK

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting due to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Deep slotting is possible by reduced neck.
- Corner radius for preventing the chipping in high speed machining.
- Higher wear-resistance.





NG | 4 | BLUE | 30° | R ±0.010 Ø1~Ø6 | R ±0.015 Ø8~Ø20 | PLAIN

P.660

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter Metric	Mill Diameter Inch	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R	D1		D2	L1	L3	L2	D3
G8A37010	R0.1	1.0	.0394	3	1.5	-	40	-
G8A37901	R0.1	1.0	.0394	6	1.5	-	40	-
G8A37015	R0.1	1.5	.0591	3	2.2	-	40	-
G8A37902	R0.1	1.5	.0591	6	2.2	-	40	-
G8A37020	R0.1	2.0	.0787	3	3	6	40	1.95
G8A37903	R0.1	2.0	.0787	6	3	6	40	1.95
G8A37025	R0.1	2.5	.0984	3	4	6	40	2.4
G8A37904	R0.1	2.5	.0984	6	4	6	40	2.4
G8A37030	R0.1	3.0	.1181	6	4	7	45	2.85
G8A37035	R0.1	3.5	.1378	6	5	9	45	3.35
G8A37040	R0.1	4.0	.1575	6	5	9	45	3.85
G8A37045	R0.1	4.5	.1772	6	6	10	45	4.35
G8A37050	R0.2	5.0	.1969	6	6	11	50	4.85
G8A37060	R0.2	6.0	.2362	6	7	14	50	5.85
G8A37080	R0.2	8.0	.3150	8	9	18	60	7.7
G8A37100	R0.2	10.0	.3937	10	12	25	75	9.7
G8A37120	R0.3	12.0	.4724	12	15	30	75	11.7
G8A37160	R0.3	16.0	.6299	16	18	38	90	15.7
G8A37200	R0.3	20.0	.7874	20	24	45	100	19.7

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

Size	Corner Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	±0.010	0~-0.012	h6
over Ø6	±0.015	0~-0.015	

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

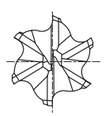
X5070 END MILLS

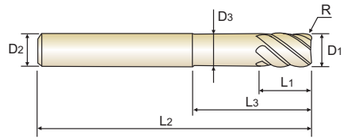
G8A39 SERIES PLAIN SHANK

CARBIDE, 6 FLUTE 45° HELIX CORNER RADIUS with EXTENDED NECK

- Designed to machine high hardened materials
- Suitable for dry cutting, high speed cutting due to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Deep slotting is possible by reduced neck.
- Corner radius for preventing the chipping in high speed machining
- Higher wear-resistance.







NG | 6 | BLUE | 45° | R ±0.010 (Ø6) | R ±0.015 (Ø8~Ø20) | PLAIN

P.660

◇ Call for Availability

Unit : mm

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

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

Size	Corner Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	±0.010	0~-0.02 (✻Extra Long Type : 0~-0.03)	h6
over Ø6	±0.015		

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

X5070 END MILLS

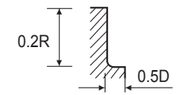
RECOMMENDED CUTTING CONDITIONS

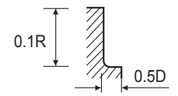
CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS HIGH FEED

G826 SERIES

■ NORMAL SPEED

MATERIAL	P HARDENED STEELS						H HIGH HARDENED STEELS			
HARDNESS	~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8 × R1/32	9000	245	6500	155	4300	100	2700	43	1800	23
3/16 × R1/16	7500	310	5100	200	3800	140	2350	70	1650	30
1/4 × R1/16	5500	310	3900	200	2800	140	1750	70	1250	30
5/16 × R3/32	4500	310	3100	200	2200	140	1400	70	1000	30
3/8 × R3/32	3800	310	2600	200	1850	140	1170	70	840	30
1/2 × R1/8	2800	310	1950	200	1400	140	880	70	630	30

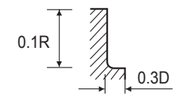


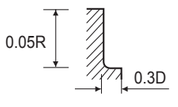


RPM = rev./min.
FEED = inch/min.

■ HIGH SPEED

MATERIAL	P HARDENED STEELS						H HIGH HARDENED STEELS			
HARDNESS	~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8 × R1/32	21000	600	16000	380	12000	300	9000	170	6500	92
3/16 × R1/16	16500	720	13500	550	11500	420	8000	250	5700	150
1/4 × R1/16	12500	720	10000	550	8500	420	6000	250	4300	150
5/16 × R3/32	10000	720	8000	550	6800	420	4800	250	3400	150
3/8 × R3/32	8500	720	6700	550	5700	420	4000	250	2850	150
1/2 × R1/8	6500	720	5000	550	4300	420	3000	250	2150	150





RPM = rev./min.
FEED = inch/min.

X5070 END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE BALL NOSE with EXTENDED NECK

G8A43 SERIES

MATERIAL	P						H					
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS				HIGH HARDENED STEELS					
HARDNESS	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc65 ~ HRc70	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1/64 × 1/32	50000	189.0	50000	165.4	45000	149.6	40000	118.1	35000	102.4	35000	90.6
R1/32 × 1/16	49700	224.4	47800	189.0	40000	157.5	35000	124.0	32000	110.2	28500	90.6
R3/64 × 3/32	49700	224.4	47800	189.0	40000	157.5	35000	124.0	32000	110.2	28500	90.6
R1/16 × 1/8	33100	236.2	31800	208.7	26500	157.5	23500	124.0	21000	110.2	19000	90.6
R3/32 × 3/16	18600	228.4	17800	192.9	15000	147.6	13500	120.1	11500	100.4	10500	82.7
R1/8 × 1/14	13900	190.9	13400	161.4	11000	122.1	10000	98.4	8800	84.7	8000	68.9
R5/32 × 5/16	11100	165.4	10700	137.8	9000	106.3	8000	84.7	7000	72.8	6500	61.0
R3/16 × 3/8	9300	145.7	8900	122.1	7500	94.5	6600	74.8	5800	65.0	5300	54.3
R1/4 × 1/2	6950	116.1	6680	98.4	5600	74.8	5000	61.0	4400	49.2	4000	41.3



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

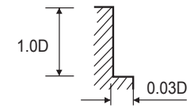
RPM = rev./min.
FEED = inch/min.

X5070 END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS

G850 SERIES

MATERIAL	P						H					
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS				HIGH HARDENED STEELS					
HARDNESS	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc65 ~ HRc70	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/16	41950	69.4	32750	49.6	22050	33.3	18250	20.6	13850	12.7	11950	9.1
1/8	20600	52.1	16350	37.2	10850	25.0	9000	15.5	7100	9.5	6050	6.9
3/16	16500	66.2	13100	49.5	8700	33.0	6700	19.1	5350	12.2	4650	8.9
1/4	12400	58.1	9800	41.8	6500	28.2	5000	16.6	3950	10.4	3500	7.8
5/16	9950	59.6	7850	42.8	5250	28.6	4050	16.6	3250	10.6	2800	7.6
3/8	8200	57.9	6450	41.6	4300	27.8	3350	15.8	2700	10.3	2300	7.2
1/2	6300	52.2	4950	37.4	3300	24.9	2500	14.3	2000	9.0	1750	6.5
5/8	4950	47.7	3950	35.1	2600	23.0	2000	13.2	1600	8.5	1400	6.3
3/4	4100	43.0	3250	32.0	2150	21.5	1700	12.7	1350	8.2	1150	5.9

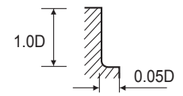


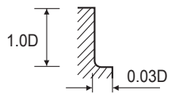
RPM = rev./min.
FEED = inch/min.

CARBIDE, 6&8 FLUTE 45° HELIX CORNER RADIUS

G851 SERIES

MATERIAL	P						H					
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS				HIGH HARDENED STEELS					
HARDNESS	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc65 ~ HRc70	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	23450	199.2	22200	182.2	15100	182.1	12750	122.7	9900	78.0	7550	53.9
5/16	20650	191.3	19600	174.8	13200	171.8	11150	115.3	8700	73.3	6600	51.2
3/8	17900	183.4	17000	167.3	11350	161.6	9500	108.0	7450	68.7	5700	48.5
1/2	12300	167.6	11800	152.4	7550	141.2	6250	93.2	5000	59.4	3800	43.0
5/8	10100	159.1	9800	147.2	6050	135.0	5050	91.5	4050	49.8	3000	34.3
3/4	8850	140.7	8600	133.3	5300	123.2	4400	82.7	3550	43.7	2650	30.0
1	6300	103.9	6150	105.5	3800	99.7	3150	65.1	2500	31.4	1900	21.5





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

RPM = rev./min.
FEED = inch/min.

X5070 END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS HIGH FEED

G859, G854 SERIES

■ NORMAL SPEED

MATERIAL	P						H			
	HARDENED STEELS						HIGH HARDENED STEELS			
HARDNESS	~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0 × R0.5	13500	255.9	9550	149.6	5500	86.6	3200	39.4	2200	21.7
3.0 × R0.5	9550	255.9	6900	163.4	4550	108.3	2850	45.3	1900	24.0
4.0 × R0.5	7950	275.6	5750	181.1	4000	126.0	2550	53.2	1750	27.6
5.0 × R0.5	6500	287.4	4800	189.0	3400	126.0	2200	63.0	1500	27.6
6.0 × R0.5	5800	301.2	4100	192.9	2900	137.8	1850	72.8	1350	31.3
6.0 × R1.0	5800	301.2	4100	192.9	2900	137.8	1850	72.8	1350	31.3
8.0 × R1.0	4350	301.2	3050	192.9	2200	137.8	1400	72.8	995	31.3
8.0 × R2.0	4350	301.2	3050	192.9	2200	137.8	1400	72.8	995	31.3
10.0 × R1.0	3500	301.2	2450	192.9	1750	137.8	1100	72.8	795	31.3
10.0 × R2.0	3500	301.2	2450	192.9	1750	137.8	1100	72.8	795	31.3
12.0 × R2.0	2900	301.2	2050	192.9	1450	137.8	925	72.8	665	31.3
12.0 × R3.0	2900	301.2	2050	192.9	1450	137.8	925	72.8	665	31.3
16.0 × R3.0	2200	301.2	1550	192.9	1100	137.8	700	72.8	500	31.3

RPM = rev./min.
FEED = inch/min.

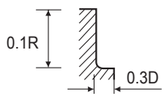


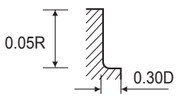


■ HIGH SPEED

MATERIAL	P						H			
	HARDENED STEELS						HIGH HARDENED STEELS			
HARDNESS	~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0 × R0.5	29000	590.6	22000	385.8	15000	309.1	11000	175.2	8700	96.5
3.0 × R0.5	22000	629.9	17000	393.7	12500	315.0	9500	181.1	6900	98.4
4.0 × R0.5	17000	689.0	13000	472.4	11000	362.2	8000	216.5	5600	114.2
5.0 × R0.5	15000	708.7	11000	192.1	10000	393.7	7000	236.2	4900	122.1
6.0 × R0.5	13500	728.4	10500	543.3	9000	433.1	6400	252.0	4500	141.7
6.0 × R1.0	13500	728.4	10500	543.3	9000	433.1	6400	252.0	4500	141.7
8.0 × R1.0	10000	728.4	8000	551.2	6800	433.1	4800	263.8	3400	161.4
8.0 × R2.0	10000	728.4	8000	551.2	6800	433.1	4800	263.8	3400	161.4
10.0 × R1.0	8000	728.4	6400	551.2	5400	433.1	3800	267.7	2700	149.6
10.0 × R2.0	8000	728.4	6400	551.2	5400	433.1	3800	267.7	2700	149.6
12.0 × R2.0	6600	728.4	5300	551.2	4500	433.1	3200	275.6	2250	141.7
12.0 × R3.0	6600	728.4	5300	551.2	4500	433.1	3200	275.6	2250	141.7
16.0 × R3.0	5000	728.4	3900	551.2	3300	433.1	2400	275.6	1650	129.9

RPM = rev./min.
FEED = inch/min.



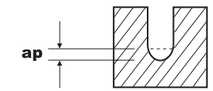


X5070 END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING

G8A46, G8A54 SERIES

MATERIAL	P						H			N		
	ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS			HIGH HARDENED STEELS			COPPER		
HARDNESS	HRc30 ~ HRc45			HRc45 ~ HRc55			HRc55 ~ HRc65					
DIAMETER	RPM	FEED	ap (mm)	RPM	FEED	ap (mm)	RPM	FEED	ap (mm)	RPM	FEED	ap (mm)
R0.1 × 0.2	50000	11.8~13.8	0.006~0.016	50000	10.4~12.2	0.005~0.013	50000	8.9~10.4	0.005~0.012	50000	17.9~20.9	0.010~0.022
R0.15 × 0.3	48000~50000	18.9~20.5	0.010~0.017	48000~50000	17.3~18.1	0.008~0.014	46000~50000	15.4~16.5	0.007~0.013	48000~50000	27.2~31.1	0.002~0.023
R0.2 × 0.4	48000~50000	28.4~31.1	0.013~0.032	48000~50000	17.7~21.7	0.011~0.026	46000~50000	15.8~18.1	0.010~0.024	48000~50000	39.4~45.3	0.019~0.048
R0.25 × 0.5	34100~49500	23.6~34.3	0.007~0.028	31900~35200	19.3~21.3	0.005~0.023	31900~35200	17.3~18.9	0.005~0.021	49000~50000	39.4~55.1	0.010~0.042
R0.3 × 0.6	28600~40700	23.2~33.5	0.007~0.034	26400~29700	18.9~21.3	0.006~0.028	26400~29700	15.8~18.9	0.006~0.025	42000~50000	43.3~66.9	0.011~0.050
R0.4 × 0.8	22000~30800	25.2~35.0	0.016~0.064	19800~22000	19.3~21.7	0.013~0.052	19800~22000	17.3~19.7	0.012~0.048	31000~50000	43.3~88.6	0.024~0.096
R0.5 × 1.0	17600~24200	23.6~33.5	0.008~0.080	15400~17600	18.5~21.3	0.007~0.065	15400~17600	17.3~19.7	0.006~0.060	24000~49500	43.3~86.6	0.012~0.120
R0.6 × 1.2	14300~18700	23.2~30.7	0.024~0.032	12000~14000	18.9~21.3	0.020~0.026	12000~14000	16.5~18.9	0.018~0.024	28500~38500	58.3~76.8	0.036~0.048
R0.75 × 1.5	11000~14300	22.8~29.9	0.031~0.048	10000~11500	18.9~21.3	0.025~0.039	10000~11500	16.5~18.9	0.023~0.036	17000~28500	43.3~76.8	0.046~0.072
R1.0 × 2.0	8500~11000	23.2~31.5	0.024~0.160	7900~8800	18.5~20.9	0.020~0.130	7900~8800	17.3~18.9	0.018~0.120	12600~24000	43.3~84.7	0.036~0.240
R1.5 × 3.0	5700~8200	28.7~39.4	0.064~0.240	5300~5800	23.2~25.6	0.052~0.195	5300~5800	21.7~24.4	0.048~0.120	11900~17000	72.8~106.3	0.096~0.360
R2.0 × 4.0	4300~6200	26.8~39.0	0.080~0.320	3950~4400	21.7~24.4	0.065~0.026	3850~4400	20.9~22.4	0.060~0.240	6600~12500	49.6~98.4	0.120~0.480

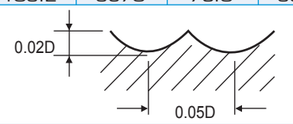


RPM = rev./min.
FEED = inch/min.

CARBIDE, 3 FLUTE BALL NOSE

G8A59 SERIES

MATERIAL	P				H					
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HIGH HARDENED STEELS					
HARDNESS	HRc30 ~ HRc45		HRc45 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc65 ~ HRc70	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1.5 × 3.0	32000	338.6	26840	228.4	19840	168.5	18680	159.1	12780	108.7
R2.0 × 4.0	24080	303.2	20130	213.8	14880	152.8	14220	143.7	9580	98.4
R2.5 × 5.0	20000	285.4	16780	213.8	12400	145.3	11670	136.6	8000	93.3
R3.0 × 6.0	18000	337.4	15200	244.9	12200	177.2	11100	150.8	7590	96.9
R4.0 × 8.0	13500	289.4	11300	206.7	9200	156.7	8320	131.9	5690	83.9
R5.0 × 10.0	10800	257.1	9100	180.7	7350	135.8	6660	113.0	4550	77.2
R6.0 × 12.0	9050	240.2	7590	167.7	6130	125.6	5530	94.5	3800	64.6
R8.0 × 16.0	6700	181.1	5690	128.0	4600	97.6	4160	70.9	2850	48.4
R10.0×20.0	5400	141.7	4550	103.2	3670	78.0	3300	56.7	2280	38.6



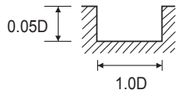
RPM = rev./min.
FEED = inch/min.

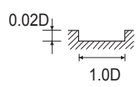
X5070 END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE - SLOTTING

G8A36 SERIES

MATERIAL	P						H					
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS				HIGH HARDENED STEELS					
HARDNESS	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc65 ~ HRc70	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
0.2	50000	5.1	45000	4.5	40000	3.7	33000	2.4	33000	1.8	26400	1.2
0.3	50000	7.5	45000	5.5	40000	4.5	33000	2.8	25000	2.0	20000	1.4
0.4	50000	9.3	45000	7.1	40000	5.5	33000	3.5	25000	2.2	20000	1.6
0.5	50000	14.6	45000	11.0	40000	8.7	33000	5.5	25000	3.4	20000	2.4
0.6	50000	18.5	45000	14.2	40000	11.2	30000	6.3	25000	4.1	20000	3.0
0.8	50000	23.6	40000	17.3	30000	11.6	25000	7.3	19000	4.3	15200	3.2
0.9	49000	25.8	39000	20.5	27800	13.0	22700	8.1	17500	4.9	14000	3.5
1.0	48000	29.5	38000	22.4	25500	14.2	20500	8.5	16000	5.3	12500	3.4
2.0	33300	33.5	26000	26.8	17500	16.5	14500	10.2	11000	6.3	9500	4.5
3.0	21800	33.5	17300	26.8	11500	16.5	9500	10.2	7500	6.3	6400	4.5
4.0	16700	34.7	13200	27.6	8800	17.3	7200	10.6	5600	6.7	4750	4.7
5.0	15700	39.4	12500	31.7	8300	19.7	6400	11.2	5100	7.1	4450	5.2
6.0	13100	37.4	10350	30.3	6900	18.9	5300	11.0	4200	7.1	3700	5.1
8.0	9880	36.6	7800	28.4	5200	17.5	4000	10.0	3200	6.5	2800	4.7
10.0	7800	33.5	6150	26.8	4100	16.3	3200	9.5	2550	6.1	2200	4.4
12.0	6650	33.5	5250	26.8	3500	16.3	2650	9.5	2100	6.1	1860	4.4
16.0	4900	28.7	3900	22.8	2600	14.4	2000	8.3	1600	5.3	1400	3.7
20.0	3900	26.0	3100	20.7	2050	14.4	1600	7.7	1300	4.9	1100	3.4





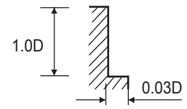
RPM = rev./min.
FEED = inch/min.

X5070 END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE - SIDE CUTTING

G8A36 SERIES

MATERIAL	P						H					
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS				HIGH HARDENED STEELS					
HARDNESS	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc65 ~ HRc70	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1.0	48000	41.3	38000	32.3	25500	20.1	20500	12.2	16000	7.5	12500	4.9
2.0	33300	47.2	26000	38.2	17500	23.6	14500	14.6	11000	9.1	9500	6.5
3.0	21800	47.2	17300	38.2	11500	23.6	9500	14.6	7500	9.1	6400	6.5
4.0	16700	49.2	13200	39.4	8800	24.6	7200	15.2	5600	9.5	4750	6.7
5.0	15700	57.1	12500	45.3	8300	28.0	6400	16.1	5100	10.2	4450	7.5
6.0	13100	53.2	10350	43.3	6900	27.2	5300	15.8	4200	10.0	3700	7.3
8.0	9880	52.0	7800	40.6	5200	25.0	4000	14.4	3200	9.3	2800	6.7
10.0	7800	47.2	6150	38.2	4100	23.2	3200	13.4	2550	8.7	2200	6.3
12.0	6650	47.2	5250	38.2	3500	23.2	2650	13.4	2100	8.7	1860	6.3
16.0	4900	41.3	3900	33.1	2600	20.5	2000	11.8	1600	7.5	1400	5.5
20.0	3900	37.4	3100	29.5	2050	18.7	1600	10.8	1300	6.9	1100	4.2



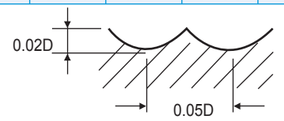
RPM = rev./min.
FEED = inch/min.

X5070 END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE BALL NOSE

G8A38, G8A28, G8A53 SERIES

MATERIAL	P						H					
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS				HIGH HARDENED STEEl					
HARDNESS	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc65 ~ HRc70	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R0.1 ×0.2	50000	47.2	50000	41.3	45000	37.8	40000	30.3	35000	26.54	31500	22.4
R0.15×0.3	50000	59.1	50000	53.6	45000	47.2	40000	37.9	35000	33.1	31500	27.6
R0.2 ×0.4	50000	74.8	50000	66.9	45000	59.1	40000	47.2	35000	41.3	31500	35.0
R0.25×0.5	50000	94.5	50000	82.7	45000	74.8	40000	59.1	35000	51.2	31500	43.3
R0.3 ×0.6	50000	114.2	50000	98.4	45000	86.6	40000	70.9	35000	63.0	31500	55.1
R0.4 ×0.8	50000	153.5	50000	129.9	45000	118.1	40000	94.5	35000	82.7	31500	70.9
R0.5 ×1.0	50000	189.0	50000	165.4	45000	149.6	40000	118.1	35000	102.4	35000	90.6
R0.6 ×1.2	50000	200.8	48000	169.3	43000	151.6	38000	118.1	34000	106.3	30600	90.6
R0.75×1.5	50000	212.6	48000	177.2	43000	157.5	37000	122.1	33000	106.3	29700	90.6
R1.0 ×2.0	49700	224.4	47800	189.0	40000	157.5	35000	124.0	32000	110.2	28500	90.6
R1.5 ×3.0	33100	236.2	31800	208.7	26500	157.5	23500	124.0	21000	110.2	19000	90.6
R2.0 ×4.0	24900	236.2	23900	208.7	20000	157.5	17500	124.0	16000	110.2	14500	90.6
R2.5 ×5.0	18600	228.4	17800	192.9	15000	147.6	13500	120.1	11500	100.4	10500	82.7
R3.0 ×6.0	13900	190.9	13400	161.4	11000	122.1	10000	98.4	8800	84.7	8000	68.9
R4.0 ×8.0	11100	165.4	10700	137.8	9000	106.3	8000	84.7	7000	72.8	6500	61.0
R5.0 ×10.0	9300	145.7	8900	122.1	7500	94.5	6600	74.8	5800	65.0	5300	54.3
R6.0 ×12.0	6950	116.1	6680	98.4	5600	74.8	5000	61.0	4400	49.2	4000	41.3
R8.0 ×16.0	5570	104.3	5350	86.6	4500	66.9	4000	53.2	3500	39.4	3200	33.5
R10.0×20.0	4450	92.5	4300	76.8	3600	59.1	3200	47.2	2800	31.5	2550	26.0



RPM = rev./min.
FEED = inch/min.

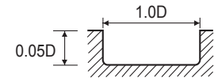
CARBIDE
HSS
CBN END MILLS
i-Xmill END MILLS
i-SMART MODULAR TYPE END MILLS
X5070 END MILLS
4G MILL END MILLS
X-POWER END MILLS
JET-POWER END MILLS
TitaNox -POWER END MILLS
V7 PLUS A END MILLS
V7 MILL INOX END MILLS
ALU-POWER HPC END MILLS
ALU-POWER END MILLS
D-POWER GRAPHITE END MILLS
D-POWER CFRP END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

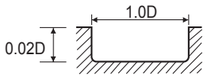
X5070 END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE MINIATURE CORNER RADIUS - SLOTTING

G8A50 SERIES

MATERIAL	P						H					
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS				HIGH HARDENED STEELS					
HARDNESS	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED		
0.3	50000	7.5	45000	5.5	40000	4.5	33000	2.8	25000	1.6		
0.4	50000	9.3	45000	7.1	40000	5.5	33000	3.5	25000	2.2		
0.5	50000	14.6	45000	11.0	40000	8.7	33000	5.5	25000	3.4		
0.6	50000	18.5	45000	14.2	40000	11.2	30000	6.3	25000	4.1		
0.8	50000	23.6	40000	17.3	30000	11.6	25000	7.3	19000	4.3		
1.0	48000	29.5	38000	22.4	25500	14.2	20500	8.5	16000	5.3		
1.2	42000	31.1	34000	25.2	22500	15.0	20000	9.8	14500	5.7		
1.5	37000	31.0	30500	26.4	21000	16.1	17000	9.8	13000	6.2		
2.0	33300	33.5	26000	26.8	17500	16.5	14500	10.2	11000	6.3		



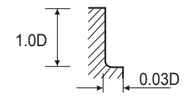


RPM = rev./min.
FEED = inch/min.

CARBIDE, 4 FLUTE CORNER RADIUS

G8A47 SERIES

MATERIAL	P						H					
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS				HIGH HARDENED STEELS					
HARDNESS	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc65 ~ HRc70	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1.0	48000	46.6	38000	33.1	25500	22.4	20500	13.5	16000	8.5	12500	5.5
2.0	33300	55.1	26000	39.4	17500	26.5	14500	16.4	11000	10.1	9500	7.2
3.0	21800	55.1	17300	39.4	11500	26.5	9500	16.4	7500	10.1	6400	7.2
4.0	16700	56.7	13200	40.9	8800	27.7	7200	17.0	5600	10.6	4750	7.6
5.0	15700	63.0	12500	47.2	8300	31.5	6400	18.3	5100	11.7	4450	8.5
6.0	13100	61.4	10350	44.1	6900	29.9	5300	17.6	4200	11.0	3700	8.2
8.0	9880	59.2	7800	42.5	5200	28.4	4000	16.4	3200	10.4	2800	7.6
10.0	7800	55.1	6150	39.7	4100	26.5	3200	15.1	2550	9.8	2200	6.9
12.0	6650	55.1	5250	39.7	3500	26.5	2650	15.1	2100	9.5	1860	6.9
16.0	4900	47.2	3900	34.7	2600	23.0	2000	13.2	1600	8.5	1400	6.3
20.0	3900	40.9	3100	30.6	2050	20.5	1600	12.0	1300	7.9	1100	5.7



RPM = rev./min. FEED = inch/min.

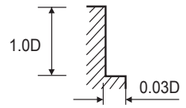
X5070 END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS with EXTENDED NECK

G8A37 SERIES

MATERIAL	P						H					
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS				HIGH HARDENED STEELS					
HARDNESS	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc65 ~ HRc70	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1.0	48000	58.3	38000	41.3	25500	28.0	20500	16.9	16000	10.6	12500	6.9
2.0	33300	68.9	26000	49.2	17500	33.1	14500	20.5	11000	12.6	9500	9.1
3.0	21800	68.9	17300	49.2	11500	33.1	9500	20.5	7500	12.6	6400	9.1
4.0	16700	70.9	13200	51.2	8800	34.7	7200	21.3	5600	13.2	4750	9.5
5.0	15700	78.7	12500	59.1	8300	39.4	6400	22.8	5100	14.6	4450	10.6
6.0	13100	76.8	10350	55.1	6900	37.4	5300	22.1	4200	13.8	3700	10.2
8.0	9880	74.0	7800	53.2	5200	35.4	4000	20.5	3200	13.0	2800	9.5
10.0	7800	68.9	6150	49.6	4100	33.1	3200	18.9	2550	12.2	2200	8.7
12.0	6650	68.9	5250	49.6	3500	33.1	2650	18.9	2100	11.8	1860	8.7
16.0	4900	59.1	3900	43.3	2600	28.7	2000	16.5	1600	10.6	1400	7.9
20.0	3900	51.2	3100	38.2	2050	25.6	1600	15.0	1300	9.8	1100	7.1

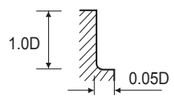


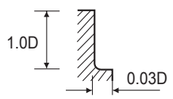
RPM = rev./min.
FEED = inch/min.

CARBIDE, 6 FLUTE 45° HELIX CORNER RADIUS

G8A39 SERIES

MATERIAL	P						H					
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS				HIGH HARDENED STEELS					
HARDNESS	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc65 ~ HRc70	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6.0	24800	210.6	23500	192.9	16000	192.9	13500	129.9	10500	82.7	8000	57.1
8.0	20000	216.5	19000	196.9	12000	181.1	10000	122.1	8000	78.7	6000	55.1
10.0	16000	192.9	15500	177.2	9500	161.4	8000	114.2	6400	70.9	4800	51.2
12.0	13000	177.2	12500	161.4	8000	149.6	6600	98.4	5300	63.0	4000	45.3
16.0	10000	157.5	9700	145.7	6000	133.9	5000	90.6	4000	49.2	3000	34.3
20.0	8000	131.9	7800	133.9	4800	126.0	4000	82.7	3200	40.2	2400	27.2





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

RPM = rev./min.
FEED = inch/min.

CARBIDE

Being the best through innovation



4G MILLS

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

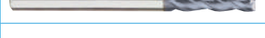
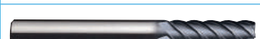
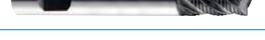
INCH

◎ : Excellent ○ : Good

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE	P: Carbon Steels ~HB225	P: Alloy Steels HB225~325	P: Prehardened Steels HRc30~40	P: Hardened Steels HRc40~45	P: Hardened Steels HRc45~55	H: High Hardened Steels HRc55~70	M: Stainless Steels	K: Cast Iron	N: Copper	N: Graphite	N: Aluminum	N: Acrylic	N: CFRP	S: Titanium	S: High Temperature Alloy
GMF15		CARBIDE, 2 FLUTE BALL NOSE	R.002	R3/8	666	○	◎	◎	◎	○			○							
GMF16		CARBIDE, 2 FLUTE BALL NOSE WITH NECK	R.004	R1/4	668	○	◎	◎	◎	○			○							
GMF17		CARBIDE, 4 FLUTE BALL NOSE	R1/16	R1/4	671	○	◎	◎	◎	○			○							
GMF18		CARBIDE, 2 FLUTE CORNER RADIUS	D3/64	D3/4	672	◎	◎	◎	◎	○			○							
GMF19		CARBIDE, 2 FLUTE CORNER RADIUS WITH NECK	D.008	D3/4	675	◎	◎	◎	◎	○			○							
GMF20		CARBIDE, 4 FLUTE CORNER RADIUS	D3/64	D3/4	681	◎	◎	◎	◎	○			○							
GMF21		CARBIDE, 4 FLUTE CORNER RADIUS WITH NECK	D3/64	D3/4	683	◎	◎	◎	◎	○			○							
GMF22		CARBIDE, 2 FLUTE WITH NECK	D.008	D1/2	688	◎	◎	◎	◎	○		○	○							
GMF23		CARBIDE, 2 FLUTE	D.004	D.120	691	◎	◎	◎	◎	○			○							
GMF24		CARBIDE, 2 FLUTE LONG	D3/64	D3/4	694	◎	◎	◎	◎	○		○	○							
GMF25		CARBIDE, 4 FLUTE	D3/64	D3/4	696	◎	◎	◎	◎	○		○	○							
GMF26		CARBIDE, 4 FLUTE	D3/64	D3/4	697	○	◎	◎	◎	○			○							
GMF27		CARBIDE, 4 FLUTE LONG	D3/64	D1	698	◎	◎	◎	◎	○			○							
GMF28		CARBIDE, 4 FLUTE WITH NECK	D3/64	D1/2	700	◎	◎	◎	◎	○		○	○							
GMF29		CARBIDE, 6 FLUTE 45° HELIX	D1/4	D3/4	701	◎	◎	◎	◎	○			○							
X-SPEED ROUGHER																				
G907 G928		CARBIDE, 4&5 FLUTE STUB LENGTH ROUGHING CORNER RADIUS	D1/4	D1	702	◎	◎	◎	○			○	◎	○						
G908 G929		CARBIDE, 4&5 FLUTE REGULAR LENGTH ROUGHING CORNER RADIUS	D1/4	D1	703	◎	◎	◎	○			○	◎	○						
G909 G930		CARBIDE, 4&5 FLUTE EXTENDED REACH ROUGHING CORNER RADIUS	D1/4	D3/4	704	◎	◎	◎	○			○	◎	○						

METRIC

◎ : Excellent ○ : Good

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE	P Carbon Steels ~HB225	P Alloy Steels HB225~325	P Prehardened Steels HRc30~40	P Hardened Steels HRc40~45	P Hardened Steels HRc45~55	H High Hardened Steels HRc55~70	M Stainless Steels	K Cast Iron	N Copper	N Graphite	N Aluminum	N Acrylic	N CFRP	S Titanium	S High Temperature Alloy
SEMD98		CARBIDE, 2 FLUTE BALL NOSE ◇	R0.05	R12.5	705	○	◎	◎	◎	○			○							
SEM846		CARBIDE, 2 FLUTE LONG NECK BALL NOSE ◇	R0.05	R6.0	710	○	◎	◎	◎	○			○							
SEM846		CARBIDE, 2 FLUTE LONG NECK BALL NOSE (6mm shank) ◇	R0.25	R1.0	718	○	◎	◎	◎	○			○							
SEMD99		CARBIDE, 2 FLUTE CORNER RADIUS ◇	D0.2	D20.0	721	◎	◎	◎	◎	○			○							
SEME61		CARBIDE, 2 FLUTE LONG NECK CORNER RADIUS ◇	D0.2	D20.0	727	◎	◎	◎	◎	○			○							
SEME01		CARBIDE, 4 FLUTE CORNER RADIUS ◇	D1.0	D20.0	742	◎	◎	◎	◎	○			○							
SEME64		CARBIDE, 4 FLUTE LONG NECK CORNER RADIUS ◇	D1.0	D20.0	747	◎	◎	◎	◎	○			○							
SEME35		CARBIDE, 2 FLUTE ◇	D0.1	D25.0	759	◎	◎	◎	◎	○		○	○							
SEME70		CARBIDE, 2 FLUTE LONG LENGTH ◇	D1.0	D25.0	764	◎	◎	◎	◎	○			○							
SEM845		CARBIDE, 2 FLUTE LONG NECK ◇	D0.1	D12.0	769	◎	◎	◎	◎	○		○	○							
SEME36		CARBIDE, 4 FLUTE ◇	D0.8	D25.0	776	◎	◎	◎	◎	○		○	○							
SEME71		CARBIDE, 4 FLUTE ◇	D1.0	D20.0	778	○	◎	◎	◎	○			○							
SEME72		CARBIDE, 4 FLUTE LONG LENGTH ◇	D1.0	D25.0	781	◎	◎	◎	◎	○			○							
SEME73		CARBIDE, 4 FLUTE LONG NECK ◇	D1.0	D12.0	786	◎	◎	◎	◎	○		○	○							
SEME75		CARBIDE, 6 FLUTE 45° HELIX ◇	D6.0	D20.0	790	◎	◎	◎	◎	○			○							
X-SPEED ROUGHER																				
G9D75 G9D67		CARBIDE, 4&5 FLUTE MULTIPLE HELIX SHORT LENGTH ROUGHING CORNER RADIUS ◇	D6.0	D20.0	791	◎	◎	◎	○			○	◎	○						
G9D76 G9D68		CARBIDE, 4&5 FLUTE MULTIPLE HELIX LONG LENGTH ROUGHING CORNER RADIUS ◇	D6.0	D20.0	792	◎	◎	◎	○			○	◎	○						
G9D77 G9D69		CARBIDE, 4&5 FLUTE MULTIPLE HELIX LONG REACH ROUGHING CORNER RADIUS ◇	D6.0	D20.0	793	◎	◎	◎	○			○	◎	○						
GAE53		HSS-PM, 4&5 FLUTE MULTIPLE HELIX SHORT LENGTH CORNER RADIUS ◇	D6.0	D20.0	794	◎	◎	○				◎	◎	○						
		RECOMMENDED CUTTING CONDITIONS			795															

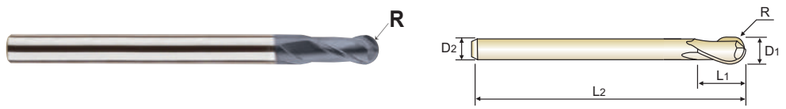
◇ Call for Availability

4G MILL END MILLS

GMF15 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE BALL NOSE

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



NG | 2 | 30° | R ±.0002 (R≤1/8) | R ±.0004 (R〉1/8) | PLAIN | P.795

Unit : Inch

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GMF15901	R.002	.004	3/16	.008	1-1/2
GMF15902	R.004	.008	3/16	1/64	1-1/2
GMF15903	R.006	.012	3/16	1/32	1-1/2
GMF15904	R.075	.015	3/16	1/32	1-1/2
GMF15905	R.010	.020	3/16	3/64	1-1/2
GMF15906	R.012	.024	3/16	3/64	1-1/2
GMF15907	R.014	.028	3/16	1/16	1-1/2
GMF15908	R.0155	.031	3/16	1/16	1-1/2
GMF15909	R.0175	.035	3/16	5/64	1-1/2
GMF15003	R.0234	3/64	3/16	3/32	2
GMF15910	R.0234	3/64	1/4	3/32	2
GMF15911	R.0234	3/64	1/4	3/32	2-3/4
GMF15004	R1/32	1/16	3/16	5/32	2
GMF15912	R1/32	1/16	1/4	5/32	2
GMF15913	R1/32	1/16	1/4	5/32	2-3/4
GMF15005	R.0391	5/64	1/4	1/8	1-1/2
GMF15914	R.0391	5/64	3/16	3/16	2
GMF15915	R.0391	5/64	1/4	3/16	2
GMF15916	R.0391	5/64	1/4	3/16	3-1/8
GMF15006	R3/64	3/32	1/4	1/4	2-3/8
GMF15917	R3/64	3/32	1/4	1/4	3-1/8
GMF15008	R1/16	1/8	1/4	3/16	1-1/2
GMF15918	R1/16	1/8	3/16	1/4	2-3/8
GMF15919	R1/16	1/8	1/4	1/4	2-3/8
GMF15920	R1/16	1/8	1/4	1/4	3-1/8
GMF15921	R1/16	1/8	1/4	1/4	4
GMF15012	R3/32	3/16	1/4	1/4	2
GMF15922	R3/32	3/16	3/16	5/16	2-3/4
GMF15923	R3/32	3/16	1/4	5/16	2-3/4
GMF15924	R3/32	3/16	3/16	5/16	4
GMF15925	R3/32	3/16	1/4	5/16	4
GMF15926	R3/32	3/16	1/4	5/16	4-1/2
GMF15013	R.102	13/64	1/4	5/16	2-3/8

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◎ : Excellent ○ : Good

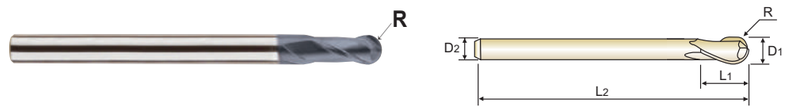
P					H	M	K	N						S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

4G MILL END MILLS

GMF15 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE BALL NOSE

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



NG | 2 | 30° | R ±.0002 (R≤1/8) | R ±.0004 (R〉1/8) | PLAIN | P.795

Unit : Inch

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GMF15927	R.102	13/64	1/4	3/8	3-1/8
GMF15016	R1/8	1/4	1/4	3/8	2
GMF15928	R1/8	1/4	1/4	3/8	3-1/8
GMF15929	R1/8	1/4	1/4	1/2	3-1/2
GMF15930	R1/8	1/4	1/4	1/2	5
GMF15018	R9/64	9/32	5/16	9/16	3-1/2
GMF15020	R5/32	5/16	5/16	1/2	2
GMF15931	R5/32	5/16	5/16	1/2	3-1/2
GMF15932	R5/32	5/16	5/16	9/16	4
GMF15933	R5/32	5/16	5/16	9/16	6
GMF15024	R3/16	3/8	3/8	5/8	2-3/8
GMF15934	R3/16	3/8	3/8	5/8	3-1/2
GMF15935	R3/16	3/8	3/8	11/16	4
GMF15936	R3/16	3/8	3/8	11/16	5
GMF15937	R3/16	3/8	3/8	11/16	6
GMF15938	R3/16	3/8	3/8	11/16	7
GMF15032	R1/4	1/2	1/2	11/16	3-1/8
GMF15939	R1/4	1/2	1/2	11/16	4
GMF15940	R1/4	1/2	1/2	7/8	4-1/4
GMF15941	R1/4	1/2	1/2	7/8	6
GMF15942	R1/4	1/2	1/2	7/8	8
GMF15036	R9/32	9/16	9/16	1	4
GMF15040	R5/16	5/8	5/8	1	4
GMF15943	R5/16	5/8	5/8	1-3/16	6
GMF15048	R3/8	3/4	3/4	1-3/16	4
GMF15944	R3/8	3/4	3/4	1-1/2	6

Size	Radius Tolerance (Inch)	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to Ø1/4	±.0002	0~-.0005	h6
over Ø1/4	±.0004	0~-.0006	

◎ : Excellent ○ : Good

P					H	M	K	N						S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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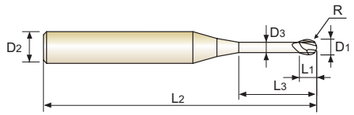
4G MILL END MILLS

GMF16 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE BALL NOSE WITH NECK

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





NG | 2 | 30° | R ±.0002 (R≤1/8) | R ±.0004 (R>1/8) | PLAIN | P.796~798

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

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

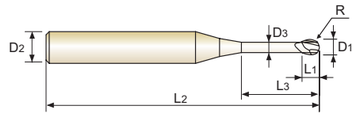
4G MILL END MILLS

GMF16 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE BALL NOSE WITH NECK

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





NG | 2 | 30° | R ±.0002 (R≤1/8) | R ±.0004 (R>1/8) | PLAIN | P.796~798

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

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

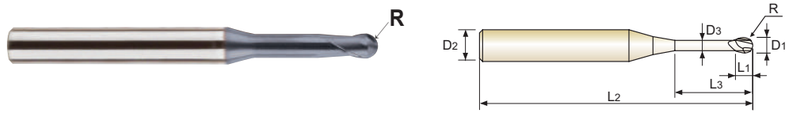
CARBIDE
HSS
CBN END MILLS
i-Xmill END MILLS
i-SMART MODULAR TYPE END MILLS
X5070 END MILLS
4G MILL END MILLS
X-POWER END MILLS
JET-POWER END MILLS
TitaNox -POWER END MILLS
V7 PLUS A END MILLS
V7 MILL INOX
ALU-POWER HPC END MILLS
ALU-POWER END MILLS
D-POWER GRAPHITE END MILLS
D-POWER CFRP END MILLS
ROUTERS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

4G MILL END MILLS

GMF16 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE BALL NOSE WITH NECK

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



NG | 2 | 30° | R ±.0002 (R≤1/8) | R ±.0004 (R>1/8) | PLAIN | P.796~798

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	h6
over Ø1/4	±.0004	0~-.0006	

◎ : Excellent ○ : Good

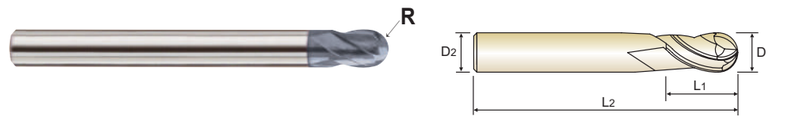
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

4G MILL END MILLS

GMF17 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE BALL NOSE

- New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- Unique ball nose geometry with superior cutting edges result in decreased cutting forces.
- Excellent performance when cutting steels, up to HRc55
- Cutting edge strength is increased and part finish is improved due to new End Geometry



NG | 4 | 30° | R ±.0002 (R1/8) | R ±.0004 (R>1/8) | PLAIN | P.798

Unit : Inch

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

Size	Radius Tolerance (Inch)	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to Ø1/4	±.0002	0~-.0008	h6
over Ø1/4	±.0004		

◎ : Excellent ○ : Good

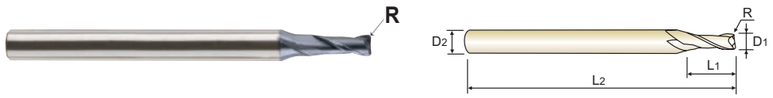
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

4G MILL END MILLS

GMF18 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE CORNER RADIUS

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



MG | 2 | 30° | R ±.0004 (D≤1/4) | R ±.0006 (D>1/4) | PLAIN | P.799

Unit : Inch

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GMF18003	R.008	3/64	1/4	3/32	2
GMF18901	R.012	3/64	1/4	3/32	2
GMF18004	R.008	1/16	1/4	5/32	2
GMF18902	R.012	1/16	1/4	5/32	2
GMF18903	R.020	1/16	1/4	5/32	2
GMF18005	R.008	5/64	1/4	1/4	2
GMF18904	R.012	5/64	1/4	1/4	2
GMF18905	R.020	5/64	1/4	1/4	2
GMF18008	R.008	1/8	1/4	5/16	2-3/8
GMF18906	R.012	1/8	1/4	5/16	2-3/8
GMF18907	R.020	1/8	1/4	5/16	2-3/8
GMF18940	R.030	1/8	1/4	5/16	2-3/8
GMF18009	R.008	9/64	1/4	3/8	2-3/4
GMF18908	R.012	9/64	1/4	3/8	2-3/4
GMF18909	R.020	9/64	1/4	3/8	2-3/4
GMF18941	R.030	9/64	1/4	3/8	2-3/4
GMF18910	R.040	9/64	1/4	3/8	2-3/4
GMF18013	R.008	13/64	1/4	1/2	3-1/2
GMF18911	R.012	13/64	1/4	1/2	3-1/2
GMF18912	R.020	13/64	1/4	1/2	3-1/2
GMF18942	R.030	13/64	1/4	1/2	3-1/2
GMF18913	R.040	13/64	1/4	1/2	3-1/2
GMF18016	R.008	1/4	1/4	5/8	2-3/8
GMF18914	R.012	1/4	1/4	5/8	2-3/8
GMF18915	R.020	1/4	1/4	5/8	2-3/8
GMF18943	R.030	1/4	1/4	5/8	2-3/8
GMF18916	R.040	1/4	1/4	5/8	2-3/8
GMF18917	R.008	1/4	1/4	5/8	3-1/2
GMF18918	R.012	1/4	1/4	5/8	3-1/2

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◎ : Excellent ○ : Good

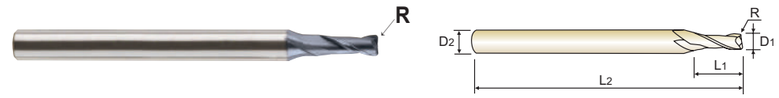
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

4G MILL END MILLS

GMF18 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE CORNER RADIUS

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



MG | 2 | 30° | R ±.0004 (D≤1/4) | R ±.0006 (D>1/4) | PLAIN | P.799

Unit : Inch

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GMF18919	R.020	1/4	1/4	5/8	3-1/2
GMF18944	R.030	1/4	1/4	5/8	3-1/2
GMF18920	R.040	1/4	1/4	5/8	3-1/2
GMF18020	R.020	5/16	5/16	3/4	2-3/4
GMF18945	R.030	5/16	5/16	3/4	2-3/4
GMF18921	R.040	5/16	5/16	3/4	2-3/4
GMF18922	R.020	5/16	5/16	3/4	4
GMF18946	R.030	5/16	5/16	3/4	4
GMF18923	R.040	5/16	5/16	3/4	4
GMF18924	R.060	5/16	5/16	3/4	4
GMF18925	R.080	5/16	5/16	3/4	4
GMF18024	R.020	3/8	3/8	1	3
GMF18947	R.030	3/8	3/8	1	3
GMF18926	R.040	3/8	3/8	1	3
GMF18927	R.020	3/8	3/8	1	4
GMF18948	R.030	3/8	3/8	1	4
GMF18928	R.040	3/8	3/8	1	4
GMF18929	R.060	3/8	3/8	1	4
GMF18930	R.080	3/8	3/8	1	4
GMF18032	R.020	1/2	1/2	1-3/16	3-1/8
GMF18949	R.030	1/2	1/2	1-3/16	3-1/8
GMF18931	R.040	1/2	1/2	1-3/16	3-1/8
GMF18932	R.020	1/2	1/2	1-3/16	4-1/4
GMF18950	R.030	1/2	1/2	1-3/16	4-1/4
GMF18933	R.040	1/2	1/2	1-3/16	4-1/4
GMF18934	R.060	1/2	1/2	1-3/16	4-1/4
GMF18935	R.080	1/2	1/2	1-3/16	4-1/4
GMF18936	R.100	1/2	1/2	1-3/16	4-1/4
GMF18937	R.118	1/2	1/2	1-3/16	4-1/4

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

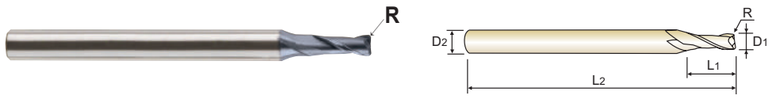
CARBIDE
HSS
CBN END MILLS
i-Xmill END MILLS
i-SMART MODULAR TYPE END MILLS
X5070 END MILLS
4G MILL END MILLS
X-POWER END MILLS
JET-POWER END MILLS
TitaNox -POWER END MILLS
V7 PLUS A END MILLS
V7 MILL INOX END MILLS
ALU-POWER HPC END MILLS
ALU-POWER END MILLS
D-POWER GRAPHITE END MILLS
D-POWER CFRP END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

4G MILL END MILLS

GMF18 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE CORNER RADIUS

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



MG | 2 | 30° | R ±.0004 (D≤1/4) | R ±.0006 (D>1/4) | PLAIN | P.799

Unit : Inch

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

Size	Radius Tolerance (Inch)	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to Ø1/4	±.0004	0~-.0005	h6
over Ø1/4	±.0006	0~-.0006	

◎ : Excellent ○ : Good

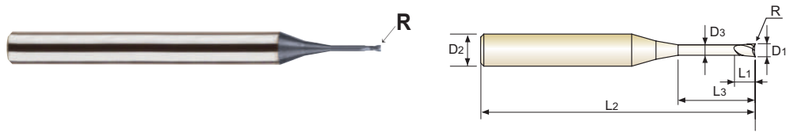
P					H	M	K	N						S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

4G MILL END MILLS

GMF19 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE CORNER RADIUS WITH NECK

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



MG | 2 | 30° | R ±.0004 (D≤1/4) | R ±.0006 (D>1/4) | PLAIN | P.800~801

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
GMF19931	R.004	.031	3/16	3/64	5/32	1-3/4	.029

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N						S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

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

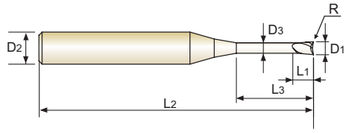
4G MILL END MILLS

GMF19 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE CORNER RADIUS WITH NECK

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





MG | 2 | 30° | R ±.0004 (D≤1/4) | R ±.0006 (D〉1/4) | PLAIN | P.800~801

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
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
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

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N						S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

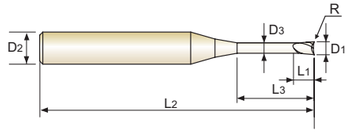
4G MILL END MILLS

GMF19 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE CORNER RADIUS WITH NECK

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





MG | 2 | 30° | R ±.0004 (D≤1/4) | R ±.0006 (D〉1/4) | PLAIN | P.800~801

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
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
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

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◎ : Excellent ○ : Good

P					H	M	K	N						S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

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

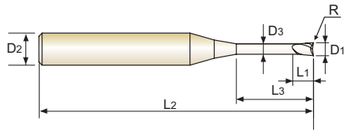
4G MILL END MILLS

GMF19 SERIES PLAIN SHANK

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

P.800~801

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
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
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

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◎ : Excellent ○ : Good

P					H	M	K	N						S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

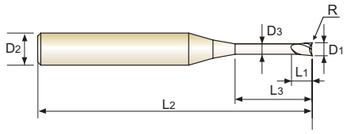
4G MILL END MILLS

GMF19 SERIES PLAIN SHANK

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

P.800~801

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
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
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

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N						S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

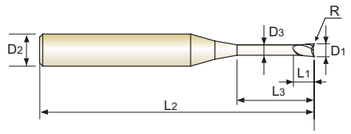
4G MILL END MILLS

GMF19 SERIES PLAIN SHANK

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- Available in many more various length shanks and corner radiuses.





MG | 2 | 30° | R ±.0004 (D≤1/4) | R ±.0006 (D>1/4) | PLAIN | P.800~801

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
GMF19836	R.012	5/16	5/16	1/2	1	2-3/4	.300
GMF19837	R.020	5/16	5/16	1/2	1	2-3/4	.300
GMF19859	R.030	5/16	5/16	1/2	1	2-3/4	.300
GMF19838	R.040	5/16	5/16	1/2	1	2-3/4	.300
GMF19024	R.012	3/8	3/8	5/8	1-3/16	3	.363
GMF19839	R.020	3/8	3/8	5/8	1-3/16	3	.363
GMF19860	R.030	3/8	3/8	5/8	1-3/16	3	.363
GMF19840	R.040	3/8	3/8	5/8	1-3/16	3	.363
GMF19032	R.020	1/2	1/2	11/16	1-1/4	3-1/8	.488
GMF19861	R.030	1/2	1/2	11/16	1-1/4	3-1/8	.488
GMF19841	R.040	1/2	1/2	11/16	1-1/4	3-1/8	.488
GMF19842	R.060	1/2	1/2	11/16	1-1/4	3-1/8	.488
GMF19040	R.020	5/8	5/8	3/4	1-3/8	4	.613
GMF19862	R.030	5/8	5/8	3/4	1-3/8	4	.613
GMF19843	R.040	5/8	5/8	3/4	1-3/8	4	.613
GMF19048	R.020	3/4	3/4	1	1-1/2	4	.738
GMF19863	R.030	3/4	3/4	1	1-1/2	4	.738
GMF19844	R.040	3/4	3/4	1	1-1/2	4	.738

Size	Radius Tolerance (Inch)	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to Ø1/4	±.0004	0~-.0005	h6
over Ø1/4	±.0006	0~-.0006	

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

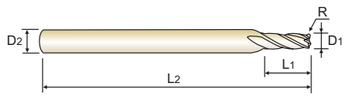
4G MILL END MILLS

GMF20 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE CORNER RADIUS

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





MG | 4 | 27°/30° | R ±.0008 | PLAIN | P.801

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
GMF20913	R.008	5/16	5/16	3/4	4
GMF20914	R.012	5/16	5/16	3/4	4
GMF20915	R.020	5/16	5/16	3/4	4
GMF20938	R.030	5/16	5/16	3/4	4
GMF20916	R.040	5/16	5/16	3/4	4
GMF20917	R.060	5/16	5/16	3/4	4
GMF20918	R.080	5/16	5/16	3/4	4

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◎ : Excellent ○ : Good

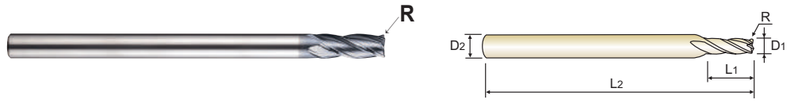
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

4G MILL END MILLS

GMF20 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE CORNER RADIUS

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



MG | 4 | 27°/30° | R ±.0008 | PLAIN | P.801

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
GMF20920	R.020	3/8	3/8	1	4
GMF20940	R.030	3/8	3/8	1	4
GMF20921	R.040	3/8	3/8	1	4
GMF20922	R.060	3/8	3/8	1	4
GMF20923	R.080	3/8	3/8	1	4
GMF20032	R.020	1/2	1/2	1-3/16	3-1/8
GMF20924	R.040	1/2	1/2	1-3/16	3-1/8
GMF20925	R.020	1/2	1/2	1-3/16	4-1/4
GMF20941	R.030	1/2	1/2	1-3/16	3-1/8
GMF20942	R.030	1/2	1/2	1-3/16	4-1/4
GMF20926	R.040	1/2	1/2	1-3/16	4-1/4
GMF20927	R.060	1/2	1/2	1-3/16	4-1/4
GMF20928	R.080	1/2	1/2	1-3/16	4-1/4
GMF20040	R.020	5/8	5/8	1-1/4	6
GMF20943	R.030	5/8	5/8	1-1/4	6
GMF20929	R.040	5/8	5/8	1-1/4	6
GMF20930	R.060	5/8	5/8	1-1/4	6
GMF20931	R.080	5/8	5/8	1-1/4	6
GMF20944	R.030	3/4	3/4	1-1/2	6
GMF20048	R.040	3/4	3/4	1-1/2	6
GMF20932	R.080	3/4	3/4	1-1/2	6

Mill Dia. Tolerance (Inch)	Corner Radius Tolerance (Inch)	Shank Dia. Tolerance
0~-.0012	±.0008	h6

◎ : Excellent ○ : Good

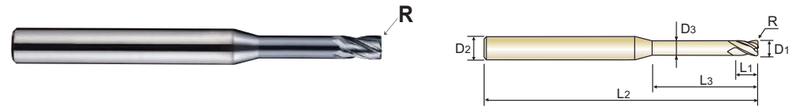
P					H	M	K	N						S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

4G MILL END MILLS

GMF21 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE CORNER RADIUS WITH NECK

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



MG | 4 | 27°/30° | R ±.0008 | PLAIN | P.802

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

P					H	M	K	N						S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

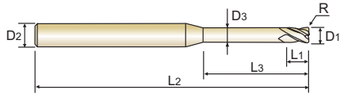
4G MILL END MILLS

GMF21 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE CORNER RADIUS WITH NECK

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





MG | 4 | 27°/30° | R ±.0008 | PLAIN | P.802

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

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

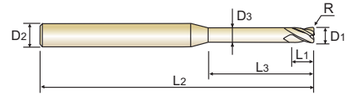
4G MILL END MILLS

GMF21 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE CORNER RADIUS WITH NECK

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





MG | 4 | 27°/30° | R ±.0008 | PLAIN | P.802

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
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	2-3/4	.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

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

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

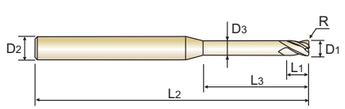
4G MILL END MILLS

GMF21 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE CORNER RADIUS WITH NECK

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- Due to Multiple Helix on 1/8" and over diameter end mills, vibration is minimized and tool life increased.
- 4 flute series has new designs to reduce vibrations





MG | 4 | 27°/30° | R ±.0008 | PLAIN | P.802

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
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

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

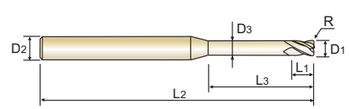
4G MILL END MILLS

GMF21 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE CORNER RADIUS WITH NECK

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





MG | 4 | 27°/30° | R ±.0008 | PLAIN | P.802

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
GMF21048	R.020	3/4	3/4	1	1-1/2	4	.738
GMF21819	R.030	3/4	3/4	1	1-1/2	4	.738
GMF21998	R.040	3/4	3/4	1	1-1/2	4	.738

Mill Dia. Tolerance (Inch)	Corner Radius Tolerance (Inch)	Shank Dia. Tolerance
0~-.0012	±.0008	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

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

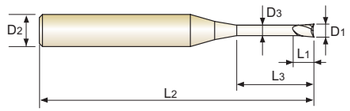
4G MILL END MILLS

GMF22 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE WITH NECK

- New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- Excellent performance when cutting steels, up to HRc55
- Due to Multiple Helix on 1/8" and over diameter end mills, vibration is minimized and tool life increased.
- For 1/32" and under 1/32" diameter sizes, double neck increases tool rigidity and minimizes vibration.
- Excellent for Rib Processing of various depths





MG | 2 | 30° | PLAIN

P.803~804

Unit : mm

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

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

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

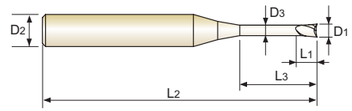
4G MILL END MILLS

GMF22 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE WITH NECK

- New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- Excellent performance when cutting steels, up to HRc55
- Due to Multiple Helix on 1/8" and over diameter end mills, vibration is minimized and tool life increased.
- For 1/32" and under 1/32" diameter sizes, double neck increases tool rigidity and minimizes vibration.
- Excellent for Rib Processing of various depths





MG | 2 | 30° | PLAIN

P.803~804

Unit : mm

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

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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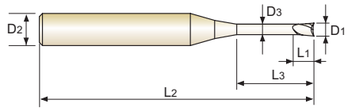
4G MILL END MILLS

GMF22 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE WITH NECK

- New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- Excellent performance when cutting steels, up to HRc55
- Due to Multiple Helix on 1/8" and over diameter end mills, vibration is minimized and tool life increased.
- For 1/32" and under 1/32" diameter sizes, double neck increases tool rigidity and minimizes vibration.
- Excellent for Rib Processing of various depths





MG | 2 | 30° | PLAIN

P.803~804

Unit : mm

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	h6
over Ø1/4	0~-.0006	

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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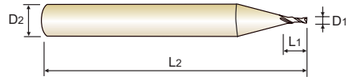
4G MILL END MILLS

GMF23 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE

- New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- Excellent performance when cutting steels, up to HRc55
- Sharp End tooth geometry allows more efficient cutting





MG | 2 | 30° | PLAIN

P.805

Unit : Inch

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

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

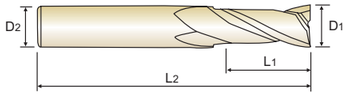
4G MILL END MILLS

GMF23 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE (3/16 SHANK)

- New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- Excellent performance when cutting steels, up to HRc55
- Sharp End tooth geometry allows more efficient cutting





MG | 2 | 30° | PLAIN | P.805

Unit : Inch

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

▶ NEXT PAGE

Size	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to Ø1/4	0~-.0005	h6
over Ø1/4	0~-.0006	

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

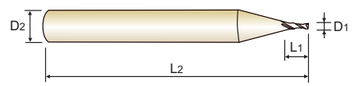
4G MILL END MILLS

GMF23 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE (1/8 Shank)

- New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- Excellent performance when cutting steels, up to HRc55
- Sharp End tooth geometry allows more efficient cutting





MG | 2 | 30° | PLAIN | P.805

Unit : Inch

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

Size	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to Ø1/4	0~-.0005	h6
over Ø1/4	0~-.0006	

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

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

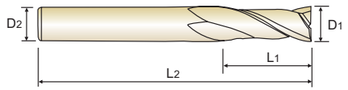
4G MILL END MILLS

GMF24 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG LENGTH

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





MG 2 30° PLAIN

P.806~807

Unit : Inch

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GMF24003	3/64	1/4	1/8	2-3/8
GMF24901	3/64	1/4	5/32	2-3/8
GMF24902	3/64	1/4	1/4	2-3/8
GMF24903	3/64	1/4	5/16	2-3/8
GMF24904	3/64	1/4	3/8	2-3/8
GMF24004	1/16	1/4	1/4	2-3/8
GMF24905	1/16	1/4	5/16	2-3/8
GMF24906	1/16	1/4	3/8	2-3/8
GMF24907	1/16	1/4	1/2	2-3/8
GMF24908	1/16	1/4	5/8	2-3/8
GMF24005	5/64	1/4	5/16	2-3/8
GMF24909	5/64	1/4	3/8	2-3/8
GMF24910	5/64	1/4	1/2	2-3/8
GMF24911	5/64	1/4	5/8	2-3/8
GMF24006	3/32	1/4	5/8	2-3/8
GMF24008	1/8	1/4	3/8	2-3/4
GMF24912	1/8	1/4	1/2	2-3/4
GMF24913	1/8	1/4	5/8	2-3/4
GMF24914	1/8	1/4	3/4	2-3/4
GMF24915	1/8	1/4	1	2-3/4
GMF24012	3/16	1/4	1/2	2-3/4
GMF24916	3/16	1/4	5/8	2-3/4
GMF24917	3/16	1/4	3/4	2-3/4
GMF24918	3/16	1/4	1	2-3/4
GMF24919	3/16	1/4	1-3/16	2-3/4
GMF24013	13/64	1/4	3/4	2-3/4
GMF24920	13/64	1/4	1	2-3/4
GMF24921	13/64	1/4	1-3/16	3-1/8
GMF24922	13/64	1/4	1-1/2	4
GMF24016	1/4	1/4	5/8	2-3/8
GMF24923	1/4	1/4	5/8	3-1/8
GMF24924	1/4	1/4	3/4	2-3/4
GMF24925	1/4	1/4	3/4	3-1/2
GMF24926	1/4	1/4	1	3

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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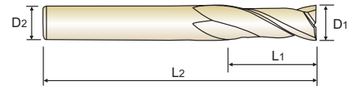
4G MILL END MILLS

GMF24 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG LENGTH

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





MG 2 30° PLAIN

P.806~807

Unit : Inch

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GMF24927	1/4	1/4	1-3/16	3-1/8
GMF24928	1/4	1/4	1-3/16	4
GMF24929	1/4	1/4	1-3/16	6
GMF24930	1/4	1/4	1-3/8	3-1/2
GMF24931	1/4	1/4	1-1/2	3-1/2
GMF24932	1/4	1/4	1-3/4	6
GMF24020	5/16	5/16	1	3-1/8
GMF24933	5/16	5/16	1-3/16	3-1/8
GMF24934	5/16	5/16	1-3/8	3-1/2
GMF24935	5/16	5/16	1-1/2	3-1/2
GMF24936	5/16	5/16	1-1/2	4-1/2
GMF24937	5/16	5/16	1-3/4	4
GMF24938	5/16	5/16	2	4
GMF24024	3/8	3/8	1-3/16	3-1/8
GMF24939	3/8	3/8	1-3/16	4
GMF24940	3/8	3/8	1-3/8	3-1/2
GMF24941	3/8	3/8	1-1/2	3-1/2
GMF24942	3/8	3/8	1-1/2	4-1/2
GMF24943	3/8	3/8	1-3/4	4
GMF24944	3/8	3/8	2	4
GMF24945	3/8	3/8	2-3/8	4-1/4
GMF24032	1/2	1/2	1-3/8	3-1/2
GMF24946	1/2	1/2	1-1/2	4
GMF24947	1/2	1/2	1-1/2	4-1/2
GMF24948	1/2	1/2	1-3/4	5
GMF24949	1/2	1/2	2	4
GMF24950	1/2	1/2	2-1/8	4-1/4
GMF24951	1/2	1/2	2-3/8	4-1/4
GMF24952	1/2	1/2	2-3/8	6
GMF24040	5/8	5/8	1-1/2	6
GMF24048	3/4	3/4	3-1/2	8
GMF24953	3/4	3/4	4-1/4	8

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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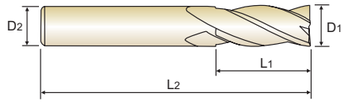
4G MILL END MILLS

GMF25 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE

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





MG | 4 | 27°/30° | PLAIN

D1<Ø1/8, 30° Helix

P.808

Unit : Inch

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

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

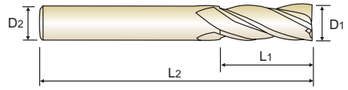
4G MILL END MILLS

GMF26 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE

- New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- Excellent performance when cutting steels, up to HRc55
- Due to Multiple Helix on 1/8″and over diameter end mills, vibration will be minimized and tool life increased.
- Due to gash land geometry used at end tooth, heavy duty cutting can be achieved.
  Various length products Available





MG | 4 | 35°/38° | PLAIN

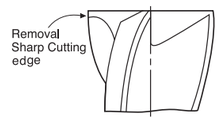
D1<Ø1/8, 38° Helix

P.808

Unit : Inch

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

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



◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

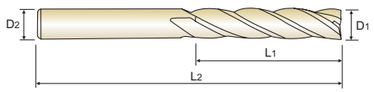
4G MILL END MILLS

GMF27 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG LENGTH

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





MG | 4 | 30° | PLAIN

P.809~810

Unit : Inch

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GMF27003	3/64	1/4	1/8	2-3/8
GMF27901	3/64	1/4	5/32	2-3/8
GMF27902	3/64	1/4	3/16	2-3/8
GMF27903	3/64	1/4	1/4	2-3/8
GMF27004	1/16	1/4	1/4	2-3/8
GMF27005	5/64	1/4	5/16	2-3/8
GMF27904	5/64	1/4	3/8	2-3/8
GMF27905	5/64	1/4	1/2	2-3/8
GMF27906	5/64	1/4	9/16	2-3/8
GMF27006	3/32	1/4	3/8	2-3/8
GMF27907	3/32	1/4	1/2	2-3/8
GMF27008	1/8	1/4	3/8	2-3/4
GMF27908	1/8	1/4	1/2	2-3/4
GMF27909	1/8	1/4	5/8	2-3/4
GMF27910	1/8	1/4	3/4	2-3/4
GMF27911	1/8	1/4	1	2-3/4
GMF27912	1/8	1/4	1-3/16	2-3/4
GMF27012	3/16	1/4	1/2	2-3/4
GMF27913	3/16	1/4	5/8	2-3/4
GMF27914	3/16	1/4	3/4	2-3/4
GMF27915	3/16	1/4	1	2-3/4
GMF27916	3/16	1/4	1-3/16	2-3/4
GMF27013	13/64	1/4	3/4	2-3/4
GMF27917	13/64	1/4	1	2-3/4
GMF27918	13/64	1/4	1-3/16	3-1/8
GMF27016	1/4	1/4	5/8	2-3/8
GMF27919	1/4	1/4	3/4	2-3/4
GMF27920	1/4	1/4	3/4	3-1/2
GMF27921	1/4	1/4	1	3
GMF27922	1/4	1/4	1-3/16	3-1/8
GMF27923	1/4	1/4	1-3/16	4
GMF27924	1/4	1/4	1-3/8	3-1/2
GMF27925	1/4	1/4	1-1/2	3-1/2

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

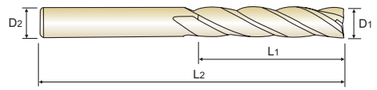
4G MILL END MILLS

GMF27 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG LENGTH

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





MG | 4 | 30° | PLAIN

P.809~810

Unit : Inch

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GMF27926	1/4	1/4	1-1/2	4-1/2
GMF27927	1/4	1/4	1-3/4	6
GMF27020	5/16	5/16	1	3-1/8
GMF27928	5/16	5/16	1-3/16	3-1/8
GMF27929	5/16	5/16	1-3/8	3-1/2
GMF27930	5/16	5/16	1-1/2	3-1/2
GMF27931	5/16	5/16	1-3/4	4
GMF27932	5/16	5/16	2	4
GMF27933	5/16	5/16	2	6
GMF27024	3/8	3/8	1-3/16	3-1/8
GMF27934	3/8	3/8	1-3/16	4
GMF27935	3/8	3/8	1-3/8	3-1/2
GMF27936	3/8	3/8	1-1/2	3-1/2
GMF27937	3/8	3/8	1-3/4	4
GMF27938	3/8	3/8	2	4
GMF27032	1/2	1/2	1-3/8	3-1/2
GMF27939	1/2	1/2	1-1/2	4
GMF27940	1/2	1/2	1-3/4	5
GMF27941	1/2	1/2	2	4
GMF27942	1/2	1/2	2-1/8	4-1/4
GMF27943	1/2	1/2	2-3/8	4-1/4
GMF27944	1/2	1/2	2-3/8	6
GMF27036	9/16	5/8	2	4-1/4
GMF27040	5/8	5/8	2	4-1/4
GMF27945	5/8	5/8	2-3/8	4-1/2
GMF27946	5/8	5/8	2-3/4	5
GMF27947	5/8	5/8	2-3/4	6
GMF27048	3/4	3/4	2-3/8	5
GMF27948	3/4	3/4	3-1/2	8
GMF27064	1	1	3-1/2	6

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

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

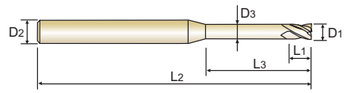
4G MILL END MILLS

GMF28 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE WITH NECK

- New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- Excellent performance when cutting steels, up to HRc55
- Many more various effective lengths and overall lengths than previous standard products.





MG | 4 | 30° | PLAIN P.811

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
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	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

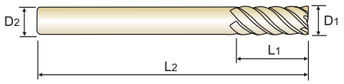
4G MILL END MILLS

GMF29 SERIES PLAIN SHANK

CARBIDE, 6 FLUTE 45° HELIX

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





MG | 6 | 45° | PLAIN P.812

Unit : Inch

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

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

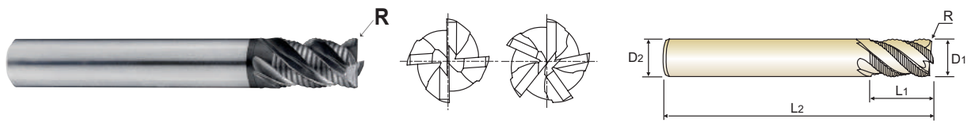
4G MILL END MILLS

X-SPEED ROUGHER

G907 SERIES PLAIN SHANK
G928 SERIES FLAT SHANK

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

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



MG 4&5 44°/45° PLAIN FLAT P.813

5 Flute, 44°/44.5°/45°

Unit : Inch

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

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~-.002	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			○	◎	○						

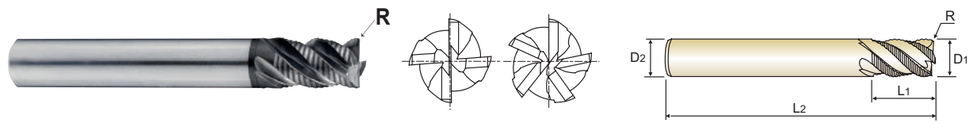
4G MILL END MILLS

X-SPEED ROUGHER

G908 SERIES PLAIN SHANK
G929 SERIES FLAT SHANK

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

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



MG 4&5 44°/45° PLAIN FLAT P.813

5 Flute, 44°/44.5°/45°

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
PLAIN	FLAT	R	D1	D2	L1	L2	
G90816	-	R.020	**1/4**	1/4	5/8	2-1/2	4
G90820	-	R.020	**5/16**	5/16	3/4	2-1/2	4
G90824	**G92924**	R.020	**3/8**	3/8	7/8	2-1/2	4
G90832	**G92932**	R.020	**1/2**	1/2	1	3	4
G90840	**G92940**	R.040	**5/8**	5/8	1-1/4	3-1/2	5
G90848	**G92948**	R.040	**3/4**	3/4	1-5/8	4	5
G90864	**G92964**	R.040	**1**	1	1-3/4	4-1/4	5

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~-.002	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			○	◎	○						

4G MILL END MILLS

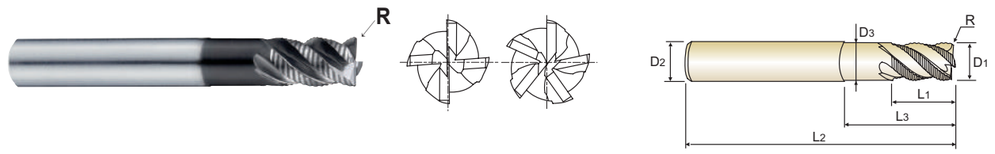
X-SPEED ROUGHER

G909 SERIES PLAIN SHANK

G930 SERIES FLAT SHANK

CARBIDE, MULTI FLUTE EXTENDED REACH ROUGHING CORNER RADIUS - FINE

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



MG | 4&5 | 44°/45° | PLAIN | FLAT

5 Flute, 44°/44.5°/45° P.813

Unit : Inch

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

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~-.002	h6

◎ : Excellent ○ : Good

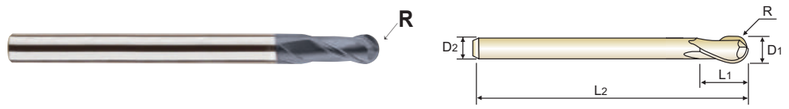
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			○	◎	○						

4G MILL END MILLS

SEMD98 SERIES PLAIN SHANK

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

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



NG | 2 | 30° | R ±0.005 (R≤3) | R ±0.010 (R>3) | PLAIN P.814

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEMD98001S	R0.05	0.1	4	0.1	40	Short
SEMD98001	R0.05	0.1	4	0.2	40	Regular
SEMD980013S	R0.05	0.1	3	0.2	40	3mm Shank
SEMD980015S	R0.075	0.15	4	0.15	40	Short
SEMD980015	R0.075	0.15	4	0.3	40	Regular
SEMD9800153S	R0.075	0.15	3	0.3	40	3mm Shank
SEMD98002S	R0.1	0.2	4	0.2	40	Short
SEMD98002	R0.1	0.2	4	0.4	40	Regular
SEMD980023S	R0.1	0.2	3	0.4	40	3mm Shank
SEMD98003S	R0.15	0.3	4	0.3	40	Short
SEMD98003	R0.15	0.3	4	0.6	40	Regular
SEMD980033S	R0.15	0.3	3	0.6	40	3mm Shank
SEMD98004S	R0.2	0.4	4	0.4	40	Short
SEMD98004	R0.2	0.4	4	0.8	40	Regular
SEMD980043S	R0.2	0.4	3	0.8	40	3mm Shank
SEMD98005S	R0.25	0.5	4	0.5	40	Short
SEMD98005	R0.25	0.5	4	1.0	40	Regular
SEMD980053S	R0.25	0.5	3	1.0	40	3mm Shank
SEMD98006S	R0.3	0.6	4	0.6	40	Short
SEMD98006	R0.3	0.6	4	1.2	40	Regular
SEMD980063S	R0.3	0.6	3	1.2	40	3mm Shank
SEMD98007S	R0.35	0.7	4	0.7	40	Short
SEMD98007	R0.35	0.7	4	1.4	40	Regular
SEMD980073S	R0.35	0.7	3	1.4	40	3mm Shank
SEMD98008S	R0.4	0.8	4	0.8	40	Short
SEMD98008	R0.4	0.8	4	1.6	40	Regular
SEMD980083S	R0.4	0.8	3	1.6	40	3mm Shank
SEMD98009S	R0.45	0.9	4	0.9	40	Short
SEMD98009	R0.45	0.9	4	1.8	40	Regular
SEMD980093S	R0.45	0.9	3	1.8	40	3mm Shank

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◎ : Excellent ○ : Good

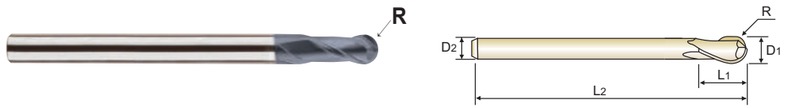
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

4G MILL END MILLS

SEMD98 SERIES PLAIN SHANK

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

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



NG | 2 | 30° | R ±0.005 (R≤3) | R ±0.010 (R>3) | PLAIN | P.814

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEMD98010040	R0.5	1.0	6	1.5	40	Short
SEMD980103S	R0.5	1.0	3	2.5	50	3mm Shank
SEMD980104S	R0.5	1.0	4	2.5	50	Regular
SEMD98010	R0.5	1.0	6	2.5	50	Regular
SEMD98010070	R0.5	1.0	6	2.5	70	Long Shank
SEMD98010100	R0.5	1.0	6	2.5	100	Long Shank
SEMD98012040	R0.6	1.2	6	2	40	Short
SEMD980123S	R0.6	1.2	3	3	50	3mm Shank
SEMD980124S	R0.6	1.2	4	3	50	Regular
SEMD98012	R0.6	1.2	6	3	50	Regular
SEMD98012070	R0.6	1.2	6	3	70	Long Shank
SEMD98012100	R0.6	1.2	6	3	100	Long Shank
SEMD98015040	R0.75	1.5	6	2.5	40	Short
SEMD980153S	R0.75	1.5	3	4	50	3mm Shank
SEMD980154S	R0.75	1.5	4	4	50	Regular
SEMD98015	R0.75	1.5	6	4	50	Regular
SEMD98015070	R0.75	1.5	6	4	70	Long Shank
SEMD98015100	R0.75	1.5	6	4	100	Long Shank
SEMD98020040	R1.0	2.0	6	3	40	Short
SEMD980203S	R1.0	2.0	3	5	50	3mm Shank
SEMD980204S	R1.0	2.0	4	5	50	Regular
SEMD98020	R1.0	2.0	6	5	50	Regular
SEMD98020080	R1.0	2.0	6	5	80	Long Shank
SEMD98020100	R1.0	2.0	6	5	100	Long Shank
SEMD98025040	R1.25	2.5	6	4	40	Short
SEMD980253S	R1.25	2.5	3	6	60	3mm Shank
SEMD980254S	R1.25	2.5	4	6	60	Regular
SEMD98025	R1.25	2.5	6	6	60	Regular
SEMD98025080	R1.25	2.5	6	6	80	Long Shank
SEMD98025100	R1.25	2.5	6	6	100	Long Shank

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◎ : Excellent ○ : Good

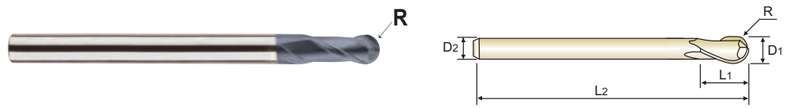
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

4G MILL END MILLS

SEMD98 SERIES PLAIN SHANK

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

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



NG | 2 | 30° | R ±0.005 (R≤3) | R ±0.010 (R>3) | PLAIN | P.814

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEMD98030040	R1.5	3.0	6	4.5	40	Short
SEMD980303S	R1.5	3.0	3	6	60	3mm Shank
SEMD980304S	R1.5	3.0	4	6	60	Regular
SEMD98030	R1.5	3.0	6	6	60	Regular
SEMD98030080	R1.5	3.0	6	6	80	Long Shank
SEMD98030100	R1.5	3.0	6	6	100	Long Shank
SEMD98035	R1.75	3.5	6	8	70	-
SEMD98040050	R2.0	4.0	6	6	50	Short
SEMD980404S	R2.0	4.0	4	8	70	Regular
SEMD98040	R2.0	4.0	6	8	70	Regular
SEMD980401004S	R2.0	4.0	4	8	100	Long Shank
SEMD980401204S	R2.0	4.0	4	8	120	Long Shank
SEMD98040100	R2.0	4.0	6	8	100	Long Shank
SEMD98040120	R2.0	4.0	6	8	120	Long Shank
SEMD98045	R2.25	4.5	6	9	80	-
SEMD98050060	R2.5	5.0	6	7.5	60	Short
SEMD98050	R2.5	5.0	6	10	80	Regular
SEMD980505S	R2.5	5.0	5	10	80	5mmShank
SEMD98055	R2.75	5.5	6	11	90	-
SEMD98060050	R3.0	6.0	6	9	50	Short
SEMD98060060	R3.0	6.0	6	9	60	Short
SEMD98060080	R3.0	6.0	6	9	80	Short
SEMD98060	R3.0	6.0	6	12	90	Regular
SEMD98060110	R3.0	6.0	6	12	110	Long Shank
SEMD98060130	R3.0	6.0	6	12	130	Long Shank
SEMD98060150	R3.0	6.0	6	12	150	Long Shank
SEMD98065	R3.25	6.5	8	13	90	-
SEMD98070	R3.5	7.0	8	14	90	-
SEMD98080050	R4.0	8.0	8	12	50	Short
SEMD98080060	R4.0	8.0	8	12	60	Short

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◎ : Excellent ○ : Good

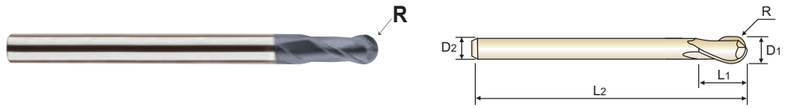
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

4G MILL END MILLS

SEMD98 SERIES PLAIN SHANK

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

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



NG | 2 | 30° | R ±0.005 (R≤3) | R ±0.010 (R>3) | PLAIN | P.814

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEMD98080080	R4.0	8.0	8	12	80	Short
SEMD98080090	R4.0	8.0	8	12	90	Short
SEMD98080	R4.0	8.0	8	14	100	Regular
SEMD98080130	R4.0	8.0	8	14	130	Long Shank
SEMD98080150	R4.0	8.0	8	14	150	Long Shank
SEMD98085	R4.25	8.5	10	16	100	-
SEMD98090	R4.5	9.0	10	18	100	-
SEMD98100050	R5.0	10.0	10	15	50	Short
SEMD98100060	R5.0	10.0	10	15	60	Short
SEMD98100080	R5.0	10.0	10	15	80	Short
SEMD98100090	R5.0	10.0	10	15	90	Short
SEMD98100	R5.0	10.0	10	18	100	Regular
SEMD98100130	R5.0	10.0	10	18	130	Long Shank
SEMD98100150	R5.0	10.0	10	18	150	Long Shank
SEMD98100180	R5.0	10.0	10	18	180	Long Shank
SEMD98100200	R5.0	10.0	10	18	200	Long Shank
SEMD98110	R5.5	11.0	12	20	100	-
SEMD98120060	R6.0	12.0	12	18	60	Short
SEMD98120080	R6.0	12.0	12	18	80	Short
SEMD98120090	R6.0	12.0	12	18	90	Short
SEMD98120100	R6.0	12.0	12	18	100	Short
SEMD98120	R6.0	12.0	12	22	110	Regular
SEMD98120130	R6.0	12.0	12	22	130	Long Shank
SEMD98120150	R6.0	12.0	12	22	150	Long Shank
SEMD98120180	R6.0	12.0	12	22	180	Long Shank
SEMD98120220	R6.0	12.0	12	22	200	Long Shank
SEMD98130	R6.5	13.0	12	24	100	-
SEMD98140	R7.0	14.0	12	26	100	Regular
SEMD9814014S	R7.0	14.0	14	26	100	-
SEMD9814016S	R7.0	14.0	16	26	100	-

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◎ : Excellent ○ : Good

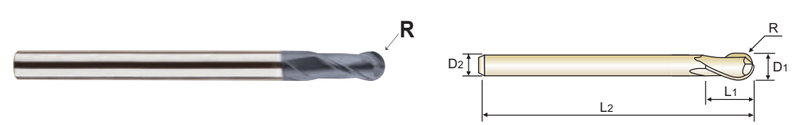
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

4G MILL END MILLS

SEMD98 SERIES PLAIN SHANK

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

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



NG | 2 | 30° | R ±0.005 (R≤3) | R ±0.010 (R>3) | PLAIN | P.814

◇ Call for Availability

Unit : mm

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

Size	Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to R3	±0.005	0~-0.012	h6
over R3	±0.010	0~-0.015	

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

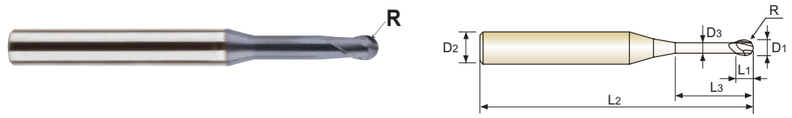
CARBIDE
HSS
CBN END MILLS
i-Xmill END MILLS
i-SMART MODULAR TYPE END MILLS
X5070 END MILLS
4G MILL END MILLS
X-POWER END MILLS
JET-POWER END MILLS
TitaNox -POWER END MILLS
V7 PLUS A END MILLS
V7 MILL INOX END MILLS
ALU-POWER HPC END MILLS
ALU-POWER END MILLS
D-POWER GRAPHITE END MILLS
D-POWER CFRP END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

4G MILL END MILLS

SEM846 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK BALL NOSE

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



NG | 2 | 30° | R ±0.005 (R≤3) | R ±0.010 (R>3) | PLAIN

P.815~819

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
SEM846001002	R0.05	0.1	4	0.1	0.2	40	0.085
SEM846001003	R0.05	0.1	4	0.1	0.3	40	0.085
SEM846001005	R0.05	0.1	4	0.1	0.5	40	0.085
SEM84600101	R0.05	0.1	4	0.1	1	40	0.085
SEM846002005	R0.1	0.2	4	0.2	0.5	40	0.17
SEM84600201	R0.1	0.2	4	0.2	1	40	0.17
SEM846002015	R0.1	0.2	4	0.2	1.5	40	0.17
SEM84600202	R0.1	0.2	4	0.2	2	40	0.17
SEM84600203	R0.1	0.2	4	0.2	3	40	0.17
SEM84600301	R0.15	0.3	4	0.3	1	40	0.27
SEM846003015	R0.15	0.3	4	0.3	1.5	40	0.27
SEM84600302	R0.15	0.3	4	0.3	2	40	0.27
SEM846003025	R0.15	0.3	4	0.3	2.5	40	0.27
SEM84600303	R0.15	0.3	4	0.3	3	40	0.27
SEM84600304	R0.15	0.3	4	0.3	4	40	0.27
SEM84600305	R0.15	0.3	4	0.3	5	40	0.27
SEM84600401	R0.2	0.4	4	0.4	1	40	0.37
SEM846004015	R0.2	0.4	4	0.4	1.5	40	0.37
SEM84600402	R0.2	0.4	4	0.4	2	40	0.37
SEM846004025	R0.2	0.4	4	0.4	2.5	40	0.37
SEM84600403	R0.2	0.4	4	0.4	3	40	0.37
SEM84600404	R0.2	0.4	4	0.4	4	40	0.37
SEM84600405	R0.2	0.4	4	0.4	5	40	0.37
SEM84600406	R0.2	0.4	4	0.4	6	40	0.37
SEM84600408	R0.2	0.4	4	0.4	8	40	0.37
SEM84600410	R0.2	0.4	4	0.4	10	40	0.37
SEM84600501	R0.25	0.5	4	0.5	1	45	0.45
SEM846005015	R0.25	0.5	4	0.5	1.5	45	0.45
SEM84600502	R0.25	0.5	4	0.5	2	45	0.45
SEM846005025	R0.25	0.5	4	0.5	2.5	45	0.45

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◎ : Excellent ○ : Good

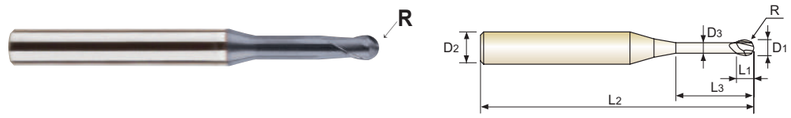
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

4G MILL END MILLS

SEM846 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK BALL NOSE

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



NG | 2 | 30° | R ±0.005 (R≤3) | R ±0.010 (R>3) | PLAIN

P.815~819

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
SEM84600503	R0.25	0.5	4	0.5	3	45	0.45
SEM84600504	R0.25	0.5	4	0.5	4	45	0.45
SEM84600505	R0.25	0.5	4	0.5	5	45	0.45
SEM84600506	R0.25	0.5	4	0.5	6	45	0.45
SEM84600508	R0.25	0.5	4	0.5	8	45	0.45
SEM84600510	R0.25	0.5	4	0.5	10	45	0.45
SEM84600512	R0.25	0.5	4	0.5	12	45	0.45
SEM84600514	R0.25	0.5	4	0.5	14	45	0.45
SEM84600516	R0.25	0.5	4	0.5	16	45	0.45
SEM84600601	R0.3	0.6	4	0.6	1	45	0.55
SEM84600602	R0.3	0.6	4	0.6	2	45	0.55
SEM84600603	R0.3	0.6	4	0.6	3	45	0.55
SEM84600604	R0.3	0.6	4	0.6	4	45	0.55
SEM84600605	R0.3	0.6	4	0.6	5	45	0.55
SEM84600606	R0.3	0.6	4	0.6	6	45	0.55
SEM84600608	R0.3	0.6	4	0.6	8	45	0.55
SEM84600610	R0.3	0.6	4	0.6	10	45	0.55
SEM84600612	R0.3	0.6	4	0.6	12	45	0.55
SEM84600614	R0.3	0.6	4	0.6	14	45	0.55
SEM84600616	R0.3	0.6	4	0.6	16	45	0.55
SEM84600702	R0.35	0.7	4	0.7	2	45	0.65
SEM84600704	R0.35	0.7	4	0.7	4	45	0.65
SEM84600706	R0.35	0.7	4	0.7	6	45	0.65
SEM84600708	R0.35	0.7	4	0.7	8	45	0.65
SEM84600710	R0.35	0.7	4	0.7	10	45	0.65
SEM84600712	R0.35	0.7	4	0.7	12	45	0.65
SEM84600801	R0.4	0.8	4	0.8	1	45	0.75
SEM84600802	R0.4	0.8	4	0.8	2	45	0.75
SEM84600803	R0.4	0.8	4	0.8	3	45	0.75
SEM84600804	R0.4	0.8	4	0.8	4	45	0.75

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

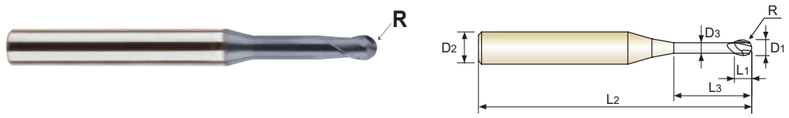
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HSS
CBN END MILLS
i-Xmill END MILLS
i-SMART MODULAR TYPE END MILLS
X5070 END MILLS
4G MILL END MILLS
X-POWER END MILLS
JET-POWER END MILLS
TitaNox -POWER END MILLS
V7 PLUS A END MILLS
V7 MILL INOX END MILLS
ALU-POWER HPC END MILLS
ALU-POWER END MILLS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

4G MILL END MILLS

SEM846 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK BALL NOSE

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



NG | 2 | 30° | R ±0.005 R≤3 | R ±0.010 R>3 | PLAIN

P.815~819

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
SEM84600805	R0.4	0.8	4	0.8	5	45	0.75
SEM84600806	R0.4	0.8	4	0.8	6	45	0.75
SEM84600808	R0.4	0.8	4	0.8	8	45	0.75
SEM84600810	R0.4	0.8	4	0.8	10	45	0.75
SEM84600812	R0.4	0.8	4	0.8	12	45	0.75
SEM84600814	R0.4	0.8	4	0.8	14	45	0.75
SEM84600816	R0.4	0.8	4	0.8	16	45	0.75
SEM84600820	R0.4	0.8	4	0.8	20	45	0.75
SEM84600904	R0.45	0.9	4	0.9	4	45	0.85
SEM84600906	R0.45	0.9	4	0.9	6	45	0.85
SEM84600908	R0.45	0.9	4	0.9	8	45	0.85
SEM84600910	R0.45	0.9	4	0.9	10	45	0.85
SEM84601002	R0.5	1.0	4	1	2	50	0.95
SEM84601003	R0.5	1.0	4	1	3	50	0.95
SEM84601004	R0.5	1.0	4	1	4	50	0.95
SEM84601005	R0.5	1.0	4	1	5	50	0.95
SEM84601006	R0.5	1.0	4	1	6	50	0.95
SEM84601007	R0.5	1.0	4	1	7	50	0.95
SEM84601008	R0.5	1.0	4	1	8	50	0.95
SEM84601009	R0.5	1.0	4	1	9	50	0.95
SEM84601010	R0.5	1.0	4	1	10	50	0.95
SEM84601012	R0.5	1.0	4	1	12	50	0.95
SEM84601014	R0.5	1.0	4	1	14	50	0.95
SEM84601016	R0.5	1.0	4	1	16	50	0.95
SEM84601018	R0.5	1.0	4	1	18	50	0.95
SEM84601020	R0.5	1.0	4	1	20	50	0.95
SEM84601022	R0.5	1.0	4	1	22	60	0.95
SEM84601026	R0.5	1.0	4	1	26	60	0.95
SEM84601030	R0.5	1.0	4	1	30	70	0.95
SEM84601040	R0.5	1.0	4	1	40	80	0.95

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◎ : Excellent ○ : Good

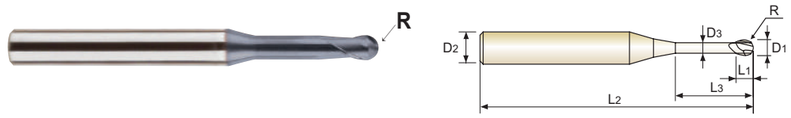
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

4G MILL END MILLS

SEM846 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK BALL NOSE

▶Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
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▶Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.



NG | 2 | 30° | R ±0.005 R≤3 | R ±0.010 R>3 | PLAIN

P.815~819

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
SEM84601050	R0.5	1.0	4	1	50	100	0.95
SEM84601204	R0.6	1.2	4	1.2	4	50	1.15
SEM84601206	R0.6	1.2	4	1.2	6	50	1.15
SEM84601208	R0.6	1.2	4	1.2	8	50	1.15
SEM84601210	R0.6	1.2	4	1.2	10	50	1.15
SEM84601212	R0.6	1.2	4	1.2	12	50	1.15
SEM84601216	R0.6	1.2	4	1.2	16	50	1.15
SEM84601220	R0.6	1.2	4	1.2	20	50	1.15
SEM84601226	R0.6	1.2	4	1.2	26	60	1.15
SEM84601406	R0.7	1.4	4	1.4	6	50	1.35
SEM84601408	R0.7	1.4	4	1.4	8	50	1.35
SEM84601410	R0.7	1.4	4	1.4	10	50	1.35
SEM84601412	R0.7	1.4	4	1.4	12	50	1.35
SEM84601416	R0.7	1.4	4	1.4	16	50	1.35
SEM84601503	R0.75	1.5	4	1.5	3	50	1.45
SEM84601504	R0.75	1.5	4	1.5	4	50	1.45
SEM84601505	R0.75	1.5	4	1.5	5	50	1.45
SEM84601506	R0.75	1.5	4	1.5	6	50	1.45
SEM84601507	R0.75	1.5	4	1.5	7	50	1.45
SEM84601508	R0.75	1.5	4	1.5	8	50	1.45
SEM84601510	R0.75	1.5	4	1.5	10	50	1.45
SEM84601512	R0.75	1.5	4	1.5	12	50	1.45
SEM84601514	R0.75	1.5	4	1.5	14	50	1.45
SEM84601516	R0.75	1.5	4	1.5	16	50	1.45
SEM84601518	R0.75	1.5	4	1.5	18	50	1.45
SEM84601520	R0.75	1.5	4	1.5	20	50	1.45
SEM84601522	R0.75	1.5	4	1.5	22	60	1.45
SEM84601526	R0.75	1.5	4	1.5	26	60	1.45
SEM84601530	R0.75	1.5	4	1.5	30	70	1.45
SEM84601535	R0.75	1.5	4	1.5	35	70	1.45

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

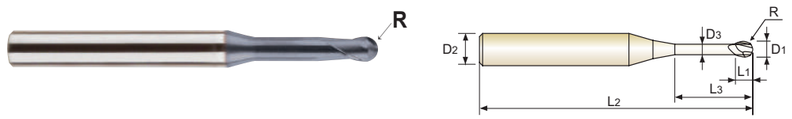
CARBIDE
HSS
CBN END MILLS
i-Xmill END MILLS
i-SMART MODULAR TYPE END MILLS
X5070 END MILLS
4G MILL END MILLS
X-POWER END MILLS
JET-POWER END MILLS
TitaNox -POWER END MILLS
V7 PLUS A END MILLS
V7 MILL INOX END MILLS
ALU-POWER HPC END MILLS
ALU-POWER END MILLS
D-POWER GRAPHITE END MILLS
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ROUTERS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

4G MILL END MILLS

SEM846 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK BALL NOSE

▶Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
▶Due to unique ball nose geometry and cutting edges, cutting force decreased, and wear resistance increased.
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NG | 2 | 30° | R ±0.005 R≤3 | R ±0.010 R>3 | PLAIN | P.815~819

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R	D1	D2	L1	L3	L2	D3
SEM84601540	R0.75	1.5	4	1.5	40	80	1.45
SEM84601604	R0.8	1.6	4	1.6	4	50	1.55
SEM84601606	R0.8	1.6	4	1.6	6	50	1.55
SEM84601608	R0.8	1.6	4	1.6	8	50	1.55
SEM84601610	R0.8	1.6	4	1.6	10	50	1.55
SEM84601612	R0.8	1.6	4	1.6	12	50	1.55
SEM84601616	R0.8	1.6	4	1.6	16	50	1.55
SEM84601620	R0.8	1.6	4	1.6	20	50	1.55
SEM84601804	R0.9	1.8	4	1.8	4	50	1.75
SEM84601806	R0.9	1.8	4	1.8	6	50	1.75
SEM84601808	R0.9	1.8	4	1.8	8	50	1.75
SEM84601810	R0.9	1.8	4	1.8	10	50	1.75
SEM84601812	R0.9	1.8	4	1.8	12	50	1.75
SEM84601816	R0.9	1.8	4	1.8	16	50	1.75
SEM84601820	R0.9	1.8	4	1.8	20	50	1.75
SEM84602004	R1.0	2.0	4	2	4	50	1.95
SEM84602006	R1.0	2.0	4	2	6	50	1.95
SEM84602008	R1.0	2.0	4	2	8	50	1.95
SEM84602010	R1.0	2.0	4	2	10	50	1.95
SEM84602012	R1.0	2.0	4	2	12	50	1.95
SEM84602014	R1.0	2.0	4	2	14	50	1.95
SEM84602016	R1.0	2.0	4	2	16	50	1.95
SEM84602018	R1.0	2.0	4	2	18	50	1.95
SEM84602020	R1.0	2.0	4	2	20	50	1.95
SEM84602022	R1.0	2.0	4	2	22	60	1.95
SEM84602026	R1.0	2.0	4	2	26	60	1.95
SEM84602030	R1.0	2.0	4	2	30	70	1.95
SEM84602035	R1.0	2.0	4	2	35	70	1.95
SEM84602040	R1.0	2.0	4	2	40	80	1.95
SEM84602045	R1.0	2.0	4	2	45	90	1.95

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◎ : Excellent ○ : Good

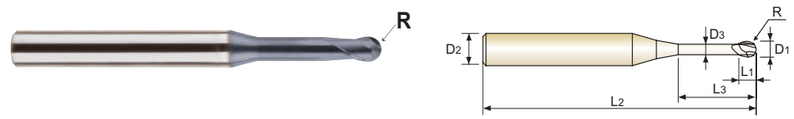
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

4G MILL END MILLS

SEM846 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK BALL NOSE

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



NG | 2 | 30° | R ±0.005 R≤3 | R ±0.010 R>3 | PLAIN | P.815~819

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R	D1	D2	L1	L3	L2	D3
SEM84602050	R1.0	2.0	4	2	50	100	1.95
SEM84602060	R1.0	2.0	4	2	60	110	1.95
SEM84602508	R1.25	2.5	4	2.5	8	50	2.40
SEM84602510	R1.25	2.5	4	2.5	10	50	2.40
SEM84602512	R1.25	2.5	4	2.5	12	50	2.40
SEM84602516	R1.25	2.5	4	2.5	16	50	2.40
SEM84602520	R1.25	2.5	4	2.5	20	50	2.40
SEM84602522	R1.25	2.5	4	2.5	22	60	2.40
SEM84602526	R1.25	2.5	4	2.5	26	60	2.40
SEM84602530	R1.25	2.5	4	2.5	30	70	2.40
SEM84602535	R1.25	2.5	4	2.5	35	70	2.40
SEM84602540	R1.25	2.5	4	2.5	40	80	2.40
SEM84602545	R1.25	2.5	4	2.5	45	90	2.40
SEM84602550	R1.25	2.5	4	2.5	50	100	2.40
SEM84603006	R1.5	3.0	6	3	6	50	2.85
SEM84603008	R1.5	3.0	6	3	8	50	2.85
SEM84603010	R1.5	3.0	6	3	10	50	2.85
SEM84603012	R1.5	3.0	6	3	12	50	2.85
SEM84603014	R1.5	3.0	6	3	14	60	2.85
SEM84603016	R1.5	3.0	6	3	16	60	2.85
SEM84603018	R1.5	3.0	6	3	18	60	2.85
SEM84603020	R1.5	3.0	6	3	20	60	2.85
SEM84603022	R1.5	3.0	6	3	22	65	2.85
SEM84603026	R1.5	3.0	6	3	26	65	2.85
SEM84603030	R1.5	3.0	6	3	30	70	2.85
SEM84603035	R1.5	3.0	6	3	35	70	2.85
SEM84603040	R1.5	3.0	6	3	40	80	2.85
SEM84603045	R1.5	3.0	6	3	45	90	2.85
SEM84603050	R1.5	3.0	6	3	50	100	2.85
SEM84603060	R1.5	3.0	6	3	60	100	2.85

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

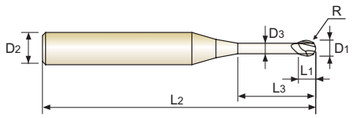
4G MILL END MILLS

SEM846 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK BALL NOSE

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





NG | 2 | 30° | R ±0.005 (R≤3) | R ±0.010 (R>3) | PLAIN | P.815~819

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R	D1	D2	L1	L3	L2	D3
SEM84604008	R2.0	**4.0**	6	4	8	50	3.85
SEM84604010	R2.0	**4.0**	6	4	10	50	3.85
SEM84604012	R2.0	**4.0**	6	4	12	50	3.85
SEM84604014	R2.0	**4.0**	6	4	14	60	3.85
SEM84604016	R2.0	**4.0**	6	4	16	60	3.85
SEM84604018	R2.0	**4.0**	6	4	18	60	3.85
SEM84604020	R2.0	**4.0**	6	4	20	60	3.85
SEM84604022	R2.0	**4.0**	6	4	22	65	3.85
SEM84604026	R2.0	**4.0**	6	4	26	65	3.85
SEM84604030	R2.0	**4.0**	6	4	30	70	3.85
SEM84604035	R2.0	**4.0**	6	4	35	70	3.85
SEM84604040	R2.0	**4.0**	6	4	40	80	3.85
SEM84604045	R2.0	**4.0**	6	4	45	90	3.85
SEM84604050	R2.0	**4.0**	6	4	50	100	3.85
SEM84604055	R2.0	**4.0**	6	4	55	100	3.85
SEM84604060	R2.0	**4.0**	6	4	60	100	3.85
SEM84605015	R2.5	**5.0**	6	6	15	60	4.85
SEM84605020	R2.5	**5.0**	6	6	20	60	4.85
SEM84605026	R2.5	**5.0**	6	6	26	65	4.85
SEM84605030	R2.5	**5.0**	6	6	30	70	4.85
SEM84605035	R2.5	**5.0**	6	6	35	70	4.85
SEM84605040	R2.5	**5.0**	6	6	40	80	4.85
SEM84605045	R2.5	**5.0**	6	6	45	90	4.85
SEM84605050	R2.5	**5.0**	6	6	50	100	4.85
SEM84605055	R2.5	**5.0**	6	6	55	100	4.85
SEM84605060	R2.5	**5.0**	6	6	60	100	4.85
SEM84606020	R3.0	**6.0**	6	8	20	60	5.85
SEM84606030	R3.0	**6.0**	6	8	30	60	5.85
SEM84606020090	R3.0	**6.0**	6	12	20	90	5.85
SEM84606030090	R3.0	**6.0**	6	12	30	90	5.85

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

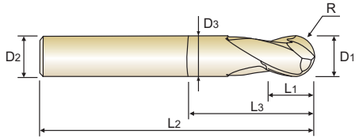
4G MILL END MILLS

SEM846 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK BALL NOSE

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▶Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.





NG | 2 | 30° | R ±0.005 (R≤3) | R ±0.010 (R>3) | PLAIN | P.815~819

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R	D1	D2	L1	L3	L2	D3
SEM84608025	R4.0	**8.0**	8	10	25	70	7.70
SEM84608035	R4.0	**8.0**	8	10	35	70	7.70
SEM84608025100	R4.0	**8.0**	8	14	25	100	7.70
SEM84608035100	R4.0	**8.0**	8	14	35	100	7.70
SEM84610030	R5.0	**10.0**	10	12	30	75	9.70
SEM84610040	R5.0	**10.0**	10	12	40	75	9.70
SEM84610030100	R5.0	**10.0**	10	18	30	100	9.70
SEM84610040100	R5.0	**10.0**	10	18	40	100	9.70
SEM84612032	R6.0	**12.0**	12	14	32	80	11.70
SEM84612045	R6.0	**12.0**	12	14	45	80	11.70
SEM84612032110	R6.0	**12.0**	12	22	32	110	11.70
SEM84612045110	R6.0	**12.0**	12	22	45	110	11.70

Size	Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to R3	±0.005	0~-0.012	h6
over R3	±0.010	0~-0.015	

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

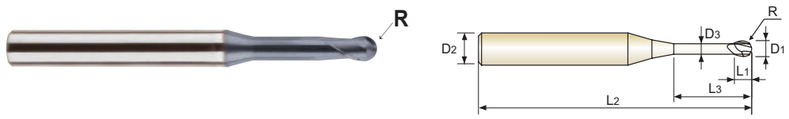
CARBIDE
HSS
CBN END MILLS
i-Xmill END MILLS
i-SMART MODULAR TYPE END MILLS
X5070 END MILLS
4G MILL END MILLS
X-POWER END MILLS
JET-POWER END MILLS
TitaNox -POWER END MILLS
V7 PLUS A END MILLS
V7 MILL INOX END MILLS
ALU-POWER HPC END MILLS
ALU-POWER END MILLS
D-POWER GRAPHITE END MILLS
D-POWER CFRP END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

4G MILL END MILLS

SEM846 SERIES PLAIN SHANK

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

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



NG | 2 | 30° | R ±0.005 | PLAIN

P.815~819

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R	D1	D2	L1	L3	L2	D3
SEM846005016S	R0.25	**0.5**	6	0.5	1	45	0.45
SEM846005026S	R0.25	**0.5**	6	0.5	2	45	0.45
SEM846005046S	R0.25	**0.5**	6	0.5	4	45	0.45
SEM846006016S	R0.3	**0.6**	6	0.6	1	45	0.55
SEM846006026S	R0.3	**0.6**	6	0.6	2	45	0.55
SEM846006036S	R0.3	**0.6**	6	0.6	3	45	0.55
SEM846006046S	R0.3	**0.6**	6	0.6	4	45	0.55
SEM846006056S	R0.3	**0.6**	6	0.6	5	45	0.55
SEM846006066S	R0.3	**0.6**	6	0.6	6	45	0.55
SEM846006086S	R0.3	**0.6**	6	0.6	8	45	0.55
SEM846006106S	R0.3	**0.6**	6	0.6	10	45	0.55
SEM846006126S	R0.3	**0.6**	6	0.6	12	45	0.55
SEM846006146S	R0.3	**0.6**	6	0.6	14	45	0.55
SEM846006166S	R0.3	**0.6**	6	0.6	16	45	0.55
SEM846008016S	R0.4	**0.8**	6	0.8	1	45	0.75
SEM846008026S	R0.4	**0.8**	6	0.8	2	45	0.75
SEM846008036S	R0.4	**0.8**	6	0.8	3	45	0.75
SEM846008046S	R0.4	**0.8**	6	0.8	4	45	0.75
SEM846008056S	R0.4	**0.8**	6	0.8	5	45	0.75
SEM846008066S	R0.4	**0.8**	6	0.8	6	45	0.75
SEM846008086S	R0.4	**0.8**	6	0.8	8	45	0.75
SEM846008106S	R0.4	**0.8**	6	0.8	10	45	0.75
SEM846008126S	R0.4	**0.8**	6	0.8	12	45	0.75
SEM846008146S	R0.4	**0.8**	6	0.8	14	45	0.75
SEM846008166S	R0.4	**0.8**	6	0.8	16	45	0.75
SEM846008206S	R0.4	**0.8**	6	0.8	20	45	0.75
SEM846010026S	R0.5	**1.0**	6	1	2	50	0.95
SEM846010036S	R0.5	**1.0**	6	1	3	50	0.95
SEM846010046S	R0.5	**1.0**	6	1	4	50	0.95
SEM846010056S	R0.5	**1.0**	6	1	5	50	0.95

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◎ : Excellent ○ : Good

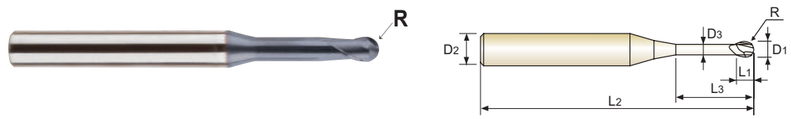
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

4G MILL END MILLS

SEM846 SERIES PLAIN SHANK

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

▶Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
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NG | 2 | 30° | R ±0.005 | PLAIN

P.815~819

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R	D1	D2	L1	L3	L2	D3
SEM846010066S	R0.5	**1.0**	6	1	6	50	0.95
SEM846010076S	R0.5	**1.0**	6	1	7	50	0.95
SEM846010086S	R0.5	**1.0**	6	1	8	50	0.95
SEM846010096S	R0.5	**1.0**	6	1	9	50	0.95
SEM846010106S	R0.5	**1.0**	6	1	10	50	0.95
SEM846010126S	R0.5	**1.0**	6	1	12	50	0.95
SEM846010146S	R0.5	**1.0**	6	1	14	50	0.95
SEM846010166S	R0.5	**1.0**	6	1	16	50	0.95
SEM846010186S	R0.5	**1.0**	6	1	18	50	0.95
SEM846010206S	R0.5	**1.0**	6	1	20	50	0.95
SEM846010226S	R0.5	**1.0**	6	1	22	60	0.95
SEM846010266S	R0.5	**1.0**	6	1	26	60	0.95
SEM846010306S	R0.5	**1.0**	6	1	30	70	0.95
SEM846015036S	R0.75	**1.5**	6	1.5	3	50	1.45
SEM846015046S	R0.75	**1.5**	6	1.5	4	50	1.45
SEM846015066S	R0.75	**1.5**	6	1.5	6	50	1.45
SEM846015086S	R0.75	**1.5**	6	1.5	8	50	1.45
SEM846015106S	R0.75	**1.5**	6	1.5	10	50	1.45
SEM846015126S	R0.75	**1.5**	6	1.5	12	50	1.45
SEM846015146S	R0.75	**1.5**	6	1.5	14	50	1.45
SEM846015166S	R0.75	**1.5**	6	1.5	16	50	1.45
SEM846015186S	R0.75	**1.5**	6	1.5	18	50	1.45
SEM846015206S	R0.75	**1.5**	6	1.5	20	50	1.45
SEM846015226S	R0.75	**1.5**	6	1.5	22	60	1.45
SEM846015266S	R0.75	**1.5**	6	1.5	26	60	1.45
SEM846015306S	R0.75	**1.5**	6	1.5	30	70	1.45
SEM846015356S	R0.75	**1.5**	6	1.5	35	70	1.45
SEM846015406S	R0.75	**1.5**	6	1.5	40	80	1.45
SEM846020046S	R1.0	**2.0**	6	2	4	50	1.95
SEM846020066S	R1.0	**2.0**	6	2	6	50	1.95

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

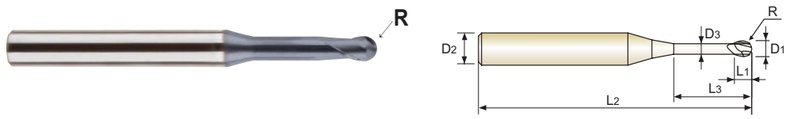
CARBIDE
HSS
CBN END MILLS
i-Xmill END MILLS
i-SMART MODULAR TYPE END MILLS
X5070 END MILLS
4G MILL END MILLS
X-POWER END MILLS
JET-POWER END MILLS
TitaNox -POWER END MILLS
V7 PLUS A END MILLS
V7 MILL INOX END MILLS
ALU-POWER HPC END MILLS
ALU-POWER END MILLS
D-POWER GRAPHITE END MILLS
D-POWER CFRP END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

4G MILL END MILLS

SEM846 SERIES PLAIN SHANK

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

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



NG | 2 | 30° | R ±0.005 | PLAIN

P.815~819

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
SEM846020086S	R1.0	**2.0**	6	2	8	50	1.95
SEM846020106S	R1.0	**2.0**	6	2	10	50	1.95
SEM846020126S	R1.0	**2.0**	6	2	12	50	1.95
SEM846020146S	R1.0	**2.0**	6	2	14	50	1.95
SEM846020166S	R1.0	**2.0**	6	2	16	50	1.95
SEM846020186S	R1.0	**2.0**	6	2	18	50	1.95
SEM846020206S	R1.0	**2.0**	6	2	20	50	1.95
SEM846020226S	R1.0	**2.0**	6	2	22	60	1.95
SEM846020266S	R1.0	**2.0**	6	2	26	60	1.95
SEM846020306S	R1.0	**2.0**	6	2	30	70	1.95
SEM846020356S	R1.0	**2.0**	6	2	35	70	1.95
SEM846020406S	R1.0	**2.0**	6	2	40	80	1.95
SEM846020456S	R1.0	**2.0**	6	2	45	90	1.95
SEM846020506S	R1.0	**2.0**	6	2	50	100	1.95

Mill Dia. Tolerance (mm)	Radius Tolerance (mm)	Shank Dia. Tolerance
0~-0.012	±0.005	h6

◎ : Excellent ○ : Good

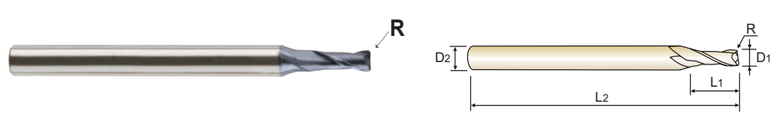
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

4G MILL END MILLS

SEMD99 SERIES PLAIN SHANK

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

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



MG | 2 | 30° | R ±0.010 (R≤6) | R ±0.015 (D>6) | PLAIN

P.820

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEMD99002002	R0.02	**0.2**	4	0.4	40	-
SEMD99002005	R0.05	**0.2**	4	0.4	40	-
SEMD99003002	R0.02	**0.3**	4	0.6	40	-
SEMD99003005	R0.05	**0.3**	4	0.6	40	-
SEMD99004005	R0.05	**0.4**	4	0.8	40	-
SEMD9900401	R0.1	**0.4**	4	0.8	40	-
SEMD99005005	R0.05	**0.5**	4	1.0	40	-
SEMD9900501	R0.1	**0.5**	4	1.0	40	-
SEMD99006005	R0.05	**0.6**	4	1.2	40	-
SEMD9900601	R0.1	**0.6**	4	1.2	40	-
SEMD9900602	R0.2	**0.6**	4	1.2	40	-
SEMD99007005	R0.05	**0.7**	4	1.4	40	-
SEMD9900701	R0.1	**0.7**	4	1.4	40	-
SEMD9900702	R0.2	**0.7**	4	1.4	40	-
SEMD99008005	R0.05	**0.8**	4	1.6	40	-
SEMD9900801	R0.1	**0.8**	4	1.6	40	-
SEMD9900802	R0.2	**0.8**	4	1.6	40	-
SEMD99009005	R0.05	**0.9**	4	1.8	40	-
SEMD9900901	R0.1	**0.9**	4	1.8	40	-
SEMD99010005	R0.05	**1.0**	6	2.5	50	-
SEMD9901001	R0.1	**1.0**	6	2.5	50	-
SEMD9901002	R0.2	**1.0**	6	2.5	50	-
SEMD9901003	R0.3	**1.0**	6	2.5	50	-
SEMD99012005	R0.05	**1.2**	6	3	50	-
SEMD9901201	R0.1	**1.2**	6	3	50	-
SEMD9901202	R0.2	**1.2**	6	3	50	-
SEMD9901203	R0.3	**1.2**	6	3	50	-
SEMD99015005	R0.05	**1.5**	6	4	50	-
SEMD9901501	R0.1	**1.5**	6	4	50	-

▶ NEXT PAGE

◎ : Excellent ○ : Good

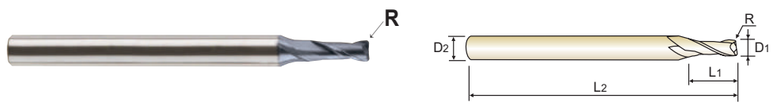
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

4G MILL END MILLS

SEMD99 SERIES PLAIN SHANK

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

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



MG | 2 | 30° | R ±0.010 (R≤6) | R ±0.015 (R>6) | PLAIN | P.820

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEMD9901502	R0.2	1.5	6	4	50	-
SEMD9901503	R0.3	1.5	6	4	50	-
SEMD9901505	R0.5	1.5	6	4	50	-
SEMD9902001	R0.1	2.0	6	6	50	-
SEMD9902002	R0.2	2.0	6	6	50	-
SEMD9902003	R0.3	2.0	6	6	50	-
SEMD9902005	R0.5	2.0	6	6	50	-
SEMD9902501	R0.1	2.5	6	7	60	-
SEMD9902502	R0.2	2.5	6	7	60	-
SEMD9902503	R0.3	2.5	6	7	60	-
SEMD9902505	R0.5	2.5	6	7	60	-
SEMD9903001	R0.1	3.0	6	8	60	-
SEMD9903002	R0.2	3.0	6	8	60	-
SEMD9903003	R0.3	3.0	6	8	60	-
SEMD9903005	R0.5	3.0	6	8	60	-
SEMD9903010	R1.0	3.0	6	8	60	-
SEMD9903501	R0.1	3.5	6	10	70	-
SEMD9903502	R0.2	3.5	6	10	70	-
SEMD9903503	R0.3	3.5	6	10	70	-
SEMD9903505	R0.5	3.5	6	10	70	-
SEMD990400014S	R0.1	4.0	4	10	70	4mm Shank
SEMD990400024S	R0.2	4.0	4	10	70	4mm Shank
SEMD990400034S	R0.3	4.0	4	10	70	4mm Shank
SEMD990400054S	R0.5	4.0	4	10	70	4mm Shank
SEMD990400104S	R1.0	4.0	4	10	70	4mm Shank
SEMD990400011004S	R0.1	4.0	4	10	100	4mm Shank
SEMD990400021004S	R0.2	4.0	4	10	100	4mm Shank
SEMD990400031004S	R0.3	4.0	4	10	100	4mm Shank
SEMD990400051004S	R0.5	4.0	4	10	100	4mm Shank

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◎ : Excellent ○ : Good

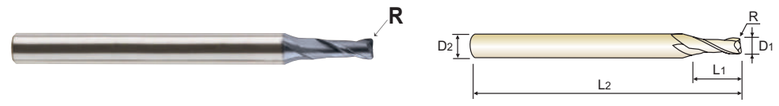
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

4G MILL END MILLS

SEMD99 SERIES PLAIN SHANK

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

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



MG | 2 | 30° | R ±0.010 (R≤6) | R ±0.015 (R>6) | PLAIN | P.820

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEMD990401010004S	R1.0	4.0	4	10	100	4mm Shank
SEMD9904001	R0.1	4.0	6	10	70	Regular
SEMD9904002	R0.2	4.0	6	10	70	Regular
SEMD9904003	R0.3	4.0	6	10	70	Regular
SEMD9904005	R0.5	4.0	6	10	70	Regular
SEMD9904010	R1.0	4.0	6	10	70	Regular
SEMD9904501	R0.1	4.5	6	11	80	-
SEMD9904502	R0.2	4.5	6	11	80	-
SEMD9904503	R0.3	4.5	6	11	80	-
SEMD9904505	R0.5	4.5	6	11	80	-
SEMD9905001	R0.1	5.0	6	13	90	-
SEMD9905002	R0.2	5.0	6	13	90	-
SEMD9905003	R0.3	5.0	6	13	90	-
SEMD9905005	R0.5	5.0	6	13	90	-
SEMD9905010	R1.0	5.0	6	13	90	-
SEMD9905501	R0.1	5.5	6	13	90	-
SEMD9905502	R0.2	5.5	6	13	90	-
SEMD9905503	R0.3	5.5	6	13	90	-
SEMD9905505	R0.5	5.5	6	13	90	-
SEMD9905510	R1.0	5.5	6	13	90	-
SEMD9906002060	R0.2	6.0	6	15	60	Short
SEMD9906003060	R0.3	6.0	6	15	60	Short
SEMD9906005060	R0.5	6.0	6	15	60	Short
SEMD9906010060	R1.0	6.0	6	15	60	Short
SEMD9906001	R0.1	6.0	6	15	90	Regular
SEMD9906002	R0.2	6.0	6	15	90	Regular
SEMD9906003	R0.3	6.0	6	15	90	Regular
SEMD9906005	R0.5	6.0	6	15	90	Regular
SEMD9906010	R1.0	6.0	6	15	90	Regular

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

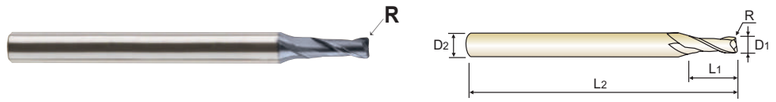
CARBIDE
HSS
CBN END MILLS
i-Xmill END MILLS
i-SMART MODULAR TYPE END MILLS
X5070 END MILLS
4G MILL END MILLS
X-POWER END MILLS
JET-POWER END MILLS
TitaNox -POWER END MILLS
V7 PLUS A END MILLS
V7 MILL INOX END MILLS
ALU-POWER HPC END MILLS
ALU-POWER END MILLS
D-POWER GRAPHITE END MILLS
D-POWER CFRP END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

4G MILL END MILLS

SEMD99 SERIES PLAIN SHANK

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

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



MG | 2 | 30° | R ±0.010 (R≤6) | R ±0.015 (R>6) | PLAIN | P.820

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEMD9906015	R1.5	**6.0**	6	15	90	Regular
SEMD9906020	R2.0	**6.0**	6	15	90	Regular
SEMD9906005	R0.5	**6.0**	6	15	110	Long Shank
SEMD9906010110	R1.0	**6.0**	6	15	110	Long Shank
SEMD9906005130	R0.5	**6.0**	6	15	130	Long Shank
SEMD9906010130	R1.0	**6.0**	6	15	130	Long Shank
SEMD9907001	R0.1	**7.0**	8	16	90	-
SEMD9907002	R0.2	**7.0**	8	16	90	-
SEMD9907003	R0.3	**7.0**	8	16	90	-
SEMD9907005	R0.5	**7.0**	8	16	90	-
SEMD9907010	R1.0	**7.0**	8	16	90	-
SEMD9907020	R2.0	**7.0**	8	16	90	-
SEMD9908003070	R0.3	**8.0**	8	20	70	Short
SEMD9908005070	R0.5	**8.0**	8	20	70	Short
SEMD9908010070	R1.0	**8.0**	8	20	70	Short
SEMD9908001	R0.1	**8.0**	8	20	100	Regular
SEMD9908002	R0.2	**8.0**	8	20	100	Regular
SEMD9908003	R0.3	**8.0**	8	20	100	Regular
SEMD9908005	R0.5	**8.0**	8	20	100	Regular
SEMD9908010	R1.0	**8.0**	8	20	100	Regular
SEMD9908015	R1.5	**8.0**	8	20	100	Regular
SEMD9908020	R2.0	**8.0**	8	20	100	Regular
SEMD9908025	R2.5	**8.0**	8	20	100	Regular
SEMD9908030	R3.0	**8.0**	8	20	100	Regular
SEMD9908005120	R0.5	**8.0**	8	20	120	Long Shank
SEMD9908010120	R1.0	**8.0**	8	20	120	Long Shank
SEMD9908015150	R0.5	**8.0**	8	20	150	Long Shank
SEMD9908010150	R1.0	**8.0**	8	20	150	Long Shank
SEMD9910003075	R0.3	**10.0**	10	25	75	Short

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◎ : Excellent ○ : Good

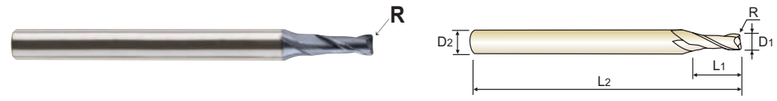
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

4G MILL END MILLS

SEMD99 SERIES PLAIN SHANK

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

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



MG | 2 | 30° | R ±0.010 (R≤6) | R ±0.015 (R>6) | PLAIN | P.820

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEMD9910005075	R0.5	**10.0**	10	25	75	Short
SEMD9910010075	R1.0	**10.0**	10	25	75	Short
SEMD9910001	R0.1	**10.0**	10	25	100	Regular
SEMD9910002	R0.2	**10.0**	10	25	100	Regular
SEMD9910003	R0.3	**10.0**	10	25	100	Regular
SEMD9910005	R0.5	**10.0**	10	25	100	Regular
SEMD9910010	R1.0	**10.0**	10	25	100	Regular
SEMD9910015	R1.5	**10.0**	10	25	100	Regular
SEMD9910020	R2.0	**10.0**	10	25	100	Regular
SEMD9910025	R2.5	**10.0**	10	25	100	Regular
SEMD9910030	R3.0	**10.0**	10	25	100	Regular
SEMD9910040	R4.0	**10.0**	10	25	100	Regular
SEMD9910005130	R0.5	**10.0**	10	25	130	Long Shank
SEMD9910010130	R1.0	**10.0**	10	25	130	Long Shank
SEMD9910005150	R0.5	**10.0**	10	25	150	Long Shank
SEMD9910010150	R1.0	**10.0**	10	25	150	Long Shank
SEMD9911002	R0.2	**11.0**	12	25	110	-
SEMD9911003	R0.3	**11.0**	12	25	110	-
SEMD9911005	R0.5	**11.0**	12	25	110	-
SEMD9911010	R1.0	**11.0**	12	25	110	-
SEMD9911020	R2.0	**11.0**	12	25	110	-
SEMD9912003080	R0.3	**12.0**	12	30	80	Short
SEMD9912005080	R0.5	**12.0**	12	30	80	Short
SEMD9912010080	R1.0	**12.0**	12	30	80	Short
SEMD9912001	R0.1	**12.0**	12	30	110	Regular
SEMD9912002	R0.2	**12.0**	12	30	110	Regular
SEMD9912003	R0.3	**12.0**	12	30	110	Regular
SEMD9912005	R0.5	**12.0**	12	30	110	Regular
SEMD9912010	R1.0	**12.0**	12	30	110	Regular

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

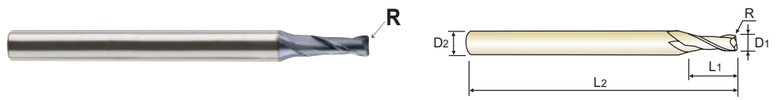
CARBIDE
HSS
CBN END MILLS
i-Xmill END MILLS
i-SMART MODULAR TYPE END MILLS
X5070 END MILLS
4G MILL END MILLS
X-POWER END MILLS
JET-POWER END MILLS
TitaNox -POWER END MILLS
V7 PLUS A END MILLS
V7 MILL INOX END MILLS
ALU-POWER HPC END MILLS
ALU-POWER END MILLS
D-POWER GRAPHITE END MILLS
D-POWER CFRP END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

4G MILL END MILLS

SEMD99 SERIES PLAIN SHANK

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

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



MG | 2 | 30° | R ±0.010 (R≤6) | R ±0.015 (R>6) | PLAIN | P.820

◇ Call for Availability

Unit : mm

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

Size	Corner Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	±0.010	0~-0.012	h6
over Ø6	±0.015	0~-0.015	

◎ : Excellent ○ : Good

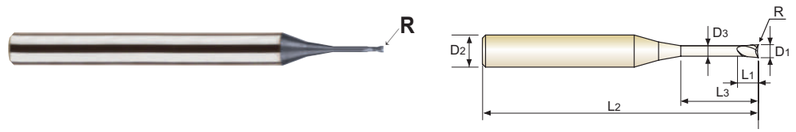
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

4G MILL END MILLS

SEME61 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK CORNER RADIUS

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



MG | 2 | 30° | R ±0.010 (R≤6) | R ±0.015 (R>6) | PLAIN | P.821~823

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Remark
SEME61002002005	R0.02	0.2	4	0.3	0.5	40	0.17	-
SEME6100200201	R0.02	0.2	4	0.3	1	40	0.17	-
SEME61002002015	R0.02	0.2	4	0.3	1.5	40	0.17	-
SEME6100200202	R0.02	0.2	4	0.3	2	40	0.17	-
SEME61002005005	R0.05	0.2	4	0.3	0.5	40	0.17	-
SEME6100200501	R0.05	0.2	4	0.3	1	40	0.17	-
SEME61002005015	R0.05	0.2	4	0.3	1.5	40	0.17	-
SEME6100200502	R0.05	0.2	4	0.3	2	40	0.17	-
SEME6100300201	R0.02	0.3	4	0.5	1	40	0.27	-
SEME6100300202	R0.02	0.3	4	0.5	2	40	0.27	-
SEME6100300203	R0.02	0.3	4	0.5	3	40	0.27	-
SEME6100300501	R0.05	0.3	4	0.5	1	40	0.27	-
SEME6100300502	R0.05	0.3	4	0.5	2	40	0.27	-
SEME6100300503	R0.05	0.3	4	0.5	3	40	0.27	-
SEME6100400501	R0.05	0.4	4	0.6	1	40	0.37	-
SEME61004005015	R0.05	0.4	4	0.6	1.5	40	0.37	-
SEME6100400502	R0.05	0.4	4	0.6	2	40	0.37	-
SEME61004005025	R0.05	0.4	4	0.6	2.5	40	0.37	-
SEME6100400503	R0.05	0.4	4	0.6	3	40	0.37	-
SEME6100400504	R0.05	0.4	4	0.6	4	40	0.37	-
SEME610040101	R0.1	0.4	4	0.6	1	40	0.37	-
SEME6100401015	R0.1	0.4	4	0.6	1.5	40	0.37	-
SEME610040102	R0.1	0.4	4	0.6	2	40	0.37	-
SEME6100401025	R0.1	0.4	4	0.6	2.5	40	0.37	-
SEME610040103	R0.1	0.4	4	0.6	3	40	0.37	-
SEME610040104	R0.1	0.4	4	0.6	4	40	0.37	-
SEME6100500501	R0.05	0.5	4	0.7	1	45	0.45	-
SEME61005005015	R0.05	0.5	4	0.7	1.5	45	0.45	-
SEME6100500502	R0.05	0.5	4	0.7	2	45	0.45	-
SEME61005005025	R0.05	0.5	4	0.7	2.5	45	0.45	-

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◎ : Excellent ○ : Good

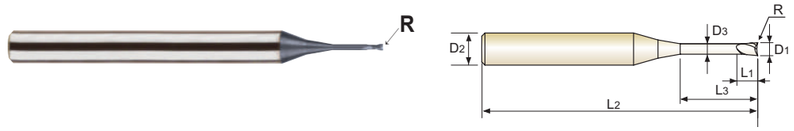
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

4G MILL END MILLS

SEME61 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK CORNER RADIUS

- ▶Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
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MG | 2 | 30° | R ±0.010 Rs6 | R ±0.015 D>6 | PLAIN

P.821~823

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Remark
SEME6100500503	R0.05	0.5	4	0.7	3	45	0.45	-
SEME6100500504	R0.05	0.5	4	0.7	4	45	0.45	-
SEME6100500505	R0.05	0.5	4	0.7	5	45	0.45	-
SEME6100500506	R0.05	0.5	4	0.7	6	45	0.45	-
SEME610050101	R0.1	0.5	4	0.7	1	45	0.45	-
SEME6100501015	R0.1	0.5	4	0.7	1.5	45	0.45	-
SEME610050102	R0.1	0.5	4	0.7	2	45	0.45	-
SEME6100501025	R0.1	0.5	4	0.7	2.5	45	0.45	-
SEME610050103	R0.1	0.5	4	0.7	3	45	0.45	-
SEME610050104	R0.1	0.5	4	0.7	4	45	0.45	-
SEME610050105	R0.1	0.5	4	0.7	5	45	0.45	-
SEME610050106	R0.1	0.5	4	0.7	6	45	0.45	-
SEME6100600502	R0.05	0.6	4	0.9	2	45	0.55	-
SEME6100600503	R0.05	0.6	4	0.9	3	45	0.55	-
SEME6100600504	R0.05	0.6	4	0.9	4	45	0.55	-
SEME6100600506	R0.05	0.6	4	0.9	6	45	0.55	-
SEME6100600508	R0.05	0.6	4	0.9	8	45	0.55	-
SEME6100600510	R0.05	0.6	4	0.9	10	45	0.55	-
SEME610060102	R0.1	0.6	4	0.9	2	45	0.55	-
SEME610060103	R0.1	0.6	4	0.9	3	45	0.55	-
SEME610060104	R0.1	0.6	4	0.9	4	45	0.55	-
SEME610060106	R0.1	0.6	4	0.9	6	45	0.55	-
SEME610060108	R0.1	0.6	4	0.9	8	45	0.55	-
SEME610060110	R0.1	0.6	4	0.9	10	45	0.55	-
SEME610060202	R0.2	0.6	4	0.9	2	45	0.55	-
SEME610060203	R0.2	0.6	4	0.9	3	45	0.55	-
SEME610060204	R0.2	0.6	4	0.9	4	45	0.55	-
SEME610060206	R0.2	0.6	4	0.9	6	45	0.55	-
SEME610060208	R0.2	0.6	4	0.9	8	45	0.55	-
SEME610060210	R0.2	0.6	4	0.9	10	45	0.55	-

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◎ : Excellent ○ : Good

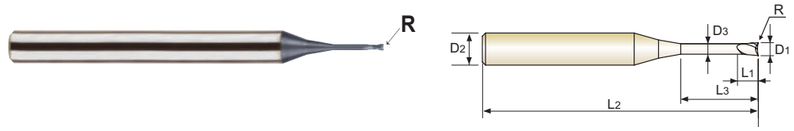
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

4G MILL END MILLS

SEME61 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK CORNER RADIUS

- ▶Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
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MG | 2 | 30° | R ±0.010 Rs6 | R ±0.015 D>6 | PLAIN

P.821~823

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Remark
SEME6100700502	R0.05	0.7	4	1.2	2	45	0.65	-
SEME6100700504	R0.05	0.7	4	1.2	4	45	0.65	-
SEME6100700506	R0.05	0.7	4	1.2	6	45	0.65	-
SEME6100700508	R0.05	0.7	4	1.2	8	45	0.65	-
SEME6100700510	R0.05	0.7	4	1.2	10	45	0.65	-
SEME6100700102	R0.1	0.7	4	1.2	2	45	0.65	-
SEME6100700104	R0.1	0.7	4	1.2	4	45	0.65	-
SEME6100700106	R0.1	0.7	4	1.2	6	45	0.65	-
SEME6100700108	R0.1	0.7	4	1.2	8	45	0.65	-
SEME6100700110	R0.1	0.7	4	1.2	10	45	0.65	-
SEME6100700202	R0.2	0.7	4	1.2	2	45	0.65	-
SEME6100700204	R0.2	0.7	4	1.2	4	45	0.65	-
SEME6100700206	R0.2	0.7	4	1.2	6	45	0.65	-
SEME6100700208	R0.2	0.7	4	1.2	8	45	0.65	-
SEME6100700210	R0.2	0.7	4	1.2	10	45	0.65	-
SEME6100800502	R0.05	0.8	4	1.2	2	45	0.75	-
SEME6100800503	R0.05	0.8	4	1.2	3	45	0.75	-
SEME6100800504	R0.05	0.8	4	1.2	4	45	0.75	-
SEME6100800506	R0.05	0.8	4	1.2	6	45	0.75	-
SEME6100800508	R0.05	0.8	4	1.2	8	45	0.75	-
SEME6100800510	R0.05	0.8	4	1.2	10	45	0.75	-
SEME6100800102	R0.1	0.8	4	1.2	2	45	0.75	-
SEME6100800103	R0.1	0.8	4	1.2	3	45	0.75	-
SEME6100800104	R0.1	0.8	4	1.2	4	45	0.75	-
SEME6100800106	R0.1	0.8	4	1.2	6	45	0.75	-
SEME6100800108	R0.1	0.8	4	1.2	8	45	0.75	-
SEME6100800110	R0.1	0.8	4	1.2	10	45	0.75	-
SEME6100800202	R0.2	0.8	4	1.2	2	45	0.75	-
SEME6100800203	R0.2	0.8	4	1.2	3	45	0.75	-
SEME6100800204	R0.2	0.8	4	1.2	4	45	0.75	-

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◎ : Excellent ○ : Good

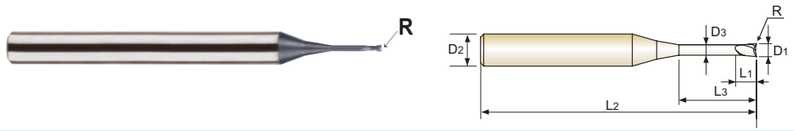
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Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

4G MILL END MILLS

SEME61 SERIES PLAIN SHANK

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MG | 2 | 30° | R ±0.010 Rs6 | R ±0.015 D>6 | PLAIN

P.821~823

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Remark
SEME610080206	R0.2	0.8	4	1.2	6	45	0.75	-
SEME610080208	R0.2	0.8	4	1.2	8	45	0.75	-
SEME610080210	R0.2	0.8	4	1.2	10	45	0.75	-
SEME6101000503	R0.05	1.0	4	1.5	3	50	0.95	-
SEME6101000504	R0.05	1.0	4	1.5	4	50	0.95	-
SEME6101000506	R0.05	1.0	4	1.5	6	50	0.95	-
SEME6101000508	R0.05	1.0	4	1.5	8	50	0.95	-
SEME6101000510	R0.05	1.0	4	1.5	10	50	0.95	-
SEME6101000512	R0.05	1.0	4	1.5	12	50	0.95	-
SEME6101000514	R0.05	1.0	4	1.5	14	50	0.95	-
SEME6101000516	R0.05	1.0	4	1.5	16	50	0.95	-
SEME6101000520	R0.05	1.0	4	1.5	20	50	0.95	-
SEME610100103	R0.1	1.0	4	1.5	3	50	0.95	-
SEME610100104	R0.1	1.0	4	1.5	4	50	0.95	-
SEME610100106	R0.1	1.0	4	1.5	6	50	0.95	-
SEME610100108	R0.1	1.0	4	1.5	8	50	0.95	-
SEME610100110	R0.1	1.0	4	1.5	10	50	0.95	-
SEME610100112	R0.1	1.0	4	1.5	12	50	0.95	-
SEME610100114	R0.1	1.0	4	1.5	14	50	0.95	-
SEME610100116	R0.1	1.0	4	1.5	16	50	0.95	-
SEME610100120	R0.1	1.0	4	1.5	20	50	0.95	-
SEME610100203	R0.2	1.0	4	1.5	3	50	0.95	-
SEME610100204	R0.2	1.0	4	1.5	4	50	0.95	-
SEME610100206	R0.2	1.0	4	1.5	6	50	0.95	-
SEME610100208	R0.2	1.0	4	1.5	8	50	0.95	-
SEME610100210	R0.2	1.0	4	1.5	10	50	0.95	-
SEME610100212	R0.2	1.0	4	1.5	12	50	0.95	-
SEME610100214	R0.2	1.0	4	1.5	14	50	0.95	-
SEME610100216	R0.2	1.0	4	1.5	16	50	0.95	-
SEME610100220	R0.2	1.0	4	1.5	20	50	0.95	-

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◎ : Excellent ○ : Good

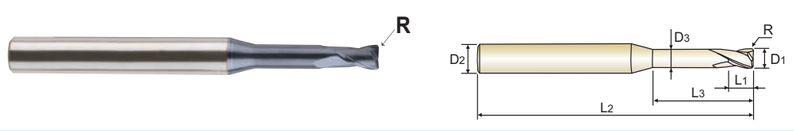
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Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

4G MILL END MILLS

SEME61 SERIES PLAIN SHANK

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MG | 2 | 30° | R ±0.010 Rs6 | R ±0.015 D>6 | PLAIN

P.821~823

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Remark
SEME610100303	R0.3	1.0	4	1.5	3	50	0.95	-
SEME610100304	R0.3	1.0	4	1.5	4	50	0.95	-
SEME610100306	R0.3	1.0	4	1.5	6	50	0.95	-
SEME610100308	R0.3	1.0	4	1.5	8	50	0.95	-
SEME610100310	R0.3	1.0	4	1.5	10	50	0.95	-
SEME610100312	R0.3	1.0	4	1.5	12	50	0.95	-
SEME610100314	R0.3	1.0	4	1.5	14	50	0.95	-
SEME610100316	R0.3	1.0	4	1.5	16	50	0.95	-
SEME610100320	R0.3	1.0	4	1.5	20	50	0.95	-
SEME6101200503	R0.05	1.2	4	1.8	3	50	1.15	-
SEME6101200504	R0.05	1.2	4	1.8	4	50	1.15	-
SEME6101200506	R0.05	1.2	4	1.8	6	50	1.15	-
SEME6101200508	R0.05	1.2	4	1.8	8	50	1.15	-
SEME6101200510	R0.05	1.2	4	1.8	10	50	1.15	-
SEME6101200512	R0.05	1.2	4	1.8	12	50	1.15	-
SEME6101200516	R0.05	1.2	4	1.8	16	50	1.15	-
SEME6101200520	R0.05	1.2	4	1.8	20	50	1.15	-
SEME6101201103	R0.1	1.2	4	1.8	3	50	1.15	-
SEME6101201104	R0.1	1.2	4	1.8	4	50	1.15	-
SEME6101201106	R0.1	1.2	4	1.8	6	50	1.15	-
SEME6101201108	R0.1	1.2	4	1.8	8	50	1.15	-
SEME6101201110	R0.1	1.2	4	1.8	10	50	1.15	-
SEME6101201112	R0.1	1.2	4	1.8	12	50	1.15	-
SEME6101201116	R0.1	1.2	4	1.8	16	50	1.15	-
SEME6101201120	R0.1	1.2	4	1.8	20	50	1.15	-
SEME6101202203	R0.2	1.2	4	1.8	3	50	1.15	-
SEME6101202204	R0.2	1.2	4	1.8	4	50	1.15	-
SEME6101202206	R0.2	1.2	4	1.8	6	50	1.15	-
SEME6101202208	R0.2	1.2	4	1.8	8	50	1.15	-
SEME6101202210	R0.2	1.2	4	1.8	10	50	1.15	-

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◎ : Excellent ○ : Good

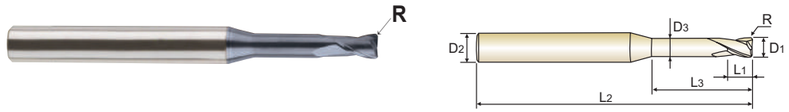
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

4G MILL END MILLS

SEME61 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK CORNER RADIUS

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



MG | 2 | 30° | R ±0.010 (Rs6) | R ±0.015 (D>6) | PLAIN

P.821~823

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Remark
	R	D1	D2	L1	L3	L2	D3	
SEME610120212	RO.2	1.2	4	1.8	12	50	1.15	-
SEME610120216	RO.2	1.2	4	1.8	16	50	1.15	-
SEME610120220	RO.2	1.2	4	1.8	20	50	1.15	-
SEME610120303	RO.3	1.2	4	1.8	3	50	1.15	-
SEME610120304	RO.3	1.2	4	1.8	4	50	1.15	-
SEME610120306	RO.3	1.2	4	1.8	6	50	1.15	-
SEME610120308	RO.3	1.2	4	1.8	8	50	1.15	-
SEME610120310	RO.3	1.2	4	1.8	10	50	1.15	-
SEME610120312	RO.3	1.2	4	1.8	12	50	1.15	-
SEME610120316	RO.3	1.2	4	1.8	16	50	1.15	-
SEME610120320	RO.3	1.2	4	1.8	20	50	1.15	-
SEME6101500504	RO.05	1.5	4	2.3	4	50	1.45	-
SEME6101500506	RO.05	1.5	4	2.3	6	50	1.45	-
SEME6101500508	RO.05	1.5	4	2.3	8	50	1.45	-
SEME6101500510	RO.05	1.5	4	2.3	10	50	1.45	-
SEME6101500512	RO.05	1.5	4	2.3	12	50	1.45	-
SEME6101500514	RO.05	1.5	4	2.3	14	50	1.45	-
SEME6101500516	RO.05	1.5	4	2.3	16	50	1.45	-
SEME6101500520	RO.05	1.5	4	2.3	20	50	1.45	-
SEME6101500522	RO.05	1.5	4	2.3	22	60	1.45	-
SEME6101500526	RO.05	1.5	4	2.3	26	60	1.45	-
SEME610150104	RO.1	1.5	4	2.3	4	50	1.45	-
SEME610150106	RO.1	1.5	4	2.3	6	50	1.45	-
SEME610150108	RO.1	1.5	4	2.3	8	50	1.45	-
SEME610150110	RO.1	1.5	4	2.3	10	50	1.45	-
SEME610150112	RO.1	1.5	4	2.3	12	50	1.45	-
SEME610150114	RO.1	1.5	4	2.3	14	50	1.45	-
SEME610150116	RO.1	1.5	4	2.3	16	50	1.45	-
SEME610150120	RO.1	1.5	4	2.3	20	50	1.45	-
SEME610150122	RO.1	1.5	4	2.3	22	60	1.45	-

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◎ : Excellent ○ : Good

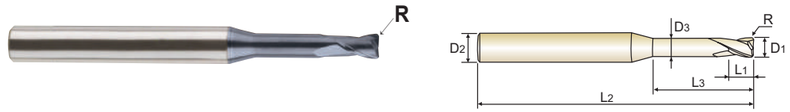
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

4G MILL END MILLS

SEME61 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK CORNER RADIUS

- ▶Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
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- ▶Available more various effective length and overall length end mills than previous standard products.



MG | 2 | 30° | R ±0.010 (Rs6) | R ±0.015 (D>6) | PLAIN

P.821~823

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Remark
	R	D1	D2	L1	L3	L2	D3	
SEME610150126	RO.1	1.5	4	2.3	26	60	1.45	-
SEME610150204	RO.2	1.5	4	2.3	4	50	1.45	-
SEME610150206	RO.2	1.5	4	2.3	6	50	1.45	-
SEME610150208	RO.2	1.5	4	2.3	8	50	1.45	-
SEME610150210	RO.2	1.5	4	2.3	10	50	1.45	-
SEME610150212	RO.2	1.5	4	2.3	12	50	1.45	-
SEME610150214	RO.2	1.5	4	2.3	14	50	1.45	-
SEME610150216	RO.2	1.5	4	2.3	16	50	1.45	-
SEME610150220	RO.2	1.5	4	2.3	20	50	1.45	-
SEME610150222	RO.2	1.5	4	2.3	22	60	1.45	-
SEME610150226	RO.2	1.5	4	2.3	26	60	1.45	-
SEME610150304	RO.3	1.5	4	2.3	4	50	1.45	-
SEME610150306	RO.3	1.5	4	2.3	6	50	1.45	-
SEME610150308	RO.3	1.5	4	2.3	8	50	1.45	-
SEME610150310	RO.3	1.5	4	2.3	10	50	1.45	-
SEME610150312	RO.3	1.5	4	2.3	12	50	1.45	-
SEME610150314	RO.3	1.5	4	2.3	14	50	1.45	-
SEME610150316	RO.3	1.5	4	2.3	16	50	1.45	-
SEME610150320	RO.3	1.5	4	2.3	20	50	1.45	-
SEME610150322	RO.3	1.5	4	2.3	22	60	1.45	-
SEME610150326	RO.3	1.5	4	2.3	26	60	1.45	-
SEME610150504	RO.5	1.5	4	2.3	4	50	1.45	-
SEME610150506	RO.5	1.5	4	2.3	6	50	1.45	-
SEME610150508	RO.5	1.5	4	2.3	8	50	1.45	-
SEME610150510	RO.5	1.5	4	2.3	10	50	1.45	-
SEME610150512	RO.5	1.5	4	2.3	12	50	1.45	-
SEME610150514	RO.5	1.5	4	2.3	14	50	1.45	-
SEME610150516	RO.5	1.5	4	2.3	16	50	1.45	-
SEME610150520	RO.5	1.5	4	2.3	20	50	1.45	-
SEME610150522	RO.5	1.5	4	2.3	22	60	1.45	-

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◎ : Excellent ○ : Good

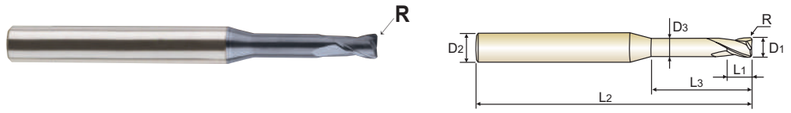
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

4G MILL END MILLS

SEME61 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK CORNER RADIUS

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



MG | 2 | 30° | R ±0.010 Rs6 | R ±0.015 D>6 | PLAIN

P.821~823

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Remark
SEME610150526	R0.5	1.5	4	2.3	26	60	1.45	-
SEME610200106	R0.1	2.0	4	3	6	50	1.95	-
SEME610200108	R0.1	2.0	4	3	8	50	1.95	-
SEME610200110	R0.1	2.0	4	3	10	50	1.95	-
SEME610200112	R0.1	2.0	4	3	12	50	1.95	-
SEME610200114	R0.1	2.0	4	3	14	50	1.95	-
SEME610200116	R0.1	2.0	4	3	16	50	1.95	-
SEME610200120	R0.1	2.0	4	3	20	50	1.95	-
SEME610200122	R0.1	2.0	4	3	22	60	1.95	-
SEME610200126	R0.1	2.0	4	3	26	60	1.95	-
SEME610200130	R0.1	2.0	4	3	30	70	1.95	-
SEME610200206	R0.2	2.0	4	3	6	50	1.95	-
SEME610200208	R0.2	2.0	4	3	8	50	1.95	-
SEME610200210	R0.2	2.0	4	3	10	50	1.95	-
SEME610200212	R0.2	2.0	4	3	12	50	1.95	-
SEME610200214	R0.2	2.0	4	3	14	50	1.95	-
SEME610200216	R0.2	2.0	4	3	16	50	1.95	-
SEME610200220	R0.2	2.0	4	3	20	50	1.95	-
SEME610200222	R0.2	2.0	4	3	22	60	1.95	-
SEME610200226	R0.2	2.0	4	3	26	60	1.95	-
SEME610200230	R0.2	2.0	4	3	30	70	1.95	-
SEME610200306	R0.3	2.0	4	3	6	50	1.95	-
SEME610200308	R0.3	2.0	4	3	8	50	1.95	-
SEME610200310	R0.3	2.0	4	3	10	50	1.95	-
SEME610200312	R0.3	2.0	4	3	12	50	1.95	-
SEME610200314	R0.3	2.0	4	3	14	50	1.95	-
SEME610200316	R0.3	2.0	4	3	16	50	1.95	-
SEME610200320	R0.3	2.0	4	3	20	50	1.95	-
SEME610200322	R0.3	2.0	4	3	22	60	1.95	-
SEME610200326	R0.3	2.0	4	3	26	60	1.95	-

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◎ : Excellent ○ : Good

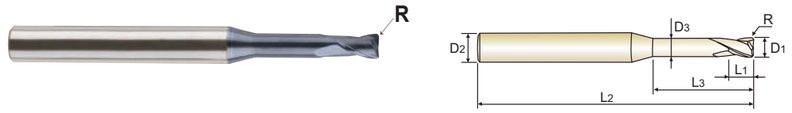
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

4G MILL END MILLS

SEME61 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK CORNER RADIUS

▶Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
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MG | 2 | 30° | R ±0.010 Rs6 | R ±0.015 D>6 | PLAIN

P.821~823

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Remark
SEME610200330	R0.3	2.0	4	3	30	70	1.95	-
SEME610200506	R0.5	2.0	4	3	6	50	1.95	-
SEME610200508	R0.5	2.0	4	3	8	50	1.95	-
SEME610200510	R0.5	2.0	4	3	10	50	1.95	-
SEME610200512	R0.5	2.0	4	3	12	50	1.95	-
SEME610200514	R0.5	2.0	4	3	14	50	1.95	-
SEME610200516	R0.5	2.0	4	3	16	50	1.95	-
SEME610200520	R0.5	2.0	4	3	20	50	1.95	-
SEME610200522	R0.5	2.0	4	3	22	60	1.95	-
SEME610200526	R0.5	2.0	4	3	26	60	1.95	-
SEME610200530	R0.5	2.0	4	3	30	70	1.95	-
SEME610250108	R0.1	2.5	4	4	8	50	2.40	-
SEME610250110	R0.1	2.5	4	4	10	50	2.40	-
SEME610250112	R0.1	2.5	4	4	12	50	2.40	-
SEME610250114	R0.1	2.5	4	4	14	50	2.40	-
SEME610250116	R0.1	2.5	4	4	16	50	2.40	-
SEME610250120	R0.1	2.5	4	4	20	50	2.40	-
SEME610250126	R0.1	2.5	4	4	26	60	2.40	-
SEME610250130	R0.1	2.5	4	4	30	70	2.40	-
SEME610250208	R0.2	2.5	4	4	8	50	2.40	-
SEME610250210	R0.2	2.5	4	4	10	50	2.40	-
SEME610250212	R0.2	2.5	4	4	12	50	2.40	-
SEME610250214	R0.2	2.5	4	4	14	50	2.40	-
SEME610250216	R0.2	2.5	4	4	16	50	2.40	-
SEME610250220	R0.2	2.5	4	4	20	50	2.40	-
SEME610250226	R0.2	2.5	4	4	26	60	2.40	-
SEME610250230	R0.2	2.5	4	4	30	70	2.40	-
SEME610250308	R0.3	2.5	4	4	8	50	2.40	-
SEME610250310	R0.3	2.5	4	4	10	50	2.40	-
SEME610250312	R0.3	2.5	4	4	12	50	2.40	-

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

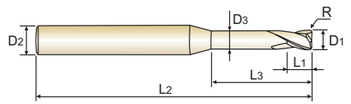
4G MILL END MILLS

SEME61 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK CORNER RADIUS

- ▶Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
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MG | 2 | 30° | R ±0.010 Rs6 | R ±0.015 D>6 | PLAIN

P.821~823

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Remark
SEME610250314	R0.3	2.5	4	4	14	50	2.40	-
SEME610250316	R0.3	2.5	4	4	16	50	2.40	-
SEME610250320	R0.3	2.5	4	4	20	50	2.40	-
SEME610250326	R0.3	2.5	4	4	26	60	2.40	-
SEME610250330	R0.3	2.5	4	4	30	70	2.40	-
SEME610250508	R0.5	2.5	6	4	8	50	2.40	-
SEME610250510	R0.5	2.5	6	4	10	50	2.40	-
SEME610250512	R0.5	2.5	6	4	12	50	2.40	-
SEME610250514	R0.5	2.5	6	4	14	50	2.40	-
SEME610250516	R0.5	2.5	6	4	16	50	2.40	-
SEME610250520	R0.5	2.5	6	4	20	50	2.40	-
SEME610250526	R0.5	2.5	6	4	26	60	2.40	-
SEME610250530	R0.5	2.5	6	4	30	70	2.40	-
SEME610300108	R0.1	3.0	6	4.5	8	50	2.85	-
SEME610300110	R0.1	3.0	6	4.5	10	50	2.85	-
SEME610300112	R0.1	3.0	6	4.5	12	50	2.85	-
SEME610300114	R0.1	3.0	6	4.5	14	60	2.85	-
SEME610300116	R0.1	3.0	6	4.5	16	60	2.85	-
SEME610300120	R0.1	3.0	6	4.5	20	60	2.85	-
SEME610300126	R0.1	3.0	6	4.5	26	65	2.85	-
SEME610300130	R0.1	3.0	6	4.5	30	70	2.85	-
SEME610300135	R0.1	3.0	6	4.5	35	70	2.85	-
SEME610300140	R0.1	3.0	6	4.5	40	80	2.85	-
SEME610300208	R0.2	3.0	6	4.5	8	50	2.85	-
SEME610300210	R0.2	3.0	6	4.5	10	50	2.85	-
SEME610300212	R0.2	3.0	6	4.5	12	50	2.85	-
SEME610300214	R0.2	3.0	6	4.5	14	60	2.85	-
SEME610300216	R0.2	3.0	6	4.5	16	60	2.85	-
SEME610300220	R0.2	3.0	6	4.5	20	60	2.85	-
SEME610300226	R0.2	3.0	6	4.5	26	65	2.85	-

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

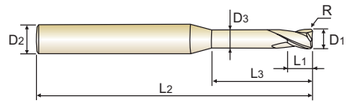
4G MILL END MILLS

SEME61 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK CORNER RADIUS

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





MG | 2 | 30° | R ±0.010 Rs6 | R ±0.015 D>6 | PLAIN

P.821~823

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Remark
SEME610300230	R0.2	3.0	6	4.5	30	70	2.85	-
SEME610300235	R0.2	3.0	6	4.5	35	70	2.85	-
SEME610300240	R0.2	3.0	6	4.5	40	80	2.85	-
SEME610300308	R0.3	3.0	6	4.5	8	50	2.85	-
SEME610300310	R0.3	3.0	6	4.5	10	50	2.85	-
SEME610300312	R0.3	3.0	6	4.5	12	50	2.85	-
SEME610300314	R0.3	3.0	6	4.5	14	60	2.85	-
SEME610300316	R0.3	3.0	6	4.5	16	60	2.85	-
SEME610300320	R0.3	3.0	6	4.5	20	60	2.85	-
SEME610300326	R0.3	3.0	6	4.5	26	65	2.85	-
SEME610300330	R0.3	3.0	6	4.5	30	70	2.85	-
SEME610300335	R0.3	3.0	6	4.5	35	70	2.85	-
SEME610300340	R0.3	3.0	6	4.5	40	80	2.85	-
SEME610300508	R0.5	3.0	6	4.5	8	50	2.85	-
SEME610300510	R0.5	3.0	6	4.5	10	50	2.85	-
SEME610300512	R0.5	3.0	6	4.5	12	50	2.85	-
SEME610300514	R0.5	3.0	6	4.5	14	60	2.85	-
SEME610300516	R0.5	3.0	6	4.5	16	60	2.85	-
SEME610300520	R0.5	3.0	6	4.5	20	60	2.85	-
SEME610300526	R0.5	3.0	6	4.5	26	65	2.85	-
SEME610300530	R0.5	3.0	6	4.5	30	70	2.85	-
SEME610300535	R0.5	3.0	6	4.5	35	70	2.85	-
SEME610300540	R0.5	3.0	6	4.5	40	80	2.85	-
SEME610301008	R1.0	3.0	6	4.5	8	50	2.85	-
SEME610301010	R1.0	3.0	6	4.5	10	50	2.85	-
SEME610301012	R1.0	3.0	6	4.5	12	50	2.85	-
SEME610301014	R1.0	3.0	6	4.5	14	60	2.85	-
SEME610301016	R1.0	3.0	6	4.5	16	60	2.85	-
SEME610301020	R1.0	3.0	6	4.5	20	60	2.85	-
SEME610301026	R1.0	3.0	6	4.5	26	65	2.85	-

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◎ : Excellent ○ : Good

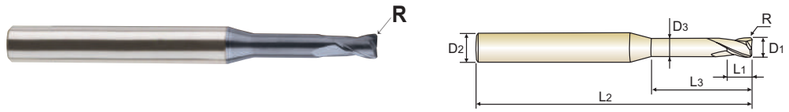
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

4G MILL END MILLS

SEME61 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK CORNER RADIUS

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



MG | 2 | 30° | R ±0.010 Rs6 | R ±0.015 D>6 | PLAIN

P.821~823

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Remark
	R	D1	D2	L1	L3	L2	D3	
SEME610301030	R1.0	3.0	6	4.5	30	70	2.85	-
SEME610301035	R1.0	3.0	6	4.5	35	70	2.85	-
SEME610301040	R1.0	3.0	6	4.5	40	80	2.85	-
SEME610400110	R0.1	4.0	6	6	10	50	3.85	-
SEME610400112	R0.1	4.0	6	6	12	50	3.85	-
SEME610400114	R0.1	4.0	6	6	14	60	3.85	-
SEME610400116	R0.1	4.0	6	6	16	60	3.85	-
SEME610400120	R0.1	4.0	6	6	20	60	3.85	-
SEME610400126	R0.1	4.0	6	6	26	65	3.85	-
SEME610400130	R0.1	4.0	6	6	30	70	3.85	-
SEME610400135	R0.1	4.0	6	6	35	70	3.85	-
SEME610400140	R0.1	4.0	6	6	40	80	3.85	-
SEME610400145	R0.1	4.0	6	6	45	90	3.85	-
SEME610400150	R0.1	4.0	6	6	50	100	3.85	-
SEME610400210	R0.2	4.0	6	6	10	50	3.85	-
SEME610400212	R0.2	4.0	6	6	12	50	3.85	-
SEME610400214	R0.2	4.0	6	6	14	60	3.85	-
SEME610400216	R0.2	4.0	6	6	16	60	3.85	-
SEME610400220	R0.2	4.0	6	6	20	60	3.85	-
SEME610400226	R0.2	4.0	6	6	26	65	3.85	-
SEME610400230	R0.2	4.0	6	6	30	70	3.85	-
SEME610400235	R0.2	4.0	6	6	35	70	3.85	-
SEME610400240	R0.2	4.0	6	6	40	80	3.85	-
SEME610400245	R0.2	4.0	6	6	45	90	3.85	-
SEME610400250	R0.2	4.0	6	6	50	100	3.85	-
SEME610400310	R0.3	4.0	6	6	10	50	3.85	-
SEME610400312	R0.3	4.0	6	6	12	50	3.85	-
SEME610400314	R0.3	4.0	6	6	14	50	3.85	-
SEME610400316	R0.3	4.0	6	6	16	50	3.85	-
SEME610400320	R0.3	4.0	6	6	20	50	3.85	-

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◎ : Excellent ○ : Good

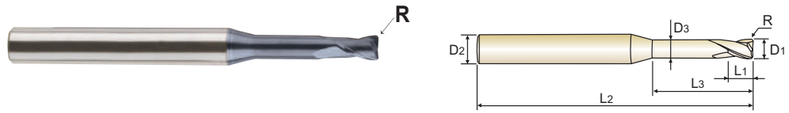
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

4G MILL END MILLS

SEME61 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK CORNER RADIUS

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



MG | 2 | 30° | R ±0.010 Rs6 | R ±0.015 D>6 | PLAIN

P.821~823

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Remark
	R	D1	D2	L1	L3	L2	D3	
SEME610400326	R0.3	4.0	6	6	26	65	3.85	-
SEME610400330	R0.3	4.0	6	6	30	70	3.85	-
SEME610400335	R0.3	4.0	6	6	35	70	3.85	-
SEME610400340	R0.3	4.0	6	6	40	80	3.85	-
SEME610400345	R0.3	4.0	6	6	45	90	3.85	-
SEME610400350	R0.3	4.0	6	6	50	100	3.85	-
SEME610400510	R0.5	4.0	6	6	10	50	3.85	-
SEME610400512	R0.5	4.0	6	6	12	50	3.85	-
SEME610400514	R0.5	4.0	6	6	14	60	3.85	-
SEME610400516	R0.5	4.0	6	6	16	60	3.85	-
SEME610400520	R0.5	4.0	6	6	20	60	3.85	-
SEME610400526	R0.5	4.0	6	6	26	65	3.85	-
SEME610400530	R0.5	4.0	6	6	30	70	3.85	-
SEME610400535	R0.5	4.0	6	6	35	70	3.85	-
SEME610400540	R0.5	4.0	6	6	40	80	3.85	-
SEME610400545	R0.5	4.0	6	6	45	90	3.85	-
SEME610400550	R0.5	4.0	6	6	50	100	3.85	-
SEME610401010	R1.0	4.0	6	6	10	50	3.85	-
SEME610401012	R1.0	4.0	6	6	12	50	3.85	-
SEME610401014	R1.0	4.0	6	6	14	60	3.85	-
SEME610401016	R1.0	4.0	6	6	16	60	3.85	-
SEME610401020	R1.0	4.0	6	6	20	60	3.85	-
SEME610401026	R1.0	4.0	6	6	26	65	3.85	-
SEME610401030	R1.0	4.0	6	6	30	70	3.85	-
SEME610401035	R1.0	4.0	6	6	35	70	3.85	-
SEME610401040	R1.0	4.0	6	6	40	80	3.85	-
SEME610401045	R1.0	4.0	6	6	45	90	3.85	-
SEME610401050	R1.0	4.0	6	6	50	100	3.85	-
SEME6105001	R0.1	5.0	6	8	15	60	4.85	-
SEME6105002	R0.2	5.0	6	8	15	60	4.85	-

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◎ : Excellent ○ : Good

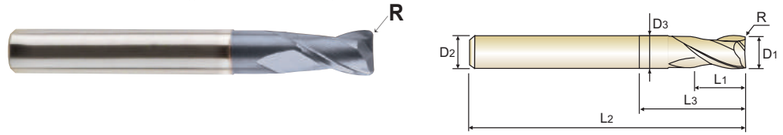
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

4G MILL END MILLS

SEME61 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK CORNER RADIUS

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



MG | 2 | 30° | R ±0.010 (R≤6) | R ±0.015 (R>6) | PLAIN

P.821~823

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Remark
SEME6105003	R0.3	5.0	6	8	15	60	4.85	-
SEME6105005	R0.5	5.0	6	8	15	60	4.85	-
SEME6105010	R1.0	5.0	6	8	15	60	4.85	-
SEME6105015	R1.5	5.0	6	8	15	60	4.85	-
SEME6105020	R2.0	5.0	6	8	15	60	4.85	-
SEME6106001	R0.1	6.0	6	9	20	60	5.85	Regular
SEME6106002	R0.2	6.0	6	9	20	60	5.85	Regular
SEME6106003	R0.3	6.0	6	9	20	60	5.85	Regular
SEME6106005	R0.5	6.0	6	9	20	60	5.85	Regular
SEME6106010	R1.0	6.0	6	9	20	60	5.85	Regular
SEME6106015	R1.5	6.0	6	9	20	60	5.85	Regular
SEME6106020	R2.0	6.0	6	9	20	60	5.85	Regular
SEME6106003090	R0.3	6.0	6	15	30	90	5.85	Long Shank
SEME6106005090	R0.5	6.0	6	15	30	90	5.85	Long Shank
SEME6106010090	R1.0	6.0	6	15	30	90	5.85	Long Shank
SEME6108001	R0.1	8.0	8	12	25	70	7.70	Regular
SEME6108002	R0.2	8.0	8	12	25	70	7.70	Regular
SEME6108003	R0.3	8.0	8	12	25	70	7.70	Regular
SEME6108005	R0.5	8.0	8	12	25	70	7.70	Regular
SEME6108010	R1.0	8.0	8	12	25	70	7.70	Regular
SEME6108015	R1.5	8.0	8	12	25	70	7.70	Regular
SEME6108020	R2.0	8.0	8	12	25	70	7.70	Regular
SEME6108003100	R0.3	8.0	8	20	35	100	7.70	Long Shank
SEME6108005100	R0.5	8.0	8	20	35	100	7.70	Long Shank
SEME6108010100	R1.0	8.0	8	20	35	100	7.70	Long Shank
SEME6110001	R0.1	10.0	10	15	30	75	9.70	Regular
SEME6110002	R0.2	10.0	10	15	30	75	9.70	Regular
SEME6110003	R0.3	10.0	10	15	30	75	9.70	Regular
SEME6110005	R0.5	10.0	10	15	30	75	9.70	Regular
SEME6110010	R1.0	10.0	10	15	30	75	9.70	Regular

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◎ : Excellent ○ : Good

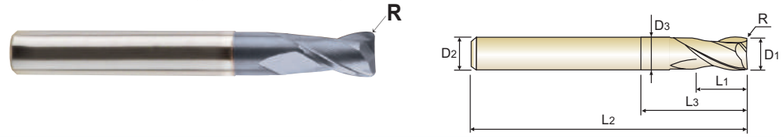
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Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

4G MILL END MILLS

SEME61 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK CORNER RADIUS

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



MG | 2 | 30° | R ±0.010 (R≤6) | R ±0.015 (R>6) | PLAIN

P.821~823

◇ Call for Availability

Unit : mm

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

Size	Corner Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	±0.010	0~-0.012	h6
over Ø6	±0.015	0~-0.015	

◎ : Excellent ○ : Good

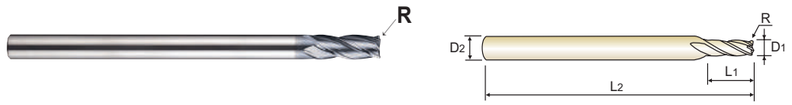
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

4G MILL END MILLS

SEME01 SERIES PLAIN SHANK

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

- ▶Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- ▶Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.
- ▶Available various products like short, regular and long shank end millls etc.



MG | 4 | 27°/30° | R ±0.02 | PLAIN

D1<Ø3.0, 30° Helix

P.824

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEME01010005	R0.05	1.0	6	2.5	50	-
SEME0101001	R0.1	1.0	6	2.5	50	-
SEME0101002	R0.2	1.0	6	2.5	50	-
SEME0101003	R0.3	1.0	6	2.5	50	-
SEME01012005	R0.05	1.2	6	3	50	-
SEME0101201	R0.1	1.2	6	3	50	-
SEME0101202	R0.2	1.2	6	3	50	-
SEME0101203	R0.3	1.2	6	3	50	-
SEME01015005	R0.05	1.5	6	4	50	-
SEME0101501	R0.1	1.5	6	4	50	-
SEME0101502	R0.2	1.5	6	4	50	-
SEME0101503	R0.3	1.5	6	4	50	-
SEME0101505	R0.5	1.5	6	4	50	-
SEME0102001	R0.1	2.0	6	6	50	-
SEME0102002	R0.2	2.0	6	6	50	-
SEME0102003	R0.3	2.0	6	6	50	-
SEME0102005	R0.5	2.0	6	6	50	-
SEME0102501	R0.1	2.5	6	7	60	-
SEME0102502	R0.2	2.5	6	7	60	-
SEME0102503	R0.3	2.5	6	7	60	-
SEME0102505	R0.5	2.5	6	7	60	-
SEME0103001	R0.1	3.0	6	8	60	-
SEME0103002	R0.2	3.0	6	8	60	-
SEME0103003	R0.3	3.0	6	8	60	-
SEME0103005	R0.5	3.0	6	8	60	-
SEME0103010	R1.0	3.0	6	8	60	-
SEME0103501	R0.1	3.5	6	10	70	-
SEME0103502	R0.2	3.5	6	10	70	-
SEME0103503	R0.3	3.5	6	10	70	-
SEME0103505	R0.5	3.5	6	10	70	-

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◎ : Excellent ○ : Good

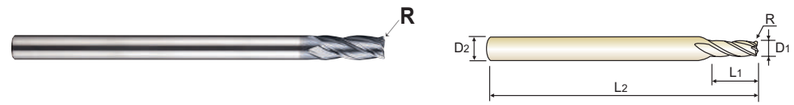
P					H	M	K	N						S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

4G MILL END MILLS

SEME01 SERIES PLAIN SHANK

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

▶Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
▶Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
▶Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.
▶Available various products like short, regular and long shank end millls etc.



MG | 4 | 27°/30° | R ±0.02 | PLAIN

D1<Ø3.0, 30° Helix

P.824

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEME01040014S	R0.1	4.0	4	10	70	4mm Shank
SEME01040024S	R0.2	4.0	4	10	70	4mm Shank
SEME01040034S	R0.3	4.0	4	10	70	4mm Shank
SEME01040054S	R0.5	4.0	4	10	70	4mm Shank
SEME01040104S	R1.0	4.0	4	10	70	4mm Shank
SEME01040011004S	R0.1	4.0	4	10	100	4mm Shank
SEME01040021004S	R0.2	4.0	4	10	100	4mm Shank
SEME01040031004S	R0.3	4.0	4	10	100	4mm Shank
SEME01040051004S	R0.5	4.0	4	10	100	4mm Shank
SEME01040101004S	R1.0	4.0	4	10	100	4mm Shank
SEME0104001	R0.1	4.0	6	10	70	Regular
SEME0104002	R0.2	4.0	6	10	70	Regular
SEME0104003	R0.3	4.0	6	10	70	Regular
SEME0104005	R0.5	4.0	6	10	70	Regular
SEME0104010	R1.0	4.0	6	10	70	Regular
SEME0104501	R0.1	4.5	6	11	80	-
SEME0104502	R0.2	4.5	6	11	80	-
SEME0104503	R0.3	4.5	6	11	80	-
SEME0104505	R0.5	4.5	6	11	80	-
SEME0105001	R0.1	5.0	6	13	90	-
SEME0105002	R0.2	5.0	6	13	90	-
SEME0105003	R0.3	5.0	6	13	90	-
SEME0105005	R0.5	5.0	6	13	90	-
SEME0105010	R1.0	5.0	6	13	90	-
SEME0105501	R0.1	5.5	6	13	90	-
SEME0105502	R0.2	5.5	6	13	90	-
SEME0105503	R0.3	5.5	6	13	90	-
SEME0105505	R0.5	5.5	6	13	90	-
SEME0105510	R1.0	5.5	6	13	90	-
SEME0106001060	R0.1	6.0	6	15	60	Short

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◎ : Excellent ○ : Good

P					H	M	K	N						S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

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

4G MILL END MILLS

SEME01 SERIES PLAIN SHANK

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

- ▶Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- ▶Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.
- ▶Available various products like short, regular and long shank end millls etc.



MG | 4 | 27°/30° | R ±0.02 | PLAIN | P.824

D1<Ø3.0, 30° Helix

◇ Call for Availability

Unit : mm

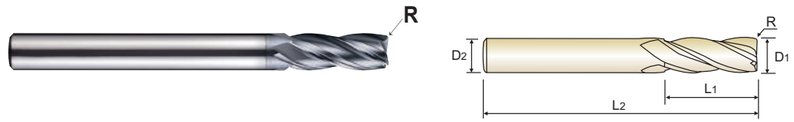
EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEME0106002060	R0.2	6.0	6	15	60	Short
SEME0106001	R0.1	6.0	6	15	90	Regular
SEME0106002	R0.2	6.0	6	15	90	Regular
SEME0106003	R0.3	6.0	6	15	90	Regular
SEME0106005	R0.5	6.0	6	15	90	Regular
SEME0106010	R1.0	6.0	6	15	90	Regular
SEME0106015	R1.5	6.0	6	15	90	Regular
SEME0106020	R2.0	6.0	6	15	90	Regular
SEME0106005110	R0.5	6.0	6	15	110	Long Shank
SEME0106010110	R1.0	6.0	6	15	110	Long Shank
SEME0106005130	R0.5	6.0	6	15	130	Long Shank
SEME0106010130	R1.0	6.0	6	15	130	Long Shank
SEME0107001	R0.1	7.0	8	16	90	-
SEME0107002	R0.2	7.0	8	16	90	-
SEME0107003	R0.3	7.0	8	16	90	-
SEME0107005	R0.5	7.0	8	16	90	-
SEME0107010	R1.0	7.0	8	16	90	-
SEME0107020	R2.0	7.0	8	16	90	-
SEME0108003070	R0.3	8.0	8	20	70	Short
SEME0108005070	R0.5	8.0	8	20	70	Short
SEME0108010070	R1.0	8.0	8	20	70	Short
SEME0108001	R0.1	8.0	8	20	100	Regular
SEME0108002	R0.2	8.0	8	20	100	Regular
SEME0108003	R0.3	8.0	8	20	100	Regular
SEME0108005	R0.5	8.0	8	20	100	Regular
SEME0108010	R1.0	8.0	8	20	100	Regular
SEME0108015	R1.5	8.0	8	20	100	Regular
SEME0108020	R2.0	8.0	8	20	100	Regular
SEME0108025	R2.5	8.0	8	20	100	Regular
SEME0108030	R3.0	8.0	8	20	100	Regular

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◎ : Excellent ○ : Good

P					H	M	K	N						S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

4G MILL END MILLS
SEME01 SERIES PLAIN SHANK
CARBIDE, 4 FLUTE CORNER RADIUS (Short, Regular, Long Shank)
▶Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
▶Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
▶Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.
▶Available various products like short, regular and long shank end millls etc.



MG | 4 | 27°/30° | R ±0.02 | PLAIN | P.824
D1<Ø3.0, 30° Helix
◇ Call for Availability
Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEME0108005120	R0.5	8.0	8	20	120	Long Shank
SEME0108010120	R1.0	8.0	8	20	120	Long Shank
SEME0108005150	R0.5	8.0	8	20	150	Long Shank
SEME0108010150	R1.0	8.0	8	20	150	Long Shank
SEME0110003075	R0.3	10.0	10	25	75	Short
SEME0110005075	R0.5	10.0	10	25	75	Short
SEME0110010075	R1.0	10.0	10	25	75	Short
SEME0110001	R0.1	10.0	10	25	100	Regular
SEME0110002	R0.2	10.0	10	25	100	Regular
SEME0110003	R0.3	10.0	10	25	100	Regular
SEME0110005	R0.5	10.0	10	25	100	Regular
SEME0110010	R1.0	10.0	10	25	100	Regular
SEME0110015	R1.5	10.0	10	25	100	Regular
SEME0110020	R2.0	10.0	10	25	100	Regular
SEME0110025	R2.5	10.0	10	25	100	Regular
SEME0110030	R3.0	10.0	10	25	100	Regular
SEME0110040	R4.0	10.0	10	25	100	Regular
SEME0110005130	R0.5	10.0	10	22	130	Long Shank
SEME0110010130	R1.0	10.0	10	22	130	Long Shank
SEME0110005150	R0.5	10.0	10	22	150	Long Shank
SEME0110010150	R1.0	10.0	10	22	150	Long Shank
SEME0111002	R0.2	11.0	12	25	110	-
SEME0111003	R0.3	11.0	12	25	110	-
SEME0111005	R0.5	11.0	12	25	110	-
SEME0111010	R1.0	11.0	12	25	110	-
SEME0111020	R2.0	11.0	12	25	110	-
SEME0112003080	R0.3	12.0	12	30	80	Short
SEME0112005080	R0.5	12.0	12	30	80	Short
SEME0112010080	R1.0	12.0	12	30	80	Short
SEME0112001	R0.1	12.0	12	30	110	Regular

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◎ : Excellent ○ : Good

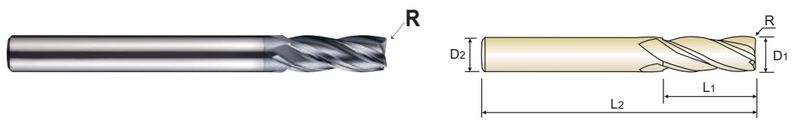
P					H	M	K	N						S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

4G MILL END MILLS

SEME01 SERIES PLAIN SHANK

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

- ▶Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- ▶Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.
- ▶Available various products like short, regular and long shank end millls etc.



MG | 4 | 27°/30° | R ±0.02 | PLAIN

D1<Ø3.0, 30° Helix

P.824

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEME0112002	R0.2	12.0	12	30	110	Regular
SEME0112003	R0.3	12.0	12	30	110	Regular
SEME0112005	R0.5	12.0	12	30	110	Regular
SEME0112010	R1.0	12.0	12	30	110	Regular
SEME0112015	R1.5	12.0	12	30	110	Regular
SEME0112020	R2.0	12.0	12	30	110	Regular
SEME0112025	R2.5	12.0	12	30	110	Regular
SEME0112030	R3.0	12.0	12	30	110	Regular
SEME0112040	R4.0	12.0	12	30	110	Regular
SEME0112050	R5.0	12.0	12	30	110	Regular
SEME0112005130	R0.5	12.0	12	30	130	Long Shank
SEME0112010130	R1.0	12.0	12	30	130	Long Shank
SEME0112005150	R0.5	12.0	12	30	130	Long Shank
SEME0112010150	R1.0	12.0	12	30	130	Long Shank
SEME0114005	R0.5	14.0	16	35	150	-
SEME0114010	R1.0	14.0	16	35	150	-
SEME0114020	R2.0	14.0	16	35	150	-
SEME0116005	R0.5	16.0	16	32	150	-
SEME0116010	R1.0	16.0	16	32	150	-
SEME0116015	R1.5	16.0	16	32	150	-
SEME0116020	R2.0	16.0	16	32	150	-
SEME0120005	R0.5	20.0	20	38	150	-
SEME0120010	R1.0	20.0	20	38	150	-
SEME0120015	R1.5	20.0	20	38	150	-
SEME0120020	R2.0	20.0	20	38	150	-

Mill Dia. Tolerance (mm)	Corner Radius Tolerance (mm)	Shank Dia. Tolerance
0~-0.03	±0.02	h6

◎ : Excellent ○ : Good

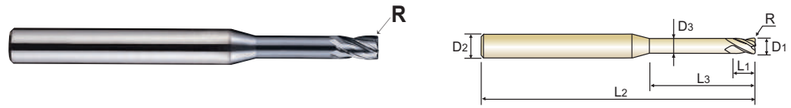
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

4G MILL END MILLS

SEME64 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG NECK CORNER RADIUS

- ▶Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- ▶Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.



MG | 4 | 27°/30° | R ±0.02 | PLAIN

D1<Ø3.0, 30° Helix

P.825~826

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Remark
SEME6401000503	R0.05	1.0	4	1.5	3	50	0.95	-
SEME6401000504	R0.05	1.0	4	1.5	4	50	0.95	-
SEME6401000506	R0.05	1.0	4	1.5	6	50	0.95	-
SEME6401000508	R0.05	1.0	4	1.5	8	50	0.95	-
SEME6401000510	R0.05	1.0	4	1.5	10	50	0.95	-
SEME6401000512	R0.05	1.0	4	1.5	12	50	0.95	-
SEME6401000514	R0.05	1.0	4	1.5	14	50	0.95	-
SEME6401000516	R0.05	1.0	4	1.5	16	50	0.95	-
SEME6401000520	R0.05	1.0	4	1.5	20	50	0.95	-
SEME640100103	R0.1	1.0	4	1.5	3	50	0.95	-
SEME640100104	R0.1	1.0	4	1.5	4	50	0.95	-
SEME640100106	R0.1	1.0	4	1.5	6	50	0.95	-
SEME640100108	R0.1	1.0	4	1.5	8	50	0.95	-
SEME640100110	R0.1	1.0	4	1.5	10	50	0.95	-
SEME640100112	R0.1	1.0	4	1.5	12	50	0.95	-
SEME640100114	R0.1	1.0	4	1.5	14	50	0.95	-
SEME640100116	R0.1	1.0	4	1.5	16	50	0.95	-
SEME640100120	R0.1	1.0	4	1.5	20	50	0.95	-
SEME640100203	R0.2	1.0	4	1.5	3	50	0.95	-
SEME640100204	R0.2	1.0	4	1.5	4	50	0.95	-
SEME640100206	R0.2	1.0	4	1.5	6	50	0.95	-
SEME640100208	R0.2	1.0	4	1.5	8	50	0.95	-
SEME640100210	R0.2	1.0	4	1.5	10	50	0.95	-
SEME640100212	R0.2	1.0	4	1.5	12	50	0.95	-
SEME640100214	R0.2	1.0	4	1.5	14	50	0.95	-
SEME640100216	R0.2	1.0	4	1.5	16	50	0.95	-
SEME640100220	R0.2	1.0	4	1.5	20	50	0.95	-
SEME640100303	R0.3	1.0	4	1.5	3	50	0.95	-
SEME640100304	R0.3	1.0	4	1.5	4	50	0.95	-
SEME640100306	R0.3	1.0	4	1.5	6	50	0.95	-

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

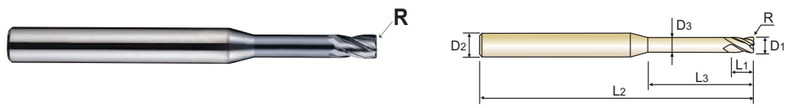
CARBIDE
HSS
CBN END MILLS
i-Xmill END MILLS
i-SMART MODULAR TYPE END MILLS
X5070 END MILLS
4G MILL END MILLS
X-POWER END MILLS
JET-POWER END MILLS
TitaNox -POWER END MILLS
V7 PLUS A END MILLS
V7 MILL INOX END MILLS
ALU-POWER HPC END MILLS
ALU-POWER END MILLS
D-POWER GRAPHITE END MILLS
D-POWER CFRP END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

4G MILL END MILLS

SEME64 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG NECK CORNER RADIUS

- ▶Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- ▶Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.



MG | 4 | 27°/30° | R ±0.02 | PLAIN | P.825~826

D1<Ø3.0, 30° Helix

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Remark
SEME640100308	R0.3	1.0	4	1.5	8	50	0.95	-
SEME640100310	R0.3	1.0	4	1.5	10	50	0.95	-
SEME640100312	R0.3	1.0	4	1.5	12	50	0.95	-
SEME640100314	R0.3	1.0	4	1.5	14	50	0.95	-
SEME640100316	R0.3	1.0	4	1.5	16	50	0.95	-
SEME640100320	R0.3	1.0	4	1.5	20	50	0.95	-
SEME6401200503	R0.05	1.2	4	1.8	3	50	1.15	-
SEME6401200504	R0.05	1.2	4	1.8	4	50	1.15	-
SEME6401200506	R0.05	1.2	4	1.8	6	50	1.15	-
SEME6401200508	R0.05	1.2	4	1.8	8	50	1.15	-
SEME6401200510	R0.05	1.2	4	1.8	10	50	1.15	-
SEME6401200512	R0.05	1.2	4	1.8	12	50	1.15	-
SEME6401200516	R0.05	1.2	4	1.8	16	50	1.15	-
SEME6401200520	R0.05	1.2	4	1.8	20	50	1.15	-
SEME640120103	R0.1	1.2	4	1.8	3	50	1.15	-
SEME640120104	R0.1	1.2	4	1.8	4	50	1.15	-
SEME640120106	R0.1	1.2	4	1.8	6	50	1.15	-
SEME640120108	R0.1	1.2	4	1.8	8	50	1.15	-
SEME640120110	R0.1	1.2	4	1.8	10	50	1.15	-
SEME640120112	R0.1	1.2	4	1.8	12	50	1.15	-
SEME640120116	R0.1	1.2	4	1.8	16	50	1.15	-
SEME640120120	R0.1	1.2	4	1.8	20	50	1.15	-
SEME640120203	R0.2	1.2	4	1.8	3	50	1.15	-
SEME640120204	R0.2	1.2	4	1.8	4	50	1.15	-
SEME640120206	R0.2	1.2	4	1.8	6	50	1.15	-
SEME640120208	R0.2	1.2	4	1.8	8	50	1.15	-
SEME640120210	R0.2	1.2	4	1.8	10	50	1.15	-
SEME640120212	R0.2	1.2	4	1.8	12	50	1.15	-
SEME640120216	R0.2	1.2	4	1.8	16	50	1.15	-
SEME640120220	R0.2	1.2	4	1.8	20	50	1.15	-

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◎ : Excellent ○ : Good

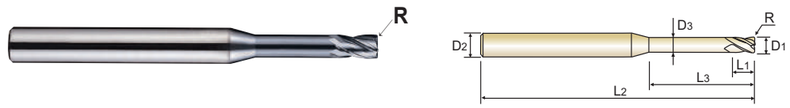
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

4G MILL END MILLS

SEME64 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG NECK CORNER RADIUS

- ▶Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- ▶Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.



MG | 4 | 27°/30° | R ±0.02 | PLAIN | P.825~826

D1<Ø3.0, 30° Helix

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Remark
SEME640120303	R0.3	1.2	4	1.8	3	50	1.15	-
SEME640120304	R0.3	1.2	4	1.8	4	50	1.15	-
SEME640120306	R0.3	1.2	4	1.8	6	50	1.15	-
SEME640120308	R0.3	1.2	4	1.8	8	50	1.15	-
SEME640120310	R0.3	1.2	4	1.8	10	50	1.15	-
SEME640120312	R0.3	1.2	4	1.8	12	50	1.15	-
SEME640120316	R0.3	1.2	4	1.8	16	50	1.15	-
SEME640120320	R0.3	1.2	4	1.8	20	50	1.15	-
SEME6401500504	R0.05	1.5	4	2.3	4	50	1.45	-
SEME6401500506	R0.05	1.5	4	2.3	6	50	1.45	-
SEME6401500508	R0.05	1.5	4	2.3	8	50	1.45	-
SEME6401500510	R0.05	1.5	4	2.3	10	50	1.45	-
SEME6401500512	R0.05	1.5	4	2.3	12	50	1.45	-
SEME6401500514	R0.05	1.5	4	2.3	14	50	1.45	-
SEME6401500516	R0.05	1.5	4	2.3	16	50	1.45	-
SEME6401500520	R0.05	1.5	4	2.3	20	50	1.45	-
SEME6401500522	R0.05	1.5	4	2.3	22	60	1.45	-
SEME6401500526	R0.05	1.5	4	2.3	26	60	1.45	-
SEME640150104	R0.1	1.5	4	2.3	4	50	1.45	-
SEME640150106	R0.1	1.5	4	2.3	6	50	1.45	-
SEME640150108	R0.1	1.5	4	2.3	8	50	1.45	-
SEME640150110	R0.1	1.5	4	2.3	10	50	1.45	-
SEME640150112	R0.1	1.5	4	2.3	12	50	1.45	-
SEME640150114	R0.1	1.5	4	2.3	14	50	1.45	-
SEME640150116	R0.1	1.5	4	2.3	16	50	1.45	-
SEME640150120	R0.1	1.5	4	2.3	20	50	1.45	-
SEME640150122	R0.1	1.5	4	2.3	22	60	1.45	-
SEME640150126	R0.1	1.5	4	2.3	26	60	1.45	-
SEME640150204	R0.2	1.5	4	2.3	4	50	1.45	-
SEME640150206	R0.2	1.5	4	2.3	6	50	1.45	-

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◎ : Excellent ○ : Good

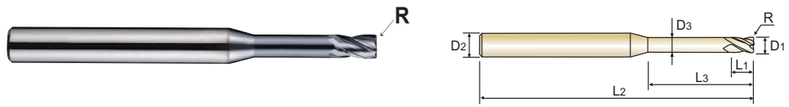
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

4G MILL END MILLS

SEME64 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG NECK CORNER RADIUS

- ▶Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- ▶Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.



MG | 4 | 27°/30° | R ±0.02 | PLAIN

D1<Ø3.0, 30° Helix

P.825~826

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Remark
SEME640150208	R0.2	1.5	4	2.3	8	50	1.45	-
SEME640150210	R0.2	1.5	4	2.3	10	50	1.45	-
SEME640150212	R0.2	1.5	4	2.3	12	50	1.45	-
SEME640150214	R0.2	1.5	4	2.3	14	50	1.45	-
SEME640150216	R0.2	1.5	4	2.3	16	50	1.45	-
SEME640150220	R0.2	1.5	4	2.3	20	50	1.45	-
SEME640150222	R0.2	1.5	4	2.3	22	60	1.45	-
SEME640150226	R0.2	1.5	4	2.3	26	60	1.45	-
SEME640150304	R0.3	1.5	4	2.3	4	50	1.45	-
SEME640150306	R0.3	1.5	4	2.3	6	50	1.45	-
SEME640150308	R0.3	1.5	4	2.3	8	50	1.45	-
SEME640150310	R0.3	1.5	4	2.3	10	50	1.45	-
SEME640150312	R0.3	1.5	4	2.3	12	50	1.45	-
SEME640150314	R0.3	1.5	4	2.3	14	50	1.45	-
SEME640150316	R0.3	1.5	4	2.3	16	50	1.45	-
SEME640150320	R0.3	1.5	4	2.3	20	50	1.45	-
SEME640150322	R0.3	1.5	4	2.3	22	60	1.45	-
SEME640150326	R0.3	1.5	4	2.3	26	60	1.45	-
SEME640150504	R0.5	1.5	4	2.3	4	50	1.45	-
SEME640150506	R0.5	1.5	4	2.3	6	50	1.45	-
SEME640150508	R0.5	1.5	4	2.3	8	50	1.45	-
SEME640150510	R0.5	1.5	4	2.3	10	50	1.45	-
SEME640150512	R0.5	1.5	4	2.3	12	50	1.45	-
SEME640150514	R0.5	1.5	4	2.3	14	50	1.45	-
SEME640150516	R0.5	1.5	4	2.3	16	50	1.45	-
SEME640150520	R0.5	1.5	4	2.3	20	50	1.45	-
SEME640150522	R0.5	1.5	4	2.3	22	60	1.45	-
SEME640150526	R0.5	1.5	4	2.3	26	60	1.45	-
SEME640200106	R0.1	2.0	4	3	6	50	1.95	-
SEME640200108	R0.1	2.0	4	3	8	50	1.95	-

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◎ : Excellent ○ : Good

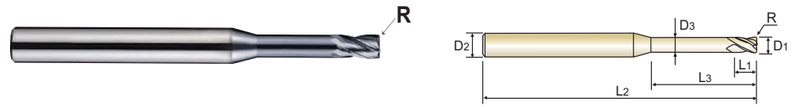
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

4G MILL END MILLS

SEME64 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG NECK CORNER RADIUS

- ▶Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
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MG | 4 | 27°/30° | R ±0.02 | PLAIN

D1<Ø3.0, 30° Helix

P.825~826

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Remark
SEME640200110	R0.1	2.0	4	3	10	50	1.95	-
SEME640200112	R0.1	2.0	4	3	12	50	1.95	-
SEME640200114	R0.1	2.0	4	3	14	50	1.95	-
SEME640200116	R0.1	2.0	4	3	16	50	1.95	-
SEME640200120	R0.1	2.0	4	3	20	50	1.95	-
SEME640200122	R0.1	2.0	4	3	22	60	1.95	-
SEME640200126	R0.1	2.0	4	3	26	60	1.95	-
SEME640200130	R0.1	2.0	4	3	30	70	1.95	-
SEME640200206	R0.2	2.0	4	3	6	50	1.95	-
SEME640200208	R0.2	2.0	4	3	8	50	1.95	-
SEME640200210	R0.2	2.0	4	3	10	50	1.95	-
SEME640200212	R0.2	2.0	4	3	12	50	1.95	-
SEME640200214	R0.2	2.0	4	3	14	50	1.95	-
SEME640200216	R0.2	2.0	4	3	16	50	1.95	-
SEME640200220	R0.2	2.0	4	3	20	50	1.95	-
SEME640200222	R0.2	2.0	4	3	22	60	1.95	-
SEME640200226	R0.2	2.0	4	3	26	60	1.95	-
SEME640200230	R0.2	2.0	4	3	30	70	1.95	-
SEME640200306	R0.3	2.0	4	3	6	50	1.95	-
SEME640200308	R0.3	2.0	4	3	8	50	1.95	-
SEME640200310	R0.3	2.0	4	3	10	50	1.95	-
SEME640200312	R0.3	2.0	4	3	12	50	1.95	-
SEME640200314	R0.3	2.0	4	3	14	50	1.95	-
SEME640200316	R0.3	2.0	4	3	16	50	1.95	-
SEME640200320	R0.3	2.0	4	3	20	50	1.95	-
SEME640200322	R0.3	2.0	4	3	22	60	1.95	-
SEME640200326	R0.3	2.0	4	3	26	60	1.95	-
SEME640200330	R0.3	2.0	4	3	30	70	1.95	-
SEME640200506	R0.5	2.0	4	3	6	50	1.95	-
SEME640200508	R0.5	2.0	4	3	8	50	1.95	-

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

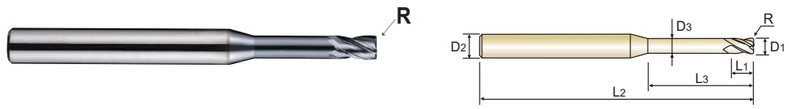
CARBIDE
HSS
CBN END MILLS
i-Xmill END MILLS
i-SMART MODULAR TYPE END MILLS
X5070 END MILLS
4G MILL END MILLS
X-POWER END MILLS
JET-POWER END MILLS
TitaNox -POWER END MILLS
V7 PLUS A END MILLS
V7 MILL INOX END MILLS
ALU-POWER HPC END MILLS
ALU-POWER END MILLS
D-POWER GRAPHITE END MILLS
D-POWER CFRP END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

4G MILL END MILLS

SEME64 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG NECK CORNER RADIUS

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MG | 4 | 27°/30° | R ±0.02 | PLAIN | P.825~826

D1<Ø3.0, 30° Helix

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Remark
SEME640200510	R0.5	2.0	4	3	10	50	1.95	-
SEME640200512	R0.5	2.0	4	3	12	50	1.95	-
SEME640200514	R0.5	2.0	4	3	14	50	1.95	-
SEME640200516	R0.5	2.0	4	3	16	50	1.95	-
SEME640200520	R0.5	2.0	4	3	20	50	1.95	-
SEME640200522	R0.5	2.0	4	3	22	60	1.95	-
SEME640200526	R0.5	2.0	4	3	26	60	1.95	-
SEME640200530	R0.5	2.0	4	3	30	70	1.95	-
SEME640250108	R0.1	2.5	4	4	8	50	2.40	-
SEME640250110	R0.1	2.5	4	4	10	50	2.40	-
SEME640250112	R0.1	2.5	4	4	12	50	2.40	-
SEME640250114	R0.1	2.5	4	4	14	50	2.40	-
SEME640250116	R0.1	2.5	4	4	16	50	2.40	-
SEME640250120	R0.1	2.5	4	4	20	50	2.40	-
SEME640250126	R0.1	2.5	4	4	26	60	2.40	-
SEME640250130	R0.1	2.5	4	4	30	70	2.40	-
SEME640250208	R0.2	2.5	4	4	8	50	2.40	-
SEME640250210	R0.2	2.5	4	4	10	50	2.40	-
SEME640250212	R0.2	2.5	4	4	12	50	2.40	-
SEME640250214	R0.2	2.5	4	4	14	50	2.40	-
SEME640250216	R0.2	2.5	4	4	16	50	2.40	-
SEME640250220	R0.2	2.5	4	4	20	50	2.40	-
SEME640250226	R0.2	2.5	4	4	26	60	2.40	-
SEME640250230	R0.2	2.5	4	4	30	70	2.40	-
SEME640250308	R0.3	2.5	4	4	8	50	2.40	-
SEME640250310	R0.3	2.5	4	4	10	50	2.40	-
SEME640250312	R0.3	2.5	4	4	12	50	2.40	-
SEME640250314	R0.3	2.5	4	4	14	50	2.40	-
SEME640250316	R0.3	2.5	4	4	16	50	2.40	-
SEME640250320	R0.3	2.5	4	4	20	50	2.40	-

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◎ : Excellent ○ : Good

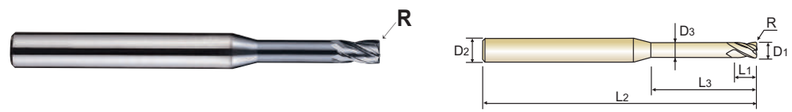
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

4G MILL END MILLS

SEME64 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG NECK CORNER RADIUS

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MG | 4 | 27°/30° | R ±0.02 | PLAIN | P.825~826

D1<Ø3.0, 30° Helix

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Remark
SEME640250326	R0.3	2.5	4	4	26	60	2.40	-
SEME640250330	R0.3	2.5	4	4	30	70	2.40	-
SEME640250508	R0.5	2.5	4	4	8	50	2.40	-
SEME640250510	R0.5	2.5	4	4	10	50	2.40	-
SEME640250512	R0.5	2.5	4	4	12	50	2.40	-
SEME640250514	R0.5	2.5	4	4	14	50	2.40	-
SEME640250516	R0.5	2.5	4	4	16	50	2.40	-
SEME640250520	R0.5	2.5	4	4	20	50	2.40	-
SEME640250526	R0.5	2.5	4	4	26	60	2.40	-
SEME640250530	R0.5	2.5	4	4	30	70	2.40	-
SEME640300108	R0.1	3.0	6	4.5	8	50	2.85	-
SEME640300110	R0.1	3.0	6	4.5	10	50	2.85	-
SEME640300112	R0.1	3.0	6	4.5	12	50	2.85	-
SEME640300114	R0.1	3.0	6	4.5	14	60	2.85	-
SEME640300116	R0.1	3.0	6	4.5	16	60	2.85	-
SEME640300120	R0.1	3.0	6	4.5	20	60	2.85	-
SEME640300126	R0.1	3.0	6	4.5	26	65	2.85	-
SEME640300130	R0.1	3.0	6	4.5	30	70	2.85	-
SEME640300135	R0.1	3.0	6	4.5	35	70	2.85	-
SEME640300140	R0.1	3.0	6	4.5	40	80	2.85	-
SEME640300208	R0.2	3.0	6	4.5	8	50	2.85	-
SEME640300210	R0.2	3.0	6	4.5	10	50	2.85	-
SEME640300212	R0.2	3.0	6	4.5	12	50	2.85	-
SEME640300214	R0.2	3.0	6	4.5	14	60	2.85	-
SEME640300216	R0.2	3.0	6	4.5	16	60	2.85	-
SEME640300220	R0.2	3.0	6	4.5	20	60	2.85	-
SEME640300226	R0.2	3.0	6	4.5	26	65	2.85	-
SEME640300230	R0.2	3.0	6	4.5	30	70	2.85	-
SEME640300235	R0.2	3.0	6	4.5	35	70	2.85	-
SEME640300240	R0.2	3.0	6	4.5	40	80	2.85	-

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

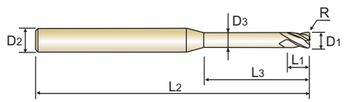
4G MILL END MILLS

SEME64 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG NECK CORNER RADIUS

- ▶Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- ▶Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.





MG | 4 | 27°/30° | R ±0.02 | PLAIN | P.825~826

D1<Ø3.0, 30° Helix

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Remark
SEME640300308	R0.3	3.0	6	4.5	8	50	2.85	-
SEME640300310	R0.3	3.0	6	4.5	10	50	2.85	-
SEME640300312	R0.3	3.0	6	4.5	12	50	2.85	-
SEME640300314	R0.3	3.0	6	4.5	14	60	2.85	-
SEME640300316	R0.3	3.0	6	4.5	16	60	2.85	-
SEME640300320	R0.3	3.0	6	4.5	20	60	2.85	-
SEME640300326	R0.3	3.0	6	4.5	26	65	2.85	-
SEME640300330	R0.3	3.0	6	4.5	30	70	2.85	-
SEME640300335	R0.3	3.0	6	4.5	35	70	2.85	-
SEME640300340	R0.3	3.0	6	4.5	40	80	2.85	-
SEME640300508	R0.5	3.0	6	4.5	8	50	2.85	-
SEME640300510	R0.5	3.0	6	4.5	10	50	2.85	-
SEME640300512	R0.5	3.0	6	4.5	12	50	2.85	-
SEME640300514	R0.5	3.0	6	4.5	14	60	2.85	-
SEME640300516	R0.5	3.0	6	4.5	16	60	2.85	-
SEME640300520	R0.5	3.0	6	4.5	20	60	2.85	-
SEME640300526	R0.5	3.0	6	4.5	26	65	2.85	-
SEME640300530	R0.5	3.0	6	4.5	30	70	2.85	-
SEME640300535	R0.5	3.0	6	4.5	35	70	2.85	-
SEME640300540	R0.5	3.0	6	4.5	40	80	2.85	-
SEME640301008	R1.0	3.0	6	4.5	8	50	2.85	-
SEME640301010	R1.0	3.0	6	4.5	10	50	2.85	-
SEME640301012	R1.0	3.0	6	4.5	12	50	2.85	-
SEME640301014	R1.0	3.0	6	4.5	14	60	2.85	-
SEME640301016	R1.0	3.0	6	4.5	16	60	2.85	-
SEME640301020	R1.0	3.0	6	4.5	20	60	2.85	-
SEME640301026	R1.0	3.0	6	4.5	26	65	2.85	-
SEME640301030	R1.0	3.0	6	4.5	30	70	2.85	-
SEME640301035	R1.0	3.0	6	4.5	35	70	2.85	-
SEME640301040	R1.0	3.0	6	4.5	40	80	2.85	-

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

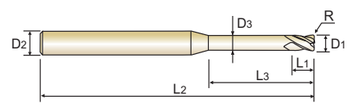
4G MILL END MILLS

SEME64 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG NECK CORNER RADIUS

- ▶Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- ▶Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.





MG | 4 | 27°/30° | R ±0.02 | PLAIN | P.825~826

D1<Ø3.0, 30° Helix

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Remark
SEME640400110	R0.1	4.0	6	6	10	50	3.85	-
SEME640400112	R0.1	4.0	6	6	12	50	3.85	-
SEME640400114	R0.1	4.0	6	6	14	60	3.85	-
SEME640400116	R0.1	4.0	6	6	16	60	3.85	-
SEME640400120	R0.1	4.0	6	6	20	60	3.85	-
SEME640400126	R0.1	4.0	6	6	26	65	3.85	-
SEME640400130	R0.1	4.0	6	6	30	70	3.85	-
SEME640400135	R0.1	4.0	6	6	35	70	3.85	-
SEME640400140	R0.1	4.0	6	6	40	80	3.85	-
SEME640400145	R0.1	4.0	6	6	45	90	3.85	-
SEME640400150	R0.1	4.0	6	6	50	100	3.85	-
SEME640400210	R0.2	4.0	6	6	10	50	3.85	-
SEME640400212	R0.2	4.0	6	6	12	50	3.85	-
SEME640400214	R0.2	4.0	6	6	14	60	3.85	-
SEME640400216	R0.2	4.0	6	6	16	60	3.85	-
SEME640400220	R0.2	4.0	6	6	20	60	3.85	-
SEME640400226	R0.2	4.0	6	6	26	65	3.85	-
SEME640400230	R0.2	4.0	6	6	30	70	3.85	-
SEME640400235	R0.2	4.0	6	6	35	70	3.85	-
SEME640400240	R0.2	4.0	6	6	40	80	3.85	-
SEME640400245	R0.2	4.0	6	6	45	90	3.85	-
SEME640400250	R0.2	4.0	6	6	50	100	3.85	-
SEME640400310	R0.3	4.0	6	6	10	50	3.85	-
SEME640400312	R0.3	4.0	6	6	12	50	3.85	-
SEME640400314	R0.3	4.0	6	6	14	60	3.85	-
SEME640400316	R0.3	4.0	6	6	16	60	3.85	-
SEME640400320	R0.3	4.0	6	6	20	60	3.85	-
SEME640400326	R0.3	4.0	6	6	26	65	3.85	-
SEME640400330	R0.3	4.0	6	6	30	70	3.85	-
SEME640400335	R0.3	4.0	6	6	35	70	3.85	-

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◎ : Excellent ○ : Good

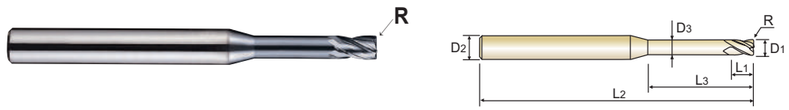
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

4G MILL END MILLS

SEME64 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG NECK CORNER RADIUS

- ▶Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- ▶Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.



MG | 4 | 27°/30° | R ±0.02 | PLAIN

D1<Ø3.0, 30° Helix

P.825~826

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Remark
SEME640400340	R0.3	4.0	6	6	40	80	3.85	-
SEME640400345	R0.3	4.0	6	6	45	90	3.85	-
SEME640400350	R0.3	4.0	6	6	50	100	3.85	-
SEME640400510	R0.5	4.0	6	6	10	50	3.85	-
SEME640400512	R0.5	4.0	6	6	12	50	3.85	-
SEME640400514	R0.5	4.0	6	6	14	60	3.85	-
SEME640400516	R0.5	4.0	6	6	16	60	3.85	-
SEME640400520	R0.5	4.0	6	6	20	60	3.85	-
SEME640400526	R0.5	4.0	6	6	26	65	3.85	-
SEME640400530	R0.5	4.0	6	6	30	70	3.85	-
SEME640400535	R0.5	4.0	6	6	35	70	3.85	-
SEME640400540	R0.5	4.0	6	6	40	80	3.85	-
SEME640400545	R0.5	4.0	6	6	45	90	3.85	-
SEME640400550	R0.5	4.0	6	6	50	100	3.85	-
SEME640401010	R1.0	4.0	6	6	10	50	3.85	-
SEME640401012	R1.0	4.0	6	6	12	50	3.85	-
SEME640401014	R1.0	4.0	6	6	14	60	3.85	-
SEME640401016	R1.0	4.0	6	6	16	60	3.85	-
SEME640401020	R1.0	4.0	6	6	20	60	3.85	-
SEME640401026	R1.0	4.0	6	6	26	65	3.85	-
SEME640401030	R1.0	4.0	6	6	30	70	3.85	-
SEME640401035	R1.0	4.0	6	6	35	70	3.85	-
SEME640401040	R1.0	4.0	6	6	40	80	3.85	-
SEME640401045	R1.0	4.0	6	6	45	90	3.85	-
SEME640401050	R1.0	4.0	6	6	50	100	3.85	-
SEME6405001	R0.1	5.0	6	8	15	60	4.85	-
SEME6405002	R0.2	5.0	6	8	15	60	4.85	-
SEME6405003	R0.3	5.0	6	8	15	60	4.85	-
SEME6405005	R0.5	5.0	6	8	15	60	4.85	-
SEME6405010	R1.0	5.0	6	8	15	60	4.85	-

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◎ : Excellent ○ : Good

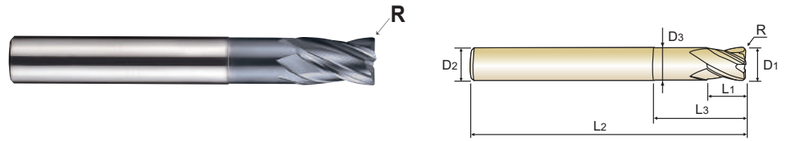
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

4G MILL END MILLS

SEME64 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG NECK CORNER RADIUS

- ▶Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- ▶Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.



MG | 4 | 27°/30° | R ±0.02 | PLAIN

D1<Ø3.0, 30° Helix

P.825~826

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Remark
SEME6405015	R1.5	5.0	6	8	15	60	4.85	-
SEME6405020	R2.0	5.0	6	8	15	60	4.85	-
SEME6406001	R0.1	6.0	6	9	20	60	5.85	Regular
SEME6406002	R0.2	6.0	6	9	20	60	5.85	Regular
SEME6406003	R0.3	6.0	6	9	20	60	5.85	Regular
SEME6406005	R0.5	6.0	6	9	20	60	5.85	Regular
SEME6406010	R1.0	6.0	6	9	20	60	5.85	Regular
SEME6406015	R1.5	6.0	6	9	20	60	5.85	Regular
SEME6406020	R2.0	6.0	6	9	20	60	5.85	Regular
SEME6406003090	R0.3	6.0	6	15	30	90	5.85	Long Shank
SEME6406005090	R0.5	6.0	6	15	30	90	5.85	Long Shank
SEME6406010090	R1.0	6.0	6	15	30	90	5.85	Long Shank
SEME6408001	R0.1	8.0	8	12	25	70	7.70	Regular
SEME6408002	R0.2	8.0	8	12	25	70	7.70	Regular
SEME6408003	R0.3	8.0	8	12	25	70	7.70	Regular
SEME6408005	R0.5	8.0	8	12	25	70	7.70	Regular
SEME6408010	R1.0	8.0	8	12	25	70	7.70	Regular
SEME6408015	R1.5	8.0	8	12	25	70	7.70	Regular
SEME6408020	R2.0	8.0	8	12	25	70	7.70	Regular
SEME6408003100	R0.3	8.0	8	20	35	100	7.70	Long Shank
SEME6408005100	R0.5	8.0	8	20	35	100	7.70	Long Shank
SEME6408010100	R1.0	8.0	8	20	35	100	8.70	Long Shank
SEME6410001	R0.1	10.0	10	15	30	75	9.70	Regular
SEME6410002	R0.2	10.0	10	15	30	75	9.70	Regular
SEME6410003	R0.3	10.0	10	15	30	75	9.70	Regular
SEME6410005	R0.5	10.0	10	15	30	75	9.70	Regular
SEME6410010	R1.0	10.0	10	15	30	75	9.70	Regular
SEME6410015	R1.5	10.0	10	15	30	75	9.70	Regular
SEME6410020	R2.0	10.0	10	15	30	75	9.70	Regular
SEME6410003100	R0.3	10.0	10	25	40	100	9.70	Long Shank

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

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

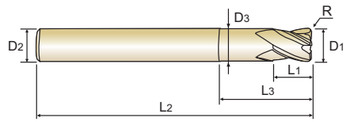
4G MILL END MILLS

SEME64 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG NECK CORNER RADIUS

▶Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
▶Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
▶Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.





MG | 4 | 27°/30° | R ±0.02 | PLAIN

D1<Ø3.0, 30° Helix

P.825~826

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Remark
SEME6410005100	R0.5	10.0	10	25	40	100	9.70	Long Shank
SEME6410010100	R1.0	10.0	10	25	40	100	9.70	Long Shank
SEME6412002	R0.2	12.0	12	18	32	80	11.70	Regular
SEME6412003	R0.3	12.0	12	18	32	80	11.70	Regular
SEME6412005	R0.5	12.0	12	18	32	80	11.70	Regular
SEME6412010	R1.0	12.0	12	18	32	80	11.70	Regular
SEME6412015	R1.5	12.0	12	18	32	80	11.70	Regular
SEME6412020	R2.0	12.0	12	18	32	80	11.70	Regular
SEME6412003110	R0.3	12.0	12	30	45	110	11.70	Long Shank
SEME6412005110	R0.5	12.0	12	30	45	110	11.70	Long Shank
SEME6412010110	R1.0	12.0	12	30	45	110	11.70	Long Shank
SEME6416005	R0.5	16.0	16	20	35	100	15.70	Regular
SEME6416010	R1.0	16.0	16	20	35	100	15.70	Regular
SEME6416005150	R0.5	16.0	20	35	50	150	15.70	Long Shank
SEME6416010150	R1.0	16.0	20	35	50	150	15.70	Long Shank
SEME641600515020	R0.5	16.0	20	35	50	150	15.70	Long Shank
SEME641601015020	R1.0	16.0	20	35	50	150	15.70	Long Shank
SEME6420005	R0.5	20.0	20	25	40	100	19.70	Regular
SEME6420010	R1.0	20.0	20	25	40	100	19.70	Regular
SEME6420005150	R0.5	20.0	20	40	55	150	19.70	Long Shank
SEME6420010150	R1.0	20.0	20	40	55	150	19.70	Long Shank

Mill Dia. Tolerance (mm)	Corner Radius Tolerance (mm)	Shank Dia. Tolerance
0~-0.03	±0.02	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

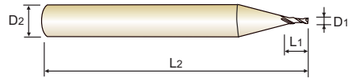
4G MILL END MILLS

SEME35 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE

▶Due to new coating and new tool geometry, outstanding cutting ability and wear resitance.
▶Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
▶Due to sharp edge geometry at end tooth, cutting ability at working is increased.





MG | 2 | 30° | PLAIN

P.827

◇ Call for Availability

Unit : mm

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

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

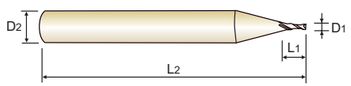
4G MILL END MILLS

SEME35 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE

- ▶Due to new coating and new tool geometry, outstanding cutting ability and wear resitance.
- ▶Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- ▶Due to sharp edge geometry at end tooth, cutting ability at working is increased.





MG | 2 | 30° | PLAIN

P.827

◇ Call for Availability

Unit : mm

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

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◎ : Excellent ○ : Good

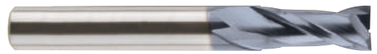
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

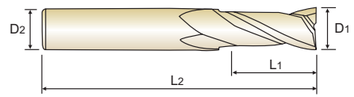
4G MILL END MILLS

SEME35 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE

- ▶Due to new coating and new tool geometry, outstanding cutting ability and wear resitance.
- ▶Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- ▶Due to sharp edge geometry at end tooth, cutting ability at working is increased.





MG | 2 | 30° | PLAIN

P.827

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME35160	16.0	16	40	100
SEME35170	17.0	16	42	100
SEME35180	18.0	16	45	100
SEME35180018S	18.0	18	45	100
SEME35190	19.0	20	45	100
SEME35200	20.0	20	45	100
SEME35210	21.0	20	45	100
SEME35220	22.0	20	45	100
SEME35230	23.0	25	50	120
SEME35240	24.0	25	50	120
SEME35250	25.0	25	50	120

▶ NEXT PAGE

Size	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	0~-0.012	h6
over Ø6	0~-0.015	

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

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

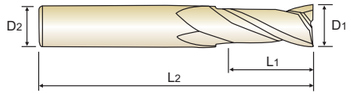
4G MILL END MILLS

SEME35 SERIES PLAIN SHANK

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

- ▶Due to new coating and new tool geometry, outstanding cutting ability and wear resitance.
- ▶Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- ▶Due to sharp edge geometry at end tooth, cutting ability at working is increased.





MG | 2 | 30° | PLAIN

P.827

◇ Call for Availability

Unit : mm

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

▶ NEXT PAGE

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.012	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

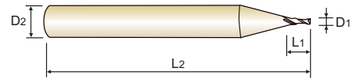
4G MILL END MILLS

SEME35 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE (3mm Shank)

- ▶Due to new coating and new tool geometry, outstanding cutting ability and wear resitance.
- ▶Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- ▶Due to sharp edge geometry at end tooth, cutting ability at working is increased.





MG | 2 | 30° | PLAIN

P.827

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME350013S	0.1	3	0.2	40
SEME350023S	0.2	3	0.4	40
SEME350033S	0.3	3	0.6	40
SEME350043S	0.4	3	0.8	40
SEME350053S	0.5	3	1.0	40
SEME350063S	0.6	3	1.2	40
SEME350073S	0.7	3	1.4	40
SEME350083S	0.8	3	1.6	40
SEME350093S	0.9	3	1.8	40
SEME350103S	1.0	3	2.5	50
SEME350123S	1.2	3	3	50
SEME350153S	1.5	3	4	50
SEME350203S	2.0	3	6	50
SEME350253S	2.5	3	7	50
SEME350303S	3.0	3	8	50

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.012	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

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

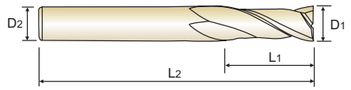
4G MILL END MILLS

SEME70 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG LENGTH

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Available various length of cut and overall length end mills.





MG | 2 | 30° | PLAIN

P.828~830

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME7001003	1.0	6	3	60
SEME7001004	1.0	6	4	60
SEME7001005	1.0	6	5	60
SEME7001006	1.0	6	6	60
SEME7001007	1.0	6	7	60
SEME7001008	1.0	6	8	60
SEME7001010	1.0	6	10	60
SEME7001012	1.0	6	12	60
SEME7001204	1.2	6	4	60
SEME7001206	1.2	6	6	60
SEME7001208	1.2	6	8	60
SEME7001210	1.2	6	10	60
SEME7001212	1.2	6	12	60
SEME7001506	1.5	6	6	60
SEME7001508	1.5	6	8	60
SEME7001510	1.5	6	10	60
SEME7001512	1.5	6	12	60
SEME7001514	1.5	6	14	60
SEME7001516	1.5	6	16	60
SEME7002008	2.0	6	8	60
SEME7002010	2.0	6	10	60
SEME7002012	2.0	6	12	60
SEME7002014	2.0	6	14	60
SEME7002016	2.0	6	16	60
SEME7002510	2.5	6	10	60
SEME7002512	2.5	6	12	60
SEME7002516	2.5	6	16	60

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

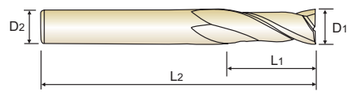
4G MILL END MILLS

SEME70 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG LENGTH

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Available various length of cut and overall length end mills.





MG | 2 | 30° | PLAIN

P.828~830

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME7002520	2.5	6	20	60
SEME7002526	2.5	6	26	60
SEME70030163S	3.0	3	16	100
SEME7003010	3.0	6	10	70
SEME7003012	3.0	6	12	70
SEME7003014	3.0	6	14	70
SEME7003016	3.0	6	16	70
SEME7003020	3.0	6	20	70
SEME7003026	3.0	6	26	70
SEME7003030	3.0	6	30	70
SEME70040204S	4.0	4	20	100
SEME7004012	4.0	6	12	70
SEME7004016	4.0	6	16	70
SEME7004020	4.0	6	20	70
SEME7004026	4.0	6	26	70
SEME7004030	4.0	6	30	70
SEME7005020	5.0	6	20	70
SEME7005025	5.0	6	25	70
SEME7005025100	5.0	6	25	100
SEME7005030	5.0	6	30	80
SEME7005035	5.0	6	35	90
SEME7005040	5.0	6	40	100
SEME7006015	6.0	6	15	60
SEME7006015080	6.0	6	15	80
SEME7006020	6.0	6	20	70
SEME7006020090	6.0	6	20	90
SEME7006025	6.0	6	25	75

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

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

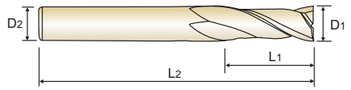
4G MILL END MILLS

SEME70 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG LENGTH

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Available various length of cut and overall length end mills.





MG | 2 | 30° | PLAIN

P.828~830

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME7006030	6.0	6	30	80
SEME7006030100	6.0	6	30	100
SEME7006030150	6.0	6	30	150
SEME7006035	6.0	6	35	90
SEME7006040	6.0	6	40	90
SEME7006040120	6.0	6	40	120
SEME7006045	6.0	6	45	150
SEME7008025	8.0	8	25	80
SEME7008030	8.0	8	30	80
SEME7008030100	8.0	8	30	100
SEME7008035	8.0	8	35	90
SEME7008040	8.0	8	40	90
SEME7008040120	8.0	8	40	120
SEME7008040150	8.0	8	40	150
SEME7008045	8.0	8	45	100
SEME7008050	8.0	8	50	100
SEME7008050150	8.0	8	50	150
SEME7010030	10.0	10	30	80
SEME7010030100	10.0	10	30	100
SEME7010035	10.0	10	35	90
SEME7010040	10.0	10	40	90
SEME7010040120	10.0	10	40	120
SEME7010045	10.0	10	45	100
SEME7010050	10.0	10	50	100
SEME7010050150	10.0	10	50	150
SEME7010050200	10.0	10	50	200
SEME7010055	10.0	10	55	150

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

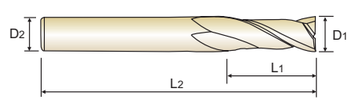
4G MILL END MILLS

SEME70 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG LENGTH

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Available various length of cut and overall length end mills.





MG | 2 | 30° | PLAIN

P.828~830

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME7010060	10.0	10	60	110
SEME7010060200	10.0	10	60	200
SEME7012035	12.0	12	35	90
SEME7012040	12.0	12	40	100
SEME7012040120	12.0	12	40	120
SEME7012045	12.0	12	45	130
SEME7012050	12.0	12	50	100
SEME7012050150	12.0	12	50	150
SEME7012055	12.0	12	55	110
SEME7012060	12.0	12	60	110
SEME7012060150	12.0	12	60	150
SEME7012060200	12.0	12	60	200
SEME7012065	12.0	12	65	150
SEME7012070	12.0	12	70	120
SEME7012070200	12.0	12	70	200
SEME7014050	14.0	16	50	110
SEME7014060	14.0	16	60	150
SEME7016040	16.0	16	40	150
SEME7016050	16.0	16	50	110
SEME7016050150	16.0	16	50	150
SEME7016060	16.0	16	60	120
SEME7016070	16.0	16	70	130
SEME7016070150	16.0	16	70	150
SEME7016070200	16.0	16	70	200
SEME7016080	16.0	16	80	150
SEME7016090	16.0	16	90	150
SEME70160110	16.0	16	110	200

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

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

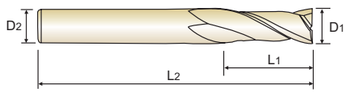
4G MILL END MILLS

SEME70 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG LENGTH

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- ▶ Available various length of cut and overall length end mills.





MG 2 30° PLAIN P.828~830

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME70160120	16.0	16	120	250
SEME7018050	18.0	20	50	120
SEME7018070	18.0	20	70	130
SEME70180100	18.0	20	100	200
SEME7020050	20.0	20	50	110
SEME7020050150	20.0	20	50	150
SEME7020060	20.0	20	60	130
SEME7020070	20.0	20	70	130
SEME7020080	20.0	20	80	150
SEME7020090	20.0	20	90	150
SEME7020090200	20.0	20	90	200
SEME70200110	20.0	20	110	200
SEME70200120	20.0	20	120	250
SEME7022075	22.0	20	75	150
SEME70220110	22.0	20	110	200
SEME7025070	25.0	25	70	150
SEME7025090	25.0	25	90	150
SEME70250110	25.0	25	110	200
SEME70250120	25.0	25	120	250

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

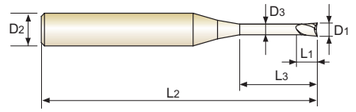
4G MILL END MILLS

SEM845 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK

- ▶Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- ▶For 1.0mm and under 1.0mm diameter sizes, designed double neck for increasing tool rigidity and minimizing vibration at working.
- ▶Available various rib processing due to supplying various effective length and overall length products.





MG 2 30° PLAIN P.831~835

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
SEM845001003	0.1	4	0.15	0.3	40	0.085
SEM845001005	0.1	4	0.15	0.5	40	0.085
SEM84500101	0.1	4	0.15	1	40	0.085
SEM845002005	0.2	4	0.3	0.5	40	0.17
SEM84500201	0.2	4	0.3	1	40	0.17
SEM845002015	0.2	4	0.3	1.5	40	0.17
SEM84500202	0.2	4	0.3	2	40	0.17
SEM84500301	0.3	4	0.5	1	40	0.27
SEM845003015	0.3	4	0.5	1.5	40	0.27
SEM84500302	0.3	4	0.5	2	40	0.27
SEM845003025	0.3	4	0.5	2.5	40	0.27
SEM84500303	0.3	4	0.5	3	40	0.27
SEM84500304	0.3	4	0.5	4	40	0.27
SEM84500305	0.3	4	0.5	5	40	0.27
SEM84500401	0.4	4	0.6	1	40	0.37
SEM845004015	0.4	4	0.6	1.5	40	0.37
SEM84500402	0.4	4	0.6	2	40	0.37
SEM845004025	0.4	4	0.6	2.5	40	0.37
SEM84500403	0.4	4	0.6	3	40	0.37
SEM84500404	0.4	4	0.6	4	40	0.37
SEM84500405	0.4	4	0.6	5	40	0.37
SEM84500406	0.4	4	0.6	6	40	0.37
SEM84500408	0.4	4	0.6	8	40	0.37
SEM84500410	0.4	4	0.6	10	40	0.37
SEM84500501	0.5	4	0.7	1	45	0.45
SEM845005015	0.5	4	0.7	1.5	45	0.45
SEM84500502	0.5	4	0.7	2	45	0.45
SEM845005025	0.5	4	0.7	2.5	45	0.45
SEM84500503	0.5	4	0.7	3	45	0.45
SEM84500504	0.5	4	0.7	4	45	0.45

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

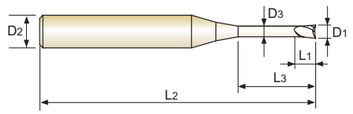
4G MILL END MILLS

SEM845 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK

- ▶Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- ▶For 1.0mm and under 1.0mm diameter sizes, designed double neck for increasing tool rigidity and minimizing vibration at working.
- ▶Available various rib processing due to supplying various effective length and overall length products.





MG 2 30° PLAIN P.831~835

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
SEM84500505	0.5	4	0.7	5	45	0.45
SEM84500506	0.5	4	0.7	6	45	0.45
SEM84500508	0.5	4	0.7	8	45	0.45
SEM84500510	0.5	4	0.7	10	45	0.45
SEM84500512	0.5	4	0.7	12	45	0.45
SEM84500514	0.5	4	0.7	14	45	0.45
SEM84500516	0.5	4	0.7	16	45	0.45
SEM84500602	0.6	4	0.9	2	45	0.55
SEM84500603	0.6	4	0.9	3	45	0.55
SEM84500604	0.6	4	0.9	4	45	0.55
SEM84500605	0.6	4	0.9	5	45	0.55
SEM84500606	0.6	4	0.9	6	45	0.55
SEM84500608	0.6	4	0.9	8	45	0.55
SEM84500610	0.6	4	0.9	10	45	0.55
SEM84500612	0.6	4	0.9	12	45	0.55
SEM84500614	0.6	4	0.9	14	45	0.55
SEM84500616	0.6	4	0.9	16	45	0.55
SEM84500702	0.7	4	1.2	2	45	0.65
SEM84500704	0.7	4	1.2	4	45	0.65
SEM84500706	0.7	4	1.2	6	45	0.65
SEM84500708	0.7	4	1.2	8	45	0.65
SEM84500710	0.7	4	1.2	10	45	0.65
SEM84500712	0.7	4	1.2	12	45	0.65
SEM84500802	0.8	4	1.2	2	45	0.75
SEM84500803	0.8	4	1.2	3	45	0.75
SEM84500804	0.8	4	1.2	4	45	0.75
SEM84500805	0.8	4	1.2	5	45	0.75
SEM84500806	0.8	4	1.2	6	45	0.75
SEM84500808	0.8	4	1.2	8	45	0.75
SEM84500810	0.8	4	1.2	10	45	0.75

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

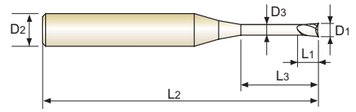
4G MILL END MILLS

SEM845 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK

▶Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
▶Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
▶For 1.0mm and under 1.0mm diameter sizes, designed double neck for increasing tool rigidity and minimizing vibration at working.
▶Available various rib processing due to supplying various effective length and overall length products.





MG 2 30° PLAIN P.831~835

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
SEM84500812	0.8	4	1.2	12	45	0.75
SEM84500814	0.8	4	1.2	14	45	0.75
SEM84500816	0.8	4	1.2	16	45	0.75
SEM84500820	0.8	4	1.2	20	45	0.75
SEM84500906	0.9	4	1.3	6	45	0.85
SEM84500908	0.9	4	1.3	8	45	0.85
SEM84500910	0.9	4	1.3	10	45	0.85
SEM84501002	1.0	4	1.5	2	50	0.95
SEM84501003	1.0	4	1.5	3	50	0.95
SEM84501004	1.0	4	1.5	4	50	0.95
SEM84501005	1.0	4	1.5	5	50	0.95
SEM84501006	1.0	4	1.5	6	50	0.95
SEM84501007	1.0	4	1.5	7	50	0.95
SEM84501008	1.0	4	1.5	8	50	0.95
SEM84501010	1.0	4	1.5	10	50	0.95
SEM84501012	1.0	4	1.5	12	50	0.95
SEM84501014	1.0	4	1.5	14	50	0.95
SEM84501016	1.0	4	1.5	16	50	0.95
SEM84501018	1.0	4	1.5	18	50	0.95
SEM84501020	1.0	4	1.5	20	50	0.95
SEM84501022	1.0	4	1.5	22	60	0.95
SEM84501026	1.0	4	1.5	26	60	0.95
SEM84501030	1.0	4	1.5	30	70	0.95
SEM84501040	1.0	4	1.5	40	80	0.95
SEM84501050	1.0	4	1.5	50	100	0.95
SEM84501204	1.2	4	1.8	4	50	1.15
SEM84501206	1.2	4	1.8	6	50	1.15
SEM84501208	1.2	4	1.8	8	50	1.15
SEM84501210	1.2	4	1.8	10	50	1.15
SEM84501212	1.2	4	1.8	12	50	1.15

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

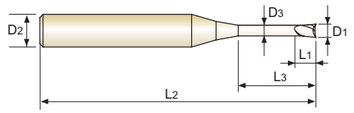
4G MILL END MILLS

SEM845 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK

▶Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
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▶For 1.0mm and under 1.0mm diameter sizes, designed double neck for increasing tool rigidity and minimizing vibration at working.
▶Available various rib processing due to supplying various effective length and overall length products.





MG 2 30° PLAIN P.831~835

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
SEM84501214	1.2	4	1.8	14	50	1.15
SEM84501216	1.2	4	1.8	16	50	1.15
SEM84501220	1.2	4	1.8	20	50	1.15
SEM84501226	1.2	4	1.8	26	60	1.15
SEM84501230	1.2	4	1.8	30	70	1.15
SEM84501406	1.4	4	2.1	6	50	1.35
SEM84501408	1.4	4	2.1	8	50	1.35
SEM84501410	1.4	4	2.1	10	50	1.35
SEM84501414	1.4	4	2.1	14	50	1.35
SEM84501416	1.4	4	2.1	16	50	1.35
SEM84501420	1.4	4	2.1	20	50	1.35
SEM84501504	1.5	4	2.3	4	50	1.45
SEM84501505	1.5	4	2.3	5	50	1. 45
SEM84501506	1.5	4	2.3	6	50	1.45
SEM84501507	1.5	4	2.3	7	50	1.45
SEM84501508	1.5	4	2.3	8	50	1.45
SEM84501510	1.5	4	2.3	10	50	1.45
SEM84501512	1.5	4	2.3	12	50	1.45
SEM84501514	1.5	4	2.3	14	50	1.45
SEM84501516	1.5	4	2.3	16	50	1.45
SEM84501518	1.5	4	2.3	18	50	1.45
SEM84501520	1.5	4	2.3	20	50	1.45
SEM84501522	1.5	4	2.3	22	60	1.45
SEM84501526	1.5	4	2.3	26	60	1.45
SEM84501530	1.5	4	2.3	30	70	1.45
SEM84501608	1.6	4	2.3	8	50	1.55
SEM84501610	1.6	4	2.3	10	50	1.55
SEM84501612	1.6	4	2.3	12	50	1.55
SEM84501616	1.6	4	2.3	16	50	1.55
SEM84501620	1.6	4	2.3	20	50	1.55

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

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

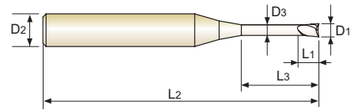
4G MILL END MILLS

SEM845 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK

▶Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
▶Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
▶For 1.0mm and under 1.0mm diameter sizes, designed double neck for increasing tool rigidity and minimizing vibration at working.
▶Available various rib processing due to supplying various effective length and overall length products.





MG 2 30° PLAIN P.831~835

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
SEM84501808	1.8	4	2.7	8	50	1.75
SEM84501810	1.8	4	2.7	10	50	1.75
SEM84501812	1.8	4	2.7	12	50	1.75
SEM84501816	1.8	4	2.7	16	50	1.75
SEM84501820	1.8	4	2.7	20	50	1.75
SEM84502006	2.0	4	3	6	50	1.95
SEM84502008	2.0	4	3	8	50	1.95
SEM84502010	2.0	4	3	10	50	1.95
SEM84502012	2.0	4	3	12	50	1.95
SEM84502014	2.0	4	3	14	50	1.95
SEM84502016	2.0	4	3	16	50	1.95
SEM84502018	2.0	4	3	18	50	1.95
SEM84502020	2.0	4	3	20	50	1.95
SEM84502022	2.0	4	3	22	60	1.95
SEM84502026	2.0	4	3	26	60	1.95
SEM84502030	2.0	4	3	30	70	1.95
SEM84502035	2.0	4	3	35	70	1.95
SEM84502040	2.0	4	3	40	80	1.95
SEM84502045	2.0	4	3	45	90	1.95
SEM84502050	2.0	4	3	50	100	1.95
SEM84502060	2.0	4	3	60	110	1.95
SEM84502508	2.5	4	4	8	50	2.40
SEM84502510	2.5	4	4	10	50	2.40
SEM84502512	2.5	4	4	12	50	2.40
SEM84502514	2.5	4	4	14	50	2.40
SEM84502516	2.5	4	4	16	50	2.40
SEM84502518	2.5	4	4	18	50	2.40
SEM84502520	2.5	4	4	20	50	2.40
SEM84502522	2.5	4	4	22	60	2.40
SEM84502526	2.5	4	4	26	60	2.40

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

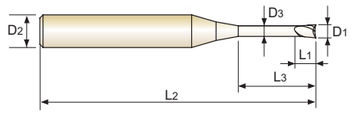
4G MILL END MILLS

SEM845 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK

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▶Available various rib processing due to supplying various effective length and overall length products.





MG | 2 | 30° | PLAIN

P.831~835

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
SEM84502530	2.5	4	4	30	70	2.40
SEM84502535	2.5	4	4	35	70	2.40
SEM84502540	2.5	4	4	40	80	2.40
SEM84502545	2.5	4	4	45	90	2.40
SEM84502550	2.5	4	4	50	100	2.40
SEM84503006	3.0	6	4.5	6	50	2.85
SEM84503008	3.0	6	4.5	8	50	2.85
SEM84503010	3.0	6	4.5	10	50	2.85
SEM84503012	3.0	6	4.5	12	50	2.85
SEM84503014	3.0	6	4.5	14	60	2.85
SEM84503016	3.0	6	4.5	16	60	2.85
SEM84503018	3.0	6	4.5	18	60	2.85
SEM84503020	3.0	6	4.5	20	60	2.85
SEM84503022	3.0	6	4.5	22	65	2.85
SEM84503026	3.0	6	4.5	26	65	2.85
SEM84503030	3.0	6	4.5	30	70	2.85
SEM84503035	3.0	6	4.5	35	70	2.85
SEM84503040	3.0	6	4.5	40	80	2.85
SEM84503045	3.0	6	4.5	45	90	2.85
SEM84503050	3.0	6	4.5	50	100	2.85
SEM84503060	3.0	6	4.5	60	100	2.85
SEM84504008	4.0	6	6	8	50	3.85
SEM84504010	4.0	6	6	10	50	3.85
SEM84504012	4.0	6	6	12	50	3.85
SEM84504014	4.0	6	6	14	60	3.85
SEM84504016	4.0	6	6	16	60	3.85
SEM84504018	4.0	6	6	18	60	3.85
SEM84504020	4.0	6	6	20	60	3.85
SEM84504022	4.0	6	6	22	65	3.85
SEM84504026	4.0	6	6	26	65	3.85

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

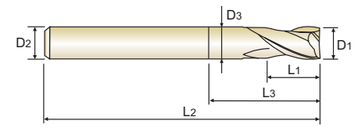
4G MILL END MILLS

SEM845 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK

▶Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
▶Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
▶For 1.0mm and under 1.0mm diameter sizes, designed double neck for increasing tool rigidity and minimizing vibration at working.
▶Available various rib processing due to supplying various effective length and overall length products.





MG | 2 | 30° | PLAIN

P.831~835

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
SEM84504030	4.0	6	6	30	70	3.85
SEM84504035	4.0	6	6	35	70	3.85
SEM84504040	4.0	6	6	40	80	3.85
SEM84504045	4.0	6	6	45	90	3.85
SEM84504050	4.0	6	6	50	100	3.85
SEM84504060	4.0	6	6	60	100	3.85
SEM84505016	5.0	6	8	16	60	4.85
SEM84505020	5.0	6	8	20	60	4.85
SEM84505026	5.0	6	8	26	65	4.85
SEM84505030	5.0	6	8	30	70	4.85
SEM84505035	5.0	6	8	35	75	4.85
SEM84505040	5.0	6	8	40	80	4.85
SEM84505050	5.0	6	8	50	90	4.85
SEM84505060	5.0	6	8	60	100	4.85
SEM84506015	6.0	6	9	15	60	5.85
SEM84506020	6.0	6	9	20	60	5.85
SEM84506030	6.0	6	9	30	70	5.85
SEM84506032	6.0	6	9	32	90	5.85
SEM84508025	8.0	8	12	25	70	7.70
SEM84508030	8.0	8	12	30	80	7.70
SEM84508042	8.0	8	12	42	100	7.70
SEM84510030	10.0	10	15	30	75	9.70
SEM84510035	10.0	10	15	35	80	9.70
SEM84510045	10.0	10	15	45	100	9.70
SEM84512035	12.0	12	20	35	80	11.70
SEM84512040	12.0	12	20	40	90	11.70
SEM84512050	12.0	12	20	50	110	11.70

Size	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	0~-0.012	h6
over Ø6	0~-0.015	

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

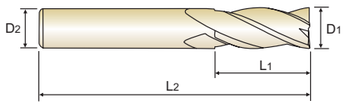
4G MILL END MILLS

SEME36 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.





MG | 4 | 27°/30° | PLAIN

D1<Ø3.0, 30° Helix

P.836

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME36008	0.8	4	1.6	40
SEME36009	0.9	4	1.8	40
SEME36010	1.0	6	2.5	50
SEME36012	1.2	6	3	50
SEME36015	1.5	6	4	50
SEME36020	2.0	6	6	50
SEME36025	2.5	6	7	50
SEME36030	3.0	6	8	50
SEME36035	3.5	6	10	50
SEME36040	4.0	6	10	50
SEME36045	4.5	6	14	50
SEME36050	5.0	6	15	60
SEME36055	5.5	6	15	60
SEME36060	6.0	6	15	60
SEME36065	6.5	8	18	60
SEME36070	7.0	8	20	60
SEME36075	7.5	8	20	60
SEME36080	8.0	8	20	70
SEME36085	8.5	10	22	70
SEME36090	9.0	10	22	70
SEME36095	9.5	10	24	70
SEME36100	10.0	10	25	75
SEME36105	10.5	12	26	75
SEME36110	11.0	12	30	75

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

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

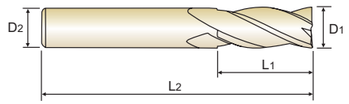
4G MILL END MILLS

SEME36 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.





MG | 4 | 27°/30° | PLAIN

D1<Ø3.0, 30° Helix

P.836

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME36115	11.5	12	30	80
SEME36120	12.0	12	30	80
SEME36130	13.0	12	35	100
SEME3614012S	14.0	12	35	100
SEME3614014S	14.0	14	35	100
SEME36140	14.0	16	35	100
SEME36150	15.0	16	38	100
SEME36160	16.0	16	40	100
SEME36170	17.0	16	42	100
SEME36180	18.0	16	45	100
SEME3618018S	18.0	18	45	100
SEME36190	19.0	20	45	100
SEME36200	20.0	20	45	100
SEME36210	21.0	20	45	100
SEME36220	22.0	20	45	100
SEME36230	23.0	25	50	120
SEME36240	24.0	25	50	120
SEME36250	25.0	25	50	120

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

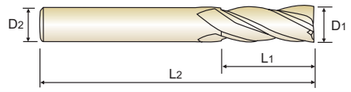
4G MILL END MILLS

SEME71 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE

- ▶Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- ▶Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.
  - Designed equal index flute for long length end mills.
- ▶Due to gash land geometry used at end tooth, heavy duty cutting can be achieved.
- ▶Available various length products like short, regular and long length end mills etc.





MG | 4 | 35°/38° | PLAIN

D1<Ø3.0, Long Length 38° Helix

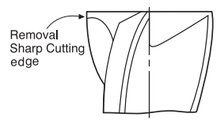
P.836

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEME7101001	1.0	6	1	40	Short
SEME7101002	1.0	6	2	40	Short
SEME71010	1.0	6	2.5	50	Regular
SEME7101003	1.0	6	3	50	Long
SEME7101004	1.0	6	4	50	Long
SEME7101006	1.0	6	6	50	Long
SEME7101202	1.2	6	2	40	Short
SEME71012	1.2	6	3	50	Regular
SEME7101204	1.2	6	4	50	Long
SEME7101206	1.2	6	6	50	Long
SEME71015015	1.5	6	1.5	40	Short
SEME7101503	1.5	6	3	40	Short
SEME71015	1.5	6	4	50	Regular
SEME7101506	1.5	6	6	50	Long
SEME7101508	1.5	6	8	50	Long
SEME7101510	1.5	6	10	50	Long
SEME7102002	2.0	6	2	40	Short
SEME7102004	2.0	6	4	40	Short
SEME71020	2.0	6	6	50	Regular
SEME7102008	2.0	6	8	50	Long
SEME7102010	2.0	6	10	50	Long
SEME7102012	2.0	6	12	50	Long
SEME71025025	2.5	6	2.5	40	Short
SEME7102505	2.5	6	5	40	Short
SEME71025	2.5	6	7	50	Regular
SEME7102510	2.5	6	10	50	Long

▶ NEXT PAGE



◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

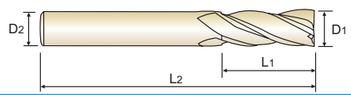
4G MILL END MILLS

SEME71 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE

- ▶Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- ▶Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.
  - Designed equal index flute for long length end mills.
- ▶Due to gash land geometry used at end tooth, heavy duty cutting can be achieved.
- ▶Available various length products like short, regular and long length end mills etc.





MG | 4 | 35°/38° | PLAIN

D1<Ø3.0, Long Length 38° Helix

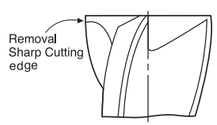
P.836

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEME7102512	2.5	6	12	50	Long
SEME7103003	3.0	6	3	40	Short
SEME7103006	3.0	6	6	40	Short
SEME71030	3.0	6	8	50	Regular
SEME7103010	3.0	6	10	50	Long
SEME7103012	3.0	6	12	50	Long
SEME7103014	3.0	6	14	50	Long
SEME7104004	4.0	6	4	40	Short
SEME7104008	4.0	6	8	40	Short
SEME71040	4.0	6	10	50	Regular
SEME7104012	4.0	6	12	50	Long
SEME7104014	4.0	6	14	50	Long
SEME7104016	4.0	6	16	50	Long
SEME7105005	5.0	6	5	50	Short
SEME7105010	5.0	6	10	50	Short
SEME71050	5.0	6	15	60	Regular
SEME7105020	5.0	6	20	60	Long
SEME7105025	5.0	6	25	60	Long
SEME7106006	6.0	6	6	50	Short
SEME7106012	6.0	6	12	50	Short
SEME71060	6.0	6	15	60	Regular
SEME7106020	6.0	6	20	60	Long
SEME7106025	6.0	6	25	60	Long
SEME7108016	8.0	8	16	60	Short
SEME71080	8.0	8	20	70	Regular
SEME7108025	8.0	8	25	70	Long

▶ NEXT PAGE



◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

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

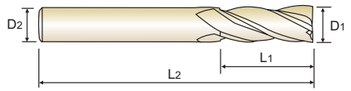
4G MILL END MILLS

SEME71 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE

- ▶Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- ▶Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.
  - Designed equal index flute for long length end mills.
- ▶Due to gash land geometry used at end tooth, heavy duty cutting can be achieved.
- ▶Available various length products like short, regular and long length end mills etc.





MG | 4 | 35°/38° | PLAIN

D1<Ø3.0, Long Length 38° Helix

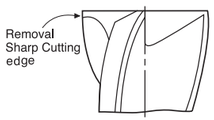
P.836

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEME7108030	8.0	8	30	70	Long
SEME7110022	10.0	10	22	65	Short
SEME71100	10.0	10	25	75	Regular
SEME7110030	10.0	10	30	75	Long
SEME7110035	10.0	10	35	75	Long
SEME7112026	12.0	12	26	70	Short
SEME71120	12.0	12	30	80	Regular
SEME7112035	12.0	12	35	80	Long
SEME7112040	12.0	12	40	80	Long
SEME71140	14.0	16	35	100	Regular
SEME7116032	16.0	16	32	100	Short
SEME71160	16.0	16	40	100	Regular
SEME71180	18.0	20	45	100	Regular
SEME71200	20.0	20	45	100	Regular

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



◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

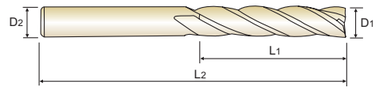
4G MILL END MILLS

SEME72 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG LENGTH

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- ▶ Available various length of cut and overall length products.





MG | 4 | 30° | PLAIN

P.837~838

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME7201003	1.0	6	3	60
SEME7201004	1.0	6	4	60
SEME7201005	1.0	6	5	60
SEME7201006	1.0	6	6	60
SEME7201007	1.0	6	7	60
SEME7201008	1.0	6	8	60
SEME7201010	1.0	6	10	60
SEME7201012	1.0	6	12	60
SEME7201204	1.2	6	4	60
SEME7201206	1.2	6	6	60
SEME7201208	1.2	6	8	60
SEME7201210	1.2	6	10	60
SEME7201212	1.2	6	12	60
SEME7201506	1.5	6	6	60
SEME7201508	1.5	6	8	60
SEME7201510	1.5	6	10	60
SEME7201512	1.5	6	12	60
SEME7201514	1.5	6	14	60
SEME7201516	1.5	6	16	60
SEME7202008	2.0	6	8	60
SEME7202010	2.0	6	10	60
SEME7202012	2.0	6	12	60
SEME7202014	2.0	6	14	60
SEME7202016	2.0	6	16	60
SEME7202510	2.5	6	10	60
SEME7202512	2.5	6	12	60
SEME7202516	2.5	6	16	60
SEME7202520	2.5	6	20	60

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

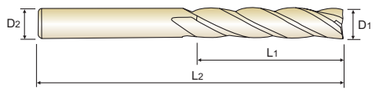
4G MILL END MILLS

SEME72 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG LENGTH

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Available various length of cut and overall length products.





MG | 4 | 30° | PLAIN

P.837~838

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME7202526	2.5	6	26	60
SEME720301635	3.0	3	16	100
SEME7203010	3.0	6	10	70
SEME7203012	3.0	6	12	70
SEME7203014	3.0	6	14	70
SEME7203016	3.0	6	16	70
SEME7203020	3.0	6	20	70
SEME7203026	3.0	6	26	70
SEME7203030	3.0	6	30	70
SEME720402045	4.0	4	20	100
SEME7204012	4.0	6	12	70
SEME7204016	4.0	6	16	70
SEME7204020	4.0	6	20	70
SEME7204026	4.0	6	26	70
SEME7204030	4.0	6	30	70
SEME7205020	5.0	6	20	70
SEME7205025	5.0	6	25	70
SEME7205025100	5.0	6	25	100
SEME7205030	5.0	6	30	80
SEME7205035	5.0	6	35	90
SEME7205040	5.0	6	40	100
SEME7206015	6.0	6	15	60
SEME7206015080	6.0	6	15	80
SEME7206020	6.0	6	20	70
SEME7206020090	6.0	6	20	90
SEME7206025	6.0	6	25	75
SEME7206030	6.0	6	30	80
SEME7206030100	6.0	6	30	100

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

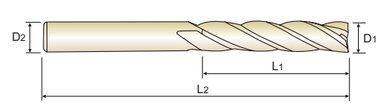
4G MILL END MILLS

SEME72 SERIES PLAIN SHANK

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MG | 4 | 30° | PLAIN

P.837~838

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME7206030150	6.0	6	30	150
SEME7206035	6.0	6	35	90
SEME7206040	6.0	6	40	90
SEME7206040120	6.0	6	40	120
SEME7206045	6.0	6	45	150
SEME7208025	8.0	8	25	80
SEME7208030	8.0	8	30	80
SEME7208030100	8.0	8	30	100
SEME7208035	8.0	8	35	90
SEME7208040	8.0	8	40	90
SEME7208040120	8.0	8	40	120
SEME7208040150	8.0	8	40	150
SEME7208045	8.0	8	45	100
SEME7208050	8.0	8	50	100
SEME7208050150	8.0	8	50	150
SEME7210030	10.0	10	30	80
SEME7210030100	10.0	10	30	100
SEME7210035	10.0	10	35	90
SEME7210040	10.0	10	40	90
SEME7210040120	10.0	10	40	120
SEME7210045	10.0	10	45	100
SEME7210050	10.0	10	50	100
SEME7210050150	10.0	10	50	150
SEME7210050200	10.0	10	50	200
SEME7210055	10.0	10	55	150
SEME7210060	10.0	10	60	110
SEME7210060200	10.0	10	60	200
SEME7212035	12.0	12	35	90

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

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

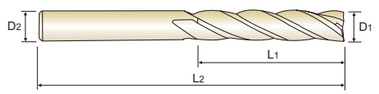
4G MILL END MILLS

SEME72 SERIES PLAIN SHANK

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MG | 4 | 30° | PLAIN

P.837~838

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME7212040	12.0	12	40	100
SEME7212040120	12.0	12	40	120
SEME7212045	12.0	12	45	130
SEME7212050	12.0	12	50	100
SEME7212050150	12.0	12	50	150
SEME7212055	12.0	12	55	110
SEME7212060	12.0	12	60	110
SEME7212060150	12.0	12	60	150
SEME7212060200	12.0	12	60	200
SEME7212065	12.0	12	65	150
SEME7212070	12.0	12	70	120
SEME7212070200	12.0	12	70	200
SEME7214050	14.0	16	50	110
SEME7214060	14.0	16	60	150
SEME7216040	16.0	16	40	150
SEME7216050	16.0	16	50	110
SEME7216050150	16.0	16	50	150
SEME7216060	16.0	16	60	120
SEME7216070	16.0	16	70	130
SEME7216070150	16.0	16	70	150
SEME7216070200	16.0	16	70	200
SEME7216080	16.0	16	80	150
SEME7216090	16.0	16	90	150
SEME72160110	16.0	16	110	200
SEME72160120	16.0	16	120	250
SEME7218050	18.0	20	50	120
SEME7218070	18.0	20	70	130
SEME72180100	18.0	20	100	200

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

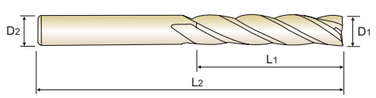
4G MILL END MILLS

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MG | 4 | 30° | PLAIN

P.837~838

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME7220050	20.0	20	50	110
SEME7220050150	20.0	20	50	150
SEME7220060	20.0	20	60	130
SEME7220070	20.0	20	70	130
SEME7220080	20.0	20	80	150
SEME7220090	20.0	20	90	150
SEME7220090200	20.0	20	90	200
SEME72200110	20.0	20	110	200
SEME72200120	20.0	20	120	250
SEME7222075	22.0	20	75	150
SEME72220110	22.0	20	110	200
SEME7225070	25.0	25	70	150
SEME7225090	25.0	25	90	150
SEME72250110	25.0	25	110	200
SEME72250120	25.0	25	120	250

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

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

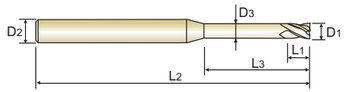
4G MILL END MILLS

SEME73 SERIES PLAIN SHANK

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MG | 4 | 30° | PLAIN

P.839~841

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
SEME7301002	1.0	4	1.5	2	50	0.95
SEME7301003	1.0	4	1.5	3	50	0.95
SEME7301004	1.0	4	1.5	4	50	0.95
SEME7301005	1.0	4	1.5	5	50	0.95
SEME7301006	1.0	4	1.5	6	50	0.95
SEME7301007	1.0	4	1.5	7	50	0.95
SEME7301008	1.0	4	1.5	8	50	0.95
SEME7301010	1.0	4	1.5	10	50	0.95
SEME7301012	1.0	4	1.5	12	50	0.95
SEME7301014	1.0	4	1.5	14	50	0.95
SEME7301016	1.0	4	1.5	16	50	0.95
SEME7301018	1.0	4	1.5	18	50	0.95
SEME7301020	1.0	4	1.5	20	50	0.95
SEME7301022	1.0	4	1.5	22	60	0.95
SEME7301026	1.0	4	1.5	26	60	0.95
SEME7301030	1.0	4	1.5	30	70	0.95
SEME7301040	1.0	4	1.5	40	80	0.95
SEME7301050	1.0	4	1.5	50	100	0.95
SEME7301204	1.2	4	1.8	4	50	1.15
SEME7301206	1.2	4	1.8	6	50	1.15
SEME7301208	1.2	4	1.8	8	50	1.15
SEME7301210	1.2	4	1.8	10	50	1.15
SEME7301212	1.2	4	1.8	12	50	1.15
SEME7301214	1.2	4	1.8	14	50	1.15
SEME7301216	1.2	4	1.8	16	50	1.15
SEME7301220	1.2	4	1.8	20	50	1.15
SEME7301226	1.2	4	1.8	26	60	1.15
SEME7301230	1.2	4	1.8	30	70	1.15
SEME7301504	1.5	4	2.3	4	50	1.45
SEME7301505	1.5	4	2.3	5	50	1.45
SEME7301506	1.5	4	2.3	6	50	1.45
SEME7301507	1.5	4	2.3	7	50	1.45

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

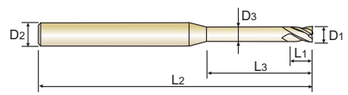
4G MILL END MILLS

SEME73 SERIES PLAIN SHANK

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MG | 4 | 30° | PLAIN

P.839~841

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
SEME7301508	1.5	4	2.3	8	50	1.45
SEME7301510	1.5	4	2.3	10	50	1.45
SEME7301512	1.5	4	2.3	12	50	1.45
SEME7301514	1.5	4	2.3	14	50	1.45
SEME7301516	1.5	4	2.3	16	50	1.45
SEME7301518	1.5	4	2.3	18	50	1.45
SEME7301520	1.5	4	2.3	20	50	1.45
SEME7301522	1.5	4	2.3	22	60	1.45
SEME7301526	1.5	4	2.3	26	60	1.45
SEME7301530	1.5	4	2.3	30	70	1.45
SEME7302006	2.0	4	3	6	50	1.95
SEME7302008	2.0	4	3	8	50	1.95
SEME7302010	2.0	4	3	10	50	1.95
SEME7302012	2.0	4	3	12	50	1.95
SEME7302014	2.0	4	3	14	50	1.95
SEME7302016	2.0	4	3	16	50	1.95
SEME7302018	2.0	4	3	18	50	1.95
SEME7302020	2.0	4	3	20	50	1.95
SEME7302022	2.0	4	3	22	60	1.95
SEME7302026	2.0	4	3	26	60	1.95
SEME7302030	2.0	4	3	30	70	1.95
SEME7302035	2.0	4	3	35	70	1.95
SEME7302040	2.0	4	3	40	80	1.95
SEME7302045	2.0	4	3	45	90	1.95
SEME7302050	2.0	4	3	50	100	1.95
SEME7302060	2.0	4	3	60	110	1.95
SEME7302508	2.5	4	4	8	50	2.40
SEME7302510	2.5	4	4	10	50	2.40
SEME7302512	2.5	4	4	12	50	2.40
SEME7302514	2.5	4	4	14	50	2.40
SEME7302516	2.5	4	4	16	50	2.40
SEME7302518	2.5	4	4	18	50	2.40

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

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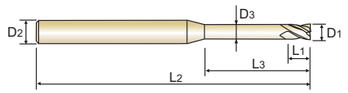
4G MILL END MILLS

SEME73 SERIES PLAIN SHANK

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MG | 4 | 30° | PLAIN

P.839~841

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
SEME7302520	2.5	4	4	20	50	2.40
SEME7302522	2.5	4	4	22	60	2.40
SEME7302526	2.5	4	4	26	60	2.40
SEME7302530	2.5	4	4	30	70	2.40
SEME7302535	2.5	4	4	35	70	2.40
SEME7302540	2.5	4	4	40	80	2.40
SEME7302545	2.5	4	4	45	90	2.40
SEME7302550	2.5	4	4	50	100	2.40
SEME7303006	3.0	6	4.5	6	50	2.85
SEME7303008	3.0	6	4.5	8	50	2.85
SEME7303010	3.0	6	4.5	10	50	2.85
SEME7303012	3.0	6	4.5	12	50	2.85
SEME7303014	3.0	6	4.5	14	60	2.85
SEME7303016	3.0	6	4.5	16	60	2.85
SEME7303018	3.0	6	4.5	18	60	2.85
SEME7303020	3.0	6	4.5	20	60	2.85
SEME7303022	3.0	6	4.5	22	65	2.85
SEME7303026	3.0	6	4.5	26	65	2.85
SEME7303030	3.0	6	4.5	30	70	2.85
SEME7303035	3.0	6	4.5	35	70	2.85
SEME7303040	3.0	6	4.5	40	80	2.85
SEME7303045	3.0	6	4.5	45	90	2.85
SEME7303050	3.0	6	4.5	50	100	2.85
SEME7303060	3.0	6	4.5	60	100	2.85
SEME7304008	4.0	6	6	8	50	3.85
SEME7304010	4.0	6	6	10	50	3.85
SEME7304012	4.0	6	6	12	50	3.85
SEME7304014	4.0	6	6	14	60	3.85
SEME7304016	4.0	6	6	16	60	3.85
SEME7304018	4.0	6	6	18	60	3.85
SEME7304020	4.0	6	6	20	60	3.85
SEME7304022	4.0	6	6	22	65	3.85

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

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

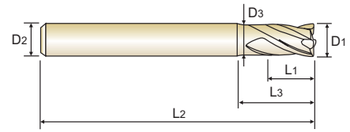
4G MILL END MILLS

SEME73 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG NECK

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Available various length of cut and overall length products.





MG | 4 | 30° | PLAIN

P.839~841

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
SEME7304026	4.0	6	6	26	65	3.85
SEME7304030	4.0	6	6	30	70	3.85
SEME7304035	4.0	6	6	35	70	3.85
SEME7304040	4.0	6	6	40	80	3.85
SEME7304045	4.0	6	6	45	90	3.85
SEME7304050	4.0	6	6	50	100	3.85
SEME7304060	4.0	6	6	60	100	3.85
SEME7305016	5.0	6	8	16	60	4.85
SEME7305020	5.0	6	8	20	60	4.85
SEME7305026	5.0	6	8	26	65	4.85
SEME7305030	5.0	6	8	30	70	4.85
SEME7305035	5.0	6	8	35	75	4.85
SEME7305040	5.0	6	8	40	80	4.85
SEME7305050	5.0	6	8	50	90	4.85
SEME7305060	5.0	6	8	60	100	4.85
SEME7306015	6.0	6	9	15	60	5.85
SEME7306020	6.0	6	9	20	60	5.85
SEME7306030	6.0	6	9	30	70	5.85
SEME7306032	6.0	6	9	32	90	5.85
SEME7308025	8.0	8	12	25	70	7.70
SEME7308030	8.0	8	12	30	80	7.70
SEME7308042	8.0	8	12	42	100	7.70
SEME7310030	10.0	10	15	30	75	9.70
SEME7310035	10.0	10	15	35	80	9.70
SEME7310045	10.0	10	15	45	100	9.70
SEME7312035	12.0	12	20	35	80	11.70
SEME7312040	12.0	12	20	40	90	11.70
SEME7312050	12.0	12	20	50	110	11.70

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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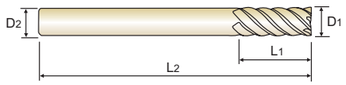
4G MILL END MILLS

SEME75 SERIES PLAIN SHANK

CARBIDE, 6 FLUTE 45º HELIX (Regular, Long Shank)

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Due to 45 helix angle, better surface roughness can be achieved at side cutting.
- Available various effective length and overall length products.





MG | 6 | 45° | PLAIN | P.842~843

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEME75060	6.0	6	15	60	Regular
SEME7506020	6.0	6	20	70	Long
SEME7506030	6.0	6	30	80	Long
SEME7506030110	6.0	6	30	110	Long
SEME75080	8.0	8	20	70	Regular
SEME7508030	8.0	8	30	80	Long
SEME7508035	8.0	8	35	90	Long
SEME7508040	8.0	8	40	90	Long
SEME7508040130	8.0	8	40	130	Long
SEME75100	10.0	10	25	75	Regular
SEME7510030	10.0	10	30	80	Long
SEME7510040	10.0	10	40	90	Long
SEME7510050	10.0	10	50	100	Long
SEME7510050150	10.0	10	50	150	Long
SEME75120	12.0	12	30	80	Regular
SEME7512040	12.0	12	40	90	Long
SEME7512050	12.0	12	50	100	Long
SEME7512060	12.0	12	60	110	Long
SEME7512060150	12.0	12	60	150	Long
SEME75160	16.0	16	40	100	Regular
SEME7516050	16.0	16	50	110	Long
SEME7516060	16.0	16	60	120	Long
SEME7516090	16.0	16	90	150	Long
SEME75160110	16.0	16	110	200	Long
SEME75160110250	16.0	16	110	250	Long
SEME75200	20.0	20	45	100	Regular
SEME7520060	20.0	20	60	120	Long
SEME7520070	20.0	20	70	130	Long
SEME75200110	20.0	20	110	200	Long
SEME75200110250	20.0	20	110	250	Long
SEME75200110300	20.0	20	110	300	Long

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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4G MILL END MILLS

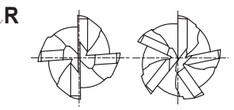
X-SPEED ROUGHER

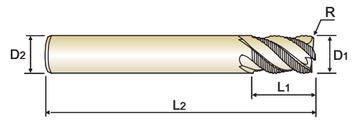
G9D75 SERIES PLAIN SHANK
G9D67 SERIES FLAT SHANK

CARBIDE, 4&5 FLUTE MULTIPLE HELIX SHORT LENGTH ROUGHING CORNER RADIUS

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







MG | 4&5 | 44º/45º | PLAIN | P.844

5 Flute, 44°/44.5°/45°

◇ Call for Availability

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	No. of Flute
G9D75060	G9D67060	R0.5	6.0	6	9	57	4
G9D75080	G9D67080	R0.5	8.0	8	12	63	4
G9D75100	G9D67100	R0.5	10.0	10	15	72	4
G9D75120	G9D67120	R0.5	12.0	12	18	83	4
G9D75160	G9D67160	R1.0	16.0	16	24	92	5
G9D75200	G9D67200	R1.0	20.0	20	30	104	5

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.05	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			○	◎	○						

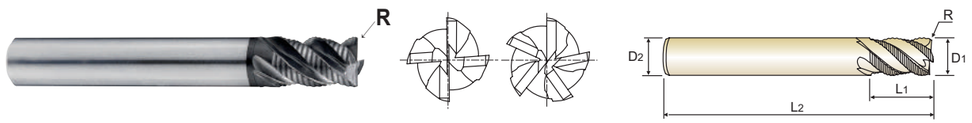
4G MILL END MILLS

X-SPEED ROUGHER

G9D76 SERIES PLAIN SHANK
G9D68 SERIES FLAT SHANK

CARBIDE, 4&5 FLUTE MULTIPLE HELIX LONG LENGTH ROUGHING CORNER RADIUS

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



MG | 4&5 | 44°/45° | PLAIN

5 Flute, 44°/44.5°/45°

P.844

◇ Call for Availability

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
PLAIN	FLAT	R	D_1	D_2	L_1	L_2	
G9D76060	**G9D68060**	R0.5	**6.0**	6	9	57	4
G9D76080	**G9D68080**	R0.5	**8.0**	8	12	63	4
G9D76100	**G9D68100**	R0.5	**10.0**	10	15	72	4
G9D76120	**G9D68120**	R0.5	**12.0**	12	18	83	4
G9D76160	**G9D68160**	R1.0	**16.0**	16	24	92	5
G9D76200	**G9D68200**	R1.0	**20.0**	20	30	104	5

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.05	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			○	◎	○						

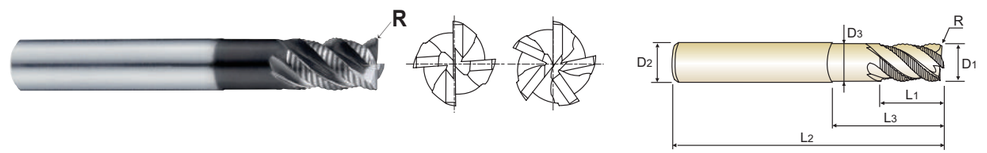
4G MILL END MILLS

X-SPEED ROUGHER

G9D77 SERIES PLAIN SHANK
G9D69 SERIES FLAT SHANK

CARBIDE, 4&5 FLUTE MULTIPLE HELIX LONG REACH ROUGHING CORNER RADIUS

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



MG | 4&5 | 44°/45° | PLAIN

5 Flute, 44°/44.5°/45°

P.844

◇ Call for Availability

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	No. of Flute
PLAIN	FLAT	R	D_1	D_2	L_1	L_3	L_2	D_3	
G9D77060	**G9D69060**	R0.5	**6.0**	6	9	18	57	5.50	4
G9D77080	**G9D69080**	R0.5	**8.0**	8	12	24	63	7.50	4
G9D77100	**G9D69100**	R0.5	**10.0**	10	15	30	72	9.50	4
G9D77120	**G9D69120**	R0.5	**12.0**	12	18	36	83	11.50	4
G9D77160	**G9D69160**	R1.0	**16.0**	16	24	48	100	15.50	5
G9D77200	**G9D69200**	R1.0	**20.0**	20	30	60	110	19.20	5

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.05	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			○	◎	○						

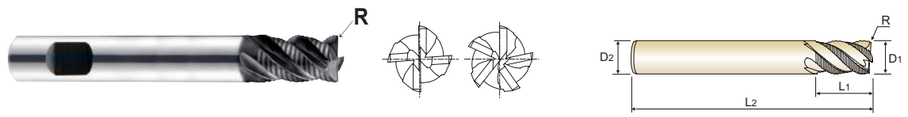
4G MILL END MILLS

X-SPEED ROUGHER

GAE53 SERIES FLAT SHANK

HSS-PM, 4&5 FLUTE MULTIPLE HELIX SHORT LENGTH ROUGHING CORNER RADIUS

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



HSS PM | 4&5 | 44°/45° | FLAT

5 Flute, 44°/44.5°/45°

P.845

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flute
		Metric	Inch				
FLAT	R	D1(js12)		D2(h6)	L1	L2	
GAE53060	R0.5	6.0	.2362	6	13	57	4
GAE53070	R0.5	7.0	.2756	10	16	66	4
GAE53080	R0.5	8.0	.3150	10	19	69	4
GAE53090	R0.5	9.0	.3543	10	19	69	4
GAE53100	R0.5	10.0	.3937	10	22	72	4
GAE53120	R0.5	12.0	.4724	12	26	83	4
GAE53140	R1.0	14.0	.5512	16	26	83	5
GAE53160	R1.0	16.0	.6299	16	32	92	5
GAE53180	R1.0	18.0	.7087	20	32	92	5
GAE53200	R1.0	20.0	.7874	20	38	104	5

Tolerances according to DIN 7160 & 7161

Tolerance range in ㎛						
Nominal-Diameter in ㎜						
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30	over 30 to 50
js12	± 50	± 60	± 75	± 90	± 105	± 125
h6	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13	0 - 16

◎ : Excellent ○ : Good

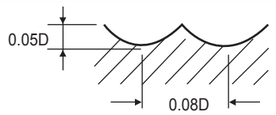
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○				◎	◎	○						

4G MILL END MILLS

CARBIDE, 2 FLUTE BALL NOSE

GMF15 SERIES

MATERIAL	P					
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	~ HRc35		HRc35 ~ HRc45		HRc45 ~ HRc55	
STRENGTH	~ 1100N/mm²		1110 ~ 1500N/mm²		1500 ~ 2000N/mm²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R.002 × .004	39400	21.3	39370	19.3	32480	15.6
R.004 × .008	29530	28.0	29530	24.4	26570	22.2
R.006 × .012	29530	34.8	29530	31.3	26570	28.0
R.075 × .015	29490	44.1	31500	42.1	28350	37.2
R.010 × .020	29530	55.7	29530	48.8	26570	44.1
R.012 × .024	29530	67.5	29530	58.1	26570	51.2
R.014 × .028	29530	79.1	29530	67.5	26570	60.4
R.0155 × .031	30480	93.5	30480	79.1	27430	72.1
R.0175 × .035	30370	103.9	30370	89.8	27330	81.3
R.0234 × 3/64	30240	121.5	29030	102.4	26000	91.7
R1/32 × 1/16	28350	120.5	27210	100.4	24380	89.4
R.0391 × 5/64	30050	135.6	28910	114.4	24190	95.3
R3/64 × 3/32	24990	145.1	24040	125.2	20160	99.2
R1/16 × 1/8	18770	133.9	18030	118.3	15120	89.4
R3/32 × 3/16	12310	131.7	11820	113.8	9920	86.4
R.102 × 13/64	10820	132.9	10350	112.2	8720	85.8
R1/8 × 1/4	7880	108.3	7600	91.5	6240	69.1
R9/64 × 9/32	7070	102.2	6820	85.6	5680	65.6
R5/32 × 5/16	6710	100.0	6470	83.3	5440	64.4
R3/16 × 3/8	5860	91.7	5610	77.0	4720	59.5
R1/4 × 1/2	3940	65.8	3780	55.7	3170	42.3
R9/32 × 9/16	3670	64.8	3530	57.9	2970	41.7
R5/16 × 5/8	3370	63.2	3240	52.4	2720	40.6
R3/8 × 3/4	2800	58.3	2710	48.4	2270	37.2



RPM = rev./min.
FEED = inch/min.

4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE BALL NOSE WITH NECK

GMF16 SERIES

MATERIAL		P								
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS		~ HRc35			HRc35 ~ HRc45			HRc45 ~ HRc55		
STRENGTH		~ 1100N/mm²			1110 ~ 1500N/mm²			1500 ~ 2000N/mm²		
DIA.	LBS	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)
.008	1/64	49210	13.0	.0007	49210	12.0	.0006	42520	10.0	.0004
.008	3/64	44290	10.4	.0003	44290	9.7	.0002	38270	8.1	.0002
.012	3/64	49210	18.5	.0007	49210	16.7	.0006	42130	14.2	.0004
.012	5/64	44290	15.0	.0004	44290	13.6	.0004	37910	11.4	.0002
.012	1/8	39370	11.8	.0003	39370	10.6	.0002	33700	9.1	.0002
.015	3/64	43040	20.3	.0009	40730	17.5	.0008	35910	14.0	.0005
.015	5/64	38740	16.3	.0006	36660	14.2	.0004	32310	11.4	.0003
.015	1/8	38740	16.3	.0004	36660	14.2	.0003	32310	11.4	.0002
.015	5/32	34440	13.0	.0004	32590	11.2	.0003	28720	9.1	.0002
.020	3/64	33660	26.6	.0018	31790	22.4	.0015	28050	19.9	.0010
.020	5/64	33660	26.6	.0013	31790	22.4	.0011	28050	19.9	.0007
.020	1/8	30300	21.5	.0007	28610	18.1	.0006	25250	16.1	.0004
.020	5/32	30300	21.5	.0007	28610	18.1	.0006	25250	16.1	.0004
.020	3/16	30300	21.5	.0004	28610	18.1	.0004	25250	16.1	.0002
.020	1/4	26930	16.9	.0004	25430	14.4	.0004	22440	12.8	.0002
.020	5/16	20200	11.2	.0003	19070	9.5	.0002	16830	8.5	.0002
.020	3/8	20200	11.2	.0002	19070	9.5	.0002	16830	8.5	.0001
.024	5/64	33660	39.8	.0015	31790	32.5	.0013	28050	26.6	.0008
.024	1/8	30300	32.1	.0009	28610	26.4	.0007	25250	21.5	.0005
.024	5/32	30300	32.1	.0009	28610	26.4	.0007	25250	21.5	.0005
.024	3/16	30300	32.1	.0009	28610	26.4	.0007	25250	21.5	.0005
.024	1/4	26930	25.4	.0006	25430	20.9	.0004	22440	16.9	.0003
.024	5/16	26930	25.4	.0003	25430	20.9	.0003	22440	16.9	.0002
.024	3/8	20200	16.7	.0003	19070	13.6	.0003	16830	11.2	.0002
.024	1/2	10100	7.1	.0002	9540	5.9	.0002	8420	4.7	.0001
1/32	5/64	34470	48.8	.0028	32550	41.1	.0024	28720	33.9	.0016
1/32	1/8	34470	48.8	.0020	32550	41.1	.0017	28720	33.9	.0011
1/32	5/32	34470	48.8	.0020	32550	41.1	.0017	28720	33.9	.0011
1/32	3/16	31020	39.6	.0011	29300	33.3	.0009	25850	27.6	.0006
1/32	1/4	31020	39.6	.0011	29300	33.3	.0009	25850	27.6	.0006
1/32	5/16	31020	39.6	.0007	29300	33.3	.0006	25850	27.6	.0004
1/32	3/8	27580	31.3	.0007	26040	26.4	.0006	22980	21.7	.0004
3/64	1/8	26510	54.5	.0042	25000	45.7	.0035	22070	37.6	.0024
3/64	5/32	26510	54.5	.0030	25000	45.7	.0025	22070	37.6	.0017
3/64	3/16	26510	54.5	.0030	25000	45.7	.0025	22070	37.6	.0017
3/64	1/4	23860	44.3	.0017	22500	37.0	.0014	19870	30.5	.0009
3/64	5/16	23860	44.3	.0017	22500	37.0	.0014	19870	30.5	.0009
3/64	3/8	23860	44.3	.0017	22500	37.0	.0014	19870	30.5	.0009
3/64	1/2	21210	34.8	.0011	20000	29.1	.0009	17660	24.2	.0006
3/64	9/16	21210	34.8	.0011	20000	29.1	.0009	17660	24.2	.0006
3/64	5/8	21210	34.8	.0006	20000	29.1	.0005	17660	24.2	.0004
3/64	3/4	15900	22.8	.0006	15000	19.1	.0005	13240	15.8	.0004

DIA. = Diameter RPM = rev./min.
LBS = Length Below Shank FEED = inch/min.

4G MILL END MILLS
RECOMMENDED CUTTING CONDITIONS
CARBIDE, 2 FLUTE BALL NOSE WITH NECK
GMF16 SERIES

MATERIAL		P								
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS		~ HRc35			HRc35 ~ HRc45			HRc45 ~ HRc55		
STRENGTH		~ 1100N/mm²			1110 ~ 1500N/mm²			1500 ~ 2000N/mm²		
DIA.	LBS	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)
1/16	5/32	22580	58.9	.0056	21350	50.4	.0047	18900	40.0	.0031
1/16	1/4	22580	58.9	.0039	21350	50.4	.0033	18900	40.0	.0022
1/16	5/16	22580	58.9	.0039	21350	50.4	.0033	18900	40.0	.0022
1/16	3/8	20320	47.6	.0022	19220	40.8	.0019	17010	32.5	.0013
1/16	1/2	20320	47.6	.0022	19220	40.8	.0019	17010	32.5	.0013
1/16	9/16	20320	47.6	.0014	19220	40.8	.0012	17010	32.5	.0008
1/16	5/8	20320	47.6	.0014	19220	40.8	.0012	17010	32.5	.0008
1/16	3/4	18070	37.6	.0014	17080	32.3	.0012	15120	25.6	.0008
5/64	1/4	18140	71.3	.0049	17130	60.4	.0041	15120	50.9	.0027
5/64	5/16	18140	71.3	.0049	17130	60.4	.0041	15120	51.0	.0027
5/64	3/8	18140	71.3	.0049	17130	60.4	.0041	15120	51.0	.0027
5/64	1/2	16330	57.7	.0028	15420	49.0	.0024	13610	41.3	.0016
5/64	9/16	16330	57.7	.0028	15420	49.0	.0024	13610	41.3	.0016
5/64	5/8	16330	57.7	.0028	15420	49.0	.0024	13610	41.3	.0016
5/64	11/16	16330	57.7	.0018	15420	49.0	.0015	13610	41.3	.0010
5/64	3/4	16330	57.7	.0018	15420	49.0	.0015	13610	41.3	.0010
5/64	1	14510	45.7	.0018	13710	38.8	.0015	12090	32.7	.0010
5/64	1-3/16	10890	29.9	.0011	10280	25.4	.0009	9070	21.5	.0006
3/32	3/8	16590	79.5	.0059	15640	66.3	.0049	13860	53.9	.0033
3/32	3/4	14930	64.4	.0034	14080	53.7	.0028	12470	43.7	.0019
1/8	5/16	12940	76.2	.0113	12190	64.4	.0094	10770	53.4	.0063
1/8	3/8	12940	76.2	.0113	12190	64.4	.0094	10770	53.4	.0063
1/8	1/2	12940	76.2	.0079	12190	64.4	.0066	10770	53.4	.0044
1/8	9/16	12940	76.2	.0079	12190	64.4	.0066	10770	53.4	.0044
1/8	5/8	12940	76.2	.0079	12190	64.4	.0066	10770	53.4	.0044
1/8	11/16	11650	61.8	.0045	10970	52.2	.0037	9690	43.3	.0025
1/8	3/4	11650	61.8	.0045	10970	52.2	.0037	9690	43.3	.0025
1/8	1	11650	61.8	.0045	10970	52.2	.0037	9690	43.3	.0025
1/8	1-3/16	11650	61.8	.0028	10970	52.2	.0024	9690	43.3	.0016
1/8	1-3/8	10360	48.8	.0028	9750	41.1	.0024	8620	34.3	.0016
3/16	3/8	8230	65.0	.0169	7810	55.3	.0141	6890	46.1	.0094
3/16	1/2	8230	65.0	.0169	7810	55.3	.0141	6890	46.1	.0094
3/16	9/16	8230	65.0	.0169	7810	55.3	.0141	6890	46.1	.0094
3/16	5/8	8230	65.0	.0118	7810	55.3	.0098	6890	46.1	.0066
3/16	11/16	8230	65.0	.0118	7810	55.3	.0098	6890	46.1	.0066
3/16	3/4	8230	65.0	.0118	7810	55.3	.0098	6890	46.1	.0066
3/16	1	7410	52.6	.0067	7030	44.7	.0056	6200	37.4	.0037
3/16	1-3/16	7410	52.6	.0067	7030	44.7	.0056	6200	37.4	.0037
3/16	1-3/8	7410	52.6	.0067	7030	44.7	.0056	6200	37.4	.0037
3/16	1-1/2	7410	52.6	.0067	7030	44.7	.0056	6200	37.4	.0037
13/64	13/64	6720	57.1	.0073	6370	44.9	.0061	5580	39.8	.0041
1/4	3/4	6140	70.7	.0225	5860	59.5	.0187	5200	49.4	.0125

DIA. = Diameter RPM = rev./min.
LBS = Length Below Shank FEED = inch/min.

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

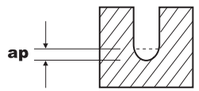
4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE BALL NOSE WITH NECK

GMF16 SERIES

MATERIAL		P								
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS		~ HRc35			HRc35 ~ HRc45			HRc45 ~ HRc55		
STRENGTH		~ 1100N/mm²			1110 ~ 1500N/mm²			1500 ~ 2000N/mm²		
DIA.	LBS	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)
1/4	1-3/16	6140	70.7	.0157	5860	59.5	.0131	5200	49.4	.0087
5/16	1	4890	71.5	.0197	4640	59.5	.0164	4030	50.8	.0109
5/16	1-3/8	4890	71.5	.0197	4640	59.5	.0164	4030	50.8	.0109
3/8	1-3/16	4040	68.1	.0236	3860	57.9	.0197	3360	49.6	.0131
3/8	1-3/16	4040	68.1	.0236	3860	57.9	.0197	3360	49.6	.0131
3/8	1-1/2	4040	68.1	.0236	3860	57.9	.0197	3360	49.6	.0131
1/2	1-1/4	3020	56.5	.0450	2880	48.4	.0375	2500	40.9	.0250
1/2	1-1/4	3020	56.5	.0450	2880	48.4	.0375	2500	40.9	.0250

(Depth of Cut per one pass)



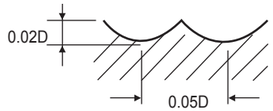
DIA. = Diameter
LBS = Length Below Shank

RPM = rev./min.
FEED = inch/min.

CARBIDE, 4 FLUTE BALL NOSE

GMF17 SERIES

MATERIAL	P					
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	~ HRc35		HRc35 ~ HRc45		HRc45 ~ HRc55	
STRENGTH	~ 1100N/mm²		1110 ~ 1500N/mm²		1500 ~ 2000N/mm²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	22700	202.0	16540	144.3	15120	135.8
R3/32 × 3/16	17600	224.4	13020	152.6	12250	143.5
R1/8 × 1/4	14400	231.3	11530	167.3	10490	142.5
R5/32 × 5/16	11400	208.3	9270	157.9	8390	132.9
R3/16 × 3/8	9600	189.8	7720	142.5	6990	118.7
R1/4 × 1/2	7200	158.5	5790	118.7	5230	89.4



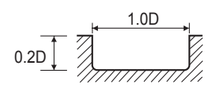
RPM = rev./min.
FEED = inch/min.

4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE CORNER RADIUS

GMF18 SERIES

MATERIAL	P					
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	~ HRc35		HRc35 ~ HRc45		HRc45 ~ HRc55	
STRENGTH	~ 1100N/mm²		1110 ~ 1500N/mm²		1500 ~ 2000N/mm²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
3/64	25000	9.7	15870	4.1	9830	2.4
1/16	20800	9.3	12760	4.1	8030	2.2
5/64	18100	10.2	11650	4.7	7260	2.8
1/8	12500	10.4	8090	5.1	4990	2.6
9/64	11700	12.0	7540	5.9	4690	3.0
13/64	8900	15.9	5620	7.7	3680	3.7
1/4	7500	18.5	4760	9.3	3100	4.5
5/16	6000	21.5	3830	9.8	2540	4.7
3/8	5300	22.2	3440	10.2	2120	4.9
1/2	3900	15.6	2630	8.5	1590	3.7
9/16	3500	15.0	2390	7.7	1450	3.5
5/8	3100	14.4	2120	6.7	1290	3.2
3/4	2600	11.6	1720	4.9	1050	2.6



RPM = rev./min.
FEED = inch/min.

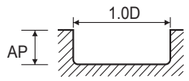
4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE CORNER RADIUS WITH NECK

GMF19 SERIES

MATERIAL		P								
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS		~ HRc35			HRc35 ~ HRc45			HRc45 ~ HRc55		
STRENGTH		~ 1100N/mm²			1110 ~ 1500N/mm²			1500 ~ 2000N/mm²		
DIA.	LBS	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)
.008	3/64	44290	5.3	.0006	30560	2.4	.0005	18740	1.4	.0004
.012	3/64	49210	7.7	.0017	31500	3.4	.0013	19690	2.0	.0010
.012	5/64	44290	6.3	.0009	28350	2.8	.0007	17720	1.6	.0006
.015	3/64	52490	8.3	.0021	33600	3.5	.0016	21000	2.0	.0013
.015	1/16	52490	8.3	.0021	33600	3.5	.0016	21000	2.0	.0013
.015	5/64	47240	6.7	.0012	30240	2.8	.0009	18900	1.8	.0007
.015	3/32	47240	6.7	.0012	30240	2.8	.0009	18900	1.8	.0007
.020	3/64	42320	8.5	.0040	27560	3.7	.0030	16830	2.4	.0024
.020	1/16	42320	8.5	.0028	27560	3.7	.0021	16830	2.4	.0017
.020	5/64	42320	8.5	.0028	27560	3.7	.0021	16830	2.4	.0017
.020	1/8	38090	6.9	.0016	24800	3.0	.0012	15150	2.0	.0009
.020	5/32	38090	6.9	.0016	24800	3.0	.0012	15150	2.0	.0009
.024	5/64	35830	9.7	.0033	23620	4.3	.0025	14270	2.6	.0020
.024	1/8	32240	7.9	.0019	21260	3.5	.0015	12840	2.0	.0011
.024	5/32	32240	7.9	.0019	21260	3.5	.0015	12840	2.0	.0011
.024	1/4	28660	6.1	.0012	18900	2.8	.0009	11420	1.6	.0007
.031	5/64	36980	10.0	.0062	24380	4.3	.0046	14730	2.6	.0037
.031	5/32	33280	8.1	.0025	21950	3.5	.0019	13260	2.2	.0015
.031	1/4	33280	8.1	.0015	21950	3.5	.0012	13260	2.2	.0009
.031	5/16	29590	6.5	.0015	19510	2.8	.0012	11790	1.6	.0009
3/64	1/8	27800	9.3	.0094	18140	3.9	.0070	11090	2.4	.0056
3/64	5/32	27800	9.3	.0066	18140	3.9	.0049	11090	2.4	.0039
3/64	1/4	25020	7.5	.0037	16330	3.2	.0028	9980	2.0	.0022
3/64	5/16	25020	7.5	.0037	16330	3.2	.0028	9980	2.0	.0022
3/64	3/8	25020	7.5	.0037	16330	3.2	.0028	9980	2.0	.0022
1/16	5/32	24940	11.2	.0125	15310	4.9	.0094	9640	2.6	.0075
1/16	1/4	24940	11.2	.0087	15310	4.9	.0066	9640	2.6	.0052
1/16	5/16	24940	11.2	.0087	15310	4.9	.0066	9640	2.6	.0052
1/16	3/8	22450	9.1	.0050	13780	3.9	.0037	8670	2.2	.0030
1/16	1/2	22450	9.1	.0050	13780	3.9	.0037	8670	2.2	.0030
5/64	1/4	21770	12.2	.0109	13910	5.5	.0082	8710	3.2	.0066
5/64	5/16	21770	12.2	.0109	13910	5.5	.0082	8710	3.2	.0066
5/64	3/8	21770	12.2	.0109	13910	5.5	.0082	8710	3.2	.0066
5/64	1/2	19590	10.0	.0063	12520	4.5	.0047	7840	2.6	.0037
5/64	9/16	19590	10.0	.0063	12520	4.5	.0047	7840	2.6	.0037
5/64	5/8	19590	10.0	.0063	12520	4.5	.0047	7840	2.6	.0037
1/8	5/16	15020	12.2	.0250	9730	5.9	.0187	5950	3.0	.0150
1/8	3/8	15020	12.2	.0250	9730	5.9	.0187	5950	3.0	.0150
1/8	1/2	15020	12.2	.0175	9730	5.9	.0131	5950	3.0	.0105
1/8	5/8	15020	12.2	.0175	9730	5.9	.0131	5950	3.0	.0105
1/8	3/4	13520	10.0	.0100	8760	4.7	.0075	5360	2.4	.0060
1/8	1	13520	10.0	.0100	8760	4.7	.0075	5360	2.4	.0060

DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = inch/min.



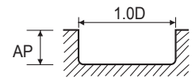
4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE CORNER RADIUS WITH NECK

GMF19 SERIES

MATERIAL		P								
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS		~ HRc35			HRc35 ~ HRc45			HRc45 ~ HRc55		
STRENGTH		~ 1100N/mm²			1110 ~ 1500N/mm²			1500 ~ 2000N/mm²		
DIA.	LBS	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)
3/16	3/8	11550	20.7	.0375	7350	9.8	.0281	4790	4.9	.0225
3/16	1/2	11550	20.7	.0375	7350	9.8	.0281	4790	4.9	.0225
3/16	5/8	11550	20.7	.0263	7350	9.8	.0197	4790	4.9	.0157
3/16	3/4	11550	20.7	.0263	7350	9.8	.0197	4790	4.9	.0157
3/16	1	10390	16.7	.0150	6610	8.1	.0113	4310	3.9	.0090
3/16	1-3/16	10390	16.7	.0150	6610	8.1	.0113	4310	3.9	.0090
1/4	3/4	8980	22.2	.0500	5670	11.2	.0375	3710	5.1	.0300
1/4	1-3/16	8980	22.2	.0350	5670	11.2	.0263	3710	5.1	.0210
5/16	1	7260	25.4	.0437	4590	11.8	.0328	3040	5.5	.0263
3/8	1-3/16	6300	26.4	.0525	4200	12.4	.0394	2540	5.7	.0315
1/2	1-1/4	4720	18.5	.1000	3160	10.0	.0750	1890	4.5	.0600
5/8	1-3/8	3750	17.9	.1250	2540	8.3	.0937	1550	3.7	.0750
3/4	1-1/2	3150	13.6	.1500	2050	5.7	.1125	1260	3.0	.0900

DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = inch/min.

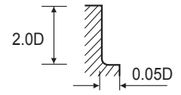


CARBIDE, 4 FLUTE CORNER RADIUS

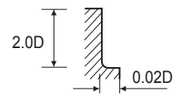
GMF20 SERIES

MATERIAL	P					
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	~ HRc35		HRc35 ~ HRc45		HRc45 ~ HRc55	
STRENGTH	~ 1100N/mm²		1110 ~ 1500N/mm²		1500 ~ 2000N/mm²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
3/64	25000	12.0	15870	8.9	9830	4.7
5/64	18100	12.8	11650	9.5	7260	5.1
1/8	12500	12.6	8090	9.7	4990	4.9
3/16	9400	15.8	5960	12.2	3830	5.7
13/64	8900	16.3	5620	13.8	3680	6.5
1/4	7500	15.9	4760	13.4	3100	6.3
5/16	6000	18.3	3830	14.4	2540	6.7
3/8	5300	19.1	3440	15.0	2120	7.1
1/2	3900	13.4	2630	11.8	1590	5.1
5/8	3100	11.0	2120	9.1	1290	4.5
3/4	2600	9.5	1720	7.5	1050	3.7

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



RPM = rev./min.
FEED = inch/min.

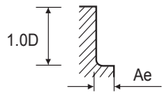


4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE CORNER RADIUS WITH NECK

GMF21 SERIES

MATERIAL		P								
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS		~ HRc35			HRc35 ~ HRc45			HRc45 ~ HRc55		
STRENGTH		~ 1100N/mm²			1110 ~ 1500N/mm²			1500 ~ 2000N/mm²		
DIA.	LBS	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)
3/64	5/32	29980	14.6	.0010	19050	10.4	.0007	11790	5.5	.0006
3/64	1/4	26990	11.8	.0006	17140	8.5	.0004	10610	4.5	.0004
3/64	5/16	26990	11.8	.0006	17140	8.5	.0004	10610	4.5	.0004
1/16	1/4	24940	13.8	.0013	15310	10.0	.0010	9640	5.1	.0008
1/16	5/16	24940	13.8	.0013	15310	10.0	.0010	9640	5.1	.0008
1/16	3/8	22450	11.2	.0007	13780	8.1	.0006	8670	4.1	.0004
1/16	1/2	22450	11.2	.0007	13780	8.1	.0006	8670	4.1	.0004
5/64	1/4	21770	15.2	.0017	13910	11.0	.0012	8710	5.9	.0010
5/64	5/16	21770	15.2	.0017	13910	11.0	.0012	8710	5.9	.0010
5/64	3/8	21770	15.2	.0017	13910	11.0	.0012	8710	5.9	.0010
5/64	1/2	19590	12.2	.0009	12520	9.1	.0007	7840	4.7	.0006
1/8	5/16	15020	15.0	.0037	9730	11.6	.0028	5950	5.5	.0022
1/8	3/8	15020	15.0	.0037	9730	11.6	.0028	5950	5.5	.0022
1/8	1/2	15020	15.0	.0026	9730	11.6	.0020	5950	5.5	.0016
1/8	5/8	15020	15.0	.0026	9730	11.6	.0020	5950	5.5	.0016
1/8	3/4	13520	12.0	.0015	8760	9.3	.0011	5360	4.5	.0009
1/8	1	13520	12.0	.0015	8760	9.3	.0011	5360	4.5	.0009
3/16	3/8	11550	21.1	.0056	7350	17.7	.0042	4790	8.3	.0034
3/16	1/2	11550	21.1	.0056	7350	17.7	.0042	4790	8.3	.0034
3/16	5/8	11550	21.1	.0039	7350	17.7	.0030	4790	8.3	.0024
3/16	3/4	11550	21.1	.0039	7350	17.7	.0030	4790	8.3	.0024
3/16	1	10390	17.1	.0022	6610	14.4	.0017	4310	6.7	.0013
1/4	3/4	8980	18.9	.0075	5670	15.9	.0056	3710	7.5	.0045
5/16	1	7260	21.9	.0066	4590	17.1	.0049	3040	7.9	.0039
5/16	1-3/8	7260	21.9	.0066	4590	17.1	.0049	3040	7.9	.0039
3/8	1-3/16	6300	22.6	.0079	4200	17.7	.0059	2540	8.3	.0047
3/8	1-1/2	6300	22.6	.0079	4200	17.7	.0059	2540	8.3	.0047
1/2	1-1/4	4720	15.9	.0150	3160	14.2	.0113	1890	5.9	.0090
1/2	1-3/4	4720	15.9	.0105	3160	14.2	.0079	1890	5.9	.0063
5/8	1-3/8	3750	13.2	.0187	2540	11.0	.0141	1550	5.3	.0113
3/4	1-1/2	3150	11.2	.0225	2050	8.7	.0169	1260	4.1	.0135



DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = inch/min.

4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

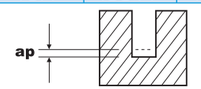
CARBIDE, 2 FLUTE WITH NECK

GMF22 SERIES

MATERIAL		P								
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS		~ HRc35			HRc35 ~ HRc45			HRc45 ~ HRc55		
STRENGTH		~ 1100N/mm²			1110 ~ 1500N/mm²			1500 ~ 2000N/mm²		
DIA.	LBS	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)
.008	3/64	34100	12.0	.0003	32160	8.5	.0002	28440	6.3	.0002
.015	3/64	26930	12.0	.0009	25430	8.5	.0007	22440	7.1	.0005
.015	5/64	24240	9.8	.0006	22890	6.7	.0004	20200	5.7	.0003
.015	1/8	24240	9.8	.0004	22890	6.7	.0003	20200	5.7	.0002
.015	5/32	21540	7.7	.0004	20350	5.3	.0003	17950	4.5	.0002
.015	3/16	21540	7.7	.0004	20350	5.3	.0003	17950	4.5	.0002
.020	5/64	26970	20.9	.0013	25390	16.5	.0010	22440	11.0	.0007
.020	1/8	24270	16.9	.0007	22850	13.4	.0006	20200	8.9	.0004
.020	5/32	24270	16.9	.0007	22850	13.4	.0006	20200	8.9	.0004
.020	3/16	24270	16.9	.0004	22850	13.4	.0004	20200	8.9	.0002
.020	1/4	21570	13.4	.0004	20310	10.6	.0004	17950	7.1	.0002
.024	5/64	26970	30.1	.0015	25390	21.1	.0012	22440	15.8	.0008
.024	1/8	24270	24.4	.0009	22850	17.1	.0007	20200	12.8	.0005
.024	5/32	24270	24.4	.0009	22850	17.1	.0007	20200	12.8	.0005
.024	3/16	24270	24.4	.0009	22850	17.1	.0007	20200	12.8	.0005
.024	1/4	21570	19.3	.0006	20310	13.6	.0004	17950	10.0	.0003
.024	5/16	21570	19.3	.0003	20310	13.6	.0002	17950	10.0	.0002
.024	3/8	16180	12.6	.0003	15240	8.9	.0002	13460	6.5	.0002
1/32	5/64	27620	30.7	.0028	26000	24.0	.0022	22980	17.9	.0016
1/32	1/8	27620	30.7	.0020	26000	24.0	.0015	22980	17.9	.0011
1/32	5/32	27620	30.7	.0020	26000	24.0	.0015	22980	17.9	.0011
1/32	3/16	24850	25.0	.0011	23400	19.5	.0009	20680	14.4	.0006
1/32	1/4	24850	25.0	.0011	23400	19.5	.0009	20680	14.4	.0006
1/32	5/16	24850	25.0	.0007	23400	19.5	.0006	20680	14.4	.0004
1/32	3/8	22090	19.7	.0007	20800	15.4	.0006	18380	11.4	.0004
3/64	1/8	22070	36.8	.0042	20860	28.5	.0033	18340	19.3	.0024
3/64	5/32	22070	36.8	.0030	20860	28.5	.0023	18340	19.3	.0017
3/64	3/16	22070	36.8	.0030	20860	28.5	.0023	18340	19.3	.0017
3/64	1/4	19870	29.9	.0017	18780	23.2	.0013	16510	15.6	.0009
3/64	5/16	19870	29.9	.0017	18780	23.2	.0013	16510	15.6	.0009
3/64	3/8	19870	29.9	.0017	18780	23.2	.0013	16510	15.6	.0009
3/64	1/2	17660	23.6	.0011	16690	18.3	.0008	14670	12.4	.0006
3/64	9/16	17660	23.6	.0011	16690	18.3	.0008	14670	12.4	.0006
3/64	5/8	17660	23.6	.0006	16690	18.3	.0005	14670	12.4	.0004
3/64	3/4	13240	15.6	.0006	12520	12.0	.0005	11010	8.1	.0004
1/16	5/32	18140	33.7	.0056	17100	23.6	.0044	15120	17.7	.0031
1/16	1/4	18140	33.7	.0039	17100	23.6	.0031	15120	17.7	.0022
1/16	5/16	18140	33.7	.0039	17100	23.6	.0031	15120	17.7	.0022
1/16	3/8	16330	27.4	.0022	15390	19.1	.0017	13610	14.4	.0013
1/16	1/2	16330	27.4	.0022	15390	19.1	.0017	13610	14.4	.0013
1/16	9/16	16330	27.4	.0014	15390	19.1	.0011	13610	14.4	.0008
1/16	5/8	16330	27.4	.0014	15390	19.1	.0011	13610	14.4	.0008

DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = inch/min.

(Depth of Cut per one pass)



4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

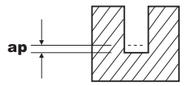
CARBIDE, 2 FLUTE WITH NECK

GMF22 SERIES

MATERIAL		P								
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS		~ HRc35			HRc35 ~ HRc45			HRc45 ~ HRc55		
STRENGTH		~ 1100N/mm^2			1110 ~ 1500N/mm^2			1500 ~ 2000N/mm^2		
DIA.	LBS	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)
1/16	3/4	14510	21.5	.0014	13680	15.2	.0011	12090	11.2	.0008
5/64	1/4	14510	32.5	.0049	13710	24.6	.0038	12090	18.9	.0027
5/64	5/16	14510	32.5	.0049	13710	24.6	.0038	12090	18.9	.0027
5/64	3/8	14510	32.5	.0049	13710	24.6	.0038	12090	18.9	.0027
5/64	1/2	13060	26.4	.0028	12340	19.9	.0022	10890	15.4	.0016
5/64	9/16	13060	26.4	.0028	12340	19.9	.0022	10890	15.4	.0016
5/64	5/8	13060	26.4	.0028	12340	19.9	.0022	10890	15.4	.0016
5/64	3/4	13060	26.4	.0018	12340	19.9	.0014	10890	15.4	.0010
3/32	5/16	12910	40.2	.0059	12180	28.2	.0046	10810	21.1	.0033
3/32	1/2	11620	32.5	.0034	10960	22.8	.0026	9730	17.1	.0019
3/32	5/8	11620	32.5	.0034	10960	22.8	.0026	9730	17.1	.0019
3/32	3/4	11620	32.5	.0034	10960	22.8	.0026	9730	17.1	.0019
1/8	5/16	10300	32.1	.0113	9730	22.4	.0087	6240	16.7	.0063
1/8	3/8	10300	32.1	.0113	9730	22.4	.0087	6240	16.7	.0063
1/8	1/2	10300	32.1	.0079	9730	22.4	.0061	6240	16.7	.0044
1/8	9/16	10300	32.1	.0079	9730	22.4	.0061	6240	16.7	.0044
1/8	5/8	10300	32.1	.0079	9730	22.4	.0061	6240	16.7	.0044
1/8	11/16	9270	26.0	.0045	8760	18.3	.0035	5610	13.6	.0025
1/8	3/4	9270	26.0	.0045	8760	18.3	.0035	5610	13.6	.0025
1/8	1	9270	26.0	.0045	8760	18.3	.0035	5610	13.6	.0025
3/16	3/8	6720	42.9	.0169	6380	38.4	.0131	5630	25.4	.0094
3/16	1/2	6720	42.9	.0169	6380	38.4	.0131	5630	25.4	.0094
3/16	5/8	6720	42.9	.0118	6380	38.4	.0092	5630	25.4	.0066
3/16	11/16	6720	42.9	.0118	6380	38.4	.0092	5630	25.4	.0066
3/16	3/4	6720	42.9	.0118	6380	38.4	.0092	5630	25.4	.0066
3/16	1	6050	34.8	.0067	5740	31.1	.0052	5060	20.7	.0037
3/16	1-3/16	6050	34.8	.0067	5740	31.1	.0052	5060	20.7	.0037
13/64	3/4	6200	44.1	.0128	5910	34.3	.0100	5230	23.0	.0071
13/64	1-3/16	5580	35.6	.0073	5320	27.8	.0057	4710	18.7	.0041
13/64	1-3/8	5580	35.6	.0073	5320	27.8	.0057	4710	18.7	.0041
13/64	1-1/2	5580	35.6	.0073	5320	27.8	.0057	4710	18.7	.0041
13/64	2	5580	35.6	.0046	5320	27.8	.0035	4710	18.7	.0025
1/4	5/8	5010	39.2	.0225	4720	30.5	.0175	4160	20.5	.0125
1/4	3/4	5010	39.2	.0225	4720	30.5	.0175	4160	20.5	.0125
1/4	1-3/16	5010	39.2	.0157	4720	30.5	.0122	4160	20.5	.0087
5/16	1	4030	37.6	.0197	3830	29.7	.0153	3330	19.9	.0109
3/8	1-3/16	3360	37.2	.0236	3200	28.2	.0184	2760	16.5	.0131
3/8	1-3/4	3360	37.2	.0236	3200	28.2	.0184	2760	16.5	.0131
1/2	1-3/8	2500	29.7	.0450	2380	22.2	.0350	2060	13.0	.0250
1/2	2	2500	29.7	.0315	2380	22.2	.0245	2060	13.0	.0175

DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = inch/min.

(Depth of Cut per one pass)

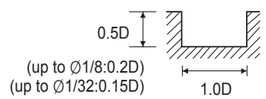


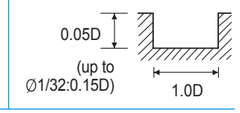
4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE

GMF23 SERIES

MATERIAL	P						M	
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		STAINLESS STEELS	
HARDNESS	~ HRc35		HRc35 ~ HRc45		HRc45 ~ HRc55			
STRENGTH	~ 1100N/mm^2		1110 ~ 1500N/mm^2		1500 ~ 2000N/mm^2			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
.004	41300	3.5	24800	2.1	16540	0.7	20670	1.7
.008	41300	3.8	24800	2.1	16540	0.7	20670	1.7
.012	38400	4.0	23000	2.4	15350	0.7	19190	1.9
.015	40900	4.5	24600	2.6	16380	1.0	20470	2.1
.020	35400	5.0	21300	2.8	14170	1.0	17720	2.4
.024	31500	5.7	18900	3.3	12600	1.2	15750	2.8
.028	27600	6.4	16500	3.8	11020	1.2	13780	3.1
.031	25400	7.1	15200	4.3	10160	1.4	12700	3.5
.035	23800	7.3	14300	4.5	9520	1.4	11900	3.8
.040	21200	7.3	12700	4.5	8460	1.4	10580	3.8
.047	18100	7.8	10900	4.7	7240	1.7	9050	4.0
1/16	14200	7.6	8500	4.5	5670	1.4	7090	3.8
5/64	11700	8.2	7600	5.2	5080	1.5	6350	3.9
3/32	10800	9.1	6900	5.8	4410	1.7	5730	4.8
1/8	8400	8.7	5300	5.6	3170	1.7	4370	5.0
9/64	8100	10.8	5000	6.7	3090	1.7	4160	5.6
3/16	6500	12.8	4000	7.6	2490	2.0	3330	6.3
13/64	6100	13.4	3700	8.0	2250	2.2	3060	6.7
1/4	5300	14.3	3200	9.1	1890	2.2	2680	7.4
17/64	5000	14.4	3000	8.7	1850	2.5	2560	7.4
9/32	4800	14.9	2900	8.5	1800	2.7	2420	7.2
5/16	4200	15.9	2500	8.3	1690	3.1	2120	7.4
11/32	3900	14.7	2300	7.6	1560	2.9	1940	7.0
23/64	3700	14.5	2200	7.2	1500	2.7	1860	7.0
3/8	3400	14.3	2100	7.0	1430	2.7	1760	7.0
13/32	3200	13.2	2000	6.4	1330	2.5	1630	6.4
7/16	3000	12.4	1800	6.0	1250	2.3	1500	6.0
1/2	2600	11.2	1600	5.3	1100	2.1	1290	5.3
9/16	2400	10.1	1500	5.0	1010	1.9	1190	5.0
5/8	2200	9.1	1400	4.6	910	1.7	1070	4.6
3/4	1800	7.4	1100	3.5	710	1.2	880	3.5





RPM = rev./min.
FEED = inch/min.

4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

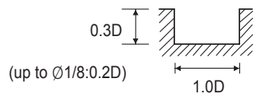
CARBIDE, 2 FLUTE LONG

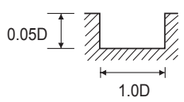
GMF24 SERIES

MATERIAL		P					
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS		~ HRc35		HRc35 ~ HRc45		HRc45 ~ HRc55	
STRENGTH		~ 1100N/mm^2		1110 ~ 1500N/mm^2		1500 ~ 2000N/mm^2	
DIA.	LOC	RPM	FEED	RPM	FEED	RPM	FEED
3/64	1/8	13710	3.0	10970	2.6	6860	1.2
3/64	5/32	13710	3.0	10970	2.6	6860	1.2
3/64	1/4	12340	2.8	9870	2.4	6170	1.0
3/64	5/16	12340	2.4	9870	2.2	6170	1.0
3/64	3/8	12340	2.2	9870	2.0	6170	0.8
1/16	1/4	10000	2.8	8000	2.4	5000	1.0
1/16	5/16	10000	2.8	8000	2.4	5000	1.0
1/16	3/8	9000	2.4	7200	2.0	4500	0.8
1/16	1/2	9000	2.0	7200	1.8	4500	0.8
1/16	5/8	9000	2.0	7200	1.8	4500	0.8
5/64	5/16	9210	3.4	7370	2.8	4610	1.4
5/64	3/8	9210	3.4	7370	2.8	4610	1.4
5/64	1/2	8290	2.8	6640	2.4	4150	1.2
5/64	5/8	8290	2.4	6640	2.0	4150	1.0
3/32	5/8	7640	3.4	6150	2.8	3820	1.4
1/8	3/8	5670	3.5	4600	3.0	2830	1.4
1/8	1/2	5670	3.5	4600	3.0	2830	1.4
1/8	5/8	5670	3.5	4600	3.0	2830	1.4
1/8	3/4	5100	2.8	4140	2.4	2550	1.2
1/8	1	5100	2.6	4140	2.2	2550	1.0
3/16	1/2	3630	3.4	2890	2.8	1820	1.4
3/16	5/8	3630	3.4	2890	2.8	1820	1.4
3/16	3/4	3630	3.4	2890	2.8	1820	1.4
3/16	1	3270	3.0	2600	2.6	1640	1.2
3/16	1-3/16	3270	2.8	2600	2.2	1640	1.2
13/64	3/4	4130	5.5	3270	4.5	2140	2.0
13/64	1	4130	5.5	3270	4.5	2140	2.0
13/64	1-3/16	3720	4.5	2940	3.7	1930	1.6
13/64	1-1/2	3720	4.5	2940	3.7	1930	1.6
1/4	5/8	3390	6.3	2720	5.3	1760	2.4
1/4	3/4	3390	6.3	2720	5.3	1760	2.4
1/4	1	3390	6.3	2720	5.3	1760	2.4
1/4	1-3/16	3390	5.3	2720	4.5	1760	2.2
1/4	1-3/8	3050	4.9	2450	3.9	1580	2.0
1/4	1-1/2	3050	4.3	2450	3.5	1580	1.6
1/4	1-3/4	3050	4.3	2450	3.5	1580	1.6
5/16	1	2930	7.7	2320	5.9	1530	2.8
5/16	1-3/16	2930	7.7	2320	5.9	1530	2.8
5/16	1-3/8	2930	7.7	2320	5.9	1530	2.8
5/16	1-1/2	2930	6.5	2320	5.1	1530	2.4

DIA. = Diameter
LOC = Length of Cut

RPM = rev./min.
FEED = inch/min.





4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE LONG

GMF24 SERIES

MATERIAL		P					
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS		~ HRc35		HRc35 ~ HRc45		HRc45 ~ HRc55	
STRENGTH		~ 1100N/mm^2		1110 ~ 1500N/mm^2		1500 ~ 2000N/mm^2	
DIA.	LOC	RPM	FEED	RPM	FEED	RPM	FEED
5/16	1-3/4	2630	5.9	2080	4.5	1380	2.2
5/16	2	2630	5.1	2080	4.1	1380	2.0
3/8	1-3/16	2700	8.3	2200	6.5	1330	3.0
3/8	1-3/8	2700	8.3	2200	6.5	1330	3.0
3/8	1-1/2	2700	8.3	2200	6.5	1330	3.0
3/8	1-3/4	2700	7.1	2200	5.5	1330	2.6
3/8	2	2430	6.3	1980	4.9	1200	2.4
3/8	2-3/8	2430	5.5	1980	4.3	1200	2.0
1/2	1-3/8	1790	5.3	1490	4.7	900	2.0
1/2	1-1/2	1790	5.3	1490	4.7	900	2.0
1/2	1-3/4	1790	5.3	1490	4.7	900	2.0
1/2	2	1790	4.5	1490	3.9	900	1.6
1/2	2-1/8	1790	4.5	1490	3.9	900	1.6
1/2	2-3/8	1790	4.5	1490	3.9	900	1.6
5/8	1-1/2	1730	5.5	1300	4.1	810	2.0
3/4	3-1/2	1340	3.4	1050	2.4	660	1.2
3/4	4-1/4	1210	3.0	940	2.1	600	1.0

DIA. = Diameter
LOC = Length of Cut

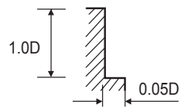
RPM = rev./min.
FEED = inch/min.

4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE

GMF25, GMF26 SERIES

MATERIAL	P						M	
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		STAINLESS STEELS	
HARDNESS	~ HRc35		HRc35 ~ HRc45		HRc45 ~ HRc55			
STRENGTH	~ 1100N/mm²		1110 ~ 1500N/mm²		1500 ~ 2000N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/64	22680	11.8	13610	7.1	9070	2.1	11340	5.9
1/16	17720	11.3	10630	6.9	7090	2.1	8860	5.9
5/64	14560	12.1	9520	7.4	6350	2.2	7940	6.1
3/32	13440	13.6	8610	8.5	5510	2.6	7170	7.2
1/8	10540	13.0	6570	8.2	3970	2.4	5460	6.9
9/64	10090	18.8	6230	11.7	3860	2.6	5200	9.5
3/16	8180	24.0	4960	14.5	3110	2.6	4160	11.9
13/64	7640	25.1	4580	15.2	2810	3.0	3830	12.6
7/32	7330	27.1	4410	16.5	2670	3.3	3710	13.4
1/4	6570	27.1	3970	16.7	2360	3.3	3350	13.4
17/64	6290	27.5	3800	16.5	2310	3.6	3200	13.8
9/32	5980	27.7	3610	15.9	2250	3.9	3030	13.9
19/64	5650	28.7	3390	16.1	2190	4.3	2840	14.3
5/16	5290	29.6	3170	15.9	2120	4.6	2650	14.7
11/32	4830	27.5	2910	14.5	1950	4.1	2420	13.6
23/64	4590	26.9	2790	13.9	1870	4.1	2330	13.2
3/8	4280	26.5	2620	13.0	1780	3.9	2200	13.0
7/16	3710	23.2	2280	11.2	1560	3.5	1880	11.0
1/2	3240	20.7	1980	9.9	1370	3.2	1610	9.5
9/16	3030	18.8	1860	9.1	1260	2.9	1510	8.9
5/8	2770	17.6	1710	8.5	1140	2.5	1390	8.3
3/4	2200	13.9	1400	7.0	890	1.6	1100	6.4



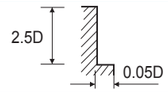
RPM = rev./min.
FEED = inch/min.

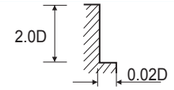
4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE LONG

GMF27 SERIES

MATERIAL		P					
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS		~ HRc35		HRc35 ~ HRc45		HRc45 ~ HRc55	
STRENGTH		~ 1100N/mm²		1110 ~ 1500N/mm²		1500 ~ 2000N/mm²	
DIA.	LOC	RPM	FEED	RPM	FEED	RPM	FEED
3/64	1/8	16330	8.1	9310	3.2	5710	1.6
3/64	5/32	16330	8.1	9310	3.2	5710	1.6
3/64	3/16	16330	8.1	9310	3.2	5710	1.6
3/64	1/4	14690	7.3	8380	3.0	5140	1.4
1/16	1/4	13040	8.1	7430	3.2	4560	1.6
5/64	5/16	10670	9.5	6100	3.7	3810	2.2
5/64	3/8	10670	9.5	6100	3.7	3810	2.2
5/64	1/2	9600	7.7	5490	3.2	3430	1.8
5/64	9/16	9600	7.7	5490	3.2	3430	1.8
3/32	3/8	9440	10.6	5420	4.5	3370	2.6
3/32	1/2	8500	9.7	4880	3.9	3030	2.2
1/8	3/8	7000	10.2	4050	4.5	2490	2.4
1/8	1/2	7000	10.2	4050	4.5	2490	2.4
1/8	5/8	7000	10.2	4050	4.5	2490	2.4
1/8	3/4	6300	8.3	3640	3.5	2250	2.0
1/8	1	6300	7.5	3640	3.2	2250	1.8
1/8	1-3/16	6300	7.5	3640	3.2	2250	1.8
3/16	1/2	5040	11.0	2860	4.5	1800	2.4
3/16	5/8	5040	11.0	2860	4.5	1800	2.4
3/16	3/4	5040	11.0	2860	4.5	1800	2.4
3/16	1	4540	10.0	2580	4.1	1620	2.2
3/16	1-3/16	4540	9.1	2580	3.7	1620	2.0
13/64	3/4	4970	16.5	2810	6.5	1840	3.2
13/64	1	4970	16.5	2810	6.5	1840	3.2
13/64	1-3/16	4470	13.4	2530	5.1	1650	2.6
1/4	5/8	4170	19.3	2380	8.1	1550	3.9
1/4	3/4	4170	19.3	2380	8.1	1550	3.9
1/4	1	4170	19.3	2380	8.1	1550	3.9
1/4	1-3/16	4170	16.3	2380	6.9	1550	3.4
1/4	1-3/8	3760	14.8	2140	6.1	1400	3.2
1/4	1-1/2	3760	13.0	2140	5.5	1400	2.8
1/4	1-3/4	3760	13.0	2140	5.5	1400	2.8
5/16	1	3390	21.9	1910	8.7	1270	4.3
5/16	1-3/16	3390	21.9	1910	8.7	1270	4.3
5/16	1-3/8	3390	21.9	1910	8.7	1270	4.3
5/16	1-1/2	3390	18.7	1910	7.3	1270	3.7
5/16	1-3/4	3050	16.7	1720	6.5	1140	3.4
5/16	2	3050	14.8	1720	5.7	1140	3.0
3/8	1-3/16	2960	22.8	1730	8.9	1060	4.5
3/8	1-3/8	2960	22.8	1730	8.9	1060	4.5





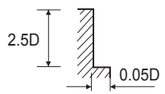
DIA. = Diameter
LOC = Length of Cut
RPM = rev./min.
FEED = inch/min.

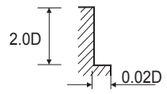
4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE LONG

GMF27 SERIES

MATERIAL		P					
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS		~ HRc35		HRc35 ~ HRc45		HRc45 ~ HRc55	
STRENGTH		~ 1100N/mm^2		1110 ~ 1500N/mm^2		1500 ~ 2000N/mm^2	
DIA.	LOC	RPM	FEED	RPM	FEED	RPM	FEED
3/8	1-1/2	2960	22.8	1730	8.9	1060	4.5
3/8	1-3/4	2960	19.5	1730	7.7	1060	3.7
3/8	2	2660	17.5	1550	6.9	950	3.4
1/2	1-3/8	2180	16.1	1320	7.1	790	3.2
1/2	1-1/2	2180	16.1	1320	7.1	790	3.2
1/2	1-3/4	2180	16.1	1320	7.1	790	3.2
1/2	2	2180	13.6	1320	6.1	790	2.6
1/2	2-1/8	2180	13.6	1320	6.1	790	2.6
1/2	2-3/8	2180	13.6	1320	6.1	790	2.6
9/16	2	2080	13.4	1210	5.5	740	2.6
5/8	2	1960	15.2	1080	5.9	680	3.0
5/8	2-3/8	1960	13.0	1080	5.1	680	2.4
5/8	2-3/4	1960	13.0	1080	5.1	680	2.4
3/4	2-3/8	1490	9.7	860	3.7	530	2.0
3/4	3-1/2	1490	8.5	860	3.4	530	1.8
1	3-1/2	1090	7.1	800	3.5	500	1.8





DIA. = Diameter
LOC = Length of Cut

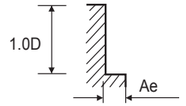
RPM = rev./min.
FEED = inch/min.

4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE WITH NECK

GMF28 SERIES

MATERIAL		P								
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS		~ HRc35			HRc35 ~ HRc45			HRc45 ~ HRc55		
STRENGTH		~ 1100N/mm^2			1110 ~ 1500N/mm^2			1500 ~ 2000N/mm^2		
DIA.	LBS	RPM	FEED	Ae(inch)	RPM	FEED	Ae(inch)	RPM	FEED	Ae(inch)
3/64	5/32	19650	12.4	.0007	12200	7.3	.0005	7560	2.0	.0004
3/64	3/16	19650	12.4	.0007	12200	7.3	.0005	7560	2.0	.0004
3/64	1/4	17690	10.0	.0004	10980	5.9	.0003	6800	1.6	.0002
3/64	5/16	17690	10.0	.0004	10980	5.9	.0003	6800	1.6	.0002
1/16	1/4	16060	11.8	.0009	10110	7.1	.0007	6140	1.8	.0006
1/16	5/16	16060	11.8	.0009	10110	7.1	.0007	6140	1.8	.0006
1/16	3/8	14460	9.7	.0005	9100	5.7	.0004	5530	1.6	.0003
1/16	1/2	14460	9.7	.0005	9100	5.7	.0004	5530	1.6	.0003
1/16	5/8	14460	9.7	.0003	9100	5.7	.0002	5530	1.6	.0002
5/64	5/16	14010	13.2	.0011	9140	7.9	.0009	6050	2.4	.0007
5/64	3/8	14010	13.2	.0011	9140	7.9	.0009	6050	2.4	.0007
5/64	1/2	12610	10.6	.0007	8230	6.5	.0005	5440	2.0	.0004
5/64	5/8	12610	10.6	.0007	8230	6.5	.0005	5440	2.0	.0004
1/8	3/8	10110	14.2	.0026	6300	8.9	.0020	3810	2.6	.0016
1/8	1/2	10110	14.2	.0019	6300	8.9	.0014	3810	2.6	.0011
1/8	5/8	10110	14.2	.0019	6300	8.9	.0014	3810	2.6	.0011
1/8	3/4	9100	11.4	.0011	5670	7.3	.0008	3430	2.2	.0006
1/8	1-3/16	9100	11.4	.0007	5670	7.3	.0005	3430	2.2	.0004
3/16	1/2	7620	22.4	.0039	4650	14.0	.0030	2960	2.4	.0024
3/16	5/8	7620	22.4	.0028	4650	14.0	.0021	2960	2.4	.0017
3/16	3/4	7620	22.4	.0028	4650	14.0	.0021	2960	2.4	.0017
3/16	1-3/16	6860	18.3	.0016	4190	11.2	.0012	2670	2.0	.0009
3/16	1-1/2	6860	18.3	.0016	4190	11.2	.0012	2670	2.0	.0009
13/64	3/4	7330	27.6	.0030	4390	16.3	.0022	2690	3.2	.0018
13/64	1-1/2	6590	22.2	.0017	3950	13.4	.0013	2420	2.6	.0010
1/4	5/8	6300	29.3	.0052	3810	18.3	.0039	2270	3.5	.0031
1/4	1-3/16	6300	29.3	.0037	3810	18.3	.0028	2270	3.5	.0022
5/16	1	5080	33.7	.0046	3040	17.9	.0035	2030	5.1	.0028
5/16	1-5/8	4570	27.4	.0026	2740	14.4	.0020	1820	4.1	.0016
3/8	1-3/16	4100	30.1	.0055	2520	15.0	.0041	1710	4.3	.0033
3/8	1-3/4	4100	30.1	.0055	2520	15.0	.0041	1710	4.3	.0033
1/2	1-3/8	3120	23.0	.0105	1900	11.2	.0079	1320	3.5	.0063
1/2	2	3120	23.0	.0074	1900	11.2	.0055	1320	3.5	.0044



DIA. = Diameter
LBS = Length Below Shank

RPM = rev./min.
FEED = inch/min.

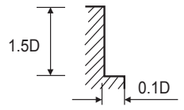
4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

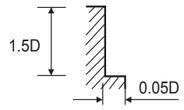
CARBIDE, 6 FLUTE 45° HELIX

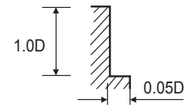
GMF29 SERIES

- NORMAL SPEED

MATERIAL		P					
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS		~ HRc35		HRc35 ~ HRc45		HRc45 ~ HRc55	
STRENGTH		~ 1100N/mm^2		1110 ~ 1500N/mm^2		1500 ~ 2000N/mm^2	
DIA.	LOC	RPM	FEED	RPM	FEED	RPM	FEED
1/4	5/8	5775	81.9	4035	56.1	1640	8.7
1/4	1-3/16	5775	69.5	4035	47.6	1640	7.4
5/16	3/4	4440	83.3	3110	57.1	1230	8.7
5/16	1-1/2	4440	70.9	3110	48.6	1230	7.4
3/8	1	3705	86.8	2560	59.5	1105	9.1
3/8	1-1/2	3705	86.8	2560	59.5	1105	9.1
1/2	1-3/16	2950	68.6	2080	47.4	870	7.4
1/2	2	2950	58.5	2080	40.3	870	6.3
5/8	1-1/2	2225	52.5	1565	36.6	685	5.4
5/8	2-3/8	2225	44.7	1565	31.2	685	4.6
3/4	1-3/4	1850	43.8	1280	30.0	545	4.8
3/4	2-3/8	1850	37.2	1280	25.4	545	4.1



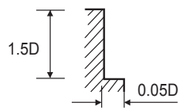


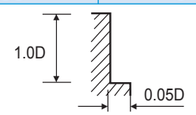


DIA. = Diameter
LOC = Length of Cut
RPM = rev./min.
FEED = inch/min.

- HIGH SPEED

MATERIAL		P			
		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS		HRc35 ~ HRc45		HRc45 ~ HRc55	
STRENGTH		1110 ~ 1500N/mm^2		1500 ~ 2000N/mm^2	
DIA.	LOC	RPM	FEED	RPM	FEED
1/4	5/8	17455	249.2	8735	124.7
1/4	1-3/16	17455	211.8	8735	106.1
5/16	3/4	13335	253.8	6670	127.1
5/16	1-1/2	13335	215.6	6670	108.1
3/8	1	11005	260.0	5555	132.3
3/8	1-1/2	11005	260.0	5555	132.3
1/2	1-3/16	8735	206.1	4365	103.1
1/2	2	8735	175.4	4365	87.7
5/8	1-1/2	6670	157.5	3340	78.8
5/8	2-3/8	6670	133.9	3340	67.0
3/4	1-3/4	5555	132.3	2785	63.9
3/4	2-3/8	5555	112.4	2785	54.2





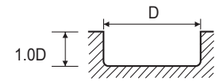
RPM = rev./min.
FEED = inch/min.

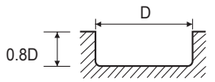
4G MILL END MILLS — X-SPEED ROUGHER — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4&5 FLUTE MULTIPLE HELIX CORNER RADIUS - SLOTTING

G907, G928, G908, G929, G909, G930 SERIES

MATERIAL		P			
		ALLOY STEELS, CARBON STEELS TOOL STEELS CAST IRON		ALLOY STEELS, CARBON STEELS TOOL STEELS, CAST IRON PREHARDENED STEELS	
HARDNESS		~ HRc25		HRc25 ~ HRc40	
DIAMETER		RPM	FEED	RPM	FEED
INCH	METRIC				
1/4	6.0	12000	61.0	10600	43.3
5/16	8.0	9000	65.0	8100	46.5
3/8	10.0	7200	65.0	6400	46.5
1/2	12.0	6000	60.6	5400	44.9
5/8	16.0	4500	59.1	4100	41.3
3/4	20.0	3600	52.4	3200	35.4
1	-	2900	46.4	2600	32.5



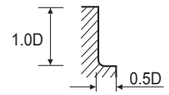


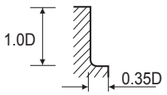
RPM = rev./min.
FEED = inch/min.

CARBIDE, 4&5 FLUTE MULTIPLE HELIX CORNER RADIUS - SIDE CUTTING

G907, G928, G908, G929, G909, G930 SERIES

MATERIAL		P			
		ALLOY STEELS, CARBON STEELS TOOL STEELS CAST IRON		ALLOY STEELS, CARBON STEELS TOOL STEELS, CAST IRON PREHARDENED STEELS	
HARDNESS		~ HRc25		HRc25 ~ HRc40	
DIAMETER		RPM	FEED	RPM	FEED
INCH	METRIC				
1/4	6.0	15800	101.2	14300	72.8
5/16	8.0	11900	106.3	10700	76.8
3/8	10.0	9500	106.3	8500	76.8
1/2	12.0	8000	101.2	7100	72.8
5/8	16.0	6000	96.5	5400	69.9
3/4	20.0	4800	84.3	4300	59.1
1	-	3800	75.3	3400	49.3





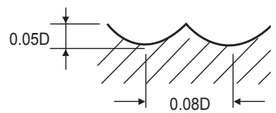
RPM = rev./min.
FEED = inch/min.

4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE BALL NOSE

SEMD98 SERIES

MATERIAL	P											
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS	~ HRc35				HRc35 ~ HRc45				HRc45 ~ HRc55			
STRENGTH	~ 1100N/mm²				1110 ~ 1500N/mm²				1500 ~ 2000N/mm²			
DIAMETER	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz
R0.05 × 0.1	40000	550	13	0.007	40000	500	13	0.006	33000	400	10	0.006
R0.1 × 0.2	30000	720	19	0.012	30000	630	19	0.011	27000	575	17	0.011
R0.15 × 0.3	30000	900	28	0.015	30000	810	28	0.014	27000	720	25	0.013
R0.2 × 0.4	30000	1140	38	0.019	30000	1020	38	0.017	27000	900	34	0.017
R0.25 × 0.5	30000	1440	47	0.024	30000	1260	47	0.021	27000	1140	42	0.021
R0.3 × 0.6	30000	1740	57	0.029	30000	1500	57	0.025	27000	1320	51	0.024
R0.35 × 0.7	30000	2040	66	0.034	30000	1740	66	0.029	27000	1560	59	0.029
R0.4 × 0.8	30000	2340	75	0.039	30000	1980	75	0.033	27000	1800	68	0.033
R0.45 × 0.9	30000	2610	85	0.044	30000	2250	85	0.038	27000	2040	76	0.038
R0.5 × 1.0	30000	2880	94	0.048	30000	2520	94	0.042	27000	2280	85	0.042
R0.6 × 1.2	30000	3060	113	0.051	28800	2580	109	0.045	25800	2310	97	0.045
R0.75 × 1.5	30000	3240	141	0.054	28800	2700	136	0.047	25800	2400	122	0.047
R1.0 × 2.0	29820	3420	187	0.057	28680	2880	180	0.050	24000	2400	151	0.050
R1.25 × 2.5	23800	3510	187	0.074	22900	3030	180	0.066	19200	2400	151	0.063
R1.5 × 3.0	19860	3600	187	0.091	19080	3180	180	0.083	16000	2400	151	0.075
R1.75 × 3.5	17000	3600	187	0.106	16400	3180	180	0.097	13700	2400	151	0.088
R2.0 × 4.0	14900	3600	187	0.121	14340	3180	180	0.111	12000	2400	151	0.100
R2.25 × 4.5	13030	3540	184	0.136	12510	3060	177	0.122	10500	2325	148	0.111
R2.5 × 5.0	11160	3480	175	0.156	10680	2940	168	0.138	9000	2250	141	0.125
R2.75 × 5.5	9750	3195	168	0.164	9360	2700	162	0.144	7800	2055	135	0.132
R3.0 × 6.0	8340	2910	157	0.174	8040	2460	152	0.153	6600	1860	124	0.141
R3.25 × 6.5	7780	2780	159	0.179	7500	2340	153	0.156	6200	1780	127	0.144
R3.5 × 7.0	7220	2650	159	0.184	6960	2220	153	0.159	5800	1700	128	0.147
R4.0 × 8.0	6660	2520	167	0.189	6420	2100	161	0.164	5400	1620	136	0.150
R4.25 × 8.5	6300	2420	168	0.192	6060	2020	162	0.167	5100	1560	136	0.153
R4.5 × 9.0	5940	2320	168	0.195	5700	1940	161	0.170	4800	1500	136	0.156
R5.0 × 10.0	5580	2220	175	0.199	5340	1860	168	0.174	4500	1440	141	0.160
R5.5 × 11.0	4875	1995	168	0.205	4670	1680	161	0.180	3930	1290	136	0.164
R6.0 × 12.0	4170	1770	157	0.212	4000	1500	151	0.188	3360	1140	127	0.170
R6.5 × 13.0	3960	1725	162	0.218	3800	1500	155	0.197	3200	1110	131	0.173
R7.0 × 14.0	3750	1680	165	0.224	3600	1500	158	0.208	3030	1080	133	0.178
R7.5 × 15.0	3550	1635	167	0.230	3400	1500	160	0.221	2870	1050	135	0.183
R8.0 × 16.0	3340	1590	168	0.238	3210	1320	161	0.206	2700	1020	136	0.189
R9.0 × 18.0	3005	1500	170	0.250	2895	1245	164	0.215	2430	960	137	0.198
R10.0 × 20.0	2670	1410	168	0.264	2580	1170	162	0.227	2160	900	136	0.208
R12.5 × 25.0	2130	1150	167	0.270	2060	950	162	0.231	1730	730	136	0.211



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

4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE LONG NECK BALL NOSE

SEM846 SERIES

MATERIAL		P														
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc35					HRc35 ~ HRc45					HRc45 ~ HRc55				
STRENGTH		~ 1100N/mm²					1110 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIA.	LBS	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)
0.1	0.2	50000	240	16	0.002	0.009	50000	215	16	0.002	0.007	50000	190	16	0.002	0.005
0.1	0.3	50000	240	16	0.002	0.009	50000	215	16	0.002	0.007	50000	190	16	0.002	0.005
0.1	0.5	50000	240	16	0.002	0.006	50000	215	16	0.002	0.005	50000	190	16	0.002	0.004
0.1	1	45000	195	14	0.002	0.002	45000	175	14	0.002	0.002	45000	155	14	0.002	0.001
0.2	0.5	50000	335	31	0.003	0.018	50000	310	31	0.003	0.014	43200	260	27	0.003	0.010
0.2	1	50000	335	31	0.003	0.013	50000	310	31	0.003	0.010	43200	260	27	0.003	0.007
0.2	1.5	45000	270	28	0.003	0.007	45000	250	28	0.003	0.006	38880	210	24	0.003	0.004
0.2	2	45000	270	28	0.003	0.005	45000	250	28	0.003	0.004	38880	210	24	0.003	0.003
0.2	3	45000	270	28	0.003	0.003	45000	250	28	0.003	0.003	38880	210	24	0.003	0.002
0.3	1	50000	475	47	0.005	0.019	50000	430	47	0.004	0.015	42800	365	40	0.004	0.011
0.3	1.5	50000	475	47	0.005	0.019	50000	430	47	0.004	0.015	42800	365	40	0.004	0.011
0.3	2	45000	385	42	0.004	0.011	45000	350	42	0.004	0.008	38520	295	36	0.004	0.006
0.3	2.5	45000	385	42	0.004	0.007	45000	350	42	0.004	0.005	38520	295	36	0.004	0.004
0.3	3	45000	385	42	0.004	0.007	45000	350	42	0.004	0.005	38520	295	36	0.004	0.004
0.3	4	40000	305	38	0.004	0.004	40000	275	38	0.003	0.003	34240	235	32	0.003	0.002
0.3	5	30000	200	28	0.003	0.003	30000	180	28	0.003	0.002	25680	155	24	0.003	0.002
0.4	1	41000	490	52	0.006	0.036	38800	425	49	0.005	0.028	34200	340	43	0.005	0.020
0.4	1.5	41000	490	52	0.006	0.025	38800	425	49	0.005	0.020	34200	340	43	0.005	0.014
0.4	2	41000	490	52	0.006	0.025	38800	425	49	0.005	0.020	34200	340	43	0.005	0.014
0.4	2.5	36900	395	46	0.005	0.014	34920	345	44	0.005	0.011	30780	275	39	0.004	0.008
0.4	3	36900	395	46	0.005	0.014	34920	345	44	0.005	0.011	30780	275	39	0.004	0.008
0.4	4	36900	395	46	0.005	0.009	34920	345	44	0.005	0.007	30780	275	39	0.004	0.005
0.4	5	32800	315	41	0.005	0.009	31040	270	39	0.004	0.007	27360	220	34	0.004	0.005
0.4	6	32800	315	41	0.005	0.005	31040	270	39	0.004	0.004	27360	220	34	0.004	0.003
0.4	8	24600	205	31	0.004	0.004	23280	180	29	0.004	0.003	20520	145	26	0.004	0.002
0.4	10	12300	90	15	0.004	0.004	11640	75	15	0.003	0.003	10260	60	13	0.003	0.002
0.5	1	34200	685	54	0.010	0.045	32300	580	51	0.009	0.035	28500	515	45	0.009	0.025
0.5	1.5	34200	685	54	0.010	0.045	32300	580	51	0.009	0.035	28500	515	45	0.009	0.025
0.5	2	34200	685	54	0.010	0.032	32300	580	51	0.009	0.025	28500	515	45	0.009	0.018
0.5	2.5	34200	685	54	0.010	0.032	32300	580	51	0.009	0.025	28500	515	45	0.009	0.018
0.5	3	30780	555	48	0.009	0.018	29070	470	46	0.008	0.014	25650	415	40	0.008	0.010
0.5	4	30780	555	48	0.009	0.018	29070	470	46	0.008	0.014	25650	415	40	0.008	0.010
0.5	5	30780	555	48	0.009	0.011	29070	470	46	0.008	0.009	25650	415	40	0.008	0.006
0.5	6	27360	440	43	0.008	0.011	25840	370	41	0.007	0.009	22800	330	36	0.007	0.006
0.5	8	20520	290	32	0.007	0.007	19380	245	30	0.006	0.005	17100	215	27	0.006	0.004
0.5	10	20520	290	32	0.007	0.005	19380	245	30	0.006	0.004	17100	215	27	0.006	0.003
0.5	12	10260	125	16	0.006	0.005	9690	105	15	0.005	0.004	8550	95	13	0.006	0.003
0.5	14	10260	125	16	0.006	0.005	9690	105	15	0.005	0.004	8550	95	13	0.006	0.003
0.5	16	3420	35	5	0.005	0.005	3230	30	5	0.005	0.004	2850	25	4	0.004	0.003
0.6	1	34200	1025	64	0.015	0.038	32300	840	61	0.013	0.029	28500	685	54	0.012	0.021
0.6	2	34200	1025	64	0.015	0.038	32300	840	61	0.013	0.029	28500	685	54	0.012	0.021
0.6	3	34200	1025	64	0.015	0.038	32300	840	61	0.013	0.029	28500	685	54	0.012	0.021
0.6	4	30780	830	58	0.013	0.022	29070	680	55	0.012	0.017	25650	555	48	0.011	0.012
0.6	5	30780	830	58	0.013	0.014	29070	680	55	0.012	0.011	25650	555	48	0.011	0.008

DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/tooth

4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE LONG NECK BALL NOSE

SEM846 SERIES

MATERIAL		P														
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc35					HRc35 ~ HRc45					HRc45 ~ HRc55				
STRENGTH		~ 1100N/mm²					1110 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIA.	LBS	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)
0.6	6	30780	830	58	0.013	0.014	29070	680	55	0.012	0.011	25650	555	48	0.011	0.008
0.6	8	27360	655	52	0.012	0.008	25840	540	49	0.010	0.006	22800	440	43	0.010	0.005
0.6	10	20520	430	39	0.010	0.005	19380	355	37	0.009	0.004	17100	290	32	0.008	0.003
0.6	12	20520	430	39	0.010	0.005	19380	355	37	0.009	0.004	17100	290	32	0.008	0.003
0.6	14	10260	185	19	0.009	0.005	9690	150	18	0.008	0.004	8550	125	16	0.007	0.003
0.6	16	10260	185	19	0.009	0.005	9690	150	18	0.008	0.004	8550	125	16	0.007	0.003
0.7	2	34200	1130	75	0.017	0.063	32300	930	71	0.014	0.049	28500	765	63	0.013	0.035
0.7	4	30780	915	68	0.015	0.025	29070	755	64	0.013	0.020	25650	620	56	0.012	0.014
0.7	6	30780	915	68	0.015	0.016	29070	755	64	0.013	0.012	25650	620	56	0.012	0.009
0.7	8	27360	725	60	0.013	0.016	25840	595	57	0.012	0.012	22800	490	50	0.011	0.009
0.7	10	27360	725	60	0.013	0.009	25840	595	57	0.012	0.007	22800	490	50	0.011	0.005
0.7	12	20520	475	45	0.012	0.006	19380	390	43	0.010	0.005	17100	320	38	0.009	0.004
0.8	2	34200	1230	86	0.018	0.072	32300	1035	81	0.016	0.056	28500	855	72	0.015	0.040
0.8	3	34200	1230	86	0.018	0.050	32300	1035	81	0.016	0.039	28500	855	72	0.015	0.028
0.8	4	34200	1230	86	0.018	0.050	32300	1035	81	0.016	0.039	28500	855	72	0.015	0.028
0.8	5	30780	995	77	0.016	0.029	29070	840	73	0.014	0.022	25650	695	64	0.014	0.016
0.8	6	30780	995	77	0.016	0.029	29070	840	73	0.014	0.022	25650	695	64	0.014	0.016
0.8	8	30780	995	77	0.016	0.018	29070	840	73	0.014	0.014	25650	695	64	0.014	0.010
0.8	10	27360	785	69	0.014	0.018	25840	660	65	0.013	0.014	22800	545	57	0.012	0.010
0.8	12	27360	785	69	0.014	0.011	25840	660	65	0.013	0.008	22800	545	57	0.012	0.006
0.8	14	20520	515	52	0.013	0.007	19380	435	49	0.011	0.006	17100	360	43	0.011	0.004
0.8	16	20520	515	52	0.013	0.007	19380	435	49	0.011	0.006	17100	360	43	0.011	0.004
0.8	20	10260	220	26	0.011	0.007	9690	185	24	0.010	0.006	8550	155	21	0.009	0.004
0.9	4	29250	1120	83	0.019	0.032	27630	935	78	0.017	0.025	24390	775	69	0.016	0.018
0.9	6	29250	1120	83	0.019	0.032	27630	935	78	0.017	0.025	24390	775	69	0.016	0.018
0.9	8	29250	1120	83	0.019	0.020	27630	935	78	0.017	0.016	24390	775	69	0.016	0.011
0.9	10	26000	885	74	0.017	0.020	24560	740	69	0.015	0.016	21680	610	61	0.014	0.011
1.0	2	30800	1540	97	0.025	0.090	29100	1310	91	0.023	0.070	25700	1075	81	0.021	0.050
1.0	3	30800	1540	97	0.025	0.090	29100	1310	91	0.023	0.070	25700	1075	81	0.021	0.050
1.0	4	30800	1540	97	0.025	0.063	29100	1310	91	0.023	0.049	25700	1075	81	0.021	0.035
1.0	5	30800	1540	97	0.025	0.063	29100	1310	91	0.023	0.049	25700	1075	81	0.021	0.035
1.0	6	27720	1245	87	0.022	0.036	26190	1060	82	0.020	0.028	23130	870	73	0.019	0.020
1.0	7	27720	1245	87	0.022	0.036	26190	1060	82	0.020	0.028	23130	870	73	0.019	0.020
1.0	8	27720	1245	87	0.022	0.036	26190	1060	82	0.020	0.028	23130	870	73	0.019	0.020
1.0	10	27720	1245	87	0.022	0.023	26190	1060	82	0.020	0.018	23130	870	73	0.019	0.013
1.0	12	24640	985	77	0.020	0.023	23280	840	73	0.018	0.018	20560	690	65	0.017	0.013
1.0	14	24640	985	77	0.020	0.014	23280	840	73	0.018	0.011	20560	690	65	0.017	0.008
1.0	16	18480	645	58	0.017	0.014	17460	550	55	0.016	0.011	15420	450	48	0.015	0.008
1.0	18	18480	645	58	0.017	0.009	17460	550	55	0.016	0.007	15420	450	48	0.015	0.005
1.0	20	18480	645	58	0.017	0.009	17460	550	55	0.016	0.007	15420	450	48	0.015	0.005
1.0	22	9240	275	29	0.015	0.009	8730	235	27	0.013	0.007	7710	195	24	0.013	0.005
1.0	26	9240	275	29	0.015	0.009	8730	235	27	0.013	0.007	7710	195	24	0.013	0.005
1.0	30	9240	275	29	0.015	0.009	8730	235	27	0.013	0.007	7710	195	24	0.013	0.005
1.0	40	3080	75	10	0.012	0.009	2910	65	9	0.011	0.007	2570	55	8	0.011	0.005

DIA. = Diameter RPM = rev./min. Vc = m/min.
LBS = Length Below Shank FEED = mm/min. fz = mm/tooth

4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE LONG NECK BALL NOSE

SEM846 SERIES

MATERIAL		P														
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc35					HRc35 ~ HRc45					HRc45 ~ HRc55				
STRENGTH		~ 1100N/mm²					1110 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIA.	LBS	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)
1.0	50	3080	75	10	0.012	0.006	2910	65	9	0.011	0.005	2570	55	8	0.011	0.003
1.2	4	26300	1375	99	0.026	0.076	24800	1150	93	0.023	0.059	21900	950	83	0.022	0.042
1.2	6	26300	1375	99	0.026	0.076	24800	1150	93	0.023	0.059	21900	950	83	0.022	0.042
1.2	8	23670	1115	89	0.024	0.043	22320	930	84	0.021	0.034	19710	770	74	0.020	0.024
1.2	10	23670	1115	89	0.024	0.027	22320	930	84	0.021	0.021	19710	770	74	0.020	0.015
1.2	12	23670	1115	89	0.024	0.027	22320	930	84	0.021	0.021	19710	770	74	0.020	0.015
1.2	16	21040	880	79	0.021	0.016	19840	735	75	0.019	0.013	17520	610	66	0.017	0.009
1.2	20	15780	580	59	0.018	0.011	14880	485	56	0.016	0.008	13140	400	50	0.015	0.006
1.2	26	7890	245	30	0.016	0.011	7440	205	28	0.014	0.008	6570	170	25	0.013	0.006
1.4	6	21500	1295	95	0.030	0.088	20300	1100	89	0.027	0.069	18000	935	79	0.026	0.049
1.4	8	19350	1050	85	0.027	0.050	18270	890	80	0.024	0.039	16200	755	71	0.023	0.028
1.4	10	19350	1050	85	0.027	0.050	18270	890	80	0.024	0.039	16200	755	71	0.023	0.028
1.4	16	17200	830	76	0.024	0.032	16240	705	71	0.022	0.025	14400	600	63	0.021	0.018
1.5	4	23900	1580	113	0.033	0.135	22600	1355	106	0.030	0.105	20000	1075	94	0.027	0.075
1.5	5	23900	1580	113	0.033	0.095	22600	1355	106	0.030	0.074	20000	1075	94	0.027	0.053
1.5	6	23900	1580	113	0.033	0.095	22600	1355	106	0.030	0.074	20000	1075	94	0.027	0.053
1.5	7	23900	1580	113	0.033	0.095	22600	1355	106	0.030	0.074	20000	1075	94	0.027	0.053
1.5	8	21510	1280	101	0.030	0.054	20340	1100	96	0.027	0.042	18000	870	85	0.024	0.030
1.5	10	21510	1280	101	0.030	0.054	20340	1100	96	0.027	0.042	18000	870	85	0.024	0.030
1.5	12	21510	1280	101	0.030	0.054	20340	1100	96	0.027	0.042	18000	870	85	0.024	0.030
1.5	14	21510	1280	101	0.030	0.034	20340	1100	96	0.027	0.026	18000	870	85	0.024	0.019
1.5	16	19120	1010	90	0.026	0.034	18080	865	85	0.024	0.026	16000	690	75	0.022	0.019
1.5	18	19120	1010	90	0.026	0.034	18080	865	85	0.024	0.026	16000	690	75	0.022	0.019
1.5	20	19120	1010	90	0.026	0.02	18080	865	85	0.024	0.016	16000	690	75	0.022	0.011
1.5	22	19120	1010	90	0.026	0.02	18080	865	85	0.024	0.016	16000	690	75	0.022	0.011
1.5	26	14340	665	68	0.023	0.014	13560	570	64	0.021	0.011	12000	450	57	0.019	0.008
1.5	30	14340	665	68	0.023	0.014	13560	570	64	0.021	0.011	12000	450	57	0.019	0.008
1.5	35	7170	285	34	0.020	0.010	6780	245	32	0.018	0.008	6000	195	28	0.016	0.005
1.5	40	7170	285	34	0.020	0.010	6780	245	32	0.018	0.008	6000	195	28	0.016	0.005
1.6	4	22200	1555	112	0.035	0.101	21000	1300	106	0.031	0.078	18500	1110	93	0.030	0.056
1.6	6	22200	1555	112	0.035	0.101	21000	1300	106	0.031	0.078	18500	1110	93	0.030	0.056
1.6	8	22200	1555	112	0.035	0.101	21000	1300	106	0.031	0.078	18500	1110	93	0.030	0.056
1.6	10	19980	1260	100	0.032	0.058	18900	1055	95	0.028	0.045	16650	900	84	0.027	0.032
1.6	12	19980	1260	100	0.032	0.058	18900	1055	95	0.028	0.045	16650	900	84	0.027	0.032
1.6	16	19980	1260	100	0.032	0.036	18900	1055	95	0.028	0.028	16650	900	84	0.027	0.020
1.6	20	17760	995	89	0.028	0.036	16800	830	84	0.025	0.028	14800	710	74	0.024	0.020
1.8	4	22200	1780	126	0.040	0.113	21000	1470	119	0.035	0.088	18500	1225	105	0.033	0.063
1.8	6	22200	1780	126	0.040	0.113	21000	1470	119	0.035	0.088	18500	1225	105	0.033	0.063
1.8	8	22200	1780	126	0.040	0.113	21000	1470	119	0.035	0.088	18500	1225	105	0.033	0.063
1.8	10	19980	1440	113	0.036	0.065	18900	1190	107	0.031	0.050	16650	990	94	0.030	0.036
1.8	12	19980	1440	113	0.036	0.065	18900	1190	107	0.031	0.050	16650	990	94	0.030	0.036
1.8	16	19980	1440	113	0.036	0.041	18900	1190	107	0.031	0.032	16650	990	94	0.030	0.023
1.8	20	17760	1140	100	0.032	0.041	16800	940	95	0.028	0.032	14800	785	84	0.027	0.023
2.0	6	18000	1795	113	0.050	0.180	17000	1525	107	0.045	0.140	15000	1285	94	0.043	0.100

DIA. = Diameter RPM = rev./min. Vc = m/min.
LBS = Length Below Shank FEED = mm/min. fz = mm/tooth

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

4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE LONG NECK BALL NOSE

SEM846 SERIES

MATERIAL		P														
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc35					HRc35 ~ HRc45					HRc45 ~ HRc55				
STRENGTH		~ 1100N/mm²					1110 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIA.	LBS	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)
2.0	8	18000	1795	113	0.050	0.126	17000	1525	107	0.045	0.098	15000	1285	94	0.043	0.070
2.0	10	18000	1795	113	0.050	0.126	17000	1525	107	0.045	0.098	15000	1285	94	0.043	0.070
2.0	12	16200	1455	102	0.045	0.072	15300	1235	96	0.040	0.056	13500	1040	85	0.039	0.040
2.0	14	16200	1455	102	0.045	0.072	15300	1235	96	0.040	0.056	13500	1040	85	0.039	0.040
2.0	16	16200	1455	102	0.045	0.072	15300	1235	96	0.040	0.056	13500	1040	85	0.039	0.040
2.0	18	16200	1455	102	0.045	0.045	15300	1235	96	0.040	0.035	13500	1040	85	0.039	0.025
2.0	20	16200	1455	102	0.045	0.045	15300	1235	96	0.040	0.035	13500	1040	85	0.039	0.025
2.0	22	14400	1150	90	0.040	0.045	13600	975	85	0.036	0.035	12000	820	75	0.034	0.025
2.0	26	14400	1150	90	0.040	0.045	13600	975	85	0.036	0.035	12000	820	75	0.034	0.025
2.0	30	14400	1150	90	0.040	0.027	13600	975	85	0.036	0.021	12000	820	75	0.034	0.015
2.0	35	10800	755	68	0.035	0.018	10200	640	64	0.031	0.014	9000	540	57	0.030	0.010
2.0	40	10800	755	68	0.035	0.018	10200	640	64	0.031	0.014	9000	540	57	0.030	0.010
2.0	45	5400	325	34	0.030	0.018	5100	275	32	0.027	0.014	4500	230	28	0.026	0.010
2.0	50	5400	325	34	0.030	0.018	5100	275	32	0.027	0.014	4500	230	28	0.026	0.010
2.0	60	5400	325	34	0.030	0.018	5100	275	32	0.027	0.014	4500	230	28	0.026	0.010
2.5	8	15800	1925	124	0.061	0.158	14900	1605	117	0.054	0.123	13200	1305	104	0.049	0.088
2.5	10	15800	1925	124	0.061	0.158	14900	1605	117	0.054	0.123	13200	1305	104	0.049	0.088
2.5	12	15800	1925	124	0.061	0.158	14900	1605	117	0.054	0.123	13200	1305	104	0.049	0.088
2.5	16	14220	1560	112	0.055	0.090	13410	1300	105	0.048	0.070	11880	1055	93	0.044	0.050
2.5	20	14220	1560	112	0.055	0.090	13410	1300	105	0.048	0.070	11880	1055	93	0.044	0.050
2.5	22	14220	1560	112	0.055	0.056	13410	1300	105	0.048	0.044	11880	1055	93	0.044	0.031
2.5	26	12640	1230	99	0.049	0.056	11920	1025	94	0.043	0.044	10560	835	83	0.040	0.031
2.5	30	12640	1230	99	0.049	0.056	11920	1025	94	0.043	0.044	10560	835	83	0.040	0.031
2.5	35	12640	1230	99	0.049	0.034	11920	1025	94	0.043	0.026	10560	835	83	0.040	0.019
2.5	40	9480	810	74	0.043	0.034	8940	675	70	0.038	0.026	7920	550	62	0.035	0.019
2.5	45	9480	810	74	0.043	0.023	8940	675	70	0.038	0.018	7920	550	62	0.035	0.013
2.5	50	9480	810	74	0.043	0.023	8940	675	70	0.038	0.018	7920	550	62	0.035	0.013
3.0	6	13700	2050	129	0.075	0.270	12900	1730	122	0.067	0.210	11400	1435	107	0.063	0.150
3.0	8	13700	2050	129	0.075	0.270	12900	1730	122	0.067	0.210	11400	1435	107	0.063	0.150
3.0	10	13700	2050	129	0.075	0.189	12900	1730	122	0.067	0.147	11400	1435	107	0.063	0.105
3.0	12	13700	2050	129	0.075	0.189	12900	1730	122	0.067	0.147	11400	1435	107	0.063	0.105
3.0	14	13700	2050	129	0.075	0.189	12900	1730	122	0.067	0.147	11400	1435	107	0.063	0.105
3.0	16	12330	1660	116	0.067	0.108	11610	1400	109	0.060	0.084	10260	1160	97	0.057	0.060
3.0	18	12330	1660	116	0.067	0.108	11610	1400	109	0.060	0.084	10260	1160	97	0.057	0.060
3.0	20	12330	1660	116	0.067	0.108	11610	1400	109	0.060	0.084	10260	1160	97	0.057	0.060
3.0	22	12330	1660	116	0.067	0.108	11610	1400	109	0.060	0.084	10260	1160	97	0.057	0.060
3.0	26	12330	1660	116	0.067	0.068	11610	1400	109	0.060	0.053	10260	1160	97	0.057	0.038
3.0	30	12330	1660	116	0.067	0.068	11610	1400	109	0.060	0.053	10260	1160	97	0.057	0.038
3.0	35	10960	1310	103	0.060	0.068	10320	1105	97	0.054	0.053	9120	920	86	0.050	0.038
3.0	40	10960	1310	103	0.060	0.041	10320	1105	97	0.054	0.032	9120	920	86	0.050	0.023
3.0	45	10960	1310	103	0.060	0.041	10320	1105	97	0.054	0.032	9120	920	86	0.050	0.023
3.0	50	8220	860	77	0.052	0.027	7740	725	73	0.047	0.021	6840	605	64	0.044	0.015
3.0	60	8220	860	77	0.052	0.027	7740	725	73	0.047	0.021	6840	605	64	0.044	0.015
4.0	8	9800	1965	123	0.100	0.360	9300	1670	117	0.090	0.280	8200	1395	103	0.085	0.200

DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/tooth

4G MILL END MILLS

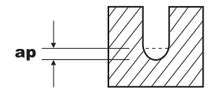
RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE LONG NECK BALL NOSE

SEM846 SERIES

MATERIAL		P														
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc35					HRc35 ~ HRc45					HRc45 ~ HRc55				
STRENGTH		~ 1100N/mm²					1110 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIA.	LBS	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)
4.0	10	9800	1965	123	0.100	0.360	9300	1670	117	0.090	0.280	8200	1395	103	0.085	0.200
4.0	12	9800	1965	123	0.100	0.360	9300	1670	117	0.090	0.280	8200	1395	103	0.085	0.200
4.0	14	9800	1965	123	0.100	0.252	9300	1670	117	0.090	0.196	8200	1395	103	0.085	0.140
4.0	16	9800	1965	123	0.100	0.252	9300	1670	117	0.090	0.196	8200	1395	103	0.085	0.140
4.0	18	9800	1965	123	0.100	0.252	9300	1670	117	0.090	0.196	8200	1395	103	0.085	0.140
4.0	20	9800	1965	123	0.100	0.252	9300	1670	117	0.090	0.196	8200	1395	103	0.085	0.140
4.0	22	8820	1590	111	0.090	0.144	8370	1355	105	0.081	0.112	7380	1130	93	0.077	0.080
4.0	26	8820	1590	111	0.090	0.144	8370	1355	105	0.081	0.112	7380	1130	93	0.077	0.080
4.0	30	8820	1590	111	0.090	0.144	8370	1355	105	0.081	0.112	7380	1130	93	0.077	0.080
4.0	35	8820	1590	111	0.090	0.090	8370	1355	105	0.081	0.070	7380	1130	93	0.077	0.050
4.0	40	8820	1590	111	0.090	0.090	8370	1355	105	0.081	0.070	7380	1130	93	0.077	0.050
4.0	45	7840	1260	99	0.080	0.090	7440	1070	93	0.072	0.070	6560	895	82	0.068	0.050
4.0	50	7840	1260	99	0.080	0.090	7440	1070	93	0.072	0.070	6560	895	82	0.068	0.050
4.0	60	7840	1260	99	0.080	0.054	7440	1070	93	0.072	0.042	6560	895	82	0.068	0.030
5.0	15	7700	1845	121	0.120	0.315	7300	1455	115	0.100	0.245	6400	1285	101	0.100	0.175
5.0	20	7700	1845	121	0.120	0.315	7300	1455	115	0.100	0.245	6400	1285	101	0.100	0.175
5.0	26	6930	1495	109	0.108	0.180	6570	1180	103	0.090	0.140	5760	1040	90	0.090	0.100
5.0	30	6930	1495	109	0.108	0.180	6570	1180	103	0.090	0.140	5760	1040	90	0.090	0.100
5.0	35	6930	1495	109	0.108	0.180	6570	1180	103	0.090	0.140	5760	1040	90	0.090	0.100
5.0	40	6930	1495	109	0.108	0.180	6570	1180	103	0.090	0.140	5760	1040	90	0.090	0.100
5.0	50	6930	1495	109	0.108	0.113	6570	1180	103	0.090	0.088	5760	1040	90	0.090	0.063
5.0	60	6160	1180	97	0.096	0.113	5840	930	92	0.080	0.088	5120	820	80	0.080	0.063
6.0	20	6500	1900	123	0.146	0.378	6200	1600	117	0.129	0.294	5500	1330	104	0.121	0.210
6.0	30	6500	1900	123	0.146	0.378	6200	1600	117	0.129	0.294	5500	1330	104	0.121	0.210
8.0	25	4850	1800	122	0.186	0.504	4600	1500	116	0.163	0.392	4000	1280	101	0.160	0.280
8.0	30	4850	1800	122	0.186	0.504	4600	1500	116	0.163	0.392	4000	1280	101	0.160	0.280
10.0	30	3850	1650	121	0.214	0.900	3680	1400	116	0.190	0.700	3200	1200	101	0.188	0.500
10.0	40	3850	1650	121	0.214	0.630	3680	1400	116	0.190	0.490	3200	1200	101	0.188	0.350
12.0	32	3200	1520	121	0.238	1.080	3050	1300	115	0.213	0.840	2650	1100	100	0.208	0.600
12.0	45	3200	1520	121	0.238	0.756	3050	1300	115	0.213	0.588	2650	1100	100	0.208	0.420

(Depth of Cut per one pass)



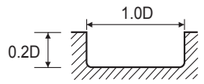
DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/tooth

4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE CORNER RADIUS

SEMD99 SERIES

MATERIAL	P											
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS	~ HRc35				HRc35 ~ HRc45				HRc45 ~ HRc55			
STRENGTH	~ 1100N/mm²				1110 ~ 1500N/mm²				1500 ~ 2000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
0.2	44000	145	28	0.002	28800	60	18	0.001	17600	40	11	0.001
0.3	41000	170	39	0.002	27000	70	25	0.001	16500	45	16	0.001
0.4	41000	170	52	0.002	27000	70	34	0.001	16500	45	21	0.001
0.5	36000	190	57	0.003	23400	80	37	0.002	14300	50	22	0.002
0.6	30000	210	57	0.004	19800	90	37	0.002	12100	55	23	0.002
0.7	30000	210	66	0.004	19800	90	44	0.002	12100	55	27	0.002
0.8	30000	210	75	0.004	19800	90	50	0.002	12100	55	30	0.002
0.9	30000	225	85	0.004	18900	90	53	0.002	11550	55	33	0.002
1.0	27600	240	87	0.004	18000	100	57	0.003	11000	60	35	0.003
1.2	24800	245	93	0.005	15750	105	59	0.003	9750	60	37	0.003
1.5	22000	250	104	0.006	13500	110	64	0.004	8500	60	40	0.004
2.0	18000	260	113	0.007	11560	120	73	0.005	7200	70	45	0.005
2.5	15000	270	118	0.009	9500	130	75	0.007	6100	70	48	0.006
3.0	13240	280	125	0.011	8560	140	81	0.008	5280	70	50	0.007
3.5	11980	310	132	0.013	7690	155	85	0.010	4790	75	53	0.008
4.0	10720	340	135	0.016	6820	170	86	0.012	4300	80	54	0.009
4.5	9940	380	141	0.019	6310	185	89	0.015	4300	90	61	0.010
5.0	9160	420	144	0.023	5800	200	91	0.017	3800	100	60	0.013
5.5	8530	460	147	0.027	5420	225	94	0.021	3540	110	61	0.016
6.0	7900	500	149	0.032	5040	250	95	0.025	3280	120	62	0.018
7.0	6950	520	153	0.037	4420	250	97	0.028	2900	120	64	0.021
8.0	6000	540	151	0.045	3800	250	96	0.033	2520	120	63	0.024
10.0	5040	540	158	0.054	3280	250	103	0.038	2020	120	63	0.030
11.0	4580	480	158	0.052	3030	240	105	0.040	1850	110	64	0.030
12.0	4120	420	155	0.051	2780	230	105	0.041	1680	100	63	0.030
14.0	3610	390	159	0.054	2440	200	107	0.041	1480	90	65	0.030
16.0	3100	360	156	0.058	2100	170	106	0.040	1280	80	64	0.031
20.0	2520	280	158	0.056	1640	120	103	0.037	1000	60	63	0.030



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

4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE LONG NECK CORNER RADIUS

SEME61 SERIES

MATERIAL		P														
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc35					HRc35 ~ HRc45					HRc45 ~ HRc55				
STRENGTH		~ 1100N/mm²					1110 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIA.	LBS	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)
0.2	0.5	50000	170	31	0.002	0.040	34500	75	22	0.001	0.030	21150	45	13	0.001	0.024
0.2	1	50000	170	31	0.002	0.028	34500	75	22	0.001	0.021	21150	45	13	0.001	0.017
0.2	1.5	45000	140	28	0.002	0.016	31050	60	20	0.001	0.012	19040	35	12	0.001	0.010
0.2	2	45000	140	28	0.002	0.010	31050	60	20	0.001	0.008	19040	35	12	0.001	0.006
0.3	1	50000	200	47	0.002	0.042	32000	85	30	0.001	0.032	20000	50	19	0.001	0.025
0.3	2	45000	160	42	0.002	0.024	28800	70	27	0.001	0.018	18000	40	17	0.001	0.014
0.3	3	45000	160	42	0.002	0.015	28800	70	27	0.001	0.011	18000	40	17	0.001	0.009
0.4	1	50000	200	63	0.002	0.080	32000	85	40	0.001	0.060	20000	50	25	0.001	0.048
0.4	1.5	50000	200	63	0.002	0.056	32000	85	40	0.001	0.042	20000	50	25	0.001	0.034
0.4	2	50000	200	63	0.002	0.056	32000	85	40	0.001	0.042	20000	50	25	0.001	0.034
0.4	2.5	45000	160	57	0.002	0.032	28800	70	36	0.001	0.024	18000	40	23	0.001	0.019
0.4	3	45000	160	57	0.002	0.032	28800	70	36	0.001	0.024	18000	40	23	0.001	0.019
0.4	4	45000	160	57	0.002	0.020	28800	70	36	0.001	0.015	18000	40	23	0.001	0.012
0.5	1	43000	220	68	0.003	0.100	28000	95	44	0.002	0.075	17100	60	27	0.002	0.060
0.5	1.5	43000	220	68	0.003	0.100	28000	95	44	0.002	0.075	17100	60	27	0.002	0.060
0.5	2	43000	220	68	0.003	0.070	28000	95	44	0.002	0.053	17100	60	27	0.002	0.042
0.5	2.5	43000	220	68	0.003	0.070	28000	95	44	0.002	0.053	17100	60	27	0.002	0.042
0.5	3	38700	180	61	0.002	0.040	25200	75	40	0.001	0.030	15390	50	24	0.002	0.024
0.5	4	38700	180	61	0.002	0.040	25200	75	40	0.001	0.030	15390	50	24	0.002	0.024
0.5	5	38700	180	61	0.002	0.025	25200	75	40	0.001	0.019	15390	50	24	0.002	0.015
0.5	6	34400	140	54	0.002	0.025	22400	60	35	0.001	0.019	13680	40	21	0.001	0.015
0.6	2	36400	250	69	0.003	0.084	24000	110	45	0.002	0.063	14500	65	27	0.002	0.050
0.6	3	36400	250	69	0.003	0.084	24000	110	45	0.002	0.063	14500	65	27	0.002	0.050
0.6	4	32760	205	62	0.003	0.048	21600	90	41	0.002	0.036	13050	55	25	0.002	0.029
0.6	6	32760	205	62	0.003	0.030	21600	90	41	0.002	0.023	13050	55	25	0.002	0.018
0.6	8	29120	160	55	0.003	0.018	19200	70	36	0.002	0.014	11600	40	22	0.002	0.011
0.6	10	21840	105	41	0.002	0.012	14400	45	27	0.002	0.009	8700	25	16	0.001	0.007
0.7	2	36400	250	80	0.003	0.140	24000	110	53	0.002	0.105	14500	65	32	0.002	0.084
0.7	4	32760	205	72	0.003	0.056	21600	90	48	0.002	0.042	13050	55	29	0.002	0.034
0.7	6	32760	205	72	0.003	0.035	21600	90	48	0.002	0.026	13050	55	29	0.002	0.021
0.7	8	29120	160	64	0.003	0.035	19200	70	42	0.002	0.026	11600	40	26	0.002	0.021
0.7	10	29120	160	64	0.003	0.021	19200	70	42	0.002	0.016	11600	40	26	0.002	0.013
0.8	2	36400	250	91	0.003	0.160	24000	110	60	0.002	0.120	14500	65	36	0.002	0.096
0.8	3	36400	250	91	0.003	0.112	24000	110	60	0.002	0.084	14500	65	36	0.002	0.067
0.8	4	36400	250	91	0.003	0.112	24000	110	60	0.002	0.084	14500	65	36	0.002	0.067
0.8	6	32760	205	82	0.003	0.064	21600	90	54	0.002	0.048	13050	55	33	0.002	0.038
0.8	8	32760	205	82	0.003	0.040	21600	90	54	0.002	0.030	13050	55	33	0.002	0.024
0.8	10	29120	160	73	0.003	0.040	19200	70	48	0.002	0.030	11600	40	29	0.002	0.024
1.0	3	33100	280	104	0.004	0.200	21600	120	68	0.003	0.150	13200	70	41	0.003	0.120
1.0	4	33100	280	104	0.004	0.140	21600	120	68	0.003	0.105	13200	70	41	0.003	0.084
1.0	6	29790	225	94	0.004	0.080	19440	95	61	0.002	0.060	11880	55	37	0.002	0.048
1.0	8	29790	225	94	0.004	0.080	19440	95	61	0.002	0.060	11880	55	37	0.002	0.048
1.0	10	29790	225	94	0.004	0.050	19440	95	61	0.002	0.038	11880	55	37	0.002	0.030
1.0	12	26480	180	83	0.003	0.050	17280	75	54	0.002	0.038	10560	45	33	0.002	0.030

DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/tooth

4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE LONG NECK CORNER RADIUS

SEME61 SERIES

MATERIAL		P														
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc35					HRc35 ~ HRc45					HRc45 ~ HRc55				
STRENGTH		~ 1100N/mm²					1110 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIA.	LBS	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)
1.0	14	26480	180	83	0.003	0.030	17280	75	54	0.002	0.023	10560	45	33	0.002	0.018
1.0	16	19860	120	62	0.003	0.030	12960	50	41	0.002	0.023	7920	30	25	0.002	0.018
1.0	20	19860	120	62	0.003	0.020	12960	50	41	0.002	0.015	7920	30	25	0.002	0.012
1.2	3	29750	290	112	0.005	0.240	18900	125	71	0.003	0.180	11700	70	44	0.003	0.144
1.2	4	29750	290	112	0.005	0.168	18900	125	71	0.003	0.126	11700	70	44	0.003	0.101
1.2	6	29750	290	112	0.005	0.168	18900	125	71	0.003	0.126	11700	70	44	0.003	0.101
1.2	8	26780	235	101	0.004	0.096	17010	100	64	0.003	0.072	10530	55	40	0.003	0.058
1.2	10	26780	235	101	0.004	0.060	17010	100	64	0.003	0.045	10530	55	40	0.003	0.036
1.2	12	26780	235	101	0.004	0.060	17010	100	64	0.003	0.045	10530	55	40	0.003	0.036
1.2	16	23800	185	90	0.004	0.036	15120	80	57	0.003	0.027	9360	45	35	0.002	0.022
1.2	20	17850	120	67	0.003	0.024	11340	55	43	0.002	0.018	7020	30	26	0.002	0.014
1.5	4	26400	300	124	0.006	0.300	16200	130	76	0.004	0.225	10200	70	48	0.003	0.180
1.5	6	26400	300	124	0.006	0.210	16200	130	76	0.004	0.158	10200	70	48	0.003	0.126
1.5	8	23760	245	112	0.005	0.120	14580	105	69	0.004	0.090	9180	55	43	0.003	0.072
1.5	10	23760	245	112	0.005	0.120	14580	105	69	0.004	0.090	9180	55	43	0.003	0.072
1.5	12	23760	245	112	0.005	0.120	14580	105	69	0.004	0.090	9180	55	43	0.003	0.072
1.5	14	23760	245	112	0.005	0.075	14580	105	69	0.004	0.056	9180	55	43	0.003	0.045
1.5	16	21120	190	100	0.004	0.075	12960	85	61	0.003	0.056	8160	45	38	0.003	0.045
1.5	20	21120	190	100	0.004	0.045	12960	85	61	0.003	0.034	8160	45	38	0.003	0.027
1.5	22	21120	190	100	0.004	0.045	12960	85	61	0.003	0.034	8160	45	38	0.003	0.027
1.5	26	15840	125	75	0.004	0.030	9720	55	46	0.003	0.023	6120	30	29	0.002	0.018
2.0	6	21600	310	136	0.007	0.400	13800	140	87	0.005	0.300	8640	80	54	0.005	0.240
2.0	8	21600	310	136	0.007	0.280	13800	140	87	0.005	0.210	8640	80	54	0.005	0.168
2.0	10	21600	310	136	0.007	0.280	13800	140	87	0.005	0.210	8640	80	54	0.005	0.168
2.0	12	19440	250	122	0.006	0.160	12420	115	78	0.005	0.120	7780	65	49	0.004	0.096
2.0	14	19440	250	122	0.006	0.160	12420	115	78	0.005	0.120	7780	65	49	0.004	0.096
2.0	16	19440	250	122	0.006	0.160	12420	115	78	0.005	0.120	7780	65	49	0.004	0.096
2.0	20	19440	250	122	0.006	0.100	12420	115	78	0.005	0.075	7780	65	49	0.004	0.060
2.0	22	17280	200	109	0.006	0.100	11040	90	69	0.004	0.075	6910	50	43	0.004	0.060
2.0	26	17280	200	109	0.006	0.100	11040	90	69	0.004	0.075	6910	50	43	0.004	0.060
2.0	30	17280	200	109	0.006	0.060	11040	90	69	0.004	0.045	6910	50	43	0.004	0.036
2.5	8	18000	320	141	0.009	0.350	11400	150	90	0.007	0.263	7320	80	57	0.005	0.210
2.5	10	18000	320	141	0.009	0.350	11400	150	90	0.007	0.263	7320	80	57	0.005	0.210
2.5	12	18000	320	141	0.009	0.350	11400	150	90	0.007	0.263	7320	80	57	0.005	0.210
2.5	14	16200	260	127	0.008	0.200	10260	120	81	0.006	0.150	6590	65	52	0.005	0.120
2.5	16	16200	260	127	0.008	0.200	10260	120	81	0.006	0.150	6590	65	52	0.005	0.120
2.5	20	16200	260	127	0.008	0.200	10260	120	81	0.006	0.150	6590	65	52	0.005	0.120
2.5	26	14400	205	113	0.007	0.125	9120	95	72	0.005	0.094	5860	50	46	0.004	0.075
2.5	30	14400	205	113	0.007	0.125	9120	95	72	0.005	0.094	5860	50	46	0.004	0.075
3.0	8	15900	330	150	0.010	0.600	10300	160	97	0.008	0.450	6300	80	59	0.006	0.360
3.0	10	15900	330	150	0.010	0.420	10300	160	97	0.008	0.315	6300	80	59	0.006	0.252
3.0	12	15900	330	150	0.010	0.420	10300	160	97	0.008	0.315	6300	80	59	0.006	0.252
3.0	14	15900	330	150	0.010	0.420	10300	160	97	0.008	0.315	6300	80	59	0.006	0.252
3.0	16	14310	265	135	0.009	0.240	9270	130	87	0.007	0.180	5670	65	53	0.006	0.144

DIA. = Diameter
LBS = Length Below Shank

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

Vc = m/min.
fz = mm/tooth

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

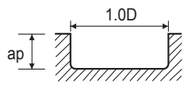
4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE LONG NECK CORNER RADIUS

SEME61 SERIES

MATERIAL		P														
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc35					HRc35 ~ HRc45					HRc45 ~ HRc55				
STRENGTH		~ 1100N/mm²					1110 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIA.	LBS	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)
3.0	20	14310	265	135	0.009	0.240	9270	130	87	0.007	0.180	5670	65	53	0.006	0.144
3.0	26	14310	265	135	0.009	0.150	9270	130	87	0.007	0.113	5670	65	53	0.006	0.090
3.0	30	14310	265	135	0.009	0.150	9270	130	87	0.007	0.113	5670	65	53	0.006	0.090
3.0	35	12720	210	120	0.008	0.150	8240	100	78	0.006	0.113	5040	50	48	0.005	0.090
3.0	40	12720	210	120	0.008	0.090	8240	100	78	0.006	0.068	5040	50	48	0.005	0.054
4.0	10	12800	400	161	0.016	0.800	8200	200	103	0.012	0.600	5150	95	65	0.009	0.480
4.0	12	12800	400	161	0.016	0.800	8200	200	103	0.012	0.600	5150	95	65	0.009	0.480
4.0	14	12800	400	161	0.016	0.560	8200	200	103	0.012	0.420	5150	95	65	0.009	0.336
4.0	16	12800	400	161	0.016	0.560	8200	200	103	0.012	0.420	5150	95	65	0.009	0.336
4.0	20	12800	400	161	0.016	0.560	8200	200	103	0.012	0.420	5150	95	65	0.009	0.336
4.0	26	11520	325	145	0.014	0.320	7380	160	93	0.011	0.240	4640	75	58	0.008	0.192
4.0	30	11520	325	145	0.014	0.320	7380	160	93	0.011	0.240	4640	75	58	0.008	0.192
4.0	35	11520	325	145	0.014	0.200	7380	160	93	0.011	0.150	4640	75	58	0.008	0.120
4.0	40	11520	325	145	0.014	0.200	7380	160	93	0.011	0.150	4640	75	58	0.008	0.120
4.0	45	10240	255	129	0.012	0.200	6560	130	82	0.010	0.150	4120	60	52	0.007	0.120
4.0	50	10240	255	129	0.012	0.200	6560	130	82	0.010	0.150	4120	60	52	0.007	0.120
5.0	15	11000	500	173	0.023	1.000	7000	240	110	0.017	0.750	4560	120	72	0.013	0.600
6.0	20	9500	600	179	0.032	0.840	6000	300	113	0.025	0.630	3930	140	74	0.018	0.504
6.0	30	9500	600	179	0.032	0.840	6000	300	113	0.025	0.630	3930	140	74	0.018	0.504
8.0	25	7200	640	181	0.044	1.120	4550	300	114	0.033	0.840	3020	140	76	0.023	0.672
8.0	35	7200	640	181	0.044	1.120	4550	300	114	0.033	0.840	3020	140	76	0.023	0.672
10.0	30	6000	640	188	0.053	2.000	4000	300	126	0.038	1.500	2420	140	76	0.029	1.200
10.0	40	6000	640	188	0.053	1.400	4000	300	126	0.038	1.050	2420	140	76	0.029	0.840
12.0	32	5000	500	188	0.050	2.400	3340	270	126	0.040	1.800	2000	120	75	0.030	1.440
12.0	45	5000	500	188	0.050	1.680	3340	270	126	0.040	1.260	2000	120	75	0.030	1.008
16.0	35	3720	450	187	0.060	3.200	2520	210	127	0.042	2.400	1540	95	77	0.031	1.920
16.0	50	3720	450	187	0.060	2.240	2520	210	127	0.042	1.680	1540	95	77	0.031	1.344
20.0	40	3000	330	188	0.055	4.000	1950	140	123	0.036	3.000	1200	70	75	0.029	2.400
20.0	55	3000	330	188	0.055	4.000	1950	140	123	0.036	3.000	1200	70	75	0.029	2.400



DIA. = Diameter
LBS = Length Below Shank

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

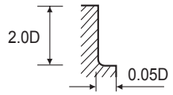
Vc = m/min.
fz = mm/tooth

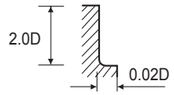
4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE CORNER RADIUS

SEME01 SERIES

MATERIAL	P											
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS	~ HRc35				HRc35 ~ HRc45				HRc45 ~ HRc55			
STRENGTH	~ 1100N/mm²				1110 ~ 1500N/mm²				1500 ~ 2000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
1.0	27600	300	87	0.003	18000	220	57	0.003	11000	120	35	0.003
1.2	24800	305	93	0.003	15750	225	59	0.004	9750	120	37	0.003
1.5	22000	310	104	0.004	13500	230	64	0.004	8500	120	40	0.004
2.0	18000	320	113	0.004	11560	240	73	0.005	7200	130	45	0.005
2.5	15000	330	118	0.006	9500	250	75	0.007	6100	130	48	0.005
3.0	13240	340	125	0.006	8560	260	81	0.008	5280	130	50	0.006
3.5	11980	380	132	0.008	7690	280	85	0.009	4790	135	53	0.007
4.0	10720	420	135	0.010	6820	300	86	0.011	4300	140	54	0.008
4.5	9940	425	141	0.011	6310	330	89	0.013	4050	155	57	0.010
5.0	9160	430	144	0.012	5800	360	91	0.016	3800	170	60	0.011
5.5	8530	430	147	0.013	5420	360	94	0.017	3540	170	61	0.012
6.0	7900	430	149	0.014	5040	360	95	0.018	3280	170	62	0.013
7.0	6950	445	153	0.016	4420	360	97	0.020	2900	170	64	0.015
8.0	6000	460	151	0.019	3800	360	96	0.024	2520	170	63	0.017
10.0	5040	460	158	0.023	3280	360	103	0.027	2020	170	63	0.021
11.0	4580	410	158	0.022	3030	340	105	0.028	1850	155	64	0.021
12.0	4120	360	155	0.022	2780	320	105	0.029	1680	140	63	0.021
14.0	3610	320	159	0.022	2440	275	107	0.028	1480	125	65	0.021
16.0	3100	280	156	0.023	2100	230	106	0.027	1280	115	64	0.022
20.0	2520	230	158	0.023	1640	180	103	0.027	1000	90	63	0.023





* 1.5XD Axial cutting depth should be for diameter over 16mm

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

4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE LONG NECK CORNER RADIUS

SEME64 SERIES

MATERIAL		P														
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc35					HRc35 ~ HRc45					HRc45 ~ HRc55				
STRENGTH		~ 1100N/mm²					1110 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIA.	LBS	RPM	FEED	Vc	fz	Ae(mm)	RPM	FEED	Vc	fz	Ae(mm)	RPM	FEED	Vc	fz	Ae(mm)
1.0	4	33100	360	104	0.003	0.021	21600	260	68	0.003	0.016	13200	140	41	0.003	0.013
1.0	6	29790	290	94	0.002	0.012	19440	210	61	0.003	0.009	11880	115	37	0.002	0.007
1.0	8	29790	290	94	0.002	0.012	19440	210	61	0.003	0.009	11880	115	37	0.002	0.007
1.0	10	29790	290	94	0.002	0.008	19440	210	61	0.003	0.006	11880	115	37	0.002	0.005
1.0	12	26480	230	83	0.002	0.008	17280	165	54	0.002	0.006	10560	90	33	0.002	0.005
1.0	16	19860	150	62	0.002	0.005	12960	110	41	0.002	0.003	7920	60	25	0.002	0.003
1.0	20	19860	150	62	0.002	0.003	12960	110	41	0.002	0.002	7920	60	25	0.002	0.002
1.0	22	9930	65	31	0.002	0.003	6480	45	20	0.002	0.002	3960	25	12	0.002	0.002
1.0	26	9930	65	31	0.002	0.003	6480	45	20	0.002	0.002	3960	25	12	0.002	0.002
1.2	3	29750	365	112	0.003	0.036	18900	265	71	0.004	0.027	11700	140	44	0.003	0.022
1.2	4	29750	365	112	0.003	0.025	18900	265	71	0.004	0.019	11700	140	44	0.003	0.015
1.2	6	29750	365	112	0.003	0.025	18900	265	71	0.004	0.019	11700	140	44	0.003	0.015
1.2	8	26780	295	101	0.003	0.014	17010	215	64	0.003	0.011	10530	115	40	0.003	0.009
1.2	10	26780	295	101	0.003	0.009	17010	215	64	0.003	0.007	10530	115	40	0.003	0.005
1.2	12	26780	295	101	0.003	0.009	17010	215	64	0.003	0.007	10530	115	40	0.003	0.005
1.2	16	23800	235	90	0.002	0.005	15120	170	57	0.003	0.004	9360	90	35	0.002	0.003
1.2	20	17850	155	67	0.002	0.004	11340	110	43	0.002	0.003	7020	60	26	0.002	0.002
1.5	4	26400	370	124	0.004	0.045	16200	270	76	0.004	0.034	10200	140	48	0.003	0.027
1.5	6	26400	370	124	0.004	0.032	16200	270	76	0.004	0.024	10200	140	48	0.003	0.019
1.5	8	23760	300	112	0.003	0.018	14580	220	69	0.004	0.014	9180	115	43	0.003	0.011
1.5	10	23760	300	112	0.003	0.018	14580	220	69	0.004	0.014	9180	115	43	0.003	0.011
1.5	12	23760	300	112	0.003	0.018	14580	220	69	0.004	0.014	9180	115	43	0.003	0.011
1.5	14	23760	300	112	0.003	0.011	14580	220	69	0.004	0.008	9180	115	43	0.003	0.007
1.5	16	21120	235	100	0.003	0.011	12960	175	61	0.003	0.008	8160	90	38	0.003	0.007
1.5	20	21120	235	100	0.003	0.007	12960	175	61	0.003	0.005	8160	90	38	0.003	0.004
1.5	22	21120	235	100	0.003	0.007	12960	175	61	0.003	0.005	8160	90	38	0.003	0.004
1.5	26	15840	155	75	0.002	0.005	9720	115	46	0.003	0.003	6120	60	29	0.002	0.003
2.0	6	21600	380	136	0.004	0.060	13800	280	87	0.005	0.045	8640	150	54	0.004	0.036
2.0	8	21600	380	136	0.004	0.042	13800	280	87	0.005	0.032	8640	150	54	0.004	0.025
2.0	10	21600	380	136	0.004	0.042	13800	280	87	0.005	0.032	8640	150	54	0.004	0.025
2.0	12	19440	310	122	0.004	0.024	12420	225	78	0.005	0.018	7780	120	49	0.004	0.014
2.0	14	19440	310	122	0.004	0.024	12420	225	78	0.005	0.018	7780	120	49	0.004	0.014
2.0	16	19440	310	122	0.004	0.024	12420	225	78	0.005	0.018	7780	120	49	0.004	0.014
2.0	20	19440	310	122	0.004	0.015	12420	225	78	0.005	0.011	7780	120	49	0.004	0.009
2.0	22	17280	245	109	0.004	0.015	11040	180	69	0.004	0.011	6910	95	43	0.003	0.009
2.0	26	17280	245	109	0.004	0.015	11040	180	69	0.004	0.011	6910	95	43	0.003	0.009
2.0	30	17280	245	109	0.004	0.009	11040	180	69	0.004	0.007	6910	95	43	0.003	0.005
2.5	8	18000	390	141	0.005	0.053	11400	300	90	0.007	0.039	7320	150	57	0.005	0.032
2.5	10	18000	390	141	0.005	0.053	11400	300	90	0.007	0.039	7320	150	57	0.005	0.032
2.5	12	18000	390	141	0.005	0.053	11400	300	90	0.007	0.039	7320	150	57	0.005	0.032
2.5	14	16200	315	127	0.005	0.030	10260	245	81	0.006	0.023	6590	120	52	0.005	0.018
2.5	16	16200	315	127	0.005	0.030	10260	245	81	0.006	0.023	6590	120	52	0.005	0.018
2.5	20	16200	315	127	0.005	0.030	10260	245	81	0.006	0.023	6590	120	52	0.005	0.018
2.5	26	14400	250	113	0.004	0.019	9120	190	72	0.005	0.014	5860	95	46	0.004	0.011

DIA. = Diameter
LBS = Length Below Shank

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

Vc = m/min.
fz = mm/tooth

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

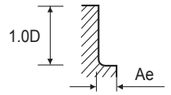
4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE LONG NECK CORNER RADIUS

SEME64 SERIES

MATERIAL		P														
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc35					HRc35 ~ HRc45					HRc45 ~ HRc55				
STRENGTH		~ 1100N/mm²					1110 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIA.	LBS	RPM	FEED	Vc	fz	Ae(mm)	RPM	FEED	Vc	fz	Ae(mm)	RPM	FEED	Vc	fz	Ae(mm)
2.5	30	14400	250	113	0.004	0.019	9120	190	72	0.005	0.014	5860	95	46	0.004	0.011
3.0	8	15900	400	150	0.006	0.090	10300	310	97	0.008	0.068	6300	150	59	0.006	0.054
3.0	10	15900	400	150	0.006	0.063	10300	310	97	0.008	0.047	6300	150	59	0.006	0.038
3.0	12	15900	400	150	0.006	0.063	10300	310	97	0.008	0.047	6300	150	59	0.006	0.038
3.0	14	15900	400	150	0.006	0.063	10300	310	97	0.008	0.047	6300	150	59	0.006	0.038
3.0	16	14310	325	135	0.006	0.036	9270	250	87	0.007	0.027	5670	120	53	0.005	0.022
3.0	20	14310	325	135	0.006	0.036	9270	250	87	0.007	0.027	5670	120	53	0.005	0.022
3.0	26	14310	325	135	0.006	0.023	9270	250	87	0.007	0.017	5670	120	53	0.005	0.014
3.0	30	14310	325	135	0.006	0.023	9270	250	87	0.007	0.017	5670	120	53	0.005	0.014
3.0	35	12720	255	120	0.005	0.023	8240	200	78	0.006	0.017	5040	95	48	0.005	0.014
3.0	40	12720	255	120	0.005	0.014	8240	200	78	0.006	0.010	5040	95	48	0.005	0.008
4.0	10	12800	500	161	0.010	0.120	8200	360	103	0.011	0.090	5150	160	65	0.008	0.072
4.0	12	12800	500	161	0.010	0.120	8200	360	103	0.011	0.090	5150	160	65	0.008	0.072
4.0	14	12800	500	161	0.010	0.084	8200	360	103	0.011	0.063	5150	160	65	0.008	0.050
4.0	16	12800	500	161	0.010	0.084	8200	360	103	0.011	0.063	5150	160	65	0.008	0.050
4.0	20	12800	500	161	0.010	0.084	8200	360	103	0.011	0.063	5150	160	65	0.008	0.050
4.0	26	11520	405	145	0.009	0.048	7380	290	93	0.010	0.036	4640	130	58	0.007	0.029
4.0	30	11520	405	145	0.009	0.048	7380	290	93	0.010	0.036	4640	130	58	0.007	0.029
4.0	35	11520	405	145	0.009	0.030	7380	290	93	0.010	0.023	4640	130	58	0.007	0.018
4.0	40	11520	405	145	0.009	0.030	7380	290	93	0.010	0.023	4640	130	58	0.007	0.018
4.0	45	10240	320	129	0.008	0.030	6560	230	82	0.009	0.023	4120	100	52	0.006	0.018
4.0	50	10240	320	129	0.008	0.030	6560	230	82	0.009	0.023	4120	100	52	0.006	0.018
5.0	15	11000	510	173	0.012	0.150	7000	430	110	0.015	0.113	4560	200	72	0.011	0.090
6.0	20	9500	510	179	0.013	0.126	6000	430	113	0.018	0.095	3930	200	74	0.013	0.076
6.0	30	9500	510	179	0.013	0.126	6000	430	113	0.018	0.095	3930	200	74	0.013	0.076
8.0	25	7200	550	181	0.019	0.168	4550	430	114	0.024	0.126	3020	200	76	0.017	0.101
8.0	35	7200	550	181	0.019	0.168	4550	430	114	0.024	0.126	3020	200	76	0.017	0.101
10.0	30	6000	550	188	0.023	0.300	4000	430	126	0.027	0.225	2420	200	76	0.021	0.180
10.0	40	6000	550	188	0.023	0.210	4000	430	126	0.027	0.158	2420	200	76	0.021	0.126
12.0	32	5000	430	188	0.022	0.360	3340	380	126	0.028	0.270	2000	160	75	0.020	0.216
12.0	45	5000	430	188	0.022	0.252	3340	380	126	0.028	0.189	2000	160	75	0.020	0.151
16.0	35	3720	330	187	0.022	0.480	2520	280	127	0.028	0.360	1540	135	77	0.022	0.288
16.0	50	3720	330	187	0.022	0.336	2520	280	127	0.028	0.252	1540	135	77	0.022	0.202
20.0	40	3000	270	188	0.023	0.600	1950	210	123	0.027	0.450	1200	100	75	0.021	0.360
20.0	55	3000	270	188	0.023	0.600	1950	210	123	0.027	0.450	1200	100	75	0.021	0.360



DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/tooth

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

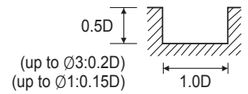
4G MILL END MILLS

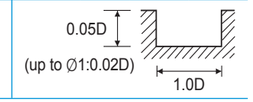
RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE

SEME35 SERIES

MATERIAL		P										M			
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS					
HARDNESS		~ HRc35				HRc35 ~ HRc45				HRc45 ~ HRc55					
STRENGTH		~ 1100N/mm²				1110 ~ 1500N/mm²				1500 ~ 2000N/mm²				STAINLESS STEELS			
DIA.	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
0.1	42000	80	13	0.001	25200	47	8	0.001	16800	16	5	0.000	21000	40	7	0.001
0.2	42000	85	26	0.001	25200	50	16	0.001	16800	17	11	0.001	21000	39	13	0.001
0.3	39000	90	37	0.001	23400	54	22	0.001	15600	18	15	0.001	19500	45	18	0.001
0.4	39000	95	49	0.001	23400	57	29	0.001	15600	19	20	0.001	19500	47	25	0.001
0.5	36000	110	57	0.002	21600	66	34	0.002	14400	22	23	0.001	18000	55	28	0.002
0.6	32000	125	60	0.002	19200	76	36	0.002	12800	25	24	0.001	16000	63	30	0.002
0.7	28000	140	62	0.003	16800	85	37	0.003	11200	28	25	0.001	14000	70	31	0.003
0.8	25000	155	63	0.003	15000	95	38	0.003	10000	32	25	0.002	12500	79	31	0.003
0.9	23500	165	66	0.004	14100	98	40	0.003	9400	33	27	0.002	11750	81	33	0.003
1.0	21500	170	68	0.004	12900	101	41	0.004	8600	34	27	0.002	10750	84	34	0.004
1.2	18000	175	68	0.005	10800	104	41	0.005	7200	35	27	0.002	9000	87	34	0.005
1.5	15000	180	71	0.006	9000	107	42	0.006	6000	36	28	0.003	7500	89	35	0.006
2.0	11560	200	73	0.009	7560	125	48	0.008	5040	37	32	0.004	6300	95	40	0.008
2.5	10240	210	80	0.010	6560	135	52	0.010	4200	39	33	0.005	5460	110	43	0.010
3.0	8920	220	84	0.012	5560	145	52	0.013	3360	42	32	0.006	4620	125	44	0.014
3.5	8240	270	91	0.016	5090	170	56	0.017	3150	42	35	0.007	4250	140	47	0.016
4.0	7560	315	95	0.021	4620	190	58	0.021	2940	42	37	0.007	3880	160	49	0.021
4.5	6930	325	98	0.023	4200	195	59	0.023	2630	47	37	0.009	3520	165	50	0.023
5.0	6300	335	99	0.027	3780	200	59	0.026	2320	53	36	0.011	3160	170	50	0.027
5.5	5930	350	102	0.030	3570	215	62	0.030	2160	55	37	0.013	3000	180	52	0.030
6.0	5560	370	105	0.033	3360	230	63	0.034	2000	58	38	0.015	2840	190	54	0.033
6.5	5220	375	107	0.036	3150	225	64	0.036	1920	63	39	0.016	2655	190	54	0.036
7.0	4880	385	107	0.039	2940	220	65	0.037	1840	68	40	0.018	2470	190	54	0.038
7.5	4540	390	107	0.043	2730	215	64	0.039	1760	74	41	0.021	2285	190	54	0.042
8.0	4200	400	106	0.048	2520	210	63	0.042	1680	79	42	0.024	2100	190	53	0.045
8.5	3965	385	106	0.049	2390	200	64	0.042	1600	74	43	0.023	1995	185	53	0.046
9.0	3730	375	105	0.050	2260	190	64	0.042	1520	68	43	0.022	1890	180	53	0.048
9.5	3495	355	104	0.051	2130	180	64	0.042	1440	63	43	0.022	1785	175	53	0.049
10.0	3260	345	102	0.053	2000	170	63	0.043	1360	63	43	0.023	1680	170	53	0.051
10.5	3130	330	103	0.053	1920	160	63	0.042	1310	61	43	0.023	1600	160	53	0.050
11.0	3000	320	104	0.053	1840	150	64	0.041	1260	58	44	0.023	1520	150	53	0.049
11.5	2870	305	104	0.053	1760	140	64	0.040	1210	58	44	0.024	1440	140	52	0.049
12.0	2740	295	103	0.054	1680	135	63	0.040	1160	58	44	0.025	1360	135	51	0.050
13.0	2605	280	106	0.054	1600	130	65	0.041	1095	55	45	0.025	1285	130	52	0.051
14.0	2470	265	109	0.054	1520	125	67	0.041	1030	49	45	0.024	1210	125	53	0.052
15.0	2335	245	110	0.052	1440	120	68	0.042	965	45	45	0.023	1135	120	53	0.053
16.0	2200	230	111	0.052	1360	115	68	0.042	900	42	45	0.023	1060	115	53	0.054
17.0	2070	215	111	0.052	1285	105	69	0.041	845	39	45	0.023	1005	105	54	0.052
18.0	1940	205	110	0.053	1210	100	68	0.041	790	37	45	0.023	950	100	54	0.053
19.0	1810	190	108	0.052	1135	90	68	0.040	735	34	44	0.023	895	90	53	0.050
20.0	1680	180	106	0.054	1060	84	67	0.040	680	32	43	0.024	840	84	53	0.050
21.0	1615	170	107	0.053	1015	82	67	0.040	650	29	43	0.022	800	80	53	0.050
22.0	1550	165	107	0.053	970	80	67	0.041	620	27	43	0.022	775	76	54	0.049
23.0	1480	150	107	0.051	925	78	67	0.042	600	25	43	0.021	745	71	54	0.048
24.0	1425	140	107	0.049	885	76	67	0.043	570	23	43	0.020	715	67	54	0.047
25.0	1360	135	107	0.050	840	74	66	0.044	540	21	42	0.019	680	63	53	0.046





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

4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE LONG LENGTH

SEME70 SERIES

MATERIAL		P											
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS		~ HRc35				HRc35 ~ HRc45				HRc45 ~ HRc55			
STRENGTH		~ 1100N/mm²				1110 ~ 1500N/mm²				1500 ~ 2000N/mm²			
DIA.	LOC	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
1.0	3	16000	70	50	0.002	12800	60	40	0.002	8000	30	25	0.002
1.0	4	16000	70	50	0.002	12800	60	40	0.002	8000	30	25	0.002
1.0	5	16000	70	50	0.002	12800	60	40	0.002	8000	30	25	0.002
1.0	6	14400	55	45	0.002	11520	50	36	0.002	7200	25	23	0.002
1.0	7	14400	55	45	0.002	11520	50	36	0.002	7200	25	23	0.002
1.0	8	14400	50	45	0.002	11520	45	36	0.002	7200	20	23	0.001
1.0	10	14400	50	45	0.002	11520	45	36	0.002	7200	20	23	0.001
1.0	12	12800	40	40	0.002	10240	35	32	0.002	6400	15	20	0.001
1.2	4	13500	75	51	0.003	10800	65	41	0.003	6750	30	25	0.002
1.2	6	13500	75	51	0.003	10800	65	41	0.003	6750	30	25	0.002
1.2	8	12150	60	46	0.002	9720	50	37	0.003	6080	25	23	0.002
1.2	10	12150	55	46	0.002	9720	45	37	0.002	6080	20	23	0.002
1.2	12	12150	55	46	0.002	9720	45	37	0.002	6080	20	23	0.002
1.5	6	11200	80	53	0.004	8960	70	42	0.004	5600	30	26	0.003
1.5	8	10080	70	48	0.003	8060	60	38	0.004	5040	30	24	0.003
1.5	10	10080	65	48	0.003	8060	55	38	0.003	5040	25	24	0.002
1.5	12	10080	60	48	0.003	8060	50	38	0.003	5040	25	24	0.002
1.5	14	10080	60	48	0.003	8060	50	38	0.003	5040	25	24	0.002
1.5	16	8960	45	42	0.003	7170	40	34	0.003	4480	20	21	0.002
2.0	8	9070	85	57	0.005	7260	70	46	0.005	4540	35	29	0.004
2.0	10	9070	85	57	0.005	7260	70	46	0.005	4540	35	29	0.004
2.0	12	8160	70	51	0.004	6530	60	41	0.005	4090	30	26	0.004
2.0	14	8160	70	51	0.004	6530	60	41	0.005	4090	30	26	0.004
2.0	16	8160	60	51	0.004	6530	50	41	0.004	4090	25	26	0.003
2.5	10	7700	95	60	0.006	6200	80	49	0.006	3850	40	30	0.005
2.5	12	7700	95	60	0.006	6200	80	49	0.006	3850	40	30	0.005
2.5	16	6930	75	54	0.005	5580	65	44	0.006	3470	30	27	0.004
2.5	20	6930	70	54	0.005	5580	55	44	0.005	3470	30	27	0.004
2.5	26	6160	55	48	0.004	4960	45	39	0.005	3080	20	24	0.003
3.0	10	6350	100	60	0.008	5150	85	49	0.008	3170	40	30	0.006
3.0	12	6350	100	60	0.008	5150	85	49	0.008	3170	40	30	0.006
3.0	14	6350	100	60	0.008	5150	85	49	0.008	3170	40	30	0.006
3.0	16	5720	90	54	0.008	4640	75	44	0.008	2850	40	27	0.007
3.0	20	5720	80	54	0.007	4640	70	44	0.008	2850	35	27	0.006
3.0	26	5720	70	54	0.006	4640	60	44	0.006	2850	30	27	0.005
3.0	30	5720	70	54	0.006	4640	60	44	0.006	2850	30	27	0.005
4.0	12	5150	120	65	0.012	4100	100	52	0.012	2580	50	32	0.010
4.0	16	5150	120	65	0.012	4100	100	52	0.012	2580	50	32	0.010
4.0	20	5150	120	65	0.012	4100	100	52	0.012	2580	50	32	0.010
4.0	26	4640	95	58	0.010	3690	85	46	0.012	2320	40	29	0.009
4.0	30	4640	95	58	0.010	3690	85	46	0.012	2320	40	29	0.009
5.0	20	4400	150	69	0.017	3480	125	55	0.018	2280	55	36	0.012

DIA. = Diameter LOC = Length of Cut RPM = rev./min. FEED = mm/min. Vc = m/min. fz = mm/tooth

4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE LONG LENGTH

SEME70 SERIES

MATERIAL		P											
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS		~ HRc35				HRc35 ~ HRc45				HRc45 ~ HRc55			
STRENGTH		~ 1100N/mm²				1110 ~ 1500N/mm²				1500 ~ 2000N/mm²			
DIA.	LOC	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
5.0	25	4400	150	69	0.017	3480	125	55	0.018	2280	55	36	0.012
5.0	30	3960	120	62	0.015	3130	100	49	0.016	2050	45	32	0.011
5.0	35	3960	120	62	0.015	3130	100	49	0.016	2050	45	32	0.011
5.0	40	3960	110	62	0.014	3130	90	49	0.014	2050	40	32	0.010
6.0	15	3800	180	72	0.024	3050	150	57	0.025	1970	70	37	0.018
6.0	20	3800	180	72	0.024	3050	150	57	0.025	1970	70	37	0.018
6.0	25	3800	180	72	0.024	3050	150	57	0.025	1970	70	37	0.018
6.0	30	3800	155	72	0.020	3050	130	57	0.021	1970	60	37	0.015
6.0	35	3420	140	64	0.020	2750	115	52	0.021	1770	55	33	0.016
6.0	40	3420	120	64	0.018	2750	100	52	0.018	1770	50	33	0.014
6.0	45	3420	120	64	0.018	2750	100	52	0.018	1770	50	33	0.014
8.0	25	2880	190	72	0.033	2280	150	57	0.033	1510	70	38	0.023
8.0	30	2880	190	72	0.033	2280	150	57	0.033	1510	70	38	0.023
8.0	35	2880	190	72	0.033	2280	150	57	0.033	1510	70	38	0.023
8.0	40	2880	160	72	0.028	2280	125	57	0.027	1510	60	38	0.020
8.0	45	2590	145	65	0.028	2050	115	52	0.028	1360	55	34	0.020
8.0	50	2590	130	65	0.025	2050	100	52	0.024	1360	50	34	0.018
10.0	30	2450	190	77	0.039	2000	150	63	0.038	1210	70	38	0.029
10.0	35	2450	190	77	0.039	2000	150	63	0.038	1210	70	38	0.029
10.0	40	2450	190	77	0.039	2000	150	63	0.038	1210	70	38	0.029
10.0	45	2450	160	77	0.033	2000	125	63	0.031	1210	60	38	0.025
10.0	50	2450	160	77	0.033	2000	125	63	0.031	1210	60	38	0.025
10.0	55	2210	145	69	0.033	1800	115	57	0.032	1090	55	34	0.025
10.0	60	2210	130	69	0.029	1800	100	57	0.028	1090	50	34	0.023
12.0	35	2000	150	75	0.038	1670	135	63	0.040	1010	55	38	0.027
12.0	40	2000	150	75	0.038	1670	135	63	0.040	1010	55	38	0.027
12.0	45	2000	130	75	0.033	1670	115	63	0.034	1010	45	38	0.022
12.0	50	2000	130	75	0.033	1670	115	63	0.034	1010	45	38	0.022
12.0	55	2000	130	75	0.033	1670	115	63	0.034	1010	45	38	0.022
12.0	60	2000	110	75	0.028	1670	100	63	0.030	1010	40	38	0.020
12.0	65	1800	100	68	0.028	1500	90	57	0.030	910	35	34	0.019
12.0	70	1800	100	68	0.028	1500	90	57	0.030	910	35	34	0.019
14.0	50	1850	125	81	0.034	1480	100	65	0.034	910	45	40	0.025
14.0	60	1850	125	81	0.034	1480	100	65	0.034	910	45	40	0.025
16.0	40	1700	140	85	0.041	1280	105	64	0.041	800	50	40	0.031
16.0	50	1700	140	85	0.041	1280	105	64	0.041	800	50	40	0.031
16.0	60	1700	120	85	0.035	1280	90	64	0.035	800	40	40	0.025
16.0	70	1700	120	85	0.035	1280	90	64	0.035	800	40	40	0.025
16.0	80	1700	105	85	0.031	1280	80	64	0.031	800	35	40	0.022
16.0	90	1530	95	77	0.031	1150	70	58	0.030	720	30	36	0.021
16.0	110	1530	95	77	0.031	1150	70	58	0.030	720	30	36	0.021
16.0	120	1530	95	77	0.031	1150	70	58	0.030	720	30	36	0.021

DIA. = Diameter LOC = Length of Cut RPM = rev./min. FEED = mm/min. Vc = m/min. fz = mm/tooth

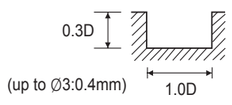
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HSS
CBN END MILLS
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i-SMART MODULAR TYPE END MILLS
X5070 END MILLS
4G MILL END MILLS
X-POWER END MILLS
JET-POWER END MILLS
TitaNox -POWER END MILLS
V7 PLUS A END MILLS
V7 MILL INOX END MILLS
ALU-POWER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

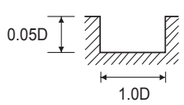
4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE LONG LENGTH

SEME70 SERIES

MATERIAL		P											
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS		~ HRc35				HRc35 ~ HRc45				HRc45 ~ HRc55			
STRENGTH		~ 1100N/mm²				1110 ~ 1500N/mm²				1500 ~ 2000N/mm²			
DIA.	LOC	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
18.0	50	1450	120	82	0.041	1120	90	63	0.040	700	40	40	0.029
18.0	70	1450	100	82	0.034	1120	75	63	0.033	700	35	40	0.025
18.0	100	1310	80	74	0.031	1000	60	57	0.030	630	30	36	0.024
20.0	50	1220	100	77	0.041	950	75	60	0.039	600	35	38	0.029
20.0	60	1220	100	77	0.041	950	75	60	0.039	600	35	38	0.029
20.0	70	1220	85	77	0.035	950	65	60	0.034	600	30	38	0.025
20.0	80	1220	85	77	0.035	950	65	60	0.034	600	30	38	0.025
20.0	90	1220	75	77	0.031	950	55	60	0.029	600	25	38	0.021
20.0	110	1100	70	69	0.032	860	50	54	0.029	540	25	34	0.023
20.0	120	1100	70	69	0.032	860	50	54	0.029	540	25	34	0.023
22.0	75	1100	75	76	0.034	840	55	58	0.033	550	30	38	0.027
22.0	110	1100	70	76	0.032	840	50	58	0.030	550	25	38	0.023
25.0	70	980	80	77	0.041	750	60	59	0.040	480	30	38	0.031
25.0	90	980	70	77	0.036	750	50	59	0.033	480	25	38	0.026
25.0	110	980	70	77	0.036	750	50	59	0.033	480	25	38	0.026
25.0	120	980	60	77	0.031	750	45	59	0.030	480	25	38	0.026





DIA. = Diameter
LOC = Length of Cut

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

Vc = m/min.
fz = mm/tooth

4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE LONG NECK

SEM845 SERIES

MATERIAL		P														
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc35					HRc35 ~ HRc45					HRc45 ~ HRc55				
STRENGTH		~ 1100N/mm²					1110 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIA.	LBS	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)
0.1	0.3	50000	315	16	0.003	0.009	46200	230	15	0.002	0.007	40600	170	13	0.002	0.005
0.1	0.5	50000	315	16	0.003	0.006	46200	230	15	0.002	0.005	40600	170	13	0.002	0.004
0.1	1	45000	255	14	0.003	0.002	41580	185	13	0.002	0.002	36540	140	11	0.002	0.001
0.2	0.5	38500	380	24	0.005	0.018	36300	270	23	0.004	0.014	32100	200	20	0.003	0.010
0.2	1	38500	380	24	0.005	0.013	36300	270	23	0.004	0.010	32100	200	20	0.003	0.007
0.2	1.5	34650	310	22	0.004	0.007	32670	220	21	0.003	0.006	28890	160	18	0.003	0.004
0.2	2	34650	310	22	0.004	0.005	32670	220	21	0.003	0.004	28890	160	18	0.003	0.003
0.3	1	34200	390	32	0.006	0.019	32300	270	30	0.004	0.015	28500	230	27	0.004	0.011
0.3	1.5	34200	390	32	0.006	0.019	32300	270	30	0.004	0.015	28500	230	27	0.004	0.011
0.3	2	30780	315	29	0.005	0.011	29070	220	27	0.004	0.008	25650	185	24	0.004	0.006
0.3	2.5	30780	315	29	0.005	0.007	29070	220	27	0.004	0.005	25650	185	24	0.004	0.004
0.3	3	30780	315	29	0.005	0.007	29070	220	27	0.004	0.005	25650	185	24	0.004	0.004
0.3	4	27360	250	26	0.005	0.004	25840	175	24	0.003	0.003	22800	145	21	0.003	0.002
0.3	5	20520	165	19	0.004	0.003	19380	115	18	0.003	0.002	17100	95	16	0.003	0.002
0.4	1	27400	540	34	0.010	0.036	25800	380	32	0.007	0.028	22800	280	29	0.006	0.02
0.4	1.5	27400	540	34	0.010	0.025	25800	380	32	0.007	0.020	22800	280	29	0.006	0.014
0.4	2	27400	540	34	0.010	0.025	25800	380	32	0.007	0.020	22800	280	29	0.006	0.014
0.4	2.5	24660	435	31	0.009	0.014	23220	310	29	0.007	0.011	20520	225	26	0.005	0.008
0.4	3	24660	435	31	0.009	0.014	23220	310	29	0.007	0.011	20520	225	26	0.005	0.008
0.4	4	24660	435	31	0.009	0.009	23220	310	29	0.007	0.007	20520	225	26	0.005	0.005
0.4	5	21920	345	28	0.008	0.009	20640	245	26	0.006	0.007	18240	180	23	0.005	0.005
0.4	6	21920	345	28	0.008	0.005	20640	245	26	0.006	0.004	18240	180	23	0.005	0.003
0.4	8	16440	225	21	0.007	0.004	15480	160	19	0.005	0.003	13680	120	17	0.004	0.002
0.4	10	8220	95	10	0.006	0.004	7740	70	10	0.005	0.003	6840	50	9	0.004	0.002
0.5	1	27400	540	43	0.010	0.045	25800	425	41	0.008	0.035	22800	285	36	0.006	0.025
0.5	1.5	27400	540	43	0.010	0.045	25800	425	41	0.008	0.035	22800	285	36	0.006	0.025
0.5	2	27400	540	43	0.010	0.032	25800	425	41	0.008	0.025	22800	285	36	0.006	0.018
0.5	2.5	27400	540	43	0.010	0.032	25800	425	41	0.008	0.025	22800	285	36	0.006	0.018
0.5	3	24660	435	39	0.009	0.018	23220	345	36	0.007	0.014	20520	230	32	0.006	0.010
0.5	4	24660	435	39	0.009	0.018	23220	345	36	0.007	0.014	20520	230	32	0.006	0.010
0.5	5	24660	435	39	0.009	0.011	23220	345	36	0.007	0.009	20520	230	32	0.006	0.006
0.5	6	21920	345	34	0.008	0.011	20640	270	32	0.007	0.009	18240	180	29	0.005	0.006
0.5	8	16440	225	26	0.007	0.007	15480	180	24	0.006	0.005	13680	120	21	0.004	0.004
0.5	10	16440	225	26	0.007	0.005	15480	180	24	0.006	0.004	13680	120	21	0.004	0.003
0.5	12	8220	95	13	0.006	0.005	7740	75	12	0.005	0.004	6840	50	11	0.004	0.003
0.5	14	8220	95	13	0.006	0.005	7740	75	12	0.005	0.004	6840	50	11	0.004	0.003
0.5	16	2740	25	4	0.005	0.005	2580	20	4	0.004	0.004	2280	15	4	0.003	0.003
0.6	2	27400	775	52	0.014	0.038	25800	545	49	0.011	0.029	22800	405	43	0.009	0.021
0.6	3	27400	775	52	0.014	0.038	25800	545	49	0.011	0.029	22800	405	43	0.009	0.021
0.6	4	24660	630	46	0.013	0.022	23220	440	44	0.009	0.017	20520	330	39	0.008	0.012
0.6	5	24660	630	46	0.013	0.014	23220	440	44	0.009	0.011	20520	330	39	0.008	0.008
0.6	6	24660	630	46	0.013	0.014	23220	440	44	0.009	0.011	20520	330	39	0.008	0.008
0.6	8	21920	495	41	0.011	0.008	20640	350	39	0.008	0.006	18240	260	34	0.007	0.005
0.6	10	16440	325	31	0.010	0.005	15480	230	29	0.007	0.004	13680	170	26	0.006	0.003

DIA. = Diameter
LBS = Length Below Shank

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

Vc = m/min.
fz = mm/tooth

4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE LONG NECK

SEM845 SERIES

MATERIAL		P														
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc35					HRc35 ~ HRc45					HRc45 ~ HRc55				
STRENGTH		~ 1100N/mm²					1110 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIA.	LBS	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)
0.6	12	16440	325	31	0.010	0.005	15480	230	29	0.007	0.004	13680	170	26	0.006	0.003
0.6	14	8220	140	15	0.009	0.005	7740	100	15	0.006	0.004	6840	75	13	0.005	0.003
0.6	16	8220	140	15	0.009	0.005	7740	100	15	0.006	0.004	6840	75	13	0.005	0.003
0.7	2	27400	775	60	0.014	0.063	25800	545	57	0.011	0.049	22800	405	50	0.009	0.035
0.7	4	24660	630	54	0.013	0.025	23220	440	51	0.009	0.020	20520	330	45	0.008	0.014
0.7	6	24660	630	54	0.013	0.016	23220	440	51	0.009	0.012	20520	330	45	0.008	0.009
0.7	8	21920	495	48	0.011	0.016	20640	350	45	0.008	0.012	18240	260	40	0.007	0.009
0.7	10	21920	495	48	0.011	0.009	20640	350	45	0.008	0.007	18240	260	40	0.007	0.005
0.7	12	16440	325	36	0.010	0.006	15480	230	34	0.007	0.005	13680	170	30	0.006	0.004
0.8	2	27400	775	69	0.014	0.072	25800	605	65	0.012	0.056	22800	450	57	0.010	0.040
0.8	3	27400	775	69	0.014	0.050	25800	605	65	0.012	0.039	22800	450	57	0.010	0.028
0.8	4	27400	775	69	0.014	0.050	25800	605	65	0.012	0.039	22800	450	57	0.010	0.028
0.8	5	24660	630	62	0.013	0.029	23220	490	58	0.011	0.022	20520	365	52	0.009	0.016
0.8	6	24660	630	62	0.013	0.029	23220	490	58	0.011	0.022	20520	365	52	0.009	0.016
0.8	8	24660	630	62	0.013	0.018	23220	490	58	0.011	0.014	20520	365	52	0.009	0.010
0.8	10	21920	495	55	0.011	0.018	20640	385	52	0.009	0.014	18240	290	46	0.008	0.010
0.8	12	21920	495	55	0.011	0.011	20640	385	52	0.009	0.008	18240	290	46	0.008	0.006
0.8	14	16440	325	41	0.010	0.007	15480	255	39	0.008	0.006	13680	190	34	0.007	0.004
0.8	16	16440	325	41	0.010	0.007	15480	255	39	0.008	0.006	13680	190	34	0.007	0.004
0.8	20	8220	140	21	0.009	0.007	7740	110	19	0.007	0.006	6840	80	17	0.006	0.004
0.9	6	22140	575	63	0.013	0.032	20970	440	59	0.010	0.025	18450	330	52	0.009	0.018
0.9	8	22140	575	63	0.013	0.020	20970	440	59	0.010	0.016	18450	330	52	0.009	0.011
0.9	10	19680	455	56	0.012	0.020	18640	350	53	0.009	0.016	16400	260	46	0.008	0.011
1.0	2	24600	1045	77	0.021	0.090	23300	890	73	0.019	0.070	20500	665	64	0.016	0.050
1.0	3	24600	1045	77	0.021	0.090	23300	890	73	0.019	0.070	20500	665	64	0.016	0.050
1.0	4	24600	1045	77	0.021	0.063	23300	890	73	0.019	0.049	20500	665	64	0.016	0.035
1.0	5	24600	1045	77	0.021	0.063	23300	890	73	0.019	0.049	20500	665	64	0.016	0.035
1.0	6	22140	845	70	0.019	0.036	20970	720	66	0.017	0.028	18450	540	58	0.015	0.020
1.0	7	22140	845	70	0.019	0.036	20970	720	66	0.017	0.028	18450	540	58	0.015	0.020
1.0	8	22140	845	70	0.019	0.036	20970	720	66	0.017	0.028	18450	540	58	0.015	0.020
1.0	10	22140	845	70	0.019	0.023	20970	720	66	0.017	0.018	18450	540	58	0.015	0.013
1.0	12	19680	670	62	0.017	0.023	18640	570	59	0.015	0.018	16400	425	52	0.013	0.013
1.0	14	19680	670	62	0.017	0.014	18640	570	59	0.015	0.011	16400	425	52	0.013	0.008
1.0	16	14760	440	46	0.015	0.014	13980	375	44	0.013	0.011	12300	280	39	0.011	0.008
1.0	18	14760	440	46	0.015	0.009	13980	375	44	0.013	0.007	12300	280	39	0.011	0.005
1.0	20	14760	440	46	0.015	0.009	13980	375	44	0.013	0.007	12300	280	39	0.011	0.005
1.0	22	7380	190	23	0.013	0.009	6990	160	22	0.011	0.007	6150	120	19	0.010	0.005
1.0	26	7380	190	23	0.013	0.009	6990	160	22	0.011	0.007	6150	120	19	0.010	0.005
1.0	30	7380	190	23	0.013	0.009	6990	160	22	0.011	0.007	6150	120	19	0.010	0.005
1.0	40	2460	50	8	0.010	0.009	2330	45	7	0.010	0.007	2050	35	6	0.009	0.005
1.0	50	2460	50	8	0.010	0.006	2330	45	7	0.010	0.005	2050	35	6	0.009	0.003
1.2	4	21900	930	83	0.021	0.076	20700	720	78	0.017	0.059	18200	485	69	0.013	0.042
1.2	6	21900	930	83	0.021	0.076	20700	720	78	0.017	0.059	18200	485	69	0.013	0.042
1.2	8	19710	755	74	0.019	0.043	18630	585	70	0.016	0.034	16380	395	62	0.012	0.024

DIA. = Diameter RPM = rev./min. Vc = m/min.
LBS = Length Below Shank FEED = mm/min. fz = mm/tooth

4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE LONG NECK

SEM845 SERIES

MATERIAL		P														
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc35					HRc35 ~ HRc45					HRc45 ~ HRc55				
STRENGTH		~ 1100N/mm²					1110 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIA.	LBS	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)
1.2	10	19710	755	74	0.019	0.027	18630	585	70	0.016	0.021	16380	395	62	0.012	0.015
1.2	12	19710	755	74	0.019	0.027	18630	585	70	0.016	0.021	16380	395	62	0.012	0.015
1.2	14	17520	595	66	0.017	0.027	16560	460	62	0.014	0.021	14560	310	55	0.011	0.015
1.2	16	17520	595	66	0.017	0.016	16560	460	62	0.014	0.013	14560	310	55	0.011	0.009
1.2	20	13140	390	50	0.015	0.011	12420	300	47	0.012	0.008	10920	205	41	0.009	0.006
1.2	26	6570	165	25	0.013	0.011	6210	130	23	0.010	0.008	5460	85	21	0.008	0.006
1.2	30	6570	165	25	0.013	0.011	6210	130	23	0.010	0.008	5460	85	21	0.008	0.006
1.4	6	19200	815	84	0.021	0.088	18100	570	80	0.016	0.069	16000	425	70	0.013	0.049
1.4	8	17280	660	76	0.019	0.050	16290	460	72	0.014	0.039	14400	345	63	0.012	0.028
1.4	10	17280	660	76	0.019	0.050	16290	460	72	0.014	0.039	14400	345	63	0.012	0.028
1.4	14	17280	660	76	0.019	0.032	16290	460	72	0.014	0.025	14400	345	63	0.012	0.018
1.4	16	15360	520	68	0.017	0.032	14480	365	64	0.013	0.025	12800	270	56	0.011	0.018
1.4	20	15360	520	68	0.017	0.019	14480	365	64	0.013	0.015	12800	270	56	0.011	0.011
1.5	4	19200	905	90	0.024	0.135	18100	635	85	0.018	0.105	16000	475	75	0.015	0.075
1.5	5	19200	905	90	0.024	0.095	18100	635	85	0.018	0.074	16000	475	75	0.015	0.053
1.5	6	19200	905	90	0.024	0.095	18100	635	85	0.018	0.074	16000	475	75	0.015	0.053
1.5	7	19200	905	90	0.024	0.095	18100	635	85	0.018	0.074	16000	475	75	0.015	0.053
1.5	8	17280	735	81	0.021	0.054	16290	515	77	0.016	0.042	14400	385	68	0.013	0.030
1.5	10	17280	735	81	0.021	0.054	16290	515	77	0.016	0.042	14400	385	68	0.013	0.030
1.5	12	17280	735	81	0.021	0.054	16290	515	77	0.016	0.042	14400	385	68	0.013	0.030
1.5	14	17280	735	81	0.021	0.034	16290	515	77	0.016	0.026	14400	385	68	0.013	0.019
1.5	16	15360	580	72	0.019	0.034	14480	405	68	0.014	0.026	12800	305	60	0.012	0.019
1.5	18	15360	580	72	0.019	0.034	14480	405	68	0.014	0.026	12800	305	60	0.012	0.019
1.5	20	15360	580	72	0.019	0.020	14480	405	68	0.014	0.016	12800	305	60	0.012	0.011
1.5	22	15360	580	72	0.019	0.020	14480	405	68	0.014	0.016	12800	305	60	0.012	0.011
1.5	26	11520	380	54	0.016	0.014	10860	265	51	0.012	0.011	9600	200	45	0.010	0.008
1.5	30	11520	380	54	0.016	0.014	10860	265	51	0.012	0.011	9600	200	45	0.010	0.008
1.6	8	17800	840	89	0.024	0.101	16800	655	84	0.019	0.078	14800	490	74	0.017	0.056
1.6	10	16020	680	81	0.021	0.058	15120	530	76	0.018	0.045	13320	395	67	0.015	0.032
1.6	12	16020	680	81	0.021	0.058	15120	530	76	0.018	0.045	13320	395	67	0.015	0.032
1.6	16	16020	680	81	0.021	0.036	15120	530	76	0.018	0.028	13320	395	67	0.015	0.020
1.6	20	14240	540	72	0.019	0.036	13440	420	68	0.016	0.028	11840	315	60	0.013	0.020
1.8	8	17800	840	101	0.024	0.113	16800	655	95	0.019	0.088	14800	490	84	0.017	0.063
1.8	10	16020	680	91	0.021	0.065	15120	530	86	0.018	0.050	13320	395	75	0.015	0.036
1.8	12	16020	680	91	0.021	0.065	15120	530	86	0.018	0.050	13320	395	75	0.015	0.036
1.8	16	16020	680	91	0.021	0.041	15120	530	86	0.018	0.032	13320	395	75	0.015	0.023
1.8	20	14240	540	81	0.019	0.041	13440	420	76	0.016	0.032	11840	315	67	0.013	0.023
2.0	6	14400	820	90	0.028	0.180	13600	620	85	0.023	0.140	12000	475	75	0.020	0.100
2.0	8	14400	820	90	0.028	0.126	13600	620	85	0.023	0.098	12000	475	75	0.020	0.070
2.0	10	14400	820	90	0.028	0.126	13600	620	85	0.023	0.098	12000	475	75	0.020	0.070
2.0	12	12960	665	81	0.026	0.072	12240	500	77	0.020	0.056	10800	385	68	0.018	0.040
2.0	14	12960	665	81	0.026	0.072	12240	500	77	0.020	0.056	10800	385	68	0.018	0.040
2.0	16	12960	665	81	0.026	0.072	12240	500	77	0.020	0.056	10800	385	68	0.018	0.040
2.0	18	12960	665	81	0.026	0.045	12240	500	77	0.020	0.035	10800	385	68	0.018	0.025

DIA. = Diameter RPM = rev./min. Vc = m/min.
LBS = Length Below Shank FEED = mm/min. fz = mm/tooth

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

4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE LONG NECK

SEM845 SERIES

MATERIAL		P														
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc35					HRc35 ~ HRc45					HRc45 ~ HRc55				
STRENGTH		~ 1100N/mm²					1110 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIA.	LBS	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)
2.0	20	12960	665	81	0.026	0.045	12240	500	77	0.020	0.035	10800	385	68	0.018	0.025
2.0	22	11520	525	72	0.023	0.045	10880	395	68	0.018	0.035	9600	305	60	0.016	0.025
2.0	26	11520	525	72	0.023	0.045	10880	395	68	0.018	0.035	9600	305	60	0.016	0.025
2.0	30	11520	525	72	0.023	0.027	10880	395	68	0.018	0.021	9600	305	60	0.016	0.015
2.0	35	8640	345	54	0.020	0.018	8160	260	51	0.016	0.014	7200	200	45	0.014	0.010
2.0	40	8640	345	54	0.020	0.018	8160	260	51	0.016	0.014	7200	200	45	0.014	0.010
2.0	45	4320	150	27	0.017	0.018	4080	110	26	0.013	0.014	3600	85	23	0.012	0.010
2.0	50	4320	150	27	0.017	0.018	4080	110	26	0.013	0.014	3600	85	23	0.012	0.010
2.0	60	4320	150	27	0.017	0.018	4080	110	26	0.013	0.014	3600	85	23	0.012	0.010
2.5	8	12300	970	97	0.039	0.158	11600	680	91	0.029	0.123	10300	510	81	0.025	0.088
2.5	10	12300	970	97	0.039	0.158	11600	680	91	0.029	0.123	10300	510	81	0.025	0.088
2.5	12	12300	970	97	0.039	0.158	11600	680	91	0.029	0.123	10300	510	81	0.025	0.088
2.5	14	11070	785	87	0.035	0.090	10440	550	82	0.026	0.070	9270	415	73	0.022	0.050
2.5	16	11070	785	87	0.035	0.090	10440	550	82	0.026	0.070	9270	415	73	0.022	0.050
2.5	18	11070	785	87	0.035	0.090	10440	550	82	0.026	0.070	9270	415	73	0.022	0.050
2.5	20	11070	785	87	0.035	0.090	10440	550	82	0.026	0.070	9270	415	73	0.022	0.050
2.5	22	11070	785	87	0.035	0.056	10440	550	82	0.026	0.044	9270	415	73	0.022	0.031
2.5	26	9840	620	77	0.032	0.056	9280	435	73	0.023	0.044	8240	325	65	0.020	0.031
2.5	30	9840	620	77	0.032	0.056	9280	435	73	0.023	0.044	8240	325	65	0.020	0.031
2.5	35	9840	620	77	0.032	0.034	9280	435	73	0.023	0.026	8240	325	65	0.020	0.019
2.5	40	7380	405	58	0.027	0.034	6960	285	55	0.020	0.026	6180	215	49	0.017	0.019
2.5	45	7380	405	58	0.027	0.023	6960	285	55	0.020	0.018	6180	215	49	0.017	0.013
2.5	50	7380	405	58	0.027	0.023	6960	285	55	0.020	0.018	6180	215	49	0.017	0.013
3.0	6	10900	860	103	0.039	0.270	10300	605	97	0.029	0.210	6600	450	62	0.034	0.150
3.0	8	10900	860	103	0.039	0.270	10300	605	97	0.029	0.210	6600	450	62	0.034	0.150
3.0	10	10900	860	103	0.039	0.189	10300	605	97	0.029	0.147	6600	450	62	0.034	0.105
3.0	12	10900	860	103	0.039	0.189	10300	605	97	0.029	0.147	6600	450	62	0.034	0.105
3.0	14	10900	860	103	0.039	0.189	10300	605	97	0.029	0.147	6600	450	62	0.034	0.105
3.0	16	9810	695	92	0.035	0.108	9270	490	87	0.026	0.084	5940	365	56	0.031	0.060
3.0	18	9810	695	92	0.035	0.108	9270	490	87	0.026	0.084	5940	365	56	0.031	0.060
3.0	20	9810	695	92	0.035	0.108	9270	490	87	0.026	0.084	5940	365	56	0.031	0.060
3.0	22	9810	695	92	0.035	0.108	9270	490	87	0.026	0.084	5940	365	56	0.031	0.060
3.0	26	9810	695	92	0.035	0.068	9270	490	87	0.026	0.053	5940	365	56	0.031	0.038
3.0	30	9810	695	92	0.035	0.068	9270	490	87	0.026	0.053	5940	365	56	0.031	0.038
3.0	35	8720	550	82	0.032	0.068	8240	385	78	0.023	0.053	5280	290	50	0.027	0.038
3.0	40	8720	550	82	0.032	0.041	8240	385	78	0.023	0.032	5280	290	50	0.027	0.023
3.0	45	8720	550	82	0.032	0.041	8240	385	78	0.023	0.032	5280	290	50	0.027	0.023
3.0	50	6540	360	62	0.028	0.027	6180	255	58	0.021	0.021	3960	190	37	0.024	0.015
3.0	60	6540	360	62	0.028	0.027	6180	255	58	0.021	0.021	3960	190	37	0.024	0.015
4.0	8	8000	1300	101	0.081	0.360	7600	1160	96	0.076	0.280	6700	770	84	0.057	0.200
4.0	10	8000	1300	101	0.081	0.360	7600	1160	96	0.076	0.280	6700	770	84	0.057	0.200
4.0	12	8000	1300	101	0.081	0.360	7600	1160	96	0.076	0.280	6700	770	84	0.057	0.200
4.0	14	8000	1300	101	0.081	0.252	7600	1160	96	0.076	0.196	6700	770	84	0.057	0.140
4.0	16	8000	1300	101	0.081	0.252	7600	1160	96	0.076	0.196	6700	770	84	0.057	0.140

DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/tooth

4G MILL END MILLS

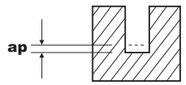
RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE LONG NECK

SEM845 SERIES

MATERIAL		P														
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc35					HRc35 ~ HRc45					HRc45 ~ HRc55				
STRENGTH		~ 1100N/mm²					1110 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIA.	LBS	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)
4.0	18	8000	1300	101	0.081	0.252	7600	1160	96	0.076	0.196	6700	770	84	0.057	0.140
4.0	20	8000	1300	101	0.081	0.252	7600	1160	96	0.076	0.196	6700	770	84	0.057	0.140
4.0	22	7200	1055	90	0.073	0.144	6840	940	86	0.069	0.112	6030	625	76	0.052	0.080
4.0	26	7200	1055	90	0.073	0.144	6840	940	86	0.069	0.112	6030	625	76	0.052	0.080
4.0	30	7200	1055	90	0.073	0.144	6840	940	86	0.069	0.112	6030	625	76	0.052	0.080
4.0	35	7200	1055	90	0.073	0.090	6840	940	86	0.069	0.070	6030	625	76	0.052	0.050
4.0	40	7200	1055	90	0.073	0.090	6840	940	86	0.069	0.070	6030	625	76	0.052	0.050
4.0	45	6400	830	80	0.065	0.090	6080	740	76	0.061	0.070	5360	495	67	0.046	0.050
4.0	50	6400	830	80	0.065	0.090	6080	740	76	0.061	0.070	5360	495	67	0.046	0.050
4.0	60	6400	830	80	0.065	0.054	6080	740	76	0.061	0.042	5360	495	67	0.046	0.030
5.0	16	6400	1155	101	0.090	0.315	6100	900	96	0.074	0.245	5400	605	85	0.056	0.175
5.0	20	6400	1155	101	0.090	0.315	6100	900	96	0.074	0.245	5400	605	85	0.056	0.175
5.0	26	5760	935	90	0.081	0.180	5490	730	86	0.066	0.140	4860	490	76	0.050	0.100
5.0	30	5760	935	90	0.081	0.180	5490	730	86	0.066	0.140	4860	490	76	0.050	0.100
5.0	35	5760	935	90	0.081	0.180	5490	730	86	0.066	0.140	4860	490	76	0.050	0.100
5.0	40	5760	935	90	0.081	0.180	5490	730	86	0.066	0.140	4860	490	76	0.050	0.100
5.0	50	5760	935	90	0.081	0.113	5490	730	86	0.066	0.088	4860	490	76	0.050	0.063
5.0	60	5120	740	80	0.072	0.113	4880	575	77	0.059	0.088	4320	385	68	0.045	0.063
6.0	15	5300	1055	100	0.100	0.540	5000	820	94	0.082	0.420	4400	550	83	0.063	0.300
6.0	20	5300	1055	100	0.100	0.378	5000	820	94	0.082	0.294	4400	550	83	0.063	0.210
6.0	30	5300	1055	100	0.100	0.378	5000	820	94	0.082	0.294	4400	550	83	0.063	0.210
6.0	32	4770	855	90	0.090	0.216	4500	665	85	0.074	0.168	3960	445	75	0.056	0.120
8.0	25	4000	950	101	0.119	0.504	3800	750	96	0.099	0.392	3300	500	83	0.076	0.280
8.0	30	4000	950	101	0.119	0.504	3800	750	96	0.099	0.392	3300	500	83	0.076	0.280
8.0	42	3600	770	90	0.107	0.288	3400	605	85	0.089	0.224	2950	405	74	0.069	0.160
10.0	30	3200	900	101	0.141	0.900	3050	680	96	0.111	0.700	2630	400	83	0.076	0.500
10.0	35	3200	900	101	0.141	0.630	3050	680	96	0.111	0.490	2630	400	83	0.076	0.350
10.0	45	3200	900	101	0.141	0.630	3050	680	96	0.111	0.490	2630	400	83	0.076	0.350
12.0	35	2650	800	100	0.151	1.080	2520	600	95	0.119	0.840	2180	350	82	0.080	0.600
12.0	40	2650	800	100	0.151	0.756	2520	600	95	0.119	0.588	2180	350	82	0.080	0.420
12.0	50	2650	800	100	0.151	0.756	2520	600	95	0.119	0.588	2180	350	82	0.080	0.420

(Depth of Cut per one pass)



DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/tooth

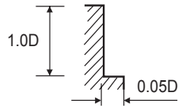
CARBIDE
HSS
CBN END MILLS
i-Xmill END MILLS
i-SMART MODULAR TYPE END MILLS
X5070 END MILLS
4G MILL END MILLS
X-POWER END MILLS
JET-POWER END MILLS
TitaNox -POWER END MILLS
V7 PLUS A END MILLS
V7 MILL INOX END MILLS
ALU-POWER HPC END MILLS
ALU-POWER END MILLS
D-POWER GRAPHITE END MILLS
D-POWER CFRP END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

4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE

SEME36, SEME71 SERIES

MATERIAL	P												M			
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS				STAINLESS STEELS			
HARDNESS	~ HRc35				HRc35 ~ HRc45				HRc45 ~ HRc55							
STRENGTH	~ 1100N/mm²				1110 ~ 1500N/mm²				1500 ~ 2000N/mm²							
DIA.	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
0.8	31250	235	79	0.002	18750	140	47	0.002	12500	42	31	0.001	15630	120	39	0.002
0.9	29300	245	83	0.002	17580	145	50	0.002	11720	42	33	0.001	14650	120	41	0.002
1.0	26800	250	84	0.002	16080	150	51	0.002	10720	47	34	0.001	13400	125	42	0.002
1.2	22500	265	85	0.003	13500	160	51	0.003	9000	47	34	0.001	11250	130	42	0.003
1.5	18750	270	88	0.004	11250	165	53	0.004	7500	47	35	0.002	9380	135	44	0.004
2.0	14450	295	91	0.005	9450	180	59	0.005	6300	53	40	0.002	7880	145	50	0.005
2.5	12800	315	101	0.006	8200	195	64	0.006	5250	58	41	0.003	6830	165	54	0.006
3.0	11150	335	105	0.008	6950	210	66	0.008	4200	63	40	0.004	5780	180	54	0.008
3.5	10300	465	113	0.011	6360	290	70	0.011	3940	63	43	0.004	5310	235	58	0.011
4.0	9450	600	119	0.016	5780	370	73	0.016	3680	63	46	0.004	4850	295	61	0.015
4.5	8660	615	122	0.018	5250	375	74	0.018	3290	70	47	0.005	4400	305	62	0.017
5.0	7880	630	124	0.020	4730	380	74	0.020	2900	75	46	0.006	3950	315	62	0.020
5.5	7410	660	128	0.022	4460	405	77	0.023	2700	80	47	0.007	3750	330	65	0.022
6.0	6950	695	131	0.025	4200	430	79	0.026	2500	85	47	0.009	3550	345	67	0.024
6.5	6530	710	133	0.027	3940	425	80	0.027	2400	95	49	0.010	3320	350	68	0.026
7.0	6100	720	134	0.030	3680	415	81	0.028	2300	100	51	0.011	3090	355	68	0.029
7.5	5680	735	134	0.032	3410	410	80	0.030	2200	110	52	0.013	2860	360	67	0.031
8.0	5250	745	132	0.035	3150	400	79	0.032	2100	115	53	0.014	2630	370	66	0.035
8.5	4960	720	132	0.036	2990	380	80	0.032	2000	110	53	0.014	2490	355	66	0.036
9.0	4660	695	132	0.037	2830	355	80	0.031	1900	105	54	0.014	2360	340	67	0.036
9.5	4370	665	130	0.038	2660	335	79	0.031	1800	100	54	0.014	2230	330	67	0.037
10.0	4080	640	128	0.039	2500	315	79	0.032	1700	95	53	0.014	2100	315	66	0.038
10.5	3910	620	129	0.040	2400	305	79	0.032	1640	95	54	0.014	2000	300	66	0.038
11.0	3750	595	130	0.040	2300	290	79	0.032	1580	90	55	0.014	1900	285	66	0.038
11.5	3590	570	130	0.040	2200	280	79	0.032	1510	90	55	0.015	1800	270	65	0.038
12.0	3430	545	129	0.040	2100	265	79	0.032	1450	85	55	0.015	1700	250	64	0.037
13.0	3260	520	133	0.040	2000	250	82	0.031	1370	80	56	0.015	1620	240	66	0.037
14.0	3090	490	136	0.040	1900	235	84	0.031	1290	75	57	0.015	1540	230	68	0.037
15.0	2920	460	138	0.039	1800	225	85	0.031	1210	70	57	0.014	1460	220	69	0.038
16.0	2750	440	138	0.040	1700	215	85	0.032	1130	65	57	0.014	1380	210	69	0.038
17.0	2590	410	138	0.040	1610	200	86	0.031	1060	60	57	0.014	1290	200	69	0.039
18.0	2430	385	137	0.040	1510	190	85	0.031	990	55	56	0.014	1210	185	68	0.038
19.0	2260	360	135	0.040	1420	180	85	0.032	920	47	55	0.013	1130	175	67	0.039
20.0	2100	335	132	0.040	1330	170	84	0.032	850	42	53	0.012	1050	160	66	0.038
21.0	2020	320	133	0.040	1270	165	84	0.032	820	42	54	0.013	1010	150	67	0.037
22.0	1940	310	134	0.040	1220	160	84	0.033	780	39	54	0.013	970	145	67	0.037
23.0	1860	295	134	0.040	1160	145	84	0.031	750	37	54	0.012	930	140	67	0.038
24.0	1780	280	134	0.039	1110	140	84	0.032	710	32	54	0.011	890	130	67	0.037
25.0	1700	265	134	0.039	1050	135	82	0.032	680	32	53	0.012	850	125	67	0.037



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

4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE LONG LENGTH

SEME72 SERIES

MATERIAL		P											
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS		~ HRc35				HRc35 ~ HRc45				HRc45 ~ HRc55			
STRENGTH		~ 1100N/mm²				1110 ~ 1500N/mm²				1500 ~ 2000N/mm²			
DIA.	LOC	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
1.0	3	19200	180	60	0.002	10940	70	34	0.002	6720	35	21	0.001
1.0	4	19200	180	60	0.002	10940	70	34	0.002	6720	35	21	0.001
1.0	5	19200	180	60	0.002	10940	70	34	0.002	6720	35	21	0.001
1.0	6	17280	145	54	0.002	9850	60	31	0.002	6050	30	19	0.001
1.0	7	17280	145	54	0.002	9850	60	31	0.002	6050	30	19	0.001
1.0	8	17280	130	54	0.002	9850	50	31	0.001	6050	25	19	0.001
1.0	10	17280	130	54	0.002	9850	50	31	0.001	6050	25	19	0.001
1.0	12	15360	100	48	0.002	8760	40	28	0.001	5380	20	17	0.001
1.2	4	16200	205	61	0.003	9230	80	35	0.002	5670	40	21	0.002
1.2	6	16200	205	61	0.003	9230	80	35	0.002	5670	40	21	0.002
1.2	8	14580	165	55	0.003	8310	65	31	0.002	5100	35	19	0.002
1.2	10	14580	145	55	0.002	8310	60	31	0.002	5100	30	19	0.001
1.2	12	14580	145	55	0.002	8310	60	31	0.002	5100	30	19	0.001
1.5	6	13800	215	65	0.004	7870	85	37	0.003	4830	45	23	0.002
1.5	8	12420	195	59	0.004	7080	80	33	0.003	4350	40	20	0.002
1.5	10	12420	175	59	0.004	7080	70	33	0.002	4350	35	20	0.002
1.5	12	12420	155	59	0.003	7080	60	33	0.002	4350	30	20	0.002
1.5	14	12420	155	59	0.003	7080	60	33	0.002	4350	30	20	0.002
1.5	16	11040	120	52	0.003	6290	50	30	0.002	3860	25	18	0.002
2.0	8	10580	240	66	0.006	6050	95	38	0.004	3780	55	24	0.004
2.0	10	10580	240	66	0.006	6050	95	38	0.004	3780	55	24	0.004
2.0	12	9530	195	60	0.005	5440	80	34	0.004	3400	45	21	0.003
2.0	14	9530	195	60	0.005	5440	80	34	0.004	3400	45	21	0.003
2.0	16	9530	175	60	0.005	5440	70	34	0.003	3400	40	21	0.003
2.5	10	8990	260	71	0.007	5170	110	41	0.005	3210	60	25	0.005
2.5	12	8990	260	71	0.007	5170	110	41	0.005	3210	60	25	0.005
2.5	16	8090	210	64	0.006	4650	85	37	0.005	2890	50	23	0.004
2.5	20	8090	185	64	0.006	4650	80	37	0.004	2890	45	23	0.004
2.5	26	7200	145	57	0.005	4130	60	32	0.004	2570	35	20	0.003
3.0	10	7400	275	70	0.009	4280	120	40	0.007	2640	65	25	0.006
3.0	12	7400	275	70	0.009	4280	120	40	0.007	2640	65	25	0.006
3.0	14	7400	275	70	0.009	4280	120	40	0.007	2640	65	25	0.006
3.0	16	6660	250	63	0.009	3860	110	36	0.007	2380	60	22	0.006
3.0	20	6660	225	63	0.008	3860	95	36	0.006	2380	55	22	0.006
3.0	26	6660	200	63	0.008	3860	85	36	0.006	2380	50	22	0.005
3.0	30	6660	200	63	0.008	3860	85	36	0.006	2380	50	22	0.005
4.0	12	6000	335	75	0.014	3410	140	43	0.010	2150	70	27	0.008
4.0	16	6000	335	75	0.014	3410	140	43	0.010	2150	70	27	0.008
4.0	20	6000	335	75	0.014	3410	140	43	0.010	2150	70	27	0.008
4.0	26	5400	270	68	0.013	3070	110	39	0.009	1930	60	24	0.008
4.0	30	5400	270	68	0.013	3070	110	39	0.009	1930	60	24	0.008
5.0	20	5120	430	80	0.021	2900	170	46	0.015	1900	85	30	0.011
5.0	25	5120	430	80	0.021	2900	170	46	0.015	1900	85	30	0.011
5.0	30	4610	350	72	0.019	2610	135	41	0.013	1710	70	27	0.010
5.0	35	4610	350	72	0.019	2610	135	41	0.013	1710	70	27	0.010
5.0	40	4610	310	72	0.017	2610	120	41	0.011	1710	60	27	0.009
6.0	15	4420	515	83	0.029	2520	215	48	0.021	1640	110	31	0.017
6.0	20	4420	515	83	0.029	2520	215	48	0.021	1640	110	31	0.017
6.0	25	4420	515	83	0.029	2520	215	48	0.021	1640	110	31	0.017
6.0	30	4420	440	83	0.025	2520	185	48	0.018	1640	90	31	0.014
6.0	35	3970	395	75	0.025	2270	165	43	0.018	1480	85	28	0.014
6.0	40	3970	350	75	0.022	2270	145	43	0.016	1480	75	28	0.013
6.0	45	3970	350	75	0.022	2270	145	43	0.016	1480	75	28	0.013
8.0	25	3360	550	84	0.041	1900	215	48	0.028	1260	110	32	0.022

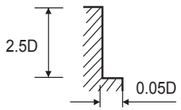
DIA. = Diameter
LOC = Length of Cut
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/tooth

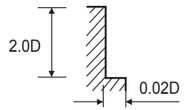
4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE LONG LENGTH

SEME72 SERIES

MATERIAL		P											
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS		~ HRc35				HRc35 ~ HRc45				HRc45 ~ HRc55			
STRENGTH		~ 1100N/mm²				1110 ~ 1500N/mm²				1500 ~ 2000N/mm²			
DIA.	LOC	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
8.0	30	3360	550	84	0.041	1900	215	48	0.028	1260	110	32	0.022
8.0	35	3360	550	84	0.041	1900	215	48	0.028	1260	110	32	0.022
8.0	40	3360	470	84	0.035	1900	185	48	0.024	1260	90	32	0.018
8.0	45	3020	420	76	0.035	1710	165	43	0.024	1130	85	28	0.019
8.0	50	3020	375	76	0.031	1710	145	43	0.021	1130	75	28	0.017
10.0	30	2820	550	89	0.049	1640	215	52	0.033	1010	110	32	0.027
10.0	35	2820	550	89	0.049	1640	215	52	0.033	1010	110	32	0.027
10.0	40	2820	550	89	0.049	1640	215	52	0.033	1010	110	32	0.027
10.0	45	2820	470	89	0.042	1640	185	52	0.028	1010	90	32	0.022
10.0	50	2820	470	89	0.042	1640	185	52	0.028	1010	90	32	0.022
10.0	55	2540	420	80	0.041	1480	165	46	0.028	910	85	29	0.023
10.0	60	2540	375	80	0.037	1480	145	46	0.024	910	75	29	0.021
12.0	35	2300	430	87	0.047	1390	190	52	0.034	840	85	32	0.025
12.0	40	2300	430	87	0.047	1390	190	52	0.034	840	85	32	0.025
12.0	45	2300	365	87	0.040	1390	165	52	0.030	840	70	32	0.021
12.0	50	2300	365	87	0.040	1390	165	52	0.030	840	70	32	0.021
12.0	55	2300	365	87	0.040	1390	165	52	0.030	840	70	32	0.021
12.0	60	2300	325	87	0.035	1390	145	52	0.026	840	65	32	0.019
12.0	65	2070	290	78	0.035	1250	130	47	0.026	760	55	29	0.018
12.0	70	2070	290	78	0.035	1250	130	47	0.026	760	55	29	0.018
14.0	50	2120	345	93	0.041	1230	145	54	0.029	760	65	33	0.021
14.0	60	2120	345	93	0.041	1230	145	54	0.029	760	65	33	0.021
16.0	40	1940	385	98	0.050	1070	150	54	0.035	670	70	34	0.026
16.0	50	1940	385	98	0.050	1070	150	54	0.035	670	70	34	0.026
16.0	60	1940	325	98	0.042	1070	130	54	0.030	670	60	34	0.022
16.0	70	1940	325	98	0.042	1070	130	54	0.030	670	60	34	0.022
16.0	80	1940	290	98	0.037	1070	115	54	0.027	670	55	34	0.021
16.0	90	1750	260	88	0.037	960	100	48	0.026	600	50	30	0.021
16.0	110	1750	260	88	0.037	960	100	48	0.026	600	50	30	0.021
16.0	120	1750	260	88	0.037	960	100	48	0.026	600	50	30	0.021
18.0	50	1680	330	95	0.049	940	130	53	0.035	590	65	33	0.028
18.0	70	1680	280	95	0.042	940	110	53	0.029	590	55	33	0.023
18.0	100	1510	225	85	0.037	850	85	48	0.025	530	45	30	0.021
20.0	50	1420	275	89	0.048	820	110	52	0.034	500	55	31	0.028
20.0	60	1420	275	89	0.048	820	110	52	0.034	500	55	31	0.028
20.0	70	1420	235	89	0.041	820	90	52	0.027	500	45	31	0.023
20.0	80	1420	235	89	0.041	820	90	52	0.027	500	45	31	0.023
20.0	90	1420	205	89	0.036	820	80	52	0.024	500	40	31	0.020
20.0	110	1270	185	80	0.036	730	75	46	0.026	450	35	28	0.019
20.0	120	1270	185	80	0.036	730	75	46	0.026	450	35	28	0.019
22.0	75	1260	205	87	0.041	820	90	57	0.027	500	45	35	0.023
22.0	110	1260	180	87	0.036	820	80	57	0.024	500	40	35	0.020
25.0	70	1100	215	86	0.049	820	110	64	0.034	500	55	39	0.028
25.0	90	1100	185	86	0.042	820	90	64	0.027	500	45	39	0.023
25.0	110	1100	185	86	0.042	820	90	64	0.027	500	45	39	0.023
25.0	120	1100	160	86	0.036	820	80	64	0.024	500	40	39	0.020





DIA. = Diameter
LOC = Length of Cut
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/tooth

4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE LONG NECK

SEME73 SERIES

MATERIAL		P														
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc35					HRc35 ~ HRc45					HRc45 ~ HRc55				
STRENGTH		~ 1100N/mm²					1110 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIA.	LBS	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)
1.0	2	22000	310	69	0.004	0.021	13500	180	42	0.003	0.016	8500	50	27	0.001	0.013
1.0	3	22000	310	69	0.004	0.021	13500	180	42	0.003	0.016	8500	50	27	0.001	0.013
1.0	4	22000	310	69	0.004	0.015	13500	180	42	0.003	0.011	8500	50	27	0.001	0.009
1.0	5	22000	310	69	0.004	0.015	13500	180	42	0.003	0.011	8500	50	27	0.001	0.009
1.0	6	19800	250	62	0.003	0.008	12150	145	38	0.003	0.006	7650	40	24	0.001	0.005
1.0	7	19800	250	62	0.003	0.008	12150	145	38	0.003	0.006	7650	40	24	0.001	0.005
1.0	8	19800	250	62	0.003	0.008	12150	145	38	0.003	0.006	7650	40	24	0.001	0.005
1.0	10	19800	250	62	0.003	0.005	12150	145	38	0.003	0.004	7650	40	24	0.001	0.003
1.0	12	17600	200	55	0.003	0.005	10800	115	34	0.003	0.004	6800	30	21	0.001	0.003
1.0	14	17600	200	55	0.003	0.003	10800	115	34	0.003	0.002	6800	30	21	0.001	0.002
1.0	16	13200	130	41	0.002	0.003	8100	75	25	0.002	0.002	5100	20	16	0.001	0.002
1.0	18	13200	130	41	0.002	0.002	8100	75	25	0.002	0.002	5100	20	16	0.001	0.001
1.0	20	13200	130	41	0.002	0.002	8100	75	25	0.002	0.002	5100	20	16	0.001	0.001
1.0	22	6600	55	21	0.002	0.002	4050	30	13	0.002	0.002	2550	10	8	0.001	0.001
1.0	26	6600	55	21	0.002	0.002	4050	30	13	0.002	0.002	2550	10	8	0.001	0.001
1.0	30	6600	55	21	0.002	0.002	4050	30	13	0.002	0.002	2550	10	8	0.001	0.001
1.0	40	2200	15	7	0.002	0.002	1350	10	4	0.002	0.002	850	5	3	0.001	0.001
1.0	50	2200	15	7	0.002	0.002	1350	10	4	0.002	0.002	850	5	3	0.001	0.001
1.2	4	19500	315	74	0.004	0.018	12100	185	46	0.004	0.013	7500	50	28	0.002	0.011
1.2	6	19500	315	74	0.004	0.018	12100	185	46	0.004	0.013	7500	50	28	0.002	0.011
1.2	8	17550	255	66	0.004	0.010	10890	150	41	0.003	0.008	6750	40	25	0.001	0.006
1.2	10	17550	255	66	0.004	0.006	10890	150	41	0.003	0.005	6750	40	25	0.001	0.004
1.2	12	17550	255	66	0.004	0.006	10890	150	41	0.003	0.005	6750	40	25	0.001	0.004
1.2	14	15600	200	59	0.003	0.006	9680	120	36	0.003	0.005	6000	30	23	0.001	0.004
1.2	16	15600	200	59	0.003	0.004	9680	120	36	0.003	0.003	6000	30	23	0.001	0.002
1.2	20	11700	130	44	0.003	0.003	7260	80	27	0.003	0.002	4500	20	17	0.001	0.002
1.2	26	5850	55	22	0.002	0.003	3630	35	14	0.002	0.002	2250	10	8	0.001	0.002
1.2	30	5850	55	22	0.002	0.003	3630	35	14	0.002	0.002	2250	10	8	0.001	0.002
1.5	4	17000	320	80	0.005	0.032	10700	190	50	0.004	0.024	6500	50	31	0.002	0.019
1.5	5	17000	320	80	0.005	0.022	10700	190	50	0.004	0.017	6500	50	31	0.002	0.013
1.5	6	17000	320	80	0.005	0.022	10700	190	50	0.004	0.017	6500	50	31	0.002	0.013
1.5	7	17000	320	80	0.005	0.022	10700	190	50	0.004	0.017	6500	50	31	0.002	0.013
1.5	8	15300	260	72	0.004	0.013	9630	155	45	0.004	0.009	5850	40	28	0.002	0.008
1.5	10	15300	260	72	0.004	0.013	9630	155	45	0.004	0.009	5850	40	28	0.002	0.008
1.5	12	15300	260	72	0.004	0.013	9630	155	45	0.004	0.009	5850	40	28	0.002	0.008
1.5	14	15300	260	72	0.004	0.008	9630	155	45	0.004	0.006	5850	40	28	0.002	0.005
1.5	16	13600	205	64	0.004	0.008	8560	120	40	0.004	0.006	5200	30	25	0.001	0.005
1.5	18	13600	205	64	0.004	0.008	8560	120	40	0.004	0.006	5200	30	25	0.001	0.005
1.5	20	13600	205	64	0.004	0.005	8560	120	40	0.004	0.004	5200	30	25	0.001	0.003
1.5	22	13600	205	64	0.004	0.005	8560	120	40	0.004	0.004	5200	30	25	0.001	0.003
1.5	26	10200	135	48	0.003	0.003	6420	80	30	0.003	0.002	3900	20	18	0.001	0.002
1.5	30	10200	135	48	0.003	0.003	6420	80	30	0.003	0.002	3900	20	18	0.001	0.002
2.0	6	13900	330	87	0.006	0.042	9070	200	57	0.006	0.032	6000	60	38	0.003	0.025
2.0	8	13900	330	87	0.006	0.029	9070	200	57	0.006	0.022	6000	60	38	0.003	0.018

DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/tooth

4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE LONG NECK

SEME73 SERIES

MATERIAL		P														
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc35					HRc35 ~ HRc45					HRc45 ~ HRc55				
STRENGTH		~ 1100N/mm²					1110 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIA.	LBS	RPM	FEED	Vc	fz	ae(mm)	RPM	FEED	Vc	fz	ae(mm)	RPM	FEED	Vc	fz	ae(mm)
2.0	10	13900	330	87	0.006	0.029	9070	200	57	0.006	0.022	6000	60	38	0.003	0.018
2.0	12	12510	265	79	0.005	0.017	8160	160	51	0.005	0.013	5400	50	34	0.002	0.010
2.0	16	12510	265	79	0.005	0.017	8160	160	51	0.005	0.013	5400	50	34	0.002	0.010
2.0	18	12510	265	79	0.005	0.011	8160	160	51	0.005	0.008	5400	50	34	0.002	0.006
2.0	20	12510	265	79	0.005	0.011	8160	160	51	0.005	0.008	5400	50	34	0.002	0.006
2.0	22	11120	210	70	0.005	0.011	7260	130	46	0.004	0.008	4800	40	30	0.002	0.006
2.0	26	11120	210	70	0.005	0.011	7260	130	46	0.004	0.008	4800	40	30	0.002	0.006
2.0	30	11120	210	70	0.005	0.006	7260	130	46	0.004	0.005	4800	40	30	0.002	0.004
2.0	35	8340	140	52	0.004	0.004	5440	85	34	0.004	0.003	3600	25	23	0.002	0.003
2.0	40	8340	140	52	0.004	0.004	5440	85	34	0.004	0.003	3600	25	23	0.002	0.003
2.0	45	4170	60	26	0.004	0.004	2720	35	17	0.003	0.003	1800	10	11	0.001	0.003
2.0	50	4170	60	26	0.004	0.004	2720	35	17	0.003	0.003	1800	10	11	0.001	0.003
2.0	60	4170	60	26	0.004	0.004	2720	35	17	0.003	0.003	1800	10	11	0.001	0.003
2.5	8	12000	350	94	0.007	0.037	7600	220	60	0.007	0.028	4500	60	35	0.003	0.022
2.5	10	12000	350	94	0.007	0.037	7600	220	60	0.007	0.028	4500	60	35	0.003	0.022
2.5	12	12000	350	94	0.007	0.037	7600	220	60	0.007	0.028	4500	60	35	0.003	0.022
2.5	14	10800	285	85	0.007	0.021	6840	180	54	0.007	0.016	4050	50	32	0.003	0.013
2.5	16	10800	285	85	0.007	0.021	6840	180	54	0.007	0.016	4050	50	32	0.003	0.013
2.5	18	10800	285	85	0.007	0.021	6840	180	54	0.007	0.016	4050	50	32	0.003	0.013
2.5	20	10800	285	85	0.007	0.021	6840	180	54	0.007	0.016	4050	50	32	0.003	0.013
2.5	22	10800	285	85	0.007	0.013	6840	180	54	0.007	0.010	4050	50	32	0.003	0.008
2.5	26	9600	225	75	0.006	0.013	6080	140	48	0.006	0.010	3600	40	28	0.003	0.008
2.5	30	9600	225	75	0.006	0.013	6080	140	48	0.006	0.010	3600	40	28	0.003	0.008
2.5	35	9600	225	75	0.006	0.008	6080	140	48	0.006	0.006	3600	40	28	0.003	0.005
2.5	40	7200	145	57	0.005	0.008	4560	90	36	0.005	0.006	2700	25	21	0.002	0.005
2.5	45	7200	145	57	0.005	0.005	4560	90	36	0.005	0.004	2700	25	21	0.002	0.003
2.5	50	7200	145	57	0.005	0.005	4560	90	36	0.005	0.004	2700	25	21	0.002	0.003
3.0	6	10700	380	101	0.009	0.063	6670	240	63	0.009	0.047	4030	70	38	0.004	0.038
3.0	8	10700	380	101	0.009	0.063	6670	240	63	0.009	0.047	4030	70	38	0.004	0.038
3.0	10	10700	380	101	0.009	0.044	6670	240	63	0.009	0.033	4030	70	38	0.004	0.026
3.0	12	10700	380	101	0.009	0.044	6670	240	63	0.009	0.033	4030	70	38	0.004	0.026
3.0	14	10700	380	101	0.009	0.044	6670	240	63	0.009	0.033	4030	70	38	0.004	0.026
3.0	16	9630	310	91	0.008	0.025	6000	195	57	0.008	0.019	3630	55	34	0.004	0.015
3.0	18	9630	310	91	0.008	0.025	6000	195	57	0.008	0.019	3630	55	34	0.004	0.015
3.0	20	9630	310	91	0.008	0.025	6000	195	57	0.008	0.019	3630	55	34	0.004	0.015
3.0	22	9630	310	91	0.008	0.025	6000	195	57	0.008	0.019	3630	55	34	0.004	0.015
3.0	26	9630	310	91	0.008	0.016	6000	195	57	0.008	0.012	3630	55	34	0.004	0.009
3.0	30	9630	310	91	0.008	0.016	6000	195	57	0.008	0.012	3630	55	34	0.004	0.009
3.0	35	8560	245	81	0.007	0.016	5340	155	50	0.007	0.012	3220	45	30	0.003	0.009
3.0	40	8560	245	81	0.007	0.009	5340	155	50	0.007	0.007	3220	45	30	0.003	0.006
3.0	45	8560	245	81	0.007	0.009	5340	155	50	0.007	0.007	3220	45	30	0.003	0.006
3.0	50	6420	160	61	0.006	0.006	4000	100	38	0.006	0.005	2420	30	23	0.003	0.004
3.0	60	6420	160	61	0.006	0.006	4000	100	38	0.006	0.005	2420	30	23	0.003	0.004
4.0	8	9070	680	114	0.019	0.084	5540	420	70	0.019	0.063	3530	70	44	0.005	0.050

DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/tooth

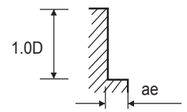
4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE LONG NECK

SEME73 SERIES

MATERIAL		P														
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc35					HRc35 ~ HRc45					HRc45 ~ HRc55				
STRENGTH		~ 1100N/mm²					1110 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIA.	LBS	RPM	FEED	Vc	fz	ae(mm)	RPM	FEED	Vc	fz	ae(mm)	RPM	FEED	Vc	fz	ae(mm)
4.0	10	9070	680	114	0.019	0.084	5540	420	70	0.019	0.063	3530	70	44	0.005	0.050
4.0	12	9070	680	114	0.019	0.084	5540	420	70	0.019	0.063	3530	70	44	0.005	0.050
4.0	14	9070	680	114	0.019	0.059	5540	420	70	0.019	0.044	3530	70	44	0.005	0.035
4.0	16	9070	680	114	0.019	0.059	5540	420	70	0.019	0.044	3530	70	44	0.005	0.035
4.0	18	9070	680	114	0.019	0.059	5540	420	70	0.019	0.044	3530	70	44	0.005	0.035
4.0	20	9070	680	114	0.019	0.059	5540	420	70	0.019	0.044	3530	70	44	0.005	0.035
4.0	22	8160	550	103	0.017	0.034	4990	340	63	0.017	0.025	3180	55	40	0.004	0.020
4.0	26	8160	550	103	0.017	0.034	4990	340	63	0.017	0.025	3180	55	40	0.004	0.020
4.0	30	8160	550	103	0.017	0.034	4990	340	63	0.017	0.025	3180	55	40	0.004	0.020
4.0	35	8160	550	103	0.017	0.021	4990	340	63	0.017	0.016	3180	55	40	0.004	0.013
4.0	40	8160	550	103	0.017	0.021	4990	340	63	0.017	0.016	3180	55	40	0.004	0.013
4.0	45	7260	435	91	0.015	0.021	4430	270	56	0.015	0.016	2820	45	35	0.004	0.013
4.0	50	7260	435	91	0.015	0.021	4430	270	56	0.015	0.016	2820	45	35	0.004	0.013
4.0	60	7260	435	91	0.015	0.013	4430	270	56	0.015	0.009	2820	45	35	0.004	0.008
5.0	16	7560	720	119	0.024	0.074	4530	430	71	0.024	0.055	2780	85	44	0.008	0.044
5.0	20	7560	720	119	0.024	0.074	4530	430	71	0.024	0.055	2780	85	44	0.008	0.044
5.0	26	6800	585	107	0.022	0.042	4080	350	64	0.021	0.032	2500	70	39	0.007	0.025
5.0	30	6800	585	107	0.022	0.042	4080	350	64	0.021	0.032	2500	70	39	0.007	0.025
5.0	35	6800	585	107	0.022	0.042	4080	350	64	0.021	0.032	2500	70	39	0.007	0.025
5.0	40	6800	585	107	0.022	0.042	4080	350	64	0.021	0.032	2500	70	39	0.007	0.025
5.0	50	6800	585	107	0.022	0.026	4080	350	64	0.021	0.020	2500	70	39	0.007	0.016
5.0	60	6050	460	95	0.019	0.026	3620	275	57	0.019	0.020	2220	55	35	0.006	0.016
6.0	15	6670	790	126	0.030	0.126	4030	490	76	0.030	0.095	2400	95	45	0.010	0.076
6.0	20	6670	790	126	0.030	0.088	4030	490	76	0.030	0.066	2400	95	45	0.010	0.053
6.0	30	6670	790	126	0.030	0.088	4030	490	76	0.030	0.066	2400	95	45	0.010	0.053
6.0	32	6000	640	113	0.027	0.050	3630	395	68	0.027	0.038	2160	75	41	0.009	0.030
8.0	25	5040	850	127	0.042	0.118	3020	450	76	0.037	0.088	2010	130	51	0.016	0.071
8.0	30	5040	850	127	0.042	0.118	3020	450	76	0.037	0.088	2010	130	51	0.016	0.071
8.0	42	4540	690	114	0.038	0.067	2720	365	68	0.034	0.050	1810	105	45	0.015	0.040
10.0	30	3910	730	123	0.047	0.210	2400	360	75	0.038	0.158	1630	105	51	0.016	0.126
10.0	35	3910	730	123	0.047	0.147	2400	360	75	0.038	0.110	1630	105	51	0.016	0.088
10.0	45	3910	730	123	0.047	0.147	2400	360	75	0.038	0.110	1630	105	51	0.016	0.088
12.0	35	3300	620	124	0.047	0.252	2010	300	76	0.037	0.189	1400	95	53	0.017	0.151
12.0	40	3300	620	124	0.047	0.176	2010	300	76	0.037	0.132	1400	95	53	0.017	0.106
12.0	50	3300	620	124	0.047	0.176	2010	300	76	0.037	0.132	1400	95	53	0.017	0.106



DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/tooth

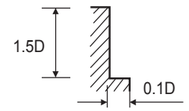
4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

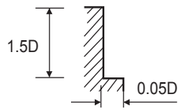
CARBIDE, 6 FLUTE 45° HELIX

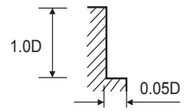
SEME75 SERIES

■ NORMAL SPEED

MATERIAL		P											
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS		~ HRc35				HRc35 ~ HRc45				HRc45 ~ HRc55			
STRENGTH		~ 1100N/mm²				1110 ~ 1500N/mm²				1500 ~ 2000N/mm²			
DIA.	LOC	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	15	5840	2100	110	0.060	4075	1440	77	0.059	1660	220	31	0.022
6.0	20	5840	2100	110	0.060	4075	1440	77	0.059	1660	220	31	0.022
6.0	30	5840	1785	110	0.051	4075	1225	77	0.050	1660	190	31	0.019
8.0	20	4410	2100	111	0.079	3085	1440	78	0.078	1220	220	31	0.030
8.0	30	4410	2100	111	0.079	3085	1440	78	0.078	1220	220	31	0.030
8.0	35	4410	2100	111	0.079	3085	1440	78	0.078	1220	220	31	0.030
8.0	40	4410	1785	111	0.067	3085	1225	78	0.066	1220	190	31	0.026
10.0	25	3530	2100	111	0.099	2435	1440	76	0.099	1050	220	33	0.035
10.0	30	3530	2100	111	0.099	2435	1440	76	0.099	1050	220	33	0.035
10.0	40	3530	2100	111	0.099	2435	1440	76	0.099	1050	220	33	0.035
10.0	50	3530	1785	111	0.084	2435	1225	76	0.084	1050	190	33	0.030
12.0	30	2980	1765	112	0.099	2100	1220	79	0.097	880	190	33	0.036
12.0	40	2980	1765	112	0.099	2100	1220	79	0.097	880	190	33	0.036
12.0	50	2980	1500	112	0.084	2100	1035	79	0.082	880	165	33	0.031
12.0	60	2980	1325	112	0.074	2100	915	79	0.073	880	140	33	0.027
16.0	40	2205	1325	111	0.100	1555	925	78	0.099	670	135	34	0.034
16.0	50	2205	1325	111	0.100	1555	925	78	0.099	670	135	34	0.034
16.0	60	2205	1125	111	0.085	1555	790	78	0.085	670	115	34	0.029
16.0	90	1985	895	100	0.075	1395	625	70	0.075	610	95	31	0.026
16.0	110	1985	895	100	0.075	1395	625	70	0.075	610	95	31	0.026
20.0	45	1765	1060	111	0.100	1220	725	77	0.099	525	115	33	0.037
20.0	60	1765	1060	111	0.100	1220	725	77	0.099	525	115	33	0.037
20.0	70	1765	905	111	0.085	1220	615	77	0.084	525	100	33	0.032
20.0	110	1585	715	100	0.075	1090	490	68	0.075	475	80	30	0.028







DIA. = Diameter RPM = rev./min. Vc = m/min.
LOC = Length of Cut FEED = mm/min. fz = mm/tooth

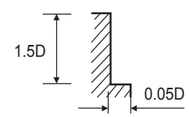
4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

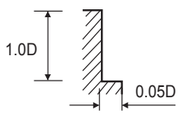
CARBIDE, 6 FLUTE 45° HELIX

SEME75 SERIES

■ HIGH SPEED

MATERIAL		P							
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON				HARDENED STEELS			
HARDNESS		HRc35 ~ HRc45				HRc45 ~ HRc55			
STRENGTH		1100 ~ 1500N/mm²				1500 ~ 2000N/mm²			
DIA.	LOC	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	15	17640	6395	333	0.060	8820	3205	166	0.061
6.0	20	17640	6395	333	0.060	8820	3205	166	0.061
6.0	30	17640	5435	333	0.051	8820	2720	166	0.051
8.0	20	13230	6395	333	0.081	6615	3205	166	0.081
8.0	30	13230	6395	333	0.081	6615	3205	166	0.081
8.0	35	13230	6395	333	0.081	6615	3205	166	0.081
8.0	40	13230	5435	333	0.068	6615	2725	166	0.069
10.0	25	10480	6290	329	0.100	5290	3205	166	0.101
10.0	30	10480	6290	329	0.100	5290	3205	166	0.101
10.0	40	10480	6290	329	0.100	5290	3205	166	0.101
10.0	50	10480	5345	329	0.085	5290	2720	166	0.086
12.0	30	8820	5290	333	0.100	4410	2645	166	0.100
12.0	40	8820	5290	333	0.100	4410	2645	166	0.100
12.0	50	8820	4500	333	0.085	4410	2245	166	0.085
12.0	60	8820	3970	333	0.075	4410	1985	166	0.075
16.0	40	6615	3970	333	0.100	3320	1985	167	0.100
16.0	50	6615	3970	333	0.100	3320	1985	167	0.100
16.0	60	6615	3375	333	0.085	3320	1685	167	0.085
16.0	90	5955	2680	299	0.075	2980	1340	150	0.075
16.0	110	5955	2680	299	0.075	2980	1340	150	0.075
20.0	45	5290	3205	332	0.101	2645	1545	166	0.097
20.0	60	5290	3205	332	0.101	2645	1545	166	0.097
20.0	70	5290	2720	332	0.086	2645	1315	166	0.083
20.0	110	4765	2165	299	0.076	2385	1040	150	0.073





DIA. = Diameter RPM = rev./min. Vc = m/min.
LOC = Length of Cut FEED = mm/min. fz = mm/tooth

4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4&5 FLUTE MULTIPLE HELIX CORNER RADIUS - SLOTTING

G9D75, G9D67, G9D76, G9D68, G9D77, G9D69 SERIES

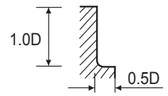
MATERIAL	P							
	ALLOYED STEELS CARBON STEELS TOOL STEELS, CAST IRON				ALLOYED STEELS, CARBON STEELS TOOL STEELS, CAST IRON PREHARDENED STEELS			
HARDNESS	~ HRc 25				HRc 25 ~ HRc 40			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	12000	1550	225	0.032	10600	1100	200	0.026
8.0	9000	1650	225	0.046	8100	1180	205	0.036
10.0	7200	1650	225	0.057	6400	1180	200	0.046
12.0	6000	1540	225	0.064	5400	1140	205	0.053
16.0	4500	1500	225	0.067	4100	1050	205	0.051
20.0	3600	1330	225	0.074	3200	900	200	0.056

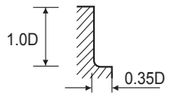
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/tooth

CARBIDE, 4&5 FLUTE MULTIPLE HELIX CORNER RADIUS - SIDE CUTTING

G9D75, G9D67, G9D76, G9D68, G9D77, G9D69 SERIES

MATERIAL	P							
	ALLOYED STEELS CARBON STEELS TOOL STEELS, CAST IRON				ALLOYED STEELS, CARBON STEELS TOOL STEELS, CAST IRON PREHARDENED STEELS			
HARDNESS	~ HRc 25				HRc 25 ~ HRc 40			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	15800	2570	300	0.041	14300	1850	270	0.032
8.0	11900	2700	300	0.057	10700	1950	270	0.046
10.0	9500	2700	300	0.071	8500	1950	265	0.057
12.0	8000	2570	300	0.080	7100	1850	270	0.065
16.0	6000	2450	300	0.082	5400	1750	270	0.065
20.0	4800	2140	300	0.089	4300	1500	270	0.070





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

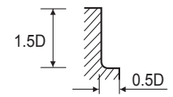
4G MILL END MILLS — RECOMMENDED CUTTING CONDITIONS

HSS-PM, 4&5 FLUTE MULTIPLE HELIX SHORT LENGTH CORNER RADIUS

GAE53 SERIES

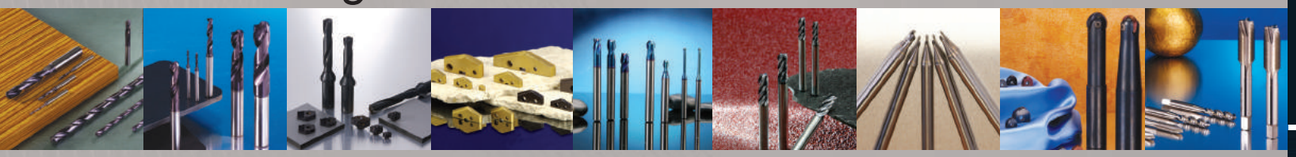
MATERIAL	P											
	STRUCTURAL STEELS CARBON STEELS				STRUCTURAL STEELS CARBON STEELS, CAST IRONS				CARBON STEELS ALLOY STEELS, TOOL STELLS			
HARDNESS					~ HRc 20				HRc 20 ~ 30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	3250	240	60	0.019	2500	185	48	0.018	1800	120	34	0.017
8.0	2750	300	70	0.027	2150	240	54	0.028	1550	170	38	0.027
10.0	2150	430	70	0.050	1700	330	54	0.049	1200	205	38	0.043
12.0	1800	430	70	0.060	1400	350	54	0.063	1000	240	38	0.059
14.0	1550	430	70	0.055	1200	350	54	0.073	850	240	38	0.069
16.0	1400	430	70	0.063	1100	350	54	0.081	750	240	38	0.080
18.0	1200	430	70	0.072	1000	350	54	0.085	700	240	38	0.086
20.0	1100	445	70	0.080	850	350	54	0.101	600	240	38	0.100

MATERIAL	P				M			
	PREHARDENED STEELS ALLOY STEELS, TOOL STEELS				STAINLESS STEELS			
HARDNESS	HRc 30 ~ 40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	1500	110	28	0.018	1750	130	33	0.019
8.0	1200	130	32	0.028	1450	170	36	0.029
10.0	1000	170	32	0.041	1150	200	36	0.045
12.0	850	190	32	0.055	950	245	36	0.064
14.0	700	190	32	0.065	850	245	36	0.074
16.0	600	190	32	0.075	700	245	36	0.085
18.0	550	190	32	0.082	650	245	36	0.093
20.0	500	190	32	0.092	600	245	36	0.107



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

Global Cutting Tool Leader **YG-1**



Being the best through innovation

CARBIDE



X-POWER END MILLS

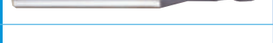
- Medium Steels to High Hardened Steels up to HRc70

◎ : Excellent ○ : Good

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE	P: Carbon Steels ~HRc20	P: Alloy Steels HRc20~30	P: Prehardened Steels HRc30~40	P: Hardened Steels HRc40~45	P: Hardened Steels HRc45~55	H: High Hardened Steels HRc55~70	M: Stainless Steels	K: Cast Iron	N: Copper	N: Graphite	N: Aluminum	N: Acrylic	N: CFRP	S: Titanium	S: High Temperature Alloy
INCH																				
EM154		CARBIDE, 2 FLUTE REGULAR LENGTH ◆	D1/16	D1	**856**	○	◎	◎	◎	○		○	○							
EM206		CARBIDE, 2 FLUTE LONG LENGTH ◆	D1/8	D1	**856**	○	◎	◎	◎	○		○	○							
EM959		CARBIDE, 2 FLUTE MINIATURE ◆	D.016	D.062	**857**	○	◎	◎	◎	○			○							
EM153		CARBIDE, 4 FLUTE REGULAR LENGTH ◆	D1/16	D1	**858**	○	◎	◎	◎	○		○	○							
EM207		CARBIDE, 4 FLUTE LONG LENGTH ◆	D1/8	D1	**858**	○	◎	◎	◎	○			○							
EM636		CARBIDE, 2 FLUTE STUB LENGTH CORNER RADIUS ◆	D1/16	D1/2	**859**	○	◎	◎	◎	○										
EM639		CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS ◆	D1/16	D1/2	**859**	○	◎	◎	◎	○		○	○							
EM637		CARBIDE, 2 FLUTE REGULAR LENGTH CORNER RADIUS ◆	D1/16	D1/2	**860**	○	◎	◎	◎	○										
EM649		CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS ◆	D1/16	D1/2	**860**	○	◎	◎	◎	○		○	○							
EM211		CARBIDE, 2 FLUTE LONG LENGTH CORNER RADIUS ◆	D1/4	D1/2	**861**	○	◎	◎	◎											
EM212		CARBIDE, 4 FLUTE LONG LENGTH CORNER RADIUS ◆	D1/4	D1/2	**861**	○	◎	◎	◎	○		○	○							
EM102		CARBIDE, 4 FLUTE 45° HELIX LONG LENGTH ◆	D3/8	D7/8	**862**	○	◎	◎	◎	○		○	○							
EM103		CARBIDE, 4 FLUTE 45° HELIX LONG REACH CORNER RADIUS ◆	D3/8	D7/8	**863**	○	◎	◎	◎	○		○	○							
EM965		CARBIDE, 4 FLUTE 55° HELIX STUB LENGTH CORNER RADIUS ◆	D1/4	D1/2	**864**	○	◎	◎	◎	○		○	○							
EM208		CARBIDE, 6&8 FLUTE 45° HELIX LONG LENGTH ◆	D1/4	D1	**865**	○	◎	◎	◎	○			○							
EM218		CARBIDE, 6&8 FLUTE 45° HELIX EXTRA LONG LENGTH ◆	D1/4	D1	**865**	○	◎	◎	◎	○			○							
EM668		CARBIDE, 6&8 FLUTE 45° HELIX LONG LENGTH CORNER RADIUS ◆	D1/4	D3/4	**866**	○	◎	◎	◎	○			○							

◆ U.S.A Stock

◎ : Excellent ○ : Good

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE	P: Carbon Steels ~HRc20	P: Alloy Steels HRc20~30	P: Prehardened Steels HRc30~40	P: Hardened Steels HRc40~45	P: Hardened Steels HRc45~55	H: High Hardened Steels HRc55~70	M: Stainless Steels	K: Cast Iron	N: Copper	N: Graphite	N: Aluminum	N: Acrylic	N: CFRP	S: Titanium	S: High Temperature Alloy
INCH																				
EM209		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE ◆	R1/64	R1/2	**867**	○	◎	◎	◎	○	○		○							
EM210		CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE ◆	R1/16	R1/2	**867**	○	◎	◎	◎	○	○		○							
EM961		CARBIDE, 2 FLUTE MEDIUM LENGTH BALL NOSE ◆	R1/16	R1/2	**868**	○	◎	◎	◎	○	○		○							
EM962		CARBIDE, 2 FLUTE LONG REACH BALL NOSE ◆	R3/64	R3/8	**869**	○	◎	◎	◎	○	○		○							
EM960		CARBIDE, 2 FLUTE MINIATURE BALL NOSE ◆	R.012	R.031	**870**	○	◎	◎	◎	○			○							
EM109		CARBIDE, 2 FLUTE 15° HELIX STUB CUT LENGTH BALL NOSE for OVER HRc55 ◆	R1/64	R1/4	**871**				○	◎	◎									
EM963		CARBIDE, 2 FLUTE BALL NOSE with TAPER NECK ◆	R1/32	R1/4	**872**	○	◎	◎	◎	○	○		○							
EM979		CARBIDE, 2 FLUTE BALL NOSE with PENCIL NECK ◆	R3/32	R1/4	**873**	○	◎	◎	◎	○	○		○							
EM084		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE (MMC-ECONOMY TYPE) ◆	R1/16	R5/16	**875**	○	◎	◎	◎	○	○		○							
EM093		CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE (MMC-ECONOMY TYPE) ◆	R1/16	R5/16	**876**	○	◎	◎	◎	○	○		○							
EM096		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE (MMC-SPHERE TYPE) ◆	R1/16	R5/16	**877**	○	◎	◎	◎	○	○		○							
EM097		CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE (MMC-SPHERE TYPE) ◆	R1/16	R5/16	**878**	○	◎	◎	◎	○	○		○							
EM666		CARBIDE, MULTI FLUTE 20° HELIX STUB LENGTH FINE PITCH ROUGHING ◆	D1/4	D1	**879**	○	◎	◎	◎	○		○	○							
EM156		CARBIDE, MULTI FLUTE 20° HELIX LONG LENGTH FINE PITCH ROUGHING ◆	D1/4	D1	**879**	○	◎	◎	◎	○		○	○							
EM662		CARBIDE, MULTI FLUTE 20° HELIX LONG LENGTH FINE PITCH ROUGHING BALL NOSE ◆	R1/8	R1/2	**880**	○	◎	◎	◎	○			○							
EM966		CARBIDE, 2 FLUTE for RIB PROCESSING ◆	D1/32	D1/8	**881**	○	◎	◎	◎	○			○							
EM967		CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING ◆	R1/64	R1/16	**882**	○	◎	◎	◎	○			○							

◆ U.S.A Stock

◎ : Excellent ○ : Good

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE	P: Carbon Steels ~HRc20	P: Alloy Steels HRc20~30	P: Prehardened Steels HRc30~40	P: Hardened Steels HRc40~45	P: Hardened Steels HRc45~55	H: High Hardened Steels HRc55~70	M: Stainless Steels	K: Cast Iron	N: Copper	N: Graphite	N: Aluminum	N: Acrylic	N: CFRP	S: Titanium	S: High Temperature Alloy
METRIC																				
EM810		CARBIDE, 2 FLUTE SHORT LENGTH ◇	D1.0	D25.0	883	○	◎	◎	◎	○		○	○							
EM816		CARBIDE, 2 FLUTE LONG LENGTH ◇	D2.0	D25.0	884	○	◎	◎	◎	○		○	○							
EM811		CARBIDE, 4 FLUTE SHORT LENGTH ◇	D2.0	D25.0	885	○	◎	◎	◎	○		○	○							
EM817		CARBIDE, 4 FLUTE LONG LENGTH ◇	D2.0	D25.0	886	○	◎	◎	◎	○			○							
EM895		CARBIDE, 3 FLUTE 38° HELIX SHORT LENGTH ◇	D1.0	D20.0	887	○	◎	◎	◎	○		○	○							
EM810		CARBIDE, 2 FLUTE MINIATURE ◇	D0.4	D1.5	888	○	◎	◎	◎	○			○							
EM818		CARBIDE, 2 FLUTE LONG LENGTH CORNER RADIUS ◇	D3.0	D20.0	889	○	◎	◎	◎	○										
EM819		CARBIDE, 4 FLUTE LONG LENGTH CORNER RADIUS ◇	D3.0	D20.0	889	○	◎	◎	◎	○		○	○							
EM905		CARBIDE, 4 FLUTE 45° HELIX SHORT LENGTH CORNER RADIUS ◇	D10.0	D22.0	890	○	◎	◎	◎	○		○	○							
EM839		CARBIDE, 4 FLUTE STUB CUT LENGTH CORNER RADIUS ◇	D2.0	D16.0	891	○	◎	◎	◎	○			○							
EM812		CARBIDE, 6&8 FLUTE 45° HELIX LONG LENGTH ◇	D6.0	D25.0	892	○	◎	◎	◎	○			○							
EM834		CARBIDE, 6&8 FLUTE 45° HELIX EXTRA LONG LENGTH ◇	D6.0	D25.0	892	○	◎	◎	◎	○			○							
EM835		CARBIDE, 6 FLUTE 45° HELIX LONG LENGTH CORNER RADIUS ◇	D6.0	D20.0	893	○	◎	◎	◎	○			○							
EM897		CARBIDE, 6 FLUTE 45° HELIX STUB CUT LENGTH CORNER RADIUS ◇	D6.0	D12.0	894	○	◎	◎	◎	○			○							
EM876		CARBIDE, 2 FLUTE SHORT LENGTH BALL NOSE ◇	R0.5	R12.5	895	○	◎	◎	◎	○	○		○							
EM813 EM823		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE ◇	R0.5	R12.5	896	○	◎	◎	◎	○	○		○							
EM815 EM825		CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE ◇	R0.5	R12.5	896	○	◎	◎	◎	○	○		○							

◇ Call for Availability

◎ : Excellent ○ : Good

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE	P: Carbon Steels ~HRc20	P: Alloy Steels HRc20~30	P: Prehardened Steels HRc30~40	P: Hardened Steels HRc40~45	P: Hardened Steels HRc45~55	H: High Hardened Steels HRc55~70	M: Stainless Steels	K: Cast Iron	N: Copper	N: Graphite	N: Aluminum	N: Acrylic	N: CFRP	S: Titanium	S: High Temperature Alloy
METRIC																				
EM899		CARBIDE, 2 FLUTE MEDIUM LENGTH BALL NOSE ◇	R1.5	R12.5	**897**	○	◎	◎	◎	○	○		○							
EM838		CARBIDE, 2 FLUTE LONG REACH BALL NOSE ◇	R1.0	R10.0	**898**	○	◎	◎	◎	○	○		○							
EM865		CARBIDE, 2 FLUTE MINIATURE BALL NOSE ◇	R0.3	R0.75	**899**	○	◎	◎	◎	○			○							
EM868		CARBIDE, 2 FLUTE 15° HELIX STUB CUT LENGTH BALL NOSE for OVER HRc55 ◇	R0.5	R12.5	**900**				○	◎	◎									
EM902		CARBIDE, 2 FLUTE BALL NOSE with TAPER NECK ◇	R0.5	R6.0	**901**	○	○	◎	◎	○										
EM669		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE (MMC-ECONOMY TYPE) ◇	R1.5	R8.0	**902**	○	◎	◎	◎	○	○		○							
EM673		CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE (MMC-ECONOMY TYPE) ◇	R2.5	R8.0	**903**	○	◎	◎	◎	○	○		○							
EM863		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE (MMC- SPHERE TYPE) ◇	R1.5	R8.0	**904**	○	◎	◎	◎	○	○		○							
EM864		CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE (MMC- SPHERE TYPE) ◇	R2.5	R8.0	**905**	○	◎	◎	◎	○	○		○							
EM832		CARBIDE, MULTI FLUTE 20° HELIX SHORT LENGTH FINE PITCH ROUGHING ◇	D6.0	D25.0	**906**	○	◎	◎	◎	○		○	○							
EM814		CARBIDE, MULTI FLUTE 20° HELIX LONG LENGTH FINE PITCH ROUGHING ◇	D6.0	D25.0	**907**	○	◎	◎	◎	○		○	○							
EM833		CARBIDE, 3&4 FLUTE 20° HELIX LONG LENGTH FINE PITCH ROUGHING BALL NOSE ◇	R3.0	R10.0	**908**	○	◎	◎	◎	○		○	○							
EM837		CARBIDE, 2 FLUTE TAPER ◇	D2.0	D8.0	**909**	○	◎	◎	◎	○			○							
EM883		CARBIDE, 2 FLUTE for RIB PROCESSING ◇	D0.8	D3.0	**910**	○	◎	◎	◎	○			○							
EM886		CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING ◇	R0.3	R2.0	**911**	○	◎	◎	◎	○			○							
		RECOMMENDED CUTTING CONDITIONS			**912**															

◇ Call for Availability

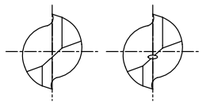
X-POWER END MILLS

EM154 SERIES PLAIN SHANK
EM206 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE REGULAR & LONG LENGTH

- Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- Superior workpiece finishes.
- Increased feed rate.





MG | 2 | 30° | PLAIN

P.912

◆ U.S.A Stock

EM154 Series ■ REGULAR LENGTH

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
93074	1/16	1/8	3/16	1-1/2
93075	1/8	1/8	1/2	1-1/2
93076	3/16	3/16	5/8	2
93077	1/4	1/4	3/4	2-1/2
93078	5/16	5/16	13/16	2-1/2
93079	3/8	3/8	1	2-1/2
93080	1/2	1/2	1	3
93081	5/8	5/8	1-1/4	3-1/2
93082	3/4	3/4	1-1/2	4
93083	1	1	1-1/2	4

EM206 Series ■ LONG LENGTH

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
93084	1/8	1/8	3/4	2-1/4
93085	3/16	3/16	3/4	2-1/2
93086	1/4	1/4	1-1/8	3
93087	5/16	5/16	1-1/8	3
93088	3/8	3/8	1-1/8	3
93089	1/2	1/2	2	4
93090	5/8	5/8	2-1/4	5
93091	3/4	3/4	2-1/4	5
93092	1	1	2-1/4	5

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

◎ : Excellent ○ : Good

P					H	M	K	N						S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○		○	○							

X-POWER END MILLS

EM959 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE MINIATURE

- High precision milling in medical, optical, electronics and aero space industries.
- Excellent performance on high hardened steel(HRc70).



MG | 2 | 30° | PLAIN

P.914

◆ U.S.A Stock

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
93495	.016	1/8	.031	1-1/2
93496	.020	1/8	.040	1-1/2
93497	.024	1/8	.047	1-1/2
93498	.028	1/8	.055	1-1/2
93499	.031	1/8	.063	1-1/2
93500	.035	1/8	.080	1-1/2
93501	.040	1/8	.100	1-1/2
93502	.043	1/8	.100	1-1/2
93503	.047	1/8	.157	1-1/2
93504	.052	1/8	.157	1-1/2
93505	.055	1/8	.157	1-1/2
93506	.062	1/8	.157	1-1/2

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

◎ : Excellent ○ : Good

P					H	M	K	N						S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

X-POWER END MILLS

EM153 SERIES PLAIN SHANK
EM207 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE REGULAR & LONG LENGTH

- Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- 4 flute allows for better workpiece finishes.
- Increased production.



MG | 4 | 30° | PLAIN | P.913

◆ U.S.A Stock

EM153 Series ■ REGULAR LENGTH

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
93093	**1/16**	1/8	3/16	1-1/2
93094	**1/8**	1/8	1/2	1-1/2
93095	**3/16**	3/16	5/8	2
93096	**1/4**	1/4	3/4	2-1/2
93097	**5/16**	5/16	13/16	2-1/2
93098	**3/8**	3/8	1	2-1/2
93594	**7/16**	7/16	1	2-3/4
93099	**1/2**	1/2	1	3
93100	**5/8**	5/8	1-1/4	3-1/2
93101	**3/4**	3/4	1-1/2	4
93102	**1**	1	1-1/2	4

EM207 Series ■ LONG LENGTH

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
93103	**1/8**	1/8	3/4	2-1/4
93104	**3/16**	3/16	3/4	2-1/2
93105	**1/4**	1/4	1-1/8	3
93106	**5/16**	5/16	1-1/8	3
93107	**3/8**	3/8	1-1/8	3
93108	**1/2**	1/2	2	4
93109	**5/8**	5/8	2-1/4	5
93110	**3/4**	3/4	2-1/4	5
93111	**1**	1	2-1/4	5

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

◎ : Excellent ○ : Good

Series	P					H	M	K	N					S	
	Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
	~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
EM153	○	◎	◎	◎	○		○	○							
EM207	○	◎	◎	◎	○			○							

X-POWER END MILLS

EM636 SERIES PLAIN SHANK
EM639 SERIES PLAIN SHANK

CARBIDE, 2&4 FLUTE STUB LENGTH CORNER RADIUS

- Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- Superior workpiece finishes.
- Increased feed rate.



MG | 2&4 | 30° | R ±.001 | PLAIN | P.914, 915

◆ U.S.A Stock

EM636(2 FLUTE), EM639(4 FLUTE) Series

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
2 FLUTE	4 FLUTE	R (±.001)				
93172	**93216**	R.008	**1/16**	1/4	1/8	2-1/4
93173	**93217**	R.010	**1/8**	1/4	1/4	2-1/4
93174	**93218**	R.020	**1/8**	1/4	1/4	2-1/4
93175	-	R.030	**1/8**	1/4	1/4	2-1/4
93176	**93220**	R.010	**3/16**	1/4	3/8	2-1/2
93177	**93221**	R.020	**3/16**	1/4	3/8	2-1/2
93178	**93222**	R.030	**3/16**	1/4	3/8	2-1/2
93179	**93223**	R.010	**1/4**	1/4	1/2	3
93180	**93224**	R.020	**1/4**	1/4	1/2	3
93181	**93225**	R.030	**1/4**	1/4	1/2	3
93182	**93226**	R.020	**5/16**	5/16	1/2	3
93183	**93227**	R.030	**5/16**	5/16	1/2	3
93184	**93228**	R.060	**5/16**	5/16	1/2	3
93185	**93229**	R.090	**5/16**	5/16	1/2	3
93186	**93230**	R.020	**3/8**	3/8	5/8	3
93187	**93231**	R.030	**3/8**	3/8	5/8	3
93188	**93232**	R.060	**3/8**	3/8	5/8	3
93189	**93233**	R.090	**3/8**	3/8	5/8	3
93190	**93234**	R.020	**1/2**	1/2	5/8	4
93191	**93235**	R.030	**1/2**	1/2	5/8	4
93192	**93236**	R.060	**1/2**	1/2	5/8	4
93193	**93237**	R.090	**1/2**	1/2	5/8	4

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

◎ : Excellent ○ : Good

Series	P					H	M	K	N					S	
	Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
	~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
EM636	○	◎	◎	◎	○										
EM639	○	◎	◎	◎	○		○	○							

X-POWER END MILLS

EM637 SERIES PLAIN SHANK
EM649 SERIES PLAIN SHANK

CARBIDE, 2&4 FLUTE REGULAR LENGTH CORNER RADIUS

- Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- Superior workpiece finishes.
- Increased feed rate.



MG | 2&4 | 30° | R ±.001 | PLAIN

P.914, 915

◆ U.S.A Stock

EM637 (2 FLUTE), EM649 (4 FLUTE) Series

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
2 FLUTE	4 FLUTE	R (±.001)				
93194	**93238**	R.008	**1/16**	1/4	3/16	2-1/4
93195	**93239**	R.010	**1/8**	1/4	1/2	2-1/4
93196	**93240**	R.020	**1/8**	1/4	1/2	2-1/4
93197	-	R.030	**1/8**	1/4	1/2	2-1/4
93198	**93242**	R.010	**3/16**	1/4	5/8	2-1/2
93199	**93243**	R.020	**3/16**	1/4	5/8	2-1/2
93200	**93244**	R.030	**3/16**	1/4	5/8	2-1/2
93201	**93245**	R.010	**1/4**	1/4	3/4	3
93202	**93246**	R.020	**1/4**	1/4	3/4	3
93203	**93247**	R.030	**1/4**	1/4	3/4	3
93204	**93248**	R.020	**5/16**	5/16	13/16	3
93205	**93249**	R.030	**5/16**	5/16	13/16	3
93206	**93250**	R.060	**5/16**	5/16	13/16	3
93207	**93251**	R.090	**5/16**	5/16	13/16	3
93208	**93252**	R.020	**3/8**	3/8	1	3
93209	**93253**	R.030	**3/8**	3/8	1	3
93210	**93254**	R.060	**3/8**	3/8	1	3
93211	**93255**	R.090	**3/8**	3/8	1	3
93600	**93595**	R.020	**7/16**	7/16	1	4
93601	**93597**	R.030	**7/16**	7/16	1	4
93602	**93598**	R.060	**7/16**	7/16	1	4
93603	**93599**	R.090	**7/16**	7/16	1	4
93212	**93256**	R.020	**1/2**	1/2	1	4
93213	**93257**	R.030	**1/2**	1/2	1	4
93214	**93258**	R.060	**1/2**	1/2	1	4
93215	**93259**	R.090	**1/2**	1/2	1	4

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

◎ : Excellent ○ : Good

Series	P					H	M	K	N					S	
	Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
	~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
EM637	○	◎	◎	◎	○										
EM649	○	◎	◎	◎	○		○	○							

X-POWER END MILLS

EM211 SERIES PLAIN SHANK
EM212 SERIES PLAIN SHANK

CARBIDE, 2&4 FLUTE LONG LENGTH CORNER RADIUS

- Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- Superior workpiece finishes.
- Increased feed rate.



MG | 2&4 | 30° | R ±.001 | PLAIN

P.914, 915

◆ U.S.A Stock

EM211 (2 FLUTE), EM212 (4 FLUTE) Series

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
2 FLUTE	4 FLUTE	R (±.001)				
93143	**93157**	R.020	**1/4**	1/4	1-1/8	3
93144	**93158**	R.030	**1/4**	1/4	1-1/8	3
93145	**93159**	R.020	**5/16**	5/16	1-1/8	3
93146	**93160**	R.030	**5/16**	5/16	1-1/8	3
93147	**93161**	R.060	**5/16**	5/16	1-1/8	3
93148	**93162**	R.090	**5/16**	5/16	1-1/8	3
93149	**93163**	R.020	**3/8**	3/8	1-1/8	3
93150	**93164**	R.030	**3/8**	3/8	1-1/8	3
93151	**93165**	R.060	**3/8**	3/8	1-1/8	3
93152	**93166**	R.090	**3/8**	3/8	1-1/8	3
93153	**93167**	R.020	**1/2**	1/2	2	4
93154	**93168**	R.030	**1/2**	1/2	2	4
93155	**93169**	R.060	**1/2**	1/2	2	4
93156	**93170**	R.090	**1/2**	1/2	2	4

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

◎ : Excellent ○ : Good

Series	P					H	M	K	N					S	
	Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
	~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
EM211	○	◎	◎	◎	○										
EM212	○	◎	◎	◎	○		○	○							

X-POWER END MILLS

EM102 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE 45º HELIX LONG LENGTH

- Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- 4 flute allows for better workpiece finishes.
- Increased production.



MG | 4 | 45° | PLAIN

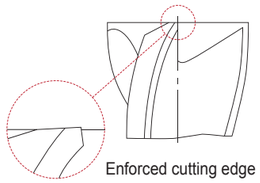
P.915

◆ U.S.A Stock

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
93395	**3/8**	5/16	5/8	5
93396	**1/2**	3/8	3/4	6
93397	**5/8**	1/2	7/8	6-1/2
93398	**3/4**	5/8	1	7
93399	**7/8**	3/4	1-1/4	8

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



◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○		○	○							

X-POWER END MILLS

EM103 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE 45º HELIX LONG REACH CORNER RADIUS

- Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- Superior workpiece finishes.
- Increased feed rate.



MG | 4 | 45° | R ±.001 | PLAIN

P.916

◆ U.S.A Stock

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (±.001)	D_1	D_2	L_1	L_3	L_2	D_3
93400	R.020	**3/8**	5/16	5/8	.750	5	.293
93405	R.040	**3/8**	5/16	5/8	.750	5	.293
93401	R.020	**1/2**	3/8	3/4	.875	6	.355
93406	R.040	**1/2**	3/8	3/4	.875	6	.355
93402	R.020	**5/8**	1/2	7/8	1.000	6-1/2	.480
93407	R.040	**5/8**	1/2	7/8	1.000	6-1/2	.480
93403	R.020	**3/4**	5/8	1	1.125	7	.605
93408	R.040	**3/4**	5/8	1	1.125	7	.605
93404	R.020	**7/8**	3/4	1-1/4	1.375	8	.730
93409	R.040	**7/8**	3/4	1-1/4	1.375	8	.730

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○		○	○							

X-POWER END MILLS

EM965 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE 55° HELIX STUB LENGTH CORNER RADIUS

- Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- Corner radius and corner protection against chipping.



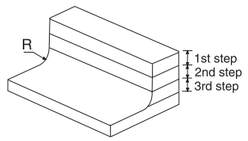
MG | 4 | 55° | R ±.001 | PLAIN | P.917

◆ U.S.A Stock

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (±.001)	D1	D2	L1	L3	L2	D3
93544	R.063	1/4	1/4	5/16	7/8	2-1/4	.230
93545	R.078	5/16	5/16	3/8	1	2-1/2	.289
93546	R.094	3/8	3/8	7/16	1-1/4	3	.344
93596	R.109	7/16	7/16	1/2	1-1/2	3-1/4	.395
93547	R.125	1/2	1/2	1/2	1-1/2	3-1/4	.461

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



◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○		○	○							

X-POWER END MILLS

EM208 SERIES PLAIN SHANK
EM218 SERIES PLAIN SHANK

CARBIDE, 6&8 FLUTE 45° HELIX LONG & EXTRA LONG LENGTH

- Designed to machine high hardened materials.
- High speed cutting and finish milling with high feed rate.
- Superior workpiece finishes.
- Superior wear resistant.
- Suitable for dry milling.
- Corner Protection against chipping.



MG | 6&8 | 45° | PLAIN | P.918, 919

◆ U.S.A Stock

EM208 Series ■ LONG LENGTH

Unit : Inch

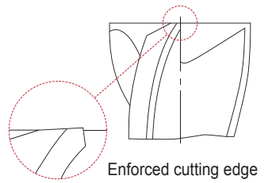
EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
93119	1/4	1/4	1/2	2-1/4	6
93120	5/16	5/16	3/4	2-1/2	6
93121	3/8	3/8	7/8	2-7/8	6
93122	1/2	1/2	1	3-1/4	6
93123	5/8	5/8	1-1/4	3-5/8	6
93124	3/4	3/4	1-1/2	4-1/8	8
93171	1	1	1-3/4	4-1/4	8

EM218 Series ■ EXTRA LONG LENGTH

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
99666	1/4	1/4	1	2-3/4	6
99667	5/16	5/16	1-1/2	3-5/8	6
99668	3/8	3/8	1-3/4	4	6
99669	1/2	1/2	2-3/16	4-3/8	6
99670	5/8	5/8	2-5/8	5-1/8	6
99588	3/4	3/4	2-1/4	5	8
99589	3/4	3/4	3-1/4	6	8
99590	3/4	3/4	4-1/8	7	8
99591	1	1	4-1/8	7	8

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



◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

X-POWER END MILLS

EM668 SERIES PLAIN SHANK

CARBIDE, 6&8 FLUTE 45° HELIX LONG LENGTH CORNER RADIUS

- Designed to machine high hardened materials.
- High speed cutting and finish milling with high feed rates.
- Superior workpiece finishes.
- Superior wear resistant.
- Suitable for dry milling.



MG | 6&8 | 45° | PLAIN

P.919

◆ U.S.A Stock

Unit : Inch

EDP No.	Corner Radius R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
93277	R.020	**1/4**	1/4	1/2	2-1/4	6
93278	R.020	**5/16**	5/16	3/4	2-1/2	6
93279	R.020	**3/8**	3/8	7/8	2-7/8	6
93280	R.030	**3/8**	3/8	7/8	2-7/8	6
93281	R.020	**1/2**	1/2	1	3-1/4	6
93282	R.030	**1/2**	1/2	1	3-1/4	6
93283	R.030	**5/8**	5/8	1-1/4	3-5/8	6
93284	R.060	**5/8**	5/8	1-1/4	3-5/8	6
93285	R.030	**3/4**	3/4	1-1/2	4-1/8	8
93286	R.060	**3/4**	3/4	1-1/2	4-1/8	8
93287	R.090	**3/4**	3/4	1-1/2	4-1/8	8

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

X-POWER END MILLS

EM209 SERIES PLAIN SHANK
EM210 SERIES PLAIN SHANK

CARBIDE, 2&4 FLUTE LONG LENGTH BALL NOSE

- Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- For copy-milling machines.



MG | 2&4 | 30° | R ±.001 | PLAIN

P.920, 921

◆ U.S.A Stock

EM209(2 FLUTE), EM210(4 FLUTE) Series

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
2 FLUTE	4 FLUTE	R (±.001)				
93260	-	R 1/64	**1/32**	1/4	1/32	2-1/2
93261	-	R 1/32	**1/16**	1/4	1/16	2-1/2
93262	-	R 3/64	**3/32**	1/4	3/32	2-1/2
93125	**93134**	R 1/16	**1/8**	1/8	5/16	2-3/8
93126	**93135**	R 3/32	**3/16**	3/16	3/8	3-1/8
93127	**93136**	R 1/8	**1/4**	1/4	1/2	3-1/2
93128	**93137**	R 5/32	**5/16**	5/16	9/16	4
93129	**93138**	R 3/16	**3/8**	3/8	3/4	4
93130	**93139**	R 1/4	**1/2**	1/2	7/8	4-1/4
93131	**93140**	R 5/16	**5/8**	5/8	1-1/4	5-1/2
93132	**93141**	R 3/8	**3/4**	3/4	1-1/2	6-1/4
93133	**93142**	R 1/2	**1**	1	2	7-1/8

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

◎ : Excellent ○ : Good

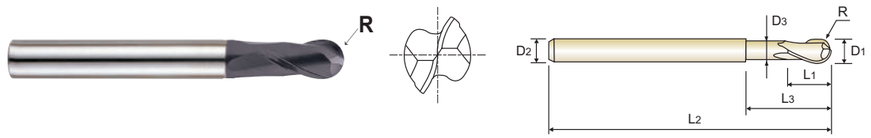
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

X-POWER END MILLS

EM961 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE MEDIUM LENGTH BALL NOSE

- Deep slotting milling is possible by reduced neck.
- High efficiency milling is possible in deep slotting with projection of the end mill being long.



MG | 2 | 30° | R ±.001 | PLAIN

P.922

◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose R (±.001)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
93517	R1/16	**1/8**	1/4	5/16	-	2-3/4	-
93518	R3/32	**3/16**	1/4	1/2	-	3-1/8	-
93519	R1/8	**1/4**	1/4	1/2	7/8	3-1/8	.242
93520	R5/32	**5/16**	5/16	9/16	1-1/16	3-1/2	.305
93521	R3/16	**3/8**	3/8	3/4	1-1/4	4	.367
93522	R1/4	**1/2**	1/2	7/8	1-3/8	4-1/4	.492
93523	R5/16	**5/8**	5/8	1-1/4	2	5-1/2	.617
93524	R3/8	**3/4**	3/4	1-1/2	2-1/4	6-1/4	.742
93525	R1/2	**1**	1	2-1/8	3	7	.992

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○		○							

X-POWER END MILLS

EM962 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG REACH BALL NOSE

- Longer overall length than EM209, EM210, type and suitable for machining deeply located area.



MG | 2 | 30° | R ±.001 | PLAIN

P.923

◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose R (±.001)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
93578	R3/64	**3/32**	1/8	1/4	3-1/8
93579	R1/16	**1/8**	1/8	5/16	4
93580	R3/32	**3/16**	3/16	3/8	4-3/4
93581	R1/8	**1/4**	1/4	3/8	4-3/4
93582	R5/32	**5/16**	5/16	9/16	5-1/2
93583	R3/16	**3/8**	3/8	3/4	7
93584	R1/4	**1/2**	1/2	7/8	8
93585	R5/16	**5/8**	5/8	1-1/4	10
93586	R3/8	**3/4**	3/4	1-1/2	10

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

X-POWER END MILLS

EM960 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE MINIATURE BALL NOSE

- High precision milling in medical, optical, electronics and aerospace industrials.
- Excellent performance at dry cutting conditon.
- Excellent performance on high hardened steel up to HRc70.



MG | 2 | 30° | R ±.0005 | PLAIN | P.929

◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose R (±.0005)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
93507	R.012	**.024**	1/8	.043	1-1/2
93508	R.014	**.028**	1/8	.060	1-1/2
93509	R.0155	**.031**	1/8	.080	1-1/2
93510	R.0175	**.035**	1/8	.087	1-1/2
93511	R.020	**.040**	1/8	.100	1-1/2
93512	R.0215	**.043**	1/8	.118	1-1/2
93513	R.0235	**.047**	1/8	.118	1-1/2
93514	R.026	**.052**	1/8	.138	1-1/2
93515	R.0275	**.055**	1/8	.138	1-1/2
93516	R.031	**.062**	1/8	.157	1-1/2

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

◎ : Excellent ○ : Good

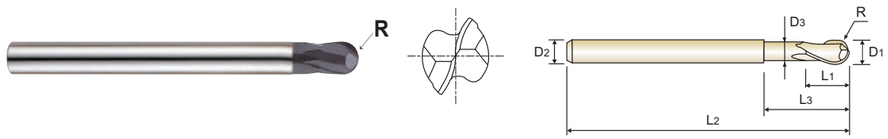
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Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

X-POWER END MILLS

EM109 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE 15° HELIX STUB CUT LENGTH BALL NOSE for OVER HRc55

- Suitable for HRc55~HRc70 high hardened materials.
- Strong cutting edges and higher tool rigidity.



MG | 2 | 15° | R ±.0005 | PLAIN | P.924

HRc55 ~ HRc70

◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose R (±.0005)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
93485	R1/64	**1/32**	1/4	1/32	1/16	2	.029
93486	R1/32	**1/16**	1/4	1/16	1/8	2	.059
93487	R3/64	**3/32**	1/4	3/32	3/16	2	.090
93488	R1/16	**1/8**	1/4	1/8	1/4	2-1/2	.121
93489	R3/32	**3/16**	1/4	3/16	3/8	3	.184
93490	R1/8	**1/4**	1/4	1/4	1/2	3-1/2	.246
93491	R5/32	**5/16**	5/16	5/16	5/8	4	.309
93492	R3/16	**3/8**	3/8	3/8	3/4	4	.371
93493	R1/4	**1/2**	1/2	1/2	1	4-1/2	.496

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

◎ : Excellent ○ : Good

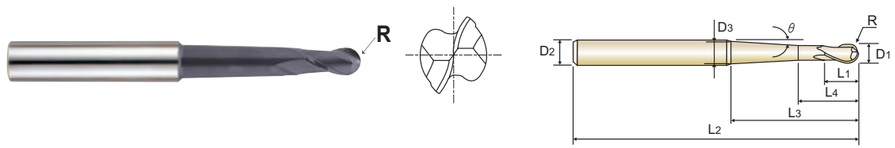
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
			○	◎	◎									

X-POWER END MILLS

EM963 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE BALL NOSE with TAPER NECK

▶ High efficiency milling is possible in deep slotting with projection of the end mill being long.



MG | 2 | 30° | R ±.0005 | PLAIN | P.925

U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Under Neck Parallel Length	Length Below Shank	Overall Length	Neck Diameter	Neck Taper Angle
	R (±.0005)	D1	D2	L1	L4	L3	L2	D3	θ
93526	R1/32	**1/16**	1/4	5/32	15/64	7/8	2-3/8	.096	1° 30´
93527	R1/32	**1/16**	1/4	5/32	15/64	1-5/8	3-1/8	.208	3°
93528	R1/16	**1/8**	1/4	1/4	21/64	2-1/16	3-5/8	.216	1° 30´
93529	R3/32	**3/16**	3/8	3/8	29/64	2-3/8	4-3/8	.288	1° 30´
93530	R1/8	**1/4**	3/8	1/2	5/8	2-1/16	4-3/8	.325	1° 30´
93531	R5/32	**5/16**	1/2	9/16	11/16	2-1/16	4-3/4	.385	1° 30´
93532	R3/16	**3/8**	1/2	11/16	13/16	2-3/8	5-1/16	.458	1° 30´
93533	R1/4	**1/2**	3/4	7/8	1	3-1/4	6-3/8	.618	1° 30´

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

◎ : Excellent ○ : Good

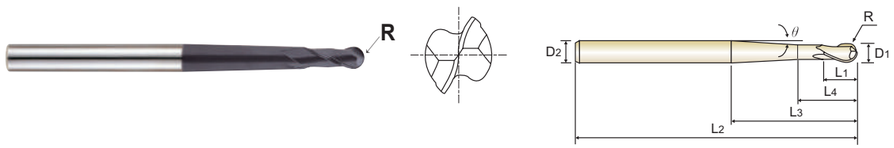
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○		○							

X-POWER END MILLS

EM979 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE BALL NOSE with PENCIL NECK

▶ High efficiency milling is possible in deep slotting with projection of the end mill being long.



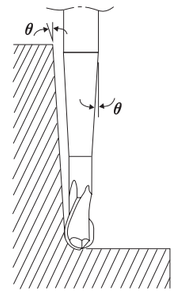
MG | 2 | 30° | R ±.0005 | PLAIN | P.926

◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Under Neck Parallel Length	Length Below Shank	Overall Length	Neck Taper Angle
	R (±.0005)	D1	D2	L1	L4	L3	L2	θ
93534	R3/32	**3/16**	3/8	9/16	.659	3-11/32	7-3/4	2°
93535	R3/32	**3/16**	3/8	9/16	.666	2-13/16	6	2° 30´
93536	R1/8	**1/4**	1/2	3/4	.859	4-7/16	7-3/4	2°
93537	R1/8	**1/4**	1/2	3/4	.856	3-23/32	6	2° 30´
93538	R5/32	**5/16**	1/2	3/4	.868	4-29/32	7-3/4	1° 20´
93539	R5/32	**5/16**	1/2	3/4	.870	3-15/16	6	1° 45´
93540	R3/16	**3/8**	5/8	1-3/16	1.326	4-29/32	7-3/4	2°
93541	R3/16	**3/8**	5/8	1-3/16	1.325	4-3/16	6	2° 30´
93542	R1/4	**1/2**	5/8	1-3/16	1.309	4	7-3/4	1° 20´
93543	R1/4	**1/2**	5/8	1-3/16	1.329	3-3/8	6	1° 45´

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



MILLING ON TAPERED WALL

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○		○							

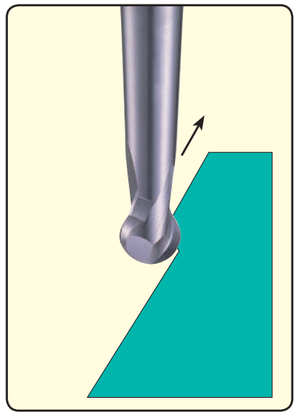
YG X-POWER END MILLS

X-POWER BALL NOSE END MILLS - MMC

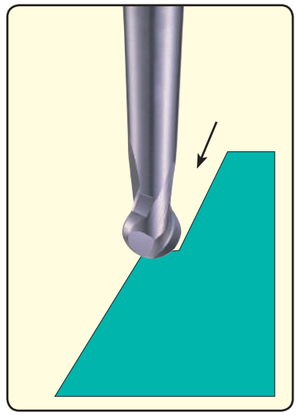
Useful Field Area
- Die & Mold making, Turbine manufacturing and Aircraft Industry, etc.
- Difficult 3-D Forms.
- Profiling of up to HRc 65 high hardened steels and Alloy steels, Nickelbase alloys, Titanium alloys.

Characteristics
- Ultra micro grain carbide which increase both toughness and hardness.
- YG-1's unique X-POWER coating suitable for dry cutting and high speed cutting.
- Oustanding tool geometry and sphere shape ball enables more increased tool life and higher speed and feed operation.

Surpassing Milling Operation



Favorable Back Milling

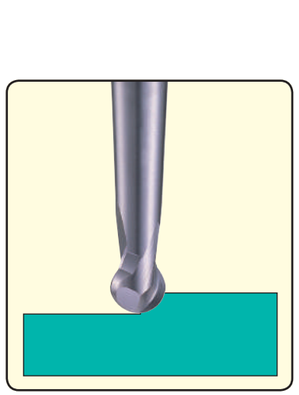


Unfavorable Drilling

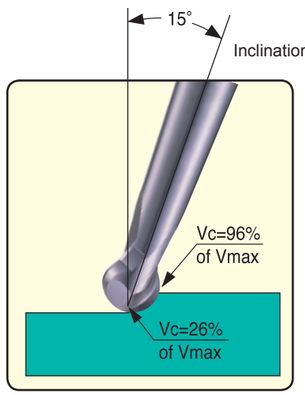
Operating angle 14° ~ 16°, higher speed and feed are possible by decreased cutting resistance at the cutting edges contacting the workpiece.

Excellent surface finish and faster milling process.

Enable to milling with higher speed and feed when Back Milling.



Unfavorable Profiling



Favorable Profiling

When 15° inclination milling operation, more productivity and higher speed and feed are possible.

Decreased cutting force.

Excellent surface roughness and brightness.

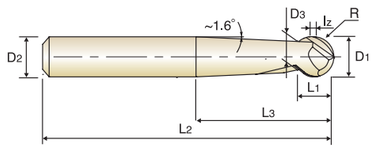
YG X-POWER END MILLS

EM084 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE (MMC-ECONOMY TYPE)

- Designed for copy milling.
- Increased feed rates.
- 15° inclination.
- Easy to regrind.





MG | 2 | 30° | R ±.0005 | PLAIN

P.927

◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Iz
	R (±.0005)	D1	D2	L1	L3	L2	D3	
93288	R1/16	**1/8**	1/4	5/32	1-1/4	3-1/4	.100	.060
93289	R3/32	**3/16**	1/4	7/32	1-1/4	3-1/4	.150	.080
93290	R1/8	**1/4**	1/4	9/32	1-1/4	4	.200	.080
93291	R5/32	**5/16**	5/16	3/8	1-1/2	4	.250	.120
93292	R3/16	**3/8**	3/8	13/32	1-3/4	4	.300	.120
93293	R1/4	**1/2**	1/2	17/32	2-1/4	4-1/4	.400	.120
93294	R5/16	**5/8**	5/8	5/8	2-3/4	6-1/4	.500	.120

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

◎ : Excellent ○ : Good

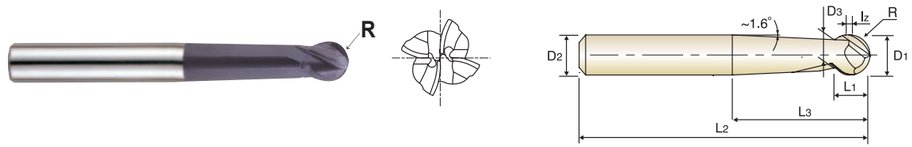
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○		○							

X-POWER END MILLS

EM093 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE (MMC-ECONOMY TYPE)

- Designed for copy milling.
- Increased feed rates.
- 15° inclination.
- Easy to regrind.



MG | 4 | 30° | R ±.0005 | PLAIN | P.928

◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Iz
	R (±.0005)	D1	D2	L1	L3	L2	D3	
93295	R1/16	**1/8**	1/4	5/32	1-1/4	3-1/4	.100	.060
93296	R3/32	**3/16**	1/4	7/32	1-1/4	3-1/4	.150	.080
93297	R1/8	**1/4**	1/4	9/32	1-1/4	4	.200	.080
93298	R5/32	**5/16**	5/16	3/8	1-1/2	4	.250	.120
93299	R3/16	**3/8**	3/8	13/32	1-3/4	4	.300	.120
93300	R1/4	**1/2**	1/2	17/32	2-1/4	4-1/4	.400	.120
93301	R5/16	**5/8**	5/8	5/8	2-3/4	6-1/4	.500	.120

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

◎ : Excellent ○ : Good

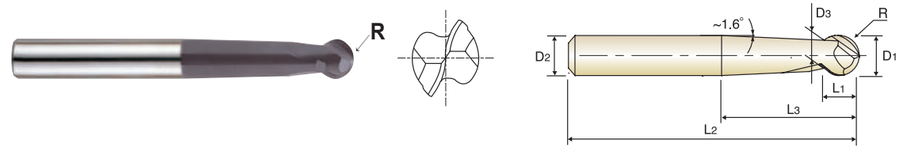
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○		○							

X-POWER END MILLS

EM096 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE (MMC-SPHERE TYPE)

- Designed for copy milling.
- Increased feed rates.
- 15° inclination.
- Sphere Angle : 250°



MG | 2 | 30° | R ±.0005 | PLAIN | P.927

◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (±.0005)	D1	D2	L1	L3	L2	D3
93410	R1/16	**1/8**	1/4	.100	1-1/4	3-1/4	.100
93411	R3/32	**3/16**	1/4	.150	1-1/4	3-1/4	.150
93412	R1/8	**1/4**	1/4	.200	1-1/8	4	.200
93413	R5/32	**5/16**	5/16	.250	1-3/8	4	.250
93414	R3/16	**3/8**	3/8	.300	1-5/8	4	.300
93415	R1/4	**1/2**	1/2	.400	2-3/16	4-1/4	.400
93416	R5/16	**5/8**	5/8	.500	2-3/4	6-1/4	.500

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○		○							

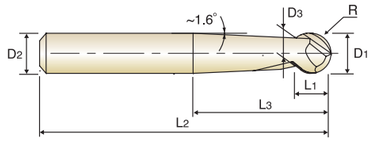
X-POWER END MILLS

EM097 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE (MMC-SPHERE TYPE)

- Designed for copy milling.
- Increased feed rates.
- 15° inclination.
- Sphere Angle : 250°





MG | 4 | 30° | R ±.0005 | PLAIN | P.928

◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (±.0005)	D1	D2	L1	L3	L2	D3
93417	R1/16	**1/8**	1/4	.100	1-1/4	3-1/4	.100
93418	R3/32	**3/16**	1/4	.150	1-1/4	3-1/4	.150
93419	R1/8	**1/4**	1/4	.200	1-1/8	4	.200
93420	R5/32	**5/16**	5/16	.250	1-3/8	4	.250
93421	R3/16	**3/8**	3/8	.300	1-5/8	4	.300
93422	R1/4	**1/2**	1/2	.400	2-3/16	4-1/4	.400
93423	R5/16	**5/8**	5/8	.500	2-3/4	6-1/4	.500

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

◎ : Excellent ○ : Good

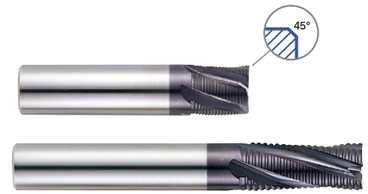
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○		○							

X-POWER END MILLS

EM666 SERIES PLAIN SHANK
EM156 SERIES PLAIN SHANK

CARBIDE, MULTI FLUTE 20° HELIX STUB & LONG LENGTH FINE PITCH ROUGHING

- Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- High velocity milling of hardened steels.
- For dry and wet milling.
- Fast chip ejection.





MG | FINE | 3-5 | 20° | PLAIN | P.929

◆ U.S.A Stock

EM666 Series ■ STUB LENGTH

Unit : Inch

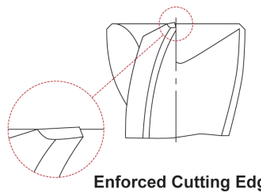
EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
93270	**1/4**	1/4	5/16	2-1/8	3
93271	**5/16**	5/16	3/8	2-1/4	3
93272	**3/8**	3/8	9/16	2-1/2	3
93273	**1/2**	1/2	5/8	3	4
93274	**5/8**	5/8	7/8	3-1/4	4
93275	**3/4**	3/4	1	3-3/4	4
93276	**1**	1	1	4	5

EM156 Series ■ LONG LENGTH

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
93112	**1/4**	1/4	3/4	2-1/2	3
93113	**5/16**	5/16	3/4	2-1/2	3
93114	**3/8**	3/8	7/8	2-1/2	3
93115	**1/2**	1/2	1	3	4
93116	**5/8**	5/8	1-1/4	3-1/2	4
93117	**3/4**	3/4	1-5/8	4	4
93118	**1**	1	1-3/4	4	5

Mill Dia. (inch)	Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
1/4~3/8	0 ~ -.0022	0 ~ -.0003
1/2~5/8	0 ~ -.0027	
3/4~1	0 ~ -.0033	



Enforced Cutting Edge

◎ : Excellent ○ : Good

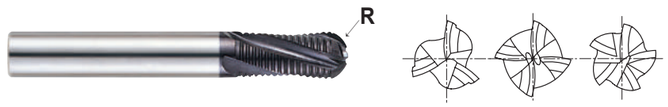
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○		○	○							

X-POWER END MILLS

EM662 SERIES PLAIN SHANK

CARBIDE, MULTI FLUTE 20° HELIX LONG LENGTH FINE PITCH ROUGHING BALL NOSE

- Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- High velocity milling of hardened steels.
- For dry and wet milling.
- Fast chip ejection.



MG | FINE | 3-5 | 20° | R ±.001 | PLAIN

P.930

◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
	R (±.001)					
93263	R1/8	**1/4**	1/4	3/4	2-1/2	3
93264	R5/32	**5/16**	5/16	3/4	2-1/2	3
93265	R3/16	**3/8**	3/8	7/8	2-1/2	3
93266	R1/4	**1/2**	1/2	1	3	4
93267	R5/16	**5/8**	5/8	1-1/4	3-1/2	4
93268	R3/8	**3/4**	3/4	1-5/8	4	4
93269	R1/2	**1**	1	1-3/4	4	5

Mill Dia. (inch)	Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
1/4~3/8	0 ~ -.0022	0 ~ -.0003
1/2~5/8	0 ~ -.0027	
3/4~1	0 ~ -.0033	

◎ : Excellent ○ : Good

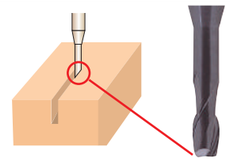
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

X-POWER END MILLS

EM966 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE for RIB PROCESSING

- For deep slotting & pocketing.
- For depths of 6 to 10X cutting diameter.
- Machine carbon steel, alloy steel, tool steel, die and mold steels.
- Suitable for high speed cutting and high precision machining.
- Designed with reinforced shank for higher stability and rigidity.
- Long neck design for deep machining near walls.





MG | 2 | 30° | PLAIN

P.930

◆ U.S.A Stock

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	D_1	D_2	L_1	L_3	L_2	D_3
93548	**1/32**	1/8	3/64	7/32	2	.029
93549	**1/32**	1/8	3/64	5/16	2	.029
93550	**3/64**	1/8	1/16	7/32	2	.045
93551	**3/64**	1/8	1/16	9/32	2	.045
93552	**3/64**	1/8	1/16	1/2	2	.045
93553	**1/16**	1/8	3/32	5/16	2	.060
93554	**1/16**	1/8	3/32	3/8	2	.060
93555	**1/16**	1/8	3/32	1/2	2	.060
93556	**1/16**	1/8	3/32	5/8	2	.060
93557	**5/64**	1/8	1/8	1/2	2	.076
93558	**5/64**	1/8	1/8	5/8	2	.076
93559	**3/32**	1/8	9/64	1/2	2	.090
93560	**3/32**	1/8	9/64	5/8	2	.090
93561	**1/8**	1/4	3/16	9/16	2-1/4	.120
93562	**1/8**	1/4	3/16	3/4	2-1/4	.120

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~-.0006	0~-.0003

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

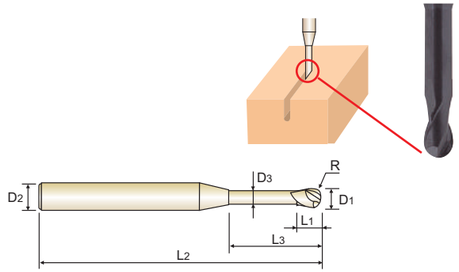
X-POWER END MILLS

EM967 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING

- For 3-D milling, deep slotting and pocketing.
- For depths of 6 to 10X cutting diameter.
- Machine carbon steel, alloy steel, tool steel, die and mold steels.
- Suitable for high speed cutting and high precision machining.
- Designed with reinforced shank for higher stability and rigidity.
- Long neck design for deep machining near walls.





MG | 2 | 30° | R ±.0005 | PLAIN

P.931

◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (±.0005)	D1	D2	L1	L3	L2	D3
93563	R1/64	**1/32**	1/8	3/64	7/32	2	.029
93564	R1/64	**1/32**	1/8	3/64	5/16	2	.029
93565	R.0234	**3/64**	1/8	1/16	7/32	2	.045
93566	R.0234	**3/64**	1/8	1/16	9/32	2	.045
93567	R.0234	**3/64**	1/8	1/16	1/2	2	.045
93568	R1/32	**1/16**	1/8	3/32	5/16	2	.060
93569	R1/32	**1/16**	1/8	3/32	1/2	2	.060
93570	R1/32	**1/16**	1/8	3/32	5/8	2	.060
93571	R.0391	**5/64**	1/8	1/8	5/16	2	.076
93572	R.0391	**5/64**	1/8	1/8	5/8	2	.076
93573	R.0391	**5/64**	1/8	1/8	3/4	2	.076
93574	R3/64	**3/32**	1/8	9/64	5/8	2	.090
93575	R3/64	**3/32**	1/8	9/64	3/4	2	.090
93576	R1/16	**1/8**	1/4	3/16	5/8	2-1/4	.120
93577	R1/16	**1/8**	1/4	3/16	3/4	2-1/4	.120

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~-.0006	0~-.0003

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

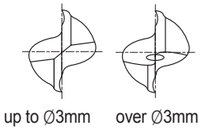
X-POWER END MILLS

EM810 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE SHORT LENGTH

- Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- Superior workpiece finishes.
- Increased feed rates.





MG | 2 | 30° | PLAIN

P.912, 914

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	Metric	Inch			
EM810901	**1.0**	**.0394**	6	2.5	40
EM810902	**1.5**	**.0591**	6	4	40
EM810020	**2.0**	**.0787**	4	6	40
EM810903	**2.0**	**.0787**	6	6	40
EM810025	**2.5**	**.0984**	4	8	40
EM810904	**2.5**	**.0984**	6	8	40
EM810030	**3.0**	**.1181**	6	8	45
EM810035	**3.5**	**.1378**	6	10	45
EM810040	**4.0**	**.1575**	6	11	45
EM810045	**4.5**	**.1772**	6	11	45
EM810050	**5.0**	**.1969**	6	13	50
EM810055	**5.5**	**.2165**	6	13	50
EM810060	**6.0**	**.2362**	6	13	50
EM810065	**6.5**	**.2559**	8	16	60
EM810070	**7.0**	**.2756**	8	16	60
EM810075	**7.5**	**.2953**	8	16	60
EM810080	**8.0**	**.3150**	8	19	60
EM810085	**8.5**	**.3346**	10	19	70
EM810090	**9.0**	**.3543**	10	19	70
EM810095	**9.5**	**.3740**	10	19	70
EM810100	**10.0**	**.3937**	10	22	70
EM810105	**10.5**	**.4134**	12	22	75
EM810110	**11.0**	**.4330**	12	22	75
EM810115	**11.5**	**.4527**	12	22	75
EM810120	**12.0**	**.4724**	12	26	75
EM810906	**13.0**	**.5118**	12	26	85
EM810140	**14.0**	**.5512**	14	26	85
EM810905	**14.0**	**.5512**	16	26	85
EM810908	**15.0**	**.5905**	16	26	90

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○		○	○							

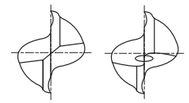
X-POWER END MILLS

EM810 SERIES PLAIN SHANK
EM816 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE SHORT& LONG LENGTH

- Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- Superior workpiece finishes.
- Increased feed rates.





up to Ø3mm over Ø3mm

MG | 2 | 30° | PLAIN P.912

◇ Call for Availability

EM810 Series ■ SHORT LENGTH

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	Metric	Inch			
EM810160	16.0	.6299	16	32	100
EM810909	17.0	.6692	16	32	100
EM810180	18.0	.7087	18	32	100
EM810911	19.0	.7480	20	32	100
EM810200	20.0	.7874	20	38	105
EM810220	22.0	.8661	20	38	105
EM810240	24.0	.9449	25	45	120
EM810250	25.0	.9843	25	45	120

EM816 Series ■ LONG LENGTH

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	Metric	Inch			
EM816020	2.0	.0787	4	8	40
EM816030	3.0	.1181	6	12	50
EM816040	4.0	.1575	6	15	50
EM816050	5.0	.1969	6	20	60
EM816060	6.0	.2362	6	20	60
EM816080	8.0	.3150	8	25	70
EM816100	10.0	.3937	10	30	90
EM816120	12.0	.4724	12	30	90
EM816140	14.0	.5512	16	40	110
EM816160	16.0	.6299	16	50	110
EM816180	18.0	.7087	20	50	110
EM816200	20.0	.7874	20	55	110
EM816250	25.0	.9843	25	75	140

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

◎ : Excellent ○ : Good

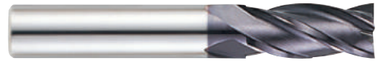
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○		○	○							

X-POWER END MILLS

EM811 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE SHORT LENGTH

- Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- 4 flute allows for better workpiece finishes.
- Increased production.





MG | 4 | 30° | PLAIN P.913

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	Metric	Inch			
EM811020	2.0	.0787	4	6	40
EM811901	2.0	.0787	6	6	40
EM811025	2.5	.0984	4	8	40
EM811902	2.5	.0984	6	8	40
EM811030	3.0	.1181	6	8	45
EM811035	3.5	.1378	6	10	45
EM811040	4.0	.1575	6	11	45
EM811045	4.5	.1772	6	11	45
EM811050	5.0	.1969	6	13	50
EM811055	5.5	.2165	6	13	50
EM811060	6.0	.2362	6	13	50
EM811065	6.5	.2559	8	16	60
EM811070	7.0	.2756	8	16	60
EM811075	7.5	.2953	8	16	60
EM811080	8.0	.3150	8	19	60
EM811085	8.5	.3346	10	19	70
EM811090	9.0	.3543	10	19	70
EM811095	9.5	.3740	10	19	70
EM811100	10.0	.3937	10	22	70
EM811105	10.5	.4134	12	22	75
EM811110	11.0	.4330	12	22	75
EM811115	11.5	.4527	12	22	75
EM811120	12.0	.4724	12	26	75
EM811904	13.0	.5118	12	26	85
EM811140	14.0	.5512	14	26	85
EM811905	14.0	.5512	12	26	85
EM811903	14.0	.5512	16	26	85
EM811906	15.0	.5905	16	26	90
EM811160	16.0	.6299	16	32	100

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○		○	○							

X-POWER END MILLS

EM811 SERIES PLAIN SHANK
EM817 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE SHORT& LONG LENGTH

- Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- 4 flute allows for better workpiece finishes.
- Increased production.





MG | 4 | 30° | PLAIN | P.913

◇ Call for Availability

EM811 Series ■ SHORT LENGTH

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	Metric	Inch			
EM811907	17.0	.6692	16	32	100
EM811180	18.0	.7087	18	32	100
EM811908	18.0	.7087	16	32	100
EM811909	19.0	.7480	20	32	100
EM811200	20.0	.7874	20	38	105
EM811220	22.0	.8661	20	38	105
EM811240	24.0	.9449	25	45	120
EM811250	25.0	.9843	25	45	120

EM817 Series ■ LONG LENGTH

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	Metric	Inch			
EM817020	2.0	.0787	4	8	40
EM817030	3.0	.1181	6	12	50
EM817040	4.0	.1575	6	15	50
EM817050	5.0	.1969	6	20	60
EM817060	6.0	.2362	6	20	60
EM817080	8.0	.3150	8	25	70
EM817100	10.0	.3937	10	30	90
EM817120	12.0	.4724	12	30	90
EM817140	14.0	.5512	16	40	110
EM817160	16.0	.6299	16	50	110
EM817180	18.0	.7087	20	50	110
EM817200	20.0	.7874	20	55	110
EM817250	25.0	.9843	25	75	140

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

◎ : Excellent ○ : Good

Series	P					H	M	K	N					S	
	Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
	~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
EM811	○	◎	◎	◎	○		○	○							
EM817	○	◎	◎	◎	○			○							

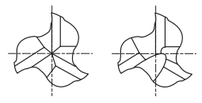
X-POWER END MILLS

EM895 SERIES PLAIN SHANK

CARBIDE, 3 FLUTE 38° HELIX SHORT LENGTH

- Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- Possesses the advantage of 2 flute and 4 flute end mill.
- Superior workpiece finishes.





under Ø3mm from Ø3mm

MG | 3 | 38° | PLAIN | P.932

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	Metric	Inch			
EM895010	1.0	.0394	3	2.5	38
EM895015	1.5	.0591	4	5	50
EM895025	2.5	.0984	3	7	38
EM895030	3.0	.1181	3	10	38
EM895901	3.0	.1181	6	10	50
EM895035	3.5	.1378	4	12	50
EM895902	3.5	.1378	6	12	50
EM895040	4.0	.1575	4	12	50
EM895903	4.0	.1575	6	12	50
EM895045	4.5	.1772	6	14	57
EM895050	5.0	.1969	5	14	50
EM895904	5.0	.1969	6	14	57
EM895060	6.0	.2362	6	16	57
EM895080	8.0	.3150	8	20	63
EM895100	10.0	.3937	10	22	72
EM895120	12.0	.4724	12	25	73
EM895140	14.0	.5512	14	25	75
EM895160	16.0	.6299	16	32	82
EM895180	18.0	.7087	18	32	92
EM895200	20.0	.7874	20	38	92

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○		○	○							

X-POWER END MILLS

EM810 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE MINIATURE

- High precision milling in medical, optical, electronics and aero space industries.
- Excellent performance on hardened steel



MG | 2 | 30° | PLAIN P.914

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	Metric	Inch			
EM810004	0.4	.0157	3	0.8	40
EM810005	0.5	.0197	3	1	40
EM810006	0.6	.0236	3	1.2	40
EM810007	0.7	.0276	3	1.4	40
EM810008	0.8	.0315	3	1.6	40
EM810009	0.9	.0354	3	2	40
EM810010	1.0	.0394	4	2.5	40
EM810011	1.1	.0433	4	2.5	40
EM810012	1.2	.0472	4	4	40
EM810013	1.3	.0512	4	4	40
EM810014	1.4	.0551	4	4	40
EM810015	1.5	.0591	4	4	40

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

X-POWER END MILLS

EM818 SERIES PLAIN SHANK
EM819 SERIES PLAIN SHANK

CARBIDE, 2&4 FLUTE LONG LENGTH CORNER RADIUS

- Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- Superior workpiece finishes.
- Increased feed rates.



MG | 2&4 | 30° | PLAIN P.933

◇ Call for Availability

EM818(2 FLUTE), EM819(4 FLUTE) Series

Unit : mm

EDP No.		Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
2 FLUTE	4 FLUTE	R	Metric	Inch			
EM818030	EM819030	R0.3	3.0	.1181	6	12	50
EM818040	EM819040	R0.3	4.0	.1575	6	15	50
EM818911	EM819911	R0.5	4.0	.1575	6	15	50
EM818050	EM819050	R0.3	5.0	.1969	6	20	60
EM818912	EM819912	R0.5	5.0	.1969	6	20	60
EM818913	EM819913	R0.3	6.0	.2362	6	20	60
EM818060	EM819060	R0.5	6.0	.2362	6	20	60
EM818901	EM819901	R1.0	6.0	.2362	6	20	60
EM818914	EM819914	R0.3	8.0	.3150	8	25	70
EM818080	EM819080	R0.5	8.0	.3150	8	25	70
EM818902	EM819902	R1.0	8.0	.3150	8	25	70
EM818903	EM819903	R1.5	8.0	.3150	8	25	70
EM818904	EM819904	R2.0	8.0	.3150	8	25	70
EM818915	EM819915	R0.3	10.0	.3937	10	30	90
EM818100	EM819100	R0.5	10.0	.3937	10	30	90
EM818905	EM819905	R1.0	10.0	.3937	10	30	90
EM818906	EM819906	R1.5	10.0	.3937	10	30	90
EM818907	EM819907	R2.0	10.0	.3937	10	30	90
EM818120	EM819120	R0.5	12.0	.4724	12	30	90
EM818908	EM819908	R1.0	12.0	.4724	12	30	90
EM818909	EM819909	R1.5	12.0	.4724	12	30	90
EM818910	EM819910	R2.0	12.0	.4724	12	30	90
EM818160	EM819160	R0.5	16.0	.6299	16	50	110
EM818916	EM819916	R1.0	16.0	.6299	16	50	110
EM818917	EM819917	R1.5	16.0	.6299	16	50	110
EM818918	EM819918	R2.0	16.0	.6299	16	50	110
EM818200	EM819200	R0.5	20.0	.7874	20	55	110
EM818919	EM819919	R1.0	20.0	.7874	20	55	110
EM818920	EM819920	R1.5	20.0	.7874	20	55	110
EM818921	EM819921	R2.0	20.0	.7874	20	55	110

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

◎ : Excellent ○ : Good

Series	P					H	M	K	N						S	
	Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
	~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
EM811	○	◎	◎	◎	○										
EM817	○	◎	◎	◎	○		○	○							

X-POWER END MILLS

EM905 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE 45° HELIX SHORT LENGTH CORNER RADIUS

- No line is marked on the boundary section during step milling because this tool has radius on the end faces of the shank
- High speed cutting in wide deep wall with step milling
- Suitable for deep side milling, Helical Milling, Contour Milling



MG | 4 | 45° | PLAIN

P.916

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R	D1		D2	L1	L3	L2	D3
EM905100	R0.5	10.0	.3937	8	15	19.2	130	7.5
EM905901	R1.0	10.0	.3937	8	15	19.2	130	7.5
EM905120	R0.5	12.0	.4724	10	18	22.2	150	9.5
EM905902	R1.0	12.0	.4724	10	18	22.2	150	9.5
EM905140	R0.5	14.0	.5512	12	21	25.2	160	11.5
EM905903	R1.0	14.0	.5512	12	21	25.2	160	11.5
EM905180	R0.5	18.0	.7087	16	27	31.2	180	15.5
EM905904	R1.0	18.0	.7087	16	27	31.2	180	15.5
EM905220	R0.5	22.0	.8661	20	33	37.2	200	19.5
EM905905	R1.0	22.0	.8661	20	33	37.2	200	19.5

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○	○	○							

X-POWER END MILLS

EM839 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS

- Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- Superior workpiece finishes.
- Increased feed rates.



MG | 4 | 30° | PLAIN

P.934

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R	D1		D2	L1	L3	L2	D3
EM839020	R0.2	2.0	.0787	6	2.5	5	50	1.9
EM839025	R0.25	2.5	.0984	6	3	6	50	2.4
EM839030	R0.3	3.0	.1181	6	4	7	50	2.8
EM839035	R0.35	3.5	.1378	6	4.5	8	50	3.2
EM839040	R0.4	4.0	.1575	6	5	9	50	3.7
EM839050	R0.5	5.0	.1969	6	6	12	50	4.6
EM839060	R0.6	6.0	.2362	6	7	14	55	5.6
EM839080	R0.8	8.0	.3150	8	10	18	60	7.4
EM839100	R1.0	10.0	.3937	10	12	25	70	9.4
EM839120	R1.2	12.0	.4724	12	15	30	80	11.4
EM839160	R1.6	16.0	.6299	16	18	35	90	15.4

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○		○							

X-POWER END MILLS

EM812 SERIES PLAIN SHANK
EM834 SERIES PLAIN SHANK

CARBIDE, 6&8 FLUTE 45° HELIX LONG & EXTRA LONG LENGTH

- Designed to machine hardened materials.
- High speed cutting and finish milling with high feed rates.
- Superior workpiece finishes.
- Superior wear resistant.
- Suitable for dry milling.



MG | 6&8 | 45° | PLAIN

P.918, 919

◇ Call for Availability

EM812 Series ■ LONG LENGTH

Unit : mm

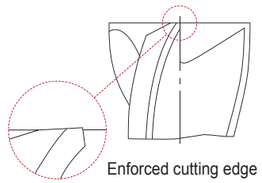
EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flute
	Metric	Inch				
EM812060	6.0	.2362	6	13	57	6
EM812070	7.0	.2756	8	16	63	6
EM812080	8.0	.3150	8	19	63	6
EM812090	9.0	.3543	10	19	72	6
EM812100	10.0	.3937	10	22	72	6
EM812120	12.0	.4724	12	26	83	6
EM812140	14.0	.5512	14	26	83	6
EM812901	14.0	.5512	16	26	83	6
EM812160	16.0	.6299	16	32	92	6
EM812180	18.0	.7087	18	32	92	8
EM812200	20.0	.7874	20	38	104	8
EM812250	25.0	.9843	25	44	104	8

EM834 Series ■ EXTRA LONG LENGTH

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flute
	Metric	Inch				
EM834060	6.0	.2362	6	26	70	6
EM834080	8.0	.3150	8	36	90	6
EM834100	10.0	.3937	10	46	100	6
EM834120	12.0	.4724	12	56	110	6
EM834160	16.0	.6299	16	66	130	6
EM834200	20.0	.7874	20	76	140	6
EM834250	25.0	.9843	25	92	180	6

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



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

X-POWER END MILLS

EM835 SERIES PLAIN SHANK

CARBIDE, 6 FLUTE 45° HELIX LONG LENGTH CORNER RADIUS

- Designed to machine hardened materials.
- High speed cutting and finish milling with high feed rates.
- Superior workpiece finishes.
- Superior wear resistant.
- Suitable for dry milling.



MG | 6 | 45° | PLAIN

P.919

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	R	Metric	Inch			
EM835060	R0.5	6.0	.2362	6	13	70
EM835080	R0.5	8.0	.3150	8	19	90
EM835100	R0.5	10.0	.3937	10	22	100
EM835901	R1.0	10.0	.3937	10	22	100
EM835120	R0.5	12.0	.4724	12	26	110
EM835902	R1.0	12.0	.4724	12	26	110
EM835160	R1.0	16.0	.6299	16	32	130
EM835903	R1.5	16.0	.6299	16	32	130
EM835200	R1.0	20.0	.7874	20	38	140
EM835904	R1.5	20.0	.7874	20	38	140
EM835905	R2.0	20.0	.7874	20	38	140

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

X-POWER END MILLS

EM897 SERIES PLAIN SHANK

CARBIDE, 6 FLUTE 45° HELIX STUB LENGTH CORNER RADIUS

- High speed cutting
- Excellent performance in dry cutting
- Cutting up to three times length of the cutting diameter due to reduced neck.



MG | 6 | 45° | PLAIN | P.934

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R	D_1		D_2	L_1	L_3	L_2	D_3
EM897060	R0.5	**6.0**	**.2362**	6	6	14	50	5.7
EM897080	R0.5	**8.0**	**.3150**	8	8	24	60	7.65
EM897100	R1.0	**10.0**	**.3937**	10	10	30	70	9.65
EM897120	R1.0	**12.0**	**.4724**	12	12	30	75	11.6

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

X-POWER END MILLS

EM876 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE SHORT LENGTH BALL NOSE

- Economic type with short overall length.
- Radius tolerance ±0.02mm & short length of cut.



MG | 2 | 30° | R ±0.02 | PLAIN | P.920

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
		Metric	Inch			
	R (±0.02)					
EM876010	R0.5	**1.0**	**.0394**	3	3	38
EM876012	R0.6	**1.2**	**.0472**	3	3	38
EM876015	R0.75	**1.5**	**.0591**	3	3	38
EM876020	R1.0	**2.0**	**.0787**	6	3	50
EM876030	R1.5	**3.0**	**.1181**	6	4	50
EM876040	R2.0	**4.0**	**.1575**	6	5	54
EM876050	R2.5	**5.0**	**.1969**	6	6	54
EM876060	R3.0	**6.0**	**.2362**	6	7	54
EM876070	R3.5	**7.0**	**.2756**	8	8	58
EM876080	R4.0	**8.0**	**.3150**	8	9	58
EM876090	R4.5	**9.0**	**.3543**	10	10	66
EM876100	R5.0	**10.0**	**.3937**	10	11	66
EM876120	R6.0	**12.0**	**.4724**	12	12	73
EM876140	R7.0	**14.0**	**.5512**	14	14	75
EM876160	R8.0	**16.0**	**.6299**	16	16	82
EM876180	R9.0	**18.0**	**.7087**	18	18	84
EM876200	R10.0	**20.0**	**.7874**	20	20	92
EM876250	R12.5	**25.0**	**.9843**	25	25	104

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○		○							

X-POWER END MILLS

EM813 / EM815 SERIES PLAIN SHANK
EM823 / EM825 SERIES FLAT SHANK

CARBIDE, 2&4 FLUTE LONG LENGTH BALL NOSE

- Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- For copy - milling machines.



MG | 2&4 | 30° | R ±0.02 | PLAIN | FLAT

P.920, 921

◇ Call for Availability

EM813, EM823(2 FLUTE), EM815, EM825(4 FLUTE) Series

Unit : mm

EDP No.				Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
2 FLUTE		4 FLUTE			Metric	Inch			
PLAIN	FLAT	PLAIN	FLAT	R (±0.02)					
93302	—	**93335**	—	R0.5	**1.0**	**.0394**	4	2.5	50
93303	—	—	—	R0.6	**1.2**	**.0472**	4	3	50
93304	—	**93336**	—	R0.75	**1.5**	**.0591**	4	4	50
93305	**93320**	**93337**	**93352**	R1.0	**2.0**	**.0787**	6	5	50
93306	**93321**	**93338**	**93353**	R1.5	**3.0**	**.1181**	6	8	60
93307	**93322**	**93339**	**93354**	R2.0	**4.0**	**.1575**	6	8	70
93308	**93323**	**93340**	**93355**	R2.5	**5.0**	**.1969**	6	10	80
93309	**93324**	**93341**	**93356**	R3.0	**6.0**	**.2362**	6	12	90
93310	**93325**	**93342**	**93357**	R3.5	**7.0**	**.2756**	8	14	90
93311	**93326**	**93343**	**93358**	R4.0	**8.0**	**.3150**	8	14	100
93312	**93327**	**93344**	**93359**	R4.5	**9.0**	**.3543**	10	18	100
93313	**93328**	**93345**	**93360**	R5.0	**10.0**	**.3937**	10	18	100
93314	**93329**	**93346**	**93361**	R6.0	**12.0**	**.4724**	12	22	110
93315	**93330**	**93347**	**93362**	R7.0	**14.0**	**.5512**	14	26	110
93316	**93331**	**93348**	**93363**	R8.0	**16.0**	**.6299**	16	30	140
93317	**93332**	**93349**	**93364**	R9.0	**18.0**	**.7087**	18	34	140
93318	**93333**	**93350**	**93365**	R10.0	**20.0**	**.7874**	20	38	160
93319	**93334**	**93351**	**93366**	R12.5	**25.0**	**.9843**	25	50	180

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

◎ : Excellent ○ : Good

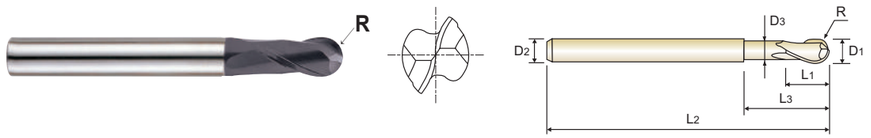
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○		○							

X-POWER END MILLS

EM899 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE MEDIUM LENGTH BALL NOSE

- Deep slotting milling is possible by reduced neck.
- High efficiency milling is possible in deep slotting with projection of the end mill being long.



MG | 2 | 30° | R ±0.01 | PLAIN

P.922

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R (±0.01)	D1		D2	L1	L3	L2	D3
EM899030	R1.5	**3.0**	**.1181**	6	8	—	70	—
EM899040	R2.0	**4.0**	**.1575**	6	8	—	70	—
EM899050	R2.5	**5.0**	**.1969**	6	12	—	80	—
EM899060	R3.0	**6.0**	**.2362**	6	12	22	80	5.8
EM899070	R3.5	**7.0**	**.2756**	8	14	—	90	—
EM899080	R4.0	**8.0**	**.3150**	8	14	27	90	7.8
EM899100	R5.0	**10.0**	**.3937**	10	18	31	100	9.8
EM899120	R6.0	**12.0**	**.4724**	12	22	35	110	11.8
EM899140	R7.0	**14.0**	**.5512**	12	26	—	120	—
EM899160	R8.0	**16.0**	**.6299**	16	30	50	140	15.8
EM899180	R9.0	**18.0**	**.7087**	16	34	—	140	—
EM899200	R10.0	**20.0**	**.7874**	20	38	58	160	19.8
EM899250	R12.5	**25.0**	**.9843**	25	55	75	180	24.8

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○		○							

X-POWER END MILLS

EM838 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG REACH BALL NOSE

▶ Longer overall length than EM813 types and suitable for machining deeply located area.



MG | 2 | 30° | R ±0.02 | PLAIN P.923

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	R (±0.02)	Metric	Inch			
EM838020	R1.0	**2.0**	**.0787**	3	6	80
EM838030	R1.5	**3.0**	**.1181**	3	8	100
EM838040	R2.0	**4.0**	**.1575**	4	8	100
EM838050	R2.5	**5.0**	**.1969**	6	10	120
EM838060	R3.0	**6.0**	**.2362**	6	10	120
EM838080	R4.0	**8.0**	**.3150**	8	14	140
EM838100	R5.0	**10.0**	**.3937**	10	18	180
EM838120	R6.0	**12.0**	**.4724**	12	22	200
EM838160	R8.0	**16.0**	**.6299**	16	30	250
EM838200	R10.0	**20.0**	**.7874**	20	38	250

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○		○							

X-POWER END MILLS

EM865 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE MINIATURE BALL NOSE

▶ High precision milling in medical, optical, electronics and aerospace industrials.
▶ Excellent performance at dry cutting conditon.
▶ Excellent performance on hardened steel.



MG | 2 | 30° | R ±0.01 | PLAIN P.929

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	R (±0.01)	Metric	Inch			
93424	R0.30	**0.6**	**.0236**	3	1.1	40
93425	R0.35	**0.7**	**.0276**	3	1.5	40
93426	R0.40	**0.8**	**.0315**	3	2.0	40
93427	R0.45	**0.9**	**.0354**	3	2.2	40
93428	R0.50	**1.0**	**.0394**	3	2.5	40
93429	R0.55	**1.1**	**.0433**	3	3.0	40
93430	R0.60	**1.2**	**.0472**	3	3.0	40
93431	R0.65	**1.3**	**.0512**	3	3.5	40
93432	R0.70	**1.4**	**.0551**	3	3.5	40
93433	R0.75	**1.5**	**.0591**	3	4.0	40

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

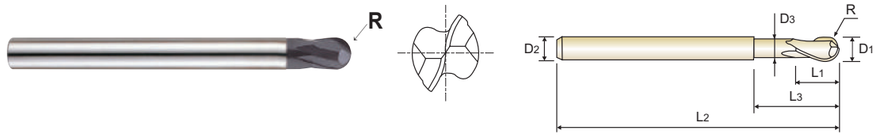
X-POWER END MILLS

EM868 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE 15° HELIX STUB CUT LENGTH BALL NOSE for OVER HRc55

HRc55 ~ HRc70

- Suitable for HRc55~HRc70 high hardened materials.
- Strong cutting edges and higher tool rigidity.



MG | 2 | 15° | R ±0.01 | PLAIN | P.924

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R (±0.01)	D1		D2	L1	L3	L2	D3
EM868010	R0.5	**1.0**	**.0394**	4	1	2.2	50	0.95
EM868901	R0.5	**1.0**	**.0394**	6	1	2.2	50	0.95
EM868012	R0.6	**1.2**	**.0472**	4	1.2	2.6	50	1.1
EM868015	R0.75	**1.5**	**.0591**	4	1.5	3	50	1.4
EM868020	R1.0	**2.0**	**.0787**	6	2	4	50	1.9
EM868030	R1.5	**3.0**	**.1181**	6	3	6	60	2.9
EM868040	R2.0	**4.0**	**.1575**	6	4	8	70	3.9
EM868050	R2.5	**5.0**	**.1969**	6	5	10	80	4.9
EM868060	R3.0	**6.0**	**.2362**	6	6	12	90	5.9
EM868070	R3.5	**7.0**	**.2756**	8	7	14	90	6.9
EM868080	R4.0	**8.0**	**.3150**	8	8	16	100	7.9
EM868090	R4.5	**9.0**	**.3543**	10	9	18	100	8.9
EM868100	R5.0	**10.0**	**.3937**	10	10	20	100	9.9
EM868120	R6.0	**12.0**	**.4724**	12	12	24	110	11.9
EM868140	R7.0	**14.0**	**.5512**	14	14	28	110	13.8
EM868160	R8.0	**16.0**	**.6299**	16	16	32	140	15.8
EM868180	R9.0	**18.0**	**.7087**	18	18	36	140	17.8
EM868200	R10.0	**20.0**	**.7874**	20	20	40	160	19.8
EM868250	R12.5	**25.0**	**.9843**	25	25	50	180	24.8

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

◎ : Excellent ○ : Good

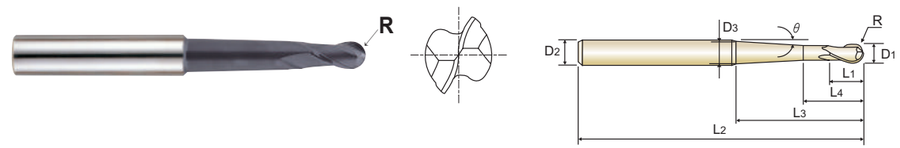
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
			○	◎	◎									

X-POWER END MILLS

EM902 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE BALL NOSE with TAPER NECK

- High efficiency milling is possible in deep slotting with projection of the end mill being long.



MG | 2 | 30° | R ±0.01 | PLAIN | P.925

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Under Neck Parallel Length	Length Below Shank	Overall Length	Neck Diameter	Neck Taper Angle
		Metric	Inch							
	R (±0.01)	D1		D2	L1	L4	L3	L2	D3	θ
EM902010	R0.5	**1.0**	**.0394**	6	2	4	23	60	2.0	1° 30´
EM902901	R0.5	**1.0**	**.0394**	6	2	4	23	60	4.3	5°
EM902902	R0.5	**1.0**	**.0394**	6	2	4	42	80	5.0	3°
EM902020	R1.0	**2.0**	**.0787**	6	4	6	23	60	2.9	1° 30´
EM902903	R1.0	**2.0**	**.0787**	6	4	6	23	60	5.0	5°
EM902904	R1.0	**2.0**	**.0787**	6	4	6	41	80	5.7	3°
EM902030	R1.5	**3.0**	**.1181**	6	6	8	32	70	5.6	3°
EM902905	R1.5	**3.0**	**.1181**	6	6	8	52	90	5.3	1° 30´
EM902040	R2.0	**4.0**	**.1575**	6	8	10	28	70	6.0	3°
EM902906	R2.0	**4.0**	**.1575**	6	8	10	49	90	6.0	1° 30´
EM902050	R2.5	**5.0**	**.1969**	8	10	12	41	90	8.0	3°
EM902907	R2.5	**5.0**	**.1969**	8	10	12	61	110	7.6	1° 30´
EM902060	R3.0	**6.0**	**.2362**	8	12	15	34	90	8.0	3°
EM902908	R3.0	**6.0**	**.2362**	8	12	15	53	110	8.0	1° 30´
EM902080	R4.0	**8.0**	**.3150**	10	14	17	36	100	10.0	3°
EM902909	R4.0	**8.0**	**.3150**	10	14	17	55	120	10.0	1° 30´
EM902100	R5.0	**10.0**	**.3937**	12	18	21	40	110	12.0	3°
EM902910	R5.0	**10.0**	**.3937**	12	18	21	59	130	12.0	1° 30´
EM902120	R6.0	**12.0**	**.4724**	16	22	25	63	140	16.0	3°
EM902911	R6.0	**12.0**	**.4724**	16	22	25	83	160	15.0	1° 30´

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

◎ : Excellent ○ : Good

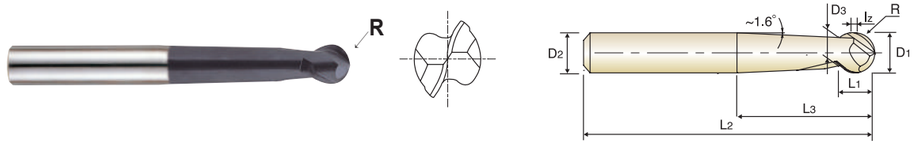
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○										

X-POWER END MILLS

EM669 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE (MMC-ECONOMY TYPE)

- Designed for copy milling.
- Increased feed rates.
- 15° inclination.
- Easy to regrind.



MG | 2 | 30° | R ±0.01 | PLAIN

P.927

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Iz
		Metric	Inch						
	R (±0.01)	D1		D2	L1	L3	L2	D3	
EM669030	R1.5	3.0	.1181	6	4	30	80	2.5	1.5
EM669040	R2.0	4.0	.1575	6	5	30	80	3.3	1.5
EM669050	R2.5	5.0	.1969	6	6	43	80	4.1	2.0
EM669060	R3.0	6.0	.2362	6	7	30	100	4.7	2.0
EM669080	R4.0	8.0	.3150	8	9	36	100	6.5	3.0
EM669100	R5.0	10.0	.3937	10	11	43	100	8.2	3.0
EM669120	R6.0	12.0	.4724	12	13	52	100	9.8	3.0
EM669160	R8.0	16.0	.6299	16	15	61	150	13.4	3.0

※ ECONOMIC TYPE HAS MORE ADVANTAGE IN RESHARPENING THAN SPHERE TYPE.

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

◎ : Excellent ○ : Good

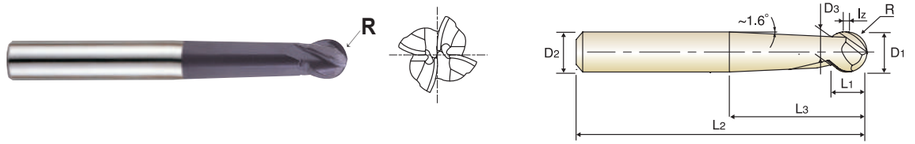
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○		○							

X-POWER END MILLS

EM673 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE (MMC-ECONOMY TYPE)

- Designed for copy milling.
- Increased feed rates.
- 15° inclination.
- Easy to regrind.



MG | 4 | 30° | R ±0.01 | PLAIN

P.928

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Iz
		Metric	Inch						
	R (±0.01)	D1		D2	L1	L3	L2	D3	
EM673050	R2.5	5.0	.1969	6	6	43	80	4.1	2.0
EM673060	R3.0	6.0	.2362	6	7	30	100	4.7	2.0
EM673080	R4.0	8.0	.3150	8	9	36	100	6.5	3.0
EM673100	R5.0	10.0	.3937	10	11	43	100	8.2	3.0
EM673120	R6.0	12.0	.4724	12	13	52	100	9.8	3.0
EM673160	R8.0	16.0	.6299	16	15	61	150	13.4	3.0

※ ECONOMIC TYPE HAS MORE ADVANTAGE IN RESHARPENING THAN SPHERE TYPE.

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○		○							

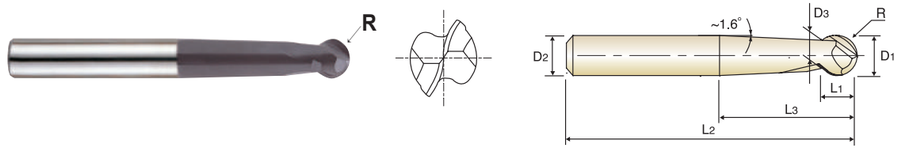
CARBIDE
HSS
CBN END MILLS
i-Xmill END MILLS
i-SMART MODULAR TYPE END MILLS
X5070 END MILLS
4G MILL END MILLS
X-POWER END MILLS
JET-POWER END MILLS
TitaNox -POWER END MILLS
V7 PLUS A END MILLS
V7 MILL INOX END MILLS
ALU-POWER HPC END MILLS
ALU-POWER END MILLS
D-POWER GRAPHITE END MILLS
D-POWER CFRP END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

X-POWER END MILLS

EM863 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE (MMC-SPHERE TYPE)

- Designed for copy milling.
- Increased feed rates.
- 15° inclination.
- Sphere Angle : 250°



MG | 2 | 30° | R ±0.01 | PLAIN

P.927

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R (±0.01)	D1		D2	L1	L3	L2	D3
EM863030	R1.5	**3.0**	**.1181**	6	2.3	30	80	2.5
EM863040	R2.0	**4.0**	**.1575**	6	3.1	30	80	3.3
EM863050	R2.5	**5.0**	**.1969**	6	3.9	38	80	4.1
EM863060	R3.0	**6.0**	**.2362**	6	4.9	28	100	4.7
EM863080	R4.0	**8.0**	**.3150**	8	6.3	33	100	6.5
EM863100	R5.0	**10.0**	**.3937**	10	7.9	40	100	8.2
EM863120	R6.0	**12.0**	**.4724**	12	9.5	49	100	9.8
EM863160	R8.0	**16.0**	**.6299**	16	12.4	59	150	13.4

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

◎ : Excellent ○ : Good

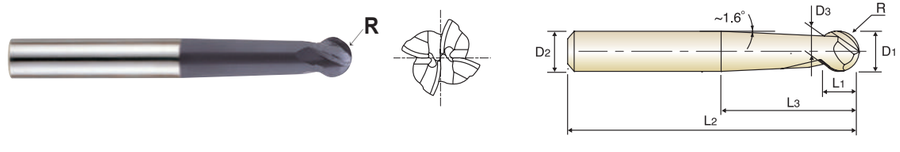
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○		○							

X-POWER END MILLS

EM864 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE (MMC-SPHERE TYPE)

- Designed for copy milling.
- Increased feed rates.
- 15° inclination.
- Sphere Angle : 250°



MG | 4 | 30° | R ±0.01 | PLAIN

P.928

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R (0.01)	D1		D2	L1	L3	L2	D3
EM864050	R2.5	**5.0**	**.1969**	6	3.9	38	80	4.1
EM864060	R3.0	**6.0**	**.2362**	6	4.9	28	100	4.7
EM864080	R4.0	**8.0**	**.3150**	8	6.3	33	100	6.5
EM864100	R5.0	**10.0**	**.3937**	10	7.9	40	100	8.2
EM864120	R6.0	**12.0**	**.4724**	12	9.5	49	100	9.8
EM864160	R8.0	**16.0**	**.6299**	16	12.4	59	150	13.4

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

◎ : Excellent ○ : Good

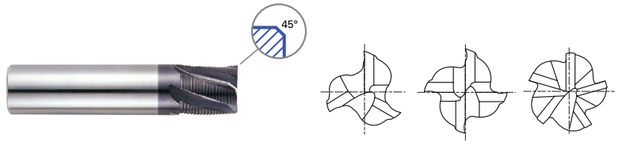
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○		○							

X-POWER END MILLS

EM832 SERIES PLAIN SHANK

CARBIDE, MULTI FLUTE 20° HELIX SHORT LENGTH FINE PITCH ROUGHING

- Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- High velocity milling of hardened steels.
- For dry and wet milling.
- Fast chip ejection.



MG | FINE | 3-5 | 20° | PLAIN

P.929

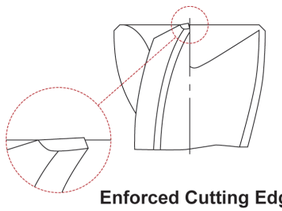
◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter Metric h10	Mill Diameter Inch h10	Shank Diameter h6	Length of Cut	Overall Length	No. of Flute
EM832060	6.0	.2362	6	7	54	3
EM832070	7.0	.2756	8	8	58	3
EM832080	8.0	.3150	8	9	58	3
EM832090	9.0	.3543	10	13	66	4
EM832100	10.0	.3937	10	14	66	4
EM832120	12.0	.4724	12	16	73	4
EM832140	14.0	.5512	14	18	75	4
EM832160	16.0	.6299	16	22	82	4
EM832180	18.0	.7087	18	24	84	4
EM832200	20.0	.7874	20	26	92	4
EM832250	25.0	.9843	25	25	110	5

Tolerances according to DIN 7160 & 7161

	Tolerance range in µm, Nominal-Diameter in mm: from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
h10	0 / − 40	0 / − 48	0 / − 58	0 / − 70	0 / − 84
h6	0 / − 6	0 / − 8	0 / − 9	0 / − 11	0 / − 13



Enforced Cutting Edge

◎ : Excellent ○ : Good

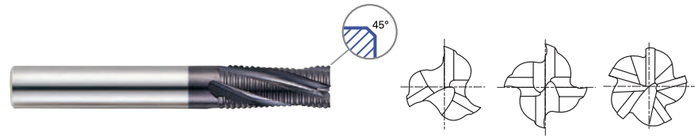
P: Carbon Steels ~HRc20	P: Alloy Steels HRc20~30	P: Prehardened Steels HRc30~40	P: Hardened Steels HRc40~45	P: Hardened Steels HRc45~55	H: High Hardened Steels HRc55~70	M: Stainless Steels	K: Cast Iron	N: Copper	N: Graphite	N: Aluminum	N: Acrylic	N: CFRP	S: Titanium	S: High Temperature Alloy
○	◎	◎	◎	○		○	○							

X-POWER END MILLS

EM814 SERIES PLAIN SHANK

CARBIDE, MULTI FLUTE 20° HELIX LONG LENGTH FINE PITCH ROUGHING

- Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- High velocity milling of hardened steels.
- For dry and wet milling.
- Fast chip ejection.



MG | FINE | 3-5 | 20° | PLAIN

P.929

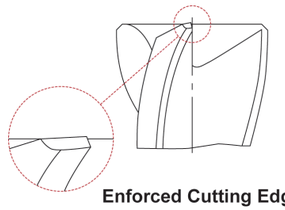
◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter Metric h10	Mill Diameter Inch h10	Shank Diameter h6	Length of Cut	Overall Length	No. of Flute
EM814060	6.0	.2362	6	16	57	3
EM814070	7.0	.2756	8	16	63	3
EM814080	8.0	.3150	8	16	63	3
EM814090	9.0	.3543	10	19	72	4
EM814100	10.0	.3937	10	22	72	4
EM814120	12.0	.4724	12	26	83	4
EM814140	14.0	.5512	14	26	83	4
EM814901	14.0	.5512	16	26	83	4
EM814160	16.0	.6299	16	32	92	4
EM814180	18.0	.7087	18	32	92	4
EM814200	20.0	.7874	20	38	104	4
EM814250	25.0	.9843	25	45	121	5

Tolerances according to DIN 7160 & 7161

	Tolerance range in µm, Nominal-Diameter in mm: from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
h10	0 / − 40	0 / − 48	0 / − 58	0 / − 70	0 / − 84
h6	0 / − 6	0 / − 8	0 / − 9	0 / − 11	0 / − 13



Enforced Cutting Edge

◎ : Excellent ○ : Good

P: Carbon Steels ~HRc20	P: Alloy Steels HRc20~30	P: Prehardened Steels HRc30~40	P: Hardened Steels HRc40~45	P: Hardened Steels HRc45~55	H: High Hardened Steels HRc55~70	M: Stainless Steels	K: Cast Iron	N: Copper	N: Graphite	N: Aluminum	N: Acrylic	N: CFRP	S: Titanium	S: High Temperature Alloy
○	◎	◎	◎	○		○	○							

X-POWER END MILLS

EM833 SERIES PLAIN SHANK

CARBIDE, 3&4 FLUTE 20° HELIX LONG LENGTH FINE PITCH ROUGHING BALL NOSE

- Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- High velocity milling of hardened steels.
- For dry and wet milling.
- Fast chip ejection.



MG | FINE | 3&4 | 20° | R ±0.02 | PLAIN

P.930

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flute
		Metric	Inch				
	R (±0.02)	h10		h6			
EM833060	R3.0	6.0	.2362	6	16	57	3
EM833080	R4.0	8.0	.3150	8	16	63	3
EM833100	R5.0	10.0	.3937	10	22	72	4
EM833120	R6.0	12.0	.4724	12	26	83	4
EM833140	R7.0	14.0	.5512	14	26	83	4
EM833160	R8.0	16.0	.6299	16	32	92	4
EM833180	R9.0	18.0	.7087	18	32	92	4
EM833200	R10.0	20.0	.7874	20	38	104	4

Tolerances according to DIN 7160 & 7161

Tolerance range in µm					
Nominal-Diameter in mm					
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
h10	0 / − 40	0 / − 48	0 / − 58	0 / − 70	0 / − 84
h6	0 / − 6	0 / − 8	0 / − 9	0 / − 11	0 / − 13

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○		○	○							

X-POWER END MILLS

EM837 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE TAPER

- Designed for milling die cavity.
- Suitable for machining tool steels, alloy steels, mold steels and other hardened materials.



MG | 2 | 30° | PLAIN

P.931

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	Taper Angle
	Metric	Inch				
EM837913	2.0	.0787	4	6	45	30′
EM837020	2.0	.0787	4	6	45	1°
EM837901	2.0	.0787	4	6	45	2°
EM837902	2.0	.0787	4	6	45	3°
EM837914	3.0	.1181	6	10	55	30′
EM837030	3.0	.1181	6	10	55	1°
EM837903	3.0	.1181	6	10	55	2°
EM837904	3.0	.1181	6	10	55	3°
EM837915	4.0	.1575	6	15	55	30′
EM837040	4.0	.1575	6	15	55	1°
EM837905	4.0	.1575	6	15	55	2°
EM837906	4.0	.1575	6	15	55	3°
EM837916	5.0	.1969	6	15	60	30′
EM837050	5.0	.1969	6	15	60	1°
EM837907	5.0	.1969	6	15	60	2°
EM837908	5.0	.1969	6	15	60	3°
EM837917	6.0	.2362	6	20	60	30′
EM837060	6.0	.2362	6	20	60	1°
EM837909	6.0	.2362	6	20	60	2°
EM837910	6.0	.2362	8	20	65	3°
EM837918	8.0	.3150	8	25	70	30′
EM837080	8.0	.3150	8	25	70	1°
EM837911	8.0	.3150	8	25	70	2°
EM837912	8.0	.3150	10	25	75	3°

▶We can supply various sizes and taper angles.

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance	Taper Angle Tolerance
0~-0.03	h6	±5′

◎ : Excellent ○ : Good

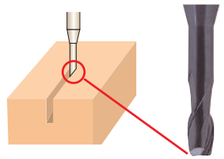
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

X-POWER END MILLS

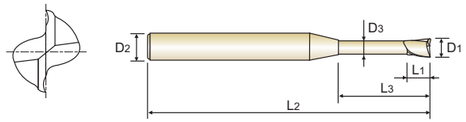
EM883 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE for RIB PROCESSING

- For deep slotting & pocketing.
- For depths of 6 to 10X cutting diameter.
- Machine carbon steel, alloy steel, tool steel, die and mold steels.
- Suitable for high speed cutting and high precision machining.
- Designed with reinforced shank for higher stability and rigidity.
- Long neck design for deep machining near walls.







MG | 2 | 30° | PLAIN

P.930

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter Metric D1	Mill Diameter Inch D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
EM883908	0.8	.0315	4	1.2	6	45	0.75
EM883909	0.8	.0315	4	1.2	8	45	0.75
EM883010	1.0	.0394	4	1.5	6	45	0.97
EM883912	1.0	.0394	4	1.5	8	45	0.95
EM883914	1.0	.0394	4	1.5	12	45	0.93
EM883915	1.2	.0472	4	1.8	8	45	1.15
EM883917	1.2	.0472	4	1.8	12	45	1.13
EM883920	1.4	.0551	4	2.1	12	45	1.33
EM883923	1.5	.0591	4	2.3	8	45	1.45
EM883924	1.5	.0591	4	2.3	10	45	1.45
EM883925	1.5	.0591	4	2.3	12	45	1.43
EM883927	1.5	.0591	4	2.3	16	50	1.41
EM883932	1.6	.0630	4	2.4	12	45	1.53
EM883946	1.8	.0709	4	2.7	12	45	1.73
EM883960	2.0	.0787	4	3.0	12	45	1.93
EM883962	2.0	.0787	4	3.0	16	50	1.91
EM883968	2.5	.0984	4	3.7	12	45	2.40
EM883970	2.5	.0984	4	3.7	16	55	2.40
EM883977	3.0	.1181	6	4.5	14	50	2.85
EM883979	3.0	.1181	6	4.5	18	55	2.85

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.015	h6

◎ : Excellent ○ : Good

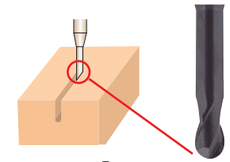
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

X-POWER END MILLS

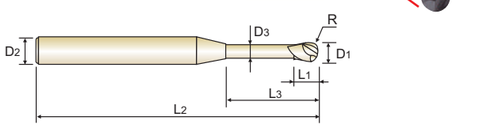
EM886 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING

- For 3-D milling, deep slotting and pocketing.
- For depths of 6 to 10X cutting diameter.
- Machine carbon steel, alloy steel, tool steel, die and mold steels.
- Suitable for high speed cutting and high precision machining.
- Designed with reinforced shank for higher stability and rigidity.
- Long neck design for deep machining near walls.







MG | 2 | 30° | R ±0.01 | PLAIN

P.931

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter Metric D1	Mill Diameter Inch D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
EM886006	R0.3	0.6	.0236	3	0.9	6	35	0.55
EM886008	R0.4	0.8	.0315	4	1.2	6	45	0.75
EM886901	R0.4	0.8	.0315	4	1.2	8	45	0.75
EM886010	R0.5	1.0	.0394	4	1.5	6	45	0.97
EM886902	R0.5	1.0	.0394	4	1.5	8	45	0.95
EM886904	R0.5	1.0	.0394	4	1.5	12	45	0.93
EM886012	R0.6	1.2	.0472	4	1.8	8	45	1.15
EM886905	R0.6	1.2	.0472	4	1.8	12	45	1.13
EM886014	R0.7	1.4	.0551	4	2.1	12	45	1.33
EM886015	R0.75	1.5	.0591	4	2.3	8	45	1.45
EM886906	R0.75	1.5	.0591	4	2.3	12	45	1.43
EM886907	R0.75	1.5	.0591	4	2.3	16	50	1.41
EM886016	R0.8	1.6	.0630	4	2.4	16	50	1.51
EM886018	R0.9	1.8	.0709	4	2.7	16	50	1.71
EM886020	R1.0	2.0	.0787	4	3.0	8	45	1.95
EM886909	R1.0	2.0	.0787	4	3.0	16	50	1.91
EM886910	R1.0	2.0	.0787	4	3.0	20	55	1.89
EM886030	R1.5	3.0	.1181	6	4.5	16	55	2.85
EM886911	R1.5	3.0	.1181	6	4.5	20	60	2.85
EM886040	R2.0	4.0	.1575	6	6.0	16	60	3.85
EM886912	R2.0	4.0	.1575	6	6.0	20	65	3.85

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.02	h6

◎ : Excellent ○ : Good

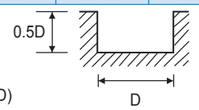
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

X-POWER END MILLS — RECOMMENDED CUTTING CONDITIONS

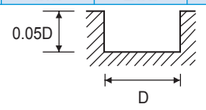
CARBIDE, 2 FLUTE FINISH - SLOTTING

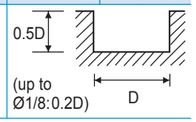
EM154, EM810 SERIES

MATERIAL	P								M	
	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS TOOL STEELS		HARDENED STEELS		HARDENED STEELS		STAINLESS STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc45		HRc45 ~ HRc55		HRc55 ~ HRc65			
STRENGTH	~ 1000N/mm²		1000 ~ 1500N/mm²		1500 ~ 2000N/mm²		2000N/mm² ~			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/16	11560	7.5	7560	4.7	5040	1.4			6300	3.6
1/8	8920	8.3	5560	5.5	3360	1.6	1900	1.6	4620	4.7
3/16	6300	12.6	3780	7.5	2320	2.0	1260	1.6	3160	6.3
1/4	5560	13.8	3360	8.7	2000	2.2	1100	1.6	2840	7.1
5/16	4200	15.0	2520	7.9	1680	3.0	840	1.6	2100	7.1
3/8	3260	13.0	2000	6.3	1360	2.4	680	1.4	1680	6.3
1/2	2740	11.0	1680	5.1	1160	2.2	560	1.4	1360	5.1
5/8	2200	8.7	1360	4.3	900	1.6	440	0.8	1060	4.3
3/4	1680	6.7	1060	3.2	680	1.2	320	0.8	840	3.2
1	1360	5.1	840	2.8	540	0.8	260	0.6	680	2.4



(up to Ø1/8:0.2D)





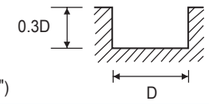
(up to Ø1/8:0.2D)

RPM = rev./min.
FEED = inch/min.

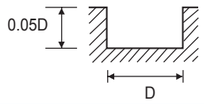
CARBIDE, 2 FLUTE LONG LENGTH FINISH - SLOTTING

EM206, EM816 SERIES

Material	P					
	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS TOOL STEELS		HARDENED STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc45		HRc45 ~ HRc55	
STRENGTH	~ 1000N/mm²		1000 ~ 1500N/mm²		1500 ~ 2000N/mm	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
1/8	4410	2.8	3570	2.4	2200	1.2
3/16	3050	4.1	2420	3.3	1580	1.6
1/4	2630	4.9	2100	4.1	1370	2.0
5/16	2000	5.3	1580	4.1	1050	2.0
3/8	1680	5.3	1370	4.1	840	2.0
1/2	1370	4.1	1160	3.7	700	1.6
5/8	1160	3.7	890	3.0	560	1.4
3/4	840	2.8	680	2.0	420	1.0
1	610	2.0	540	1.6	330	0.7



(up to Ø1/8: .0016")



RPM = rev./min.
FEED = inch/min.

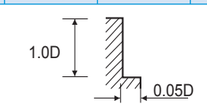
CARBIDE
HSS
CBN END MILLS
i-Xmill END MILLS
i-SMART MODULAR TYPE END MILLS
X5070 END MILLS
4G MILL END MILLS
X-POWER END MILLS
JET-POWER END MILLS
TitaNox -POWER END MILLS
V7 PLUS A END MILLS
V7 MILL INOX END MILLS
ALU-POWER HPC END MILLS
ALU-POWER END MILLS
D-POWER GRAPHITE END MILLS
D-POWER CFRP END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

X-POWER END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE FINISH - SIDE CUTTING

EM153, EM811 SERIES

MATERIAL	P								M	
	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS TOOL STEELS		HARDENED STEELS		HARDENED STEELS		STAINLESS STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc45		HRc45 ~ HRc55		HRc55 ~ HRc65			
STRENGTH	~ 1000N/mm²		1000 ~ 1500N/mm²		1500 ~ 2000N/mm²		2000N/mm² ~			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/16	11560	11.0	7560	6.7	5040	2.0			6300	5.5
1/8	8920	12.6	5560	7.9	3360	2.4	1900	2.4	4620	6.7
3/16	6300	23.6	3780	14.2	2320	2.8	1260	2.4	3160	11.8
1/4	5560	26.0	3360	16.2	2000	3.2	1100	2.4	2840	13.0
5/16	4200	28.0	2520	15.0	1680	4.3	840	2.4	2100	13.8
3/8	3260	24.0	2000	11.8	1360	3.6	680	2.0	1680	11.8
1/2	2740	20.5	1680	9.9	1160	3.2	560	2.0	1360	9.5
5/8	2200	16.2	1360	7.9	900	2.4	440	1.2	1060	7.9
3/4	1680	12.6	1060	6.3	680	1.6	320	1.2	840	5.9
1	1360	9.9	840	5.1	540	1.2	260	0.8	680	4.7

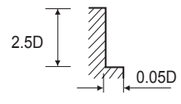


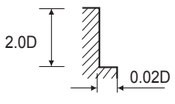
RPM = rev./min.
FEED = inch/min.

CARBIDE, 4 FLUTE LONG LENGTH FINISH - SIDE CUTTING

EM207, EM817 SERIES

MATERIAL	P							
	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS TOOL STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc45		HRc45 ~ HRc55		HRc55 ~ HRc65	
STRENGTH	~ 1000N/mm²		1000 ~ 1500N/mm²		1500 ~ 2000N/mm²		2000N/mm² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	4410	4.5	3570	3.9	2200	2.2	1890	1.2
3/16	3050	7.1	2420	5.5	1580	2.8	1260	1.6
1/4	2630	8.5	2100	7.1	1370	3.5	1160	2.0
5/16	2000	9.1	1580	7.1	1050	3.5	840	2.0
3/8	1680	9.1	1370	7.1	840	3.5	670	2.0
1/2	1370	7.1	1160	6.3	700	2.8	560	1.6
5/8	1160	6.3	890	4.9	560	2.4	440	1.4
3/4	840	4.5	680	3.5	420	1.8	340	1.0
1	670	4.5	540	3.5	340	1.8	270	1.0





RPM = rev./min.
FEED = inch/min.

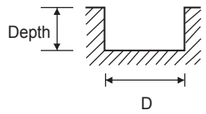
X-POWER END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE MINIATURE - SLOTTING

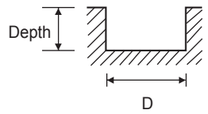
EM959, EM810 SERIES

MATERIAL	P			
	ALLOY STEELS TOOL STEELS		HARDENED STEELS	
HARDNESS	HRc30 ~ HRc45		HRc45 ~ HRc55	
STRENGTH	1000 ~ 1500N/mm^2		1500 ~ 2000N/mm^2	
DIAMETER	RPM	FEED	RPM	FEED
.016	30000	7.1	23000	3.9
.031	24000	11.8	18000	5.1
.040	20000	12.6	15000	5.9
.047	16000	12.6	12000	5.9
.062	12000	11.8	9000	5.5

D < .040
Depth=0.15×D
D ≧ .040
Depth=0.25×D



D < .040
Depth=0.02×D
D ≧ .040
Depth=0.05×D

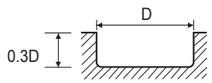


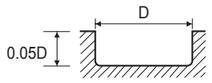
RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE CORNER RADIUS - SLOTTING

EM636, EM637, EM211 SERIES

MATERIAL	P							
	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS TOOL STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc65	
STRENGTH	~ 1000N/mm^2		1000 ~ 1750N/mm^2		1750 ~ 2000N/mm^2		2000N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	2630	4.9	2100	4.2	1370	2.0	1160	1.4
5/16	2000	5.3	1580	4.2	1050	2.0	840	1.4
3/8	1680	5.3	1370	4.2	840	2.0	670	1.4
1/2	1370	4.2	1160	3.8	700	1.5	550	1.0





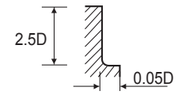
RPM = rev./min.
FEED = inch/min.

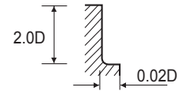
X-POWER END MILLS — RECOMMENDED CUTTING CONDITIONS

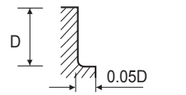
CARBIDE, 4 FLUTE CORNER RADIUS - SIDE CUTTING

EM639, EM649, EM212 SERIES

MATERIAL	P							
	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS TOOL STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc65	
STRENGTH	~ 1000N/mm^2		1000 ~ 1750N/mm^2		1750 ~ 2000N/mm^2		2000N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	2630	8.5	2100	7.1	1370	3.3	1160	2.0
5/16	2000	9.0	1580	7.1	1050	3.3	840	2.0
3/8	1680	9.0	1370	7.1	840	3.3	670	2.0
1/2	1370	7.1	1160	6.3	700	2.8	550	1.5





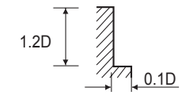


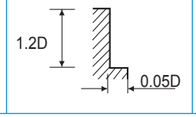
RPM = rev./min.
FEED = inch/min.

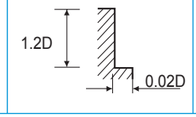
CARBIDE, 4 FLUTE 45° HELIX - SIDE CUTTING

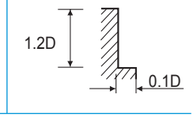
EM102 SERIES

MATERIAL	P								M	
	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS		STAINLESS STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc45		HRc45 ~ HRc55		HRc55 ~ HRc60			
STRENGTH	~ 1000N/mm^2		1000 ~ 1500N/mm^2		1500 ~ 2000N/mm^2		2000N/mm^2 ~			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/8	3010	31.5	2610	14.3	1400	5.3	1000	2.6	1600	7.7
1/2	2260	27.0	1950	12.3	1050	4.6	750	2.0	1200	6.3
5/8	1800	22.6	1560	10.1	840	4.1	600	1.7	960	5.1
3/4	1500	19.0	1300	8.5	700	3.9	500	1.6	800	4.5
7/8	1290	16.1	1120	7.6	600	3.9	430	1.6	690	4.5









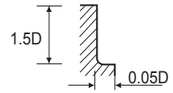
RPM = rev./min.
FEED = inch/min.

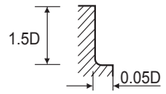
X-POWER END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE 45° HELIX CORNER RADIUS - SIDE CUTTING

EM103, EM905 SERIES

MATERIAL	P								M	
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS		STAINLESS STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc45		HRc45 ~ HRc55		HRc55 ~ HRc65			
STRENGTH	~ 1000N/mm²		1000 ~ 1500N/mm²		1500 ~ 2000N/mm²		2000N/mm² ~			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/8	7690	79.0	7690	48.0	5680	29.0	3840	19.0	5680	36.0
1/2	5760	79.0	5760	48.0	4260	29.0	2880	19.0	4260	36.0
5/8	4600	71.0	4600	48.0	3410	29.0	2300	19.0	3410	36.0
3/4	3850	60.0	3850	48.0	2840	29.0	1920	19.0	2840	36.0
7/8	3300	51.0	3300	48.0	2430	29.0	1650	19.0	2430	36.0



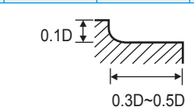


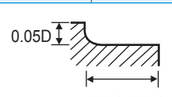
RPM = rev./min.
FEED = inch/min.

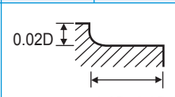
CARBIDE, 4 FLUTE 45° HELIX CORNER RADIUS - CONTOURING

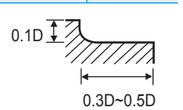
EM103, EM905 SERIES

MATERIAL	P								M	
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS		STAINLESS STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc45		HRc45 ~ HRc55		HRc55 ~ HRc65			
STRENGTH	~ 1000N/mm²		1000 ~ 1500N/mm²		1500 ~ 2000N/mm²		2000N/mm² ~			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/8	7690	45.0	5680	36.0	5680	18.0	3840	11.0	5680	31.0
1/2	5760	45.0	4260	36.0	4260	18.0	2880	11.0	4260	31.0
5/8	4600	45.0	3410	36.0	3410	18.0	2300	11.0	3410	31.0
3/4	4850	45.0	2840	36.0	2840	18.0	1920	11.0	2840	31.0
7/8	3300	45.0	2430	36.0	2430	18.0	1650	11.0	2430	31.0









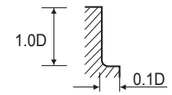
RPM = rev./min.
FEED = inch/min.

X-POWER END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE 55° HELIX CORNER RADIUS - SIDE CUTTING

EM965 SERIES

MATERIAL	P						M	
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS		STAINLESS STEELS	
HARDNESS	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc65			
STRENGTH	1000 ~ 1250N/mm²		1250 ~ 1700N/mm²		1500N/mm² ~			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	21000	32.0	13000	9.5	7300	9.5	13000	21.0
3/16	18000	56.0	11000	9.5	4800	9.5	11000	33.0
1/4	13000	66.0	7500	13.0	4200	9.5	7500	40.0
5/16	9500	61.0	6500	17.0	3200	9.5	6500	39.0
3/8	7700	48.0	5700	22.0	3850	12.0	5700	39.0
1/2	5800	48.0	4260	25.0	2900	15.0	4260	39.0
5/8	4200	48.0	3100	29.0	2100	19.0	3100	39.0

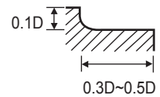


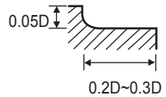
RPM = rev./min.
FEED = inch/min.

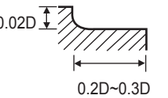
CARBIDE, 4 FLUTE 55° HELIX CORNER RADIUS - CONTOURING

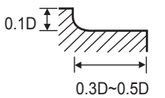
EM965 SERIES

MATERIAL	P						M	
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS		STAINLESS STEELS	
HARDNESS	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc65			
STRENGTH	1000 ~ 1250N/mm²		1250 ~ 1700N/mm²		1500N/mm² ~			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	21000	24	13000	6	7300	5.5	13000	18
3/16	18000	42	11000	6	4800	5.5	11000	29
1/4	13000	50	7500	8	4200	5.5	7500	35
5/16	9500	46	6500	10	3200	5.5	6500	34
3/8	7700	36	5700	12	3850	7.5	5700	34
1/2	5800	36	4260	15	2900	9.5	4260	34
5/8	4200	36	3100	18	2100	11.5	3100	34









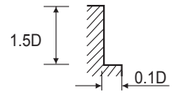
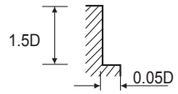
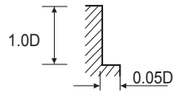
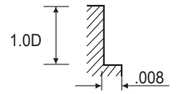
RPM = rev./min.
FEED = inch/min.

X-POWER END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 6&8 FLUTE 45° HELIX LONG LENGTH - SIDE CUTTING

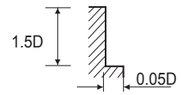
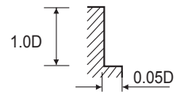
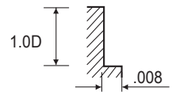
EM208, EM812 SERIES

■ NORMAL SPEED

MATERIAL	P							
	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS TOOL STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~HRc30		HRc30 ~ HRc50		HRc50 ~ HRc55		HRc60 ~ HRc65	
STRENGTH	~1000N/mm^2		1000 ~ 1750N/mm^2		1750 ~ 2080N/mm^2		2080N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	5560	79.0	3880	54.0	1580	8.3	1100	5.1
5/16	4200	79.0	2940	54.0	1160	8.3	840	5.1
3/8	3360	79.0	2320	54.0	1000	8.3	680	5.1
1/2	2840	66.0	2000	46.0	840	7.1	560	4.4
5/8	2100	50.0	1480	35.0	640	5.1	420	2.8
3/4	1680	40.0	1160	27.0	500	4.4	320	2.4
1	1260	25.0	870	17.5	375	3.0	240	1.5
								

RPM = rev./min.
FEED = inch/min.

■ HIGH SPEED

MATERIAL	P					
	CARBON STEELS TOOL STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~HRc50		HRc50 ~ HRc60		HRc60 ~	
STRENGTH	~1750N/mm^2		1750N/mm^2		1750N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
1/4	16800	240.0	8400	120.0	4200	58.0
5/16	12600	240.0	6300	120.0	3160	58.0
3/8	9980	235.0	5040	120.0	2520	58.0
1/2	8400	199.0	4200	100.0	2100	50.0
5/8	6300	149.0	3160	75.0	1580	37.0
3/4	5040	120.0	2520	58.0	1260	30.0
1	3790	75.0	1890	38.0	950	19.0
						

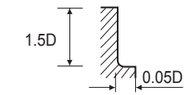
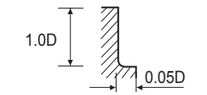
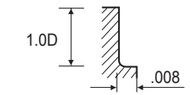
RPM = rev./min.
FEED = inch/min.

X-POWER END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 6&8 FLUTE 45° HELIX CORNER RADIUS - SIDE CUTTING

EM668, EM835 SERIES

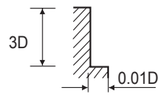
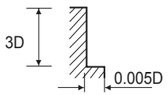
■ HIGH SPEED

MATERIAL	P					
	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS TOOL STEELS		HARDENED STEELS	
HARDNESS	~ HRc50		HRc50 ~ HRc60		HRc60 ~ HRc65	
STRENGTH	~ 1750N/mm^2		1750 ~ 2080N/mm^2		2080N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
1/4	16800	240.0	8400	120.0	4200	58.0
5/16	12600	240.0	6300	120.0	3200	58.0
3/8	10000	235.0	5000	120.0	2500	58.0
1/2	8400	200.0	4200	100.0	2100	50.0
5/8	6300	150.0	3150	75.0	1600	37.0
3/4	5000	120.0	2500	58.0	1260	30.0
						

RPM = rev./min.
FEED = inch/min.

CARBIDE, 6&8 FLUTE 45° HELIX EXTRA LONG LENGTH - SIDE CUTTING

EM218, EM812, EM834 SERIES

MATERIAL	P							
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~HRc40		HRc40 ~ HRc50		HRc50 ~ HRc60		HRc60 ~ HRc65	
STRENGTH	~1250N/mm^2		1250 ~ 1750N/mm^2		1750 ~ 2080N/mm^2		2080N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	2230	19.0	1670	14.0	1390	10.0	1110	8.0
5/16	1670	18.0	1250	13.0	1050	9.5	840	7.0
3/8	1330	17.0	1000	12.0	840	9.0	680	6.3
1/2	1110	16.0	840	11.0	690	8.5	560	6.0
5/8	840	13.0	630	9.0	530	6.5	420	5.0
3/4	670	11.0	500	8.0	420	6.0	320	4.7
1	540	9.5	400	6.5	340	5.0	270	3.7
								

RPM = rev./min.
FEED = inch/min.

X-POWER END MILLS — RECOMMENDED CUTTING CONDITIONS

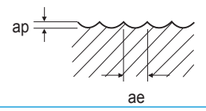
CARBIDE, 2 FLUTE BALL NOSE

EM209, EM876, EM813, EM823 SERIES

■ NORMAL SPEED

MATERIAL	P					
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc40		HRc45 ~ HRc65	
STRENGTH	~ 1000N/mm^2		1000 ~ 1250N/mm^2		1500N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R1/64 × 1/32	15760	9.8	12720	7.8	5800	3.5
R1/32 × 1/16	15760	13.8	12140	10.6	5320	4.7
R3/64 × 3/32	14400	29.5	10700	19.3	4680	5.9
R1/16 × 1/8	13100	26.7	10000	18.1	4520	5.9
R3/32 × 3/16	9140	32.3	7300	22.8	3680	7.1
R1/8 × 1/4	7780	33.0	6300	24.8	3160	7.5
R5/32 × 5/16	5260	37.5	4420	26.0	2100	7.5
R3/16 × 3/8	4620	40.1	3780	28.0	1780	7.5
R1/4 × 1/2	3780	35.4	2940	26.0	1360	7.5
R5/16 × 5/8	2740	36.2	2320	26.0	1160	7.5
R3/8 × 3/4	2100	33.0	1900	25.0	840	7.5

ap: D1/32~D1/4 =.008″
D5/16~D3/4=.012″
ae: 0.2×D



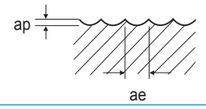
ap: D1/32~D1/4 =.008″
D5/16~D3/4 =.012″
ae: 0.1×D

RPM = rev./min.
FEED = inch/min.

■ HIGH SPEED

MATERIAL	P			
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		HARDENED STEELS	
HARDNESS	~ HRc45		HRc45 ~ HRc65	
STRENGTH	~ 1500N/mm^2		1500N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED
R1/64 × 1/32	25000	25.6	25000	15.7
R1/32 × 1/16	23000	27.5	23000	16.9
R3/64 × 3/32	21000	34.6	19000	19.3
R1/16 × 1/8	21000	39.4	17000	20.5
R3/32 × 3/16	21000	70.9	12000	23.6
R1/8 × 1/4	21000	90.9	10500	24.8
R5/32 × 5/16	15760	111.8	7880	29.1
R3/16 × 3/8	13660	120.0	6300	33.0
R1/4 × 1/2	10500	103.5	5260	33.0
R5/16 × 5/8	8200	103.5	3780	28.0
R3/8 × 3/4	6300	99.0	2940	20.8

ap: D1/32~D1/4 =.008″
D5/16~D3/4=.012″
ae: 0.05×D



RPM = rev./min.
FEED = inch/min.

X-POWER END MILLS — RECOMMENDED CUTTING CONDITIONS

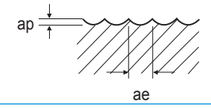
CARBIDE, 4 FLUTE BALL NOSE

EM210, EM815, EM825 SERIES

■ NORMAL SPEED

MATERIAL	P					
	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS TOOL STEELS		HARDENED STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc40		HRc45 ~ HRc65	
STRENGTH	~ 1000N/mm^2		1000 ~ 1250N/mm^2		1500N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	13100	40.1	10000	27.0	4520	8.9
R3/32 × 3/16	9140	48.5	7300	34.0	3680	10.5
R1/8 × 1/4	7780	49.5	6300	37.0	3160	11.3
R5/32 × 5/16	5260	56.0	4420	39.0	2100	11.3
R3/16 × 3/8	4620	60.0	3780	42.0	1780	11.3
R1/4 × 1/2	3780	53.0	2940	39.0	1360	11.3
R5/16 × 5/8	2740	54.5	2320	38.5	1160	11.3

ap: D1/8~D1/4 =.008″
D5/16~D5/8=.012″
ae: 0.2×D



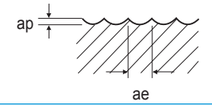
ap: D1/8~D1/4 =.008″
D5/16~D5/8 =.012″
ae: 0.1×D

RPM = rev./min.
FEED = inch/min.

■ HIGH SPEED

MATERIAL	P			
	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS TOOL STEELS	
HARDNESS	~ HRc45		HRc45 ~ HRc65	
STRENGTH	~ 1500N/mm^2		1500N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED
R1/16 × 1/8	21000	59.0	17000	30.5
R3/32 × 3/16	21000	106.3	12000	35.5
R1/8 × 1/4	21000	136.5	10500	37.0
R5/32 × 5/16	15760	167.5	7880	43.5
R3/16 × 3/8	13660	180.0	6300	49.5
R1/4 × 1/2	10500	155.5	5260	49.5
R5/16 × 5/8	8200	155.5	3780	42.0

ap: D1/8~D1/4 =.008″
D5/16~D5/8=.012″
ae: 0.05×D



RPM = rev./min.
FEED = inch/min.

X-POWER END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE MEDIUM LENGTH BALL NOSE

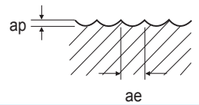
EM961, EM899 SERIES

■ NORMAL SPEED

MATERIAL	P					
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	HRc30 ~ HRc40		HRc45 ~ HRc50		HRc50 ~ HRc55	
STRENGTH	1000 ~ 1250N/mm^2		1500 ~ 1750N/mm^2		1750 ~ 2000N/mm^2	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	10000	18.1	12700	43.3	12300	41.3
R3/32 × 3/16	7300	22.8	9400	43.3	9050	41.3
R1/8 × 1/4	6300	24.8	8600	45.3	8250	43.3
R5/32 × 5/16	4420	26.0	7000	41.3	6700	39.4
R3/16 × 3/8	3780	28.0	6050	39.4	5800	37.8
R1/4 × 1/2	2940	26.0	5450	39.4	5200	37.8
R5/16 × 5/8	2320	26.0	4350	34.3	4150	32.7
R3/8 × 3/4	1900	25.0	3500	27.2	3300	25.6
R1/2 × 1	1520	25.0	2800	27.2	2650	25.6

ap: D1/8~D1/4 =.008″
D5/16~D1 =.012″
ae: 0.2×D

ap: D1/8 = .006″
D3/16~D5/16 = .010″
D3/8~D1 = .012″
ae: 0.1×D



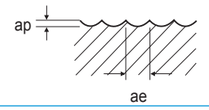
RPM = rev./min.
FEED = inch/min.

■ HIGH SPEED

MATERIAL	P					
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRc45		HRc45 ~ HRc50		HRc50 ~ HRc55	
STRENGTH	1000 ~ 1250N/mm^2		1500 ~ 1750N/mm^2		1750 ~ 2000N/mm^2	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	21000	39.4	12700	68.9	12300	65.7
R3/32 × 3/16	21000	70.9	9400	65.0	9050	61.8
R1/8 × 1/4	21000	90.9	8600	69.0	8250	65.7
R5/32 × 5/16	15760	111.8	7000	61.0	6700	57.5
R3/16 × 3/8	13660	120.1	6050	57.1	5800	53.5
R1/4 × 1/2	10500	103.5	5450	55.9	5200	52.4
R5/16 × 5/8	8200	103.5	4350	48.4	4150	44.5
R3/8 × 3/4	6300	99.2	3500	39.4	3300	35.4
R1/2 × 1	5040	99.2	2800	39.4	2650	35.4

ap: D1/8~D1/4 =.008
D5/16~D1 =.012
ae: 0.05×D

ap: D1/8 = .006″
D3/16~D5/16 = .010″
D3/8~D1 = .012″
ae: 0.05×D



RPM = rev./min.
FEED = inch/min.

X-POWER END MILLS — RECOMMENDED CUTTING CONDITIONS

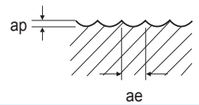
CARBIDE, 2 FLUTE LONG REACH BALL NOSE

EM962, EM838 SERIES

■ NORMAL SPEED

MATERIAL	P					
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc40		HRc45 ~ HRc65	
STRENGTH	~ 1000N/mm^2		1000 ~ 1250N/mm^2		1500N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R3/64 × 3/32	12600	16.5	9250	10.2	3870	3.5
R1/16 × 1/8	10500	21.3	8000	14.6	3620	4.7
R3/32 × 3/16	7310	26.0	5840	18.1	2940	5.5
R1/8 × 1/4	6220	26.4	5040	19.7	2530	5.9
R5/32 ×5/16	4210	29.9	3540	20.7	1680	5.9
R3/16 ×3/8	3700	32.3	3020	22.4	1420	5.9
R1/4 × 1/2	3020	28.3	2350	20.9	1090	5.9
R5/16 × 5/8	2190	29.1	1860	20.5	930	5.9
R3/8 × 3/4	1680	26.4	1520	19.7	670	5.9

ap: D3/32~D1/4 =.008″
D5/16~D3/4=.012″
ae: 0.2×D



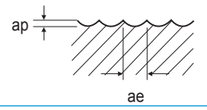
ap: D3/32~D1/4 =.008″
D5/16~D3/4 =.012″
ae: 0.1×D

RPM = rev./min.
FEED = inch/min.

■ HIGH SPEED

MATERIAL	P			
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		HARDENED STEELS	
HARDNESS	~ HRc45		HRc45 ~ HRc65	
STRENGTH	~ 1500N/mm^2		1500N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED
R3/64 × 3/32	16800	23.2	16800	15.0
R1/16 × 1/8	16800	31.5	13600	16.5
R3/32 × 3/16	16800	56.7	9600	18.9
R1/8 × 1/4	16800	72.8	8400	19.7
R5/32 × 5/16	12610	89.4	6300	23.2
R3/16 × 3/8	10930	96.1	5040	26.4
R1/4 × 1/2	8400	82.7	4210	26.4
R5/16 × 5/8	6560	82.7	3020	22.4
R3/8 × 3/4	5040	79.5	2350	16.5

ap: D3/32~D1/4 =.008″
D5/16~D3/4=.012″
ae: 0.05×D



RPM = rev./min.
FEED = inch/min.

X-POWER END MILLS — RECOMMENDED CUTTING CONDITIONS

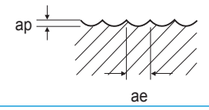
CARBIDE, 2 FLUTE BALL NOSE for OVER HRc55

EM109, EM868 SERIES

■ NORMAL SPEED

MATERIAL	P							
	HARDENED STEELS		HARDENED STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	HRc45 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc70	
STRENGTH	1500 ~ 1750N/mm²		1750 ~ 2000N/mm²		2000 ~ 2080N/mm²		2080N/mm² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	12700	43.3	12300	41.3	11800	39.4	8400	26.0
R3/32 × 3/16	9400	43.3	9050	41.3	8600	37.4	5600	26.8
R1/8 × 1/4	8600	45.3	8250	43.3	7850	37.4	4850	27.6
R5/32 × 5/16	7000	41.3	6700	39.4	6350	37.4	3800	25.6
R3/16 × 3/8	6050	39.4	5800	37.8	5450	35.4	3200	24.4
R1/4 × 1/2	5450	39.4	5200	37.8	4900	35.4	2750	24.0
R5/16 × 5/8	4350	34.3	4150	32.7	3900	32.3	2150	10.4
R3/8 × 3/4	3500	27.2	3300	25.6	3150	24.8	1700	8.7
R1/2 × 1	2800	27.2	2650	25.6	2520	24.8	1360	8.7

ap: D1/8 =.006″
D3/16 ~ D5/16=.010″
D3/8 ~ D1=.012″
ae: 0.1×D

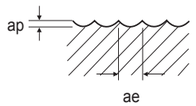


RPM = rev./min.
FEED = inch/min.

■ HIGH SPEED

MATERIAL	P					
	HARDENED STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	HRc45 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc70	
STRENGTH	1500 ~ 1750N/mm²		1750 ~ 2000N/mm²		2000 ~ 2080N/mm²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	12700	68.9	12300	65.7	11800	33.9
R3/32 × 3/16	9400	65.0	9050	61.8	8600	29.5
R1/8 × 1/4	8600	68.9	8250	65.7	7850	27.6
R5/32 × 5/16	7000	61.0	6700	57.5	6350	25.6
R3/16 × 3/8	6050	57.1	5800	53.5	5450	24.4
R1/4 × 1/2	5450	55.9	5200	52.4	4900	24.0
R5/16 × 5/8	4350	48.4	4150	44.5	3900	10.4
R3/8 × 3/4	3500	39.4	3300	35.4	3150	8.7
R1/2 × 1	2800	39.4	2640	35.4	2520	8.7

ap: D1/8 = .006″
D3/16~D5/16 = .010″
D3/8~D1 = .012″
ae: 0.05×D



RPM = rev./min.
FEED = inch/min.

X-POWER END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE BALL NOSE with TAPER NECK

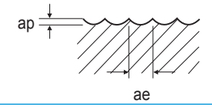
EM963, EM902 SERIES

■ NORMAL SPEED

MATERIAL	P					
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	HRc30 ~ HRc40		HRc45 ~ HRc50		HRc50 ~ HRc55	
STRENGTH	1000 ~ 1250N/mm²		1250 ~ 1750N/mm²		1750 ~ 2000N/mm²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R1/32 × 1/16	9700	8.3	13800	19.9	13600	17.9
R1/16 × 1/8	8000	14.6	10200	34.6	9800	33.5
R3/32 × 3/16	5840	18.1	7500	34.6	7200	33.5
R1/8 × 1/4	5040	19.7	6900	36.2	6500	34.6
R5/32 × 5/16	3540	20.9	5600	33.1	5300	31.5
R3/16 × 3/8	3020	22.4	4850	31.5	4650	30.3
R1/4 × 1/2	2350	20.9	4350	31.5	4150	30.3

ap: D1/16~D1/4 =.008″
D5/16~D1/2 =.012″
ae: 0.2×D

ap: D1/16~D1/8 = 0.05×D
D3/16~D5/16 = .010″
D3/8~D1/2 = .012″
ae: 0.1×D



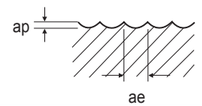
RPM = rev./min.
FEED = inch/min.

■ HIGH SPEED

MATERIAL	P					
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRc45		HRc45 ~ HRc50		HRc50 ~ HRc55	
STRENGTH	1500N/mm²		1250 ~ 1750N/mm²		1750 ~ 2000N/mm²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R1/32 × 1/16	18400	21.9	13800	28.9	13600	30.1
R1/16 × 1/8	16800	31.5	10200	55.1	9800	51.2
R3/32 × 3/16	16800	56.7	7500	52.0	7200	49.2
R1/8 × 1/4	16800	72.8	6900	55.1	6500	53.1
R5/32 × 5/16	12600	89.4	5600	49.2	5300	45.3
R3/16 × 3/8	10930	96.1	4850	45.3	4650	43.3
R1/4 × 1/2	8400	82.7	4350	44.5	4150	41.3

ap: D1/16~D1/4 =.008″
D5/16~D1/2 =.012″
ae: 0.05×D

ap: D1/16~D1/8 = 0.05×D
D3/16~D5/16 = .010″
D3/8~D1/2 = .012″
ae: 0.05×D



RPM = rev./min.
FEED = inch/min.

X-POWER END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE BALL NOSE with PENCIL NECK

EM979 SERIES

■ NORMAL SPEED

MATERIAL	P					
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	HRc30 ~ HRc40		HRc45 ~ HRc50		HRc50 ~ HRc55	
STRENGTH	1000 ~ 1250N/mm^2		1250 ~ 1750N/mm^2		1750 ~ 2000N/mm^2	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R3/32 × 3/16	4670	14.5	6000	27.7	5760	26.8
R1/8 × 1/4	4030	15.8	5520	29.0	5200	27.7
R5/32 × 5/16	2830	16.7	4480	26.5	4240	25.2
R3/16 × 3/8	2420	17.9	3880	25.2	3720	24.2
R1/4 × 1/2	1880	16.7	3480	25.2	3320	24.2

ap: D3/16~D1/4 =.008″
D5/16~D1/2 =.012″
ae: 0.2×D

ap: D3/16~D5/16 = .010″
D3/8~D1/2 = .012″
ae: 0.1×D



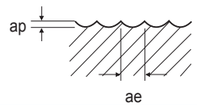
RPM = rev./min.
FEED = inch/min.

■ HIGH SPEED

MATERIAL	P					
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRc45		HRc45 ~ HRc50		HRc50 ~ HRc55	
STRENGTH	1500N/mm^2		1250 ~ 1750N/mm^2		1750 ~ 2000N/mm^2	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R3/32 × 3/16	13440	45.4	6000	41.6	5760	39.4
R1/8 × 1/4	13440	58.2	5520	44.1	5200	42.5
R5/32 × 5/16	10080	71.5	4480	39.4	4240	36.2
R3/16 × 3/8	8740	76.9	3880	36.3	3720	34.6
R1/4 × 1/2	6720	66.2	3480	35.6	3320	33.0

ap: D3/16~D1/4 =.008″
D5/16~D1/2 =.012″
ae: 0.05×D

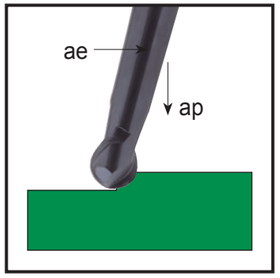
ap: D3/16~D5/16 = .010″
D3/8~D1/2 = .012″
ae: 0.05×D



RPM = rev./min.
FEED = inch/min.

X-POWER END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE BALL NOSE - MMC



RECOMMENDED CUTTING CONDITIONS

- ap=0.02×D1
- ae=0.05×D1

EM084, EM096, EM669, EM863 SERIES

■ NORMAL SPEED

MATERIAL	P					
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOYED STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	~HRc30		HRc30 ~ HRc40		HRc45 ~ HRc65	
STRENGTH	~1000N/mm^2		1000 ~ 1250N/mm^2		1500N/mm^2	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	35000	110.2	33000	102.4	12000	35.4
R5/64 × 5/32	26000	90.6	25000	86.6	9000	31.5
R3/32 × 3/16	21000	82.7	20000	78.7	7000	27.6
R1/8 × 1/4	17000	74.8	16000	70.9	6000	25.6
R5/32 × 5/16	13000	66.9	12000	63.0	4500	21.7
R3/16 × 3/8	10500	57.1	10000	55.1	3500	19.7
R1/4 × 1/2	9000	55.1	8000	51.2	3000	17.7
R5/16 × 5/8	6000	47.2	5500	43.3	2000	15.8

RPM = rev./min.
FEED = inch/min.

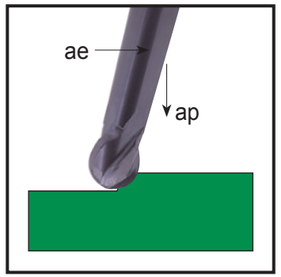
■ HIGH SPEED

MATERIAL	P					
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOYED STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	~HRc30		HRc30 ~ HRc40		HRc45 ~ HRc65	
STRENGTH	~1000N/mm^2		1000 ~ 1250N/mm^2		1500N/mm^2	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	47000	145.7	44000	137.8	17000	55.1
R5/64 × 5/32	35000	126.0	33000	118.1	13000	47.2
R3/32 × 3/16	28000	110.2	27000	102.4	10000	43.3
R1/8 × 1/4	23000	102.4	22000	94.5	8000	37.4
R5/32 × 5/16	18000	90.6	17000	82.7	6000	33.5
R3/16 × 3/8	14000	78.7	13000	74.8	5000	29.5
R1/4 × 1/2	12000	70.9	11000	70.9	4000	27.6
R5/16 × 5/8	9000	63.0	8000	59.1	3300	23.6

RPM = rev./min.
FEED = inch/min.

X-POWER END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE BALL NOSE - MMC



RECOMMENDED CUTTING CONDITIONS

- ap=0.02×D1
- ae=0.05×D1

EM093, EM097, EM673, EM864 SERIES

■ NORMAL SPEED

MATERIAL	P					
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOYED STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	~HRc30		HRc30 ~ HRc40		HRc45 ~ HRc65	
STRENGTH	~1000N/mm^2		1000 ~ 1250N/mm^2		1500N/mm^2	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R3/32 × 3/16	21000	157.5	20000	157.5	7000	55.1
R1/8 × 1/4	17000	157.5	16000	137.8	6000	51.2
R5/32 × 5/16	13000	137.8	12000	118.1	4500	43.3
R3/16 × 3/8	10500	118.1	10000	98.4	3500	39.4
R1/4 × 1/2	9000	110.2	8000	98.4	3000	37.4
R5/16 × 5/8	6000	110.2	5500	86.6	2000	31.5

RPM = rev./min.
FEED = inch/min.

■ HIGH SPEED

MATERIAL	P					
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOYED STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	~HRc30		HRc30 ~ HRc40		HRc45 ~ HRc65	
STRENGTH	~1000N/mm^2		1000 ~ 1250N/mm^2		1500N/mm^2	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R3/32 × 3/16	28000	220.5	27000	208.7	11000	82.7
R1/8 × 1/4	23000	200.1	22000	192.9	9000	74.8
R5/32 × 5/16	18000	181.1	17000	169.3	7000	66.9
R3/16 × 3/8	14000	153.5	13000	145.7	5000	55.1
R1/4 × 1/2	12000	145.7	11000	137.8	4500	51.2
R5/16 × 5/8	9000	122.0	8000	118.1	3300	43.3

RPM = rev./min.
FEED = inch/min.

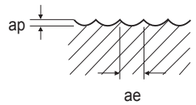
X-POWER END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE MINIATURE BALL NOSE

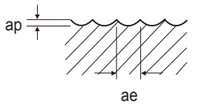
EM960, EM865 SERIES

MATERIAL	P			
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		HARDENED STEELS	
HARDNESS	HRc30 ~ HRc45		HRc45 ~ HRc55	
STRENGTH	1000 ~ 1500N/mm^2		1500 ~ 2000N/mm^2	
DIAMETER	RPM	FEED	RPM	FEED
R.012 × .024	30000	23.6	30000	11.8
R.0155 × .031	27000	25.6	27000	15.0
R.020 × .040	25000	25.6	25000	15.7
R.0235 × .047	24000	26.4	24000	16.5
R.031 × .062	23000	27.6	23000	16.9

D < .040 ap=0.05×D ae=0.15×D
D ≧ .040 ap=0.075×D ae=0.15×D



D < .040 ap=0.05×D ae=0.1×D
D ≧ .040 ap=0.05×D ae=0.15×D

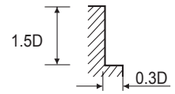


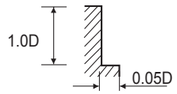
RPM = rev./min.
FEED = inch/min.

CARBIDE, MULTI FLUTE ROUGHING - SIDE CUTTING

EM666, EM156, EM832, EM814 SERIES

MATERIAL	P									
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~HRc30		HRc30 ~ HRc38		HRc38 ~ HRc45		HRc45 ~ HRc55		HRc55 ~ HRc65	
STRENGTH	~1000N/mm^2		1000 ~ 1200N/mm^2		1200` ~ 1400N/mm^2		1400 ~ 2000N/mm^2		2000N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	15600	91.4	12400	33.1	8400	22.5	3400	10.3	2400	7.5
5/16	11600	91.4	9200	33.1	6300	22.5	2400	9.5	1800	7.1
3/8	9200	91.4	7600	33.1	5100	22.5	2000	11.4	1300	7.5
1/2	8000	94.5	6000	31.5	4200	22.5	1680	10.3	1200	7.5
5/8	6000	94.5	4800	29.9	3300	20.1	1200	6.3	800	4.4
3/4	5200	91.4	4400	28.4	2700	16.6	1100	5.9	700	4.0
1	4800	85.1	3600	22.1	2400	14.2	1000	5.9	660	4.0





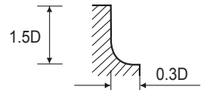
RPM = rev./min.
FEED = inch/min.

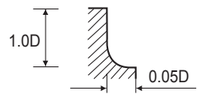
X-POWER END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, MULTI FLUTE ROUGHING BALL NOSE - SIDE CUTTING

EM662, EM833 SERIES

MATERIAL	P									
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc38		HRc38 ~ HRc45		HRc45 ~ HRc55		HRc55 ~ HRc65	
STRENGTH	~ 1000N/mm^2		1000 ~ 1200N/mm^2		1200 ~ 1400N/mm^2		1400 ~ 2000N/mm^2		2000N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1/8 × 1/4	15600	91.3	12400	33.0	8400	22.4	3400	10.2	2400	7.5
R5/32 × 5/16	11600	91.3	9200	33.0	6300	22.4	2400	9.4	1800	7.1
R3/16 × 3/8	9200	91.3	7600	33.0	5100	22.4	2000	11.4	1300	7.5
R1/4 × 1/2	8000	94.5	6000	31.5	4200	22.4	1680	10.2	1200	7.5
R5/16 × 5/8	6000	94.5	4800	29.9	3300	20.1	1200	6.3	800	4.3
R3/8 × 3/4	4800	85.0	3600	22.0	2400	14.1	1000	5.9	660	3.9





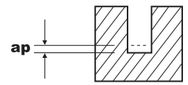
RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE FINISH for RIB PROCESSING

EM966, EM883 SERIES

MATERIAL	P								
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS	~ HRc30			HRc30 ~ HRc45			HRc45 ~ HRc55		
STRENGTH	~ 1000N/mm^2			1000 ~ 1500N/mm^2			1500 ~ 2000N/mm^2		
DIAMETER	RPM	FEED	ap	RPM	FEED	ap	RPM	FEED	ap
1/32	27000~35000	7.5~16.5	.0006~.0014	19500~24500	2.4~9.5	.0006~.0014	12500~14800	1.4~3.7	.0003~.0006
3/64	18500~23500	7.5~23.6	.0022~.0039	13000~16500	3.7~11.8	.0022~.0039	8300~10500	2.0~3.9	.0004~.0009
1/16	14000~18000	7.5~23.6	.0030~.0057	10200~12800	3.7~11.8	.0030~.0057	6400~8000	2.0~3.9	.0006~.0012
5/64	12000~14500	7.5~23.6	.0035~.0071	8300~10500	3.7~11.8	.0035~.0071	5300~6600	2.0~3.9	.0007~.0014
3/32	9500~12000	7.5~23.6	.0044~.0093	6700~8500	3.7~11.8	.0044~.0093	4300~5300	2.0~3.9	.0009~.0018
1/8	8000~10000	7.5~23.6	.0053~.0106	5500~7000	3.7~11.8	.0053~.0106	3500~4400	2.0~3.9	.0011~.0022

(Depth of Cut per one pass)



RPM = rev./min.
FEED = inch/min.

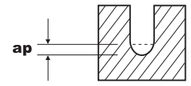
X-POWER END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING

EM967, EM886 SERIES

MATERIAL	P								
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS	~ HRc30			HRc30 ~ HRc45			HRc45 ~ HRc55		
STRENGTH	~ 1000N/mm^2			1000 ~ 1500N/mm^2			1500 ~ 2000N/mm^2		
DIAMETER	RPM	FEED	ap	RPM	FEED	ap	RPM	FEED	ap
R1/64 × 1/32	27000~35000	7.5~16.5	.0006~.0014	19500~24500	2.4~9.5	.0006~.0014	12500~14800	1.4~3.7	.0003~.0006
R.0234 × 3/64	18500~23500	7.5~23.6	.0022~.0039	13000~16500	3.7~11.8	.0022~.0039	8300~10500	2.0~3.9	.0004~.0009
R1/32 × 1/16	14000~18000	7.5~23.6	.0030~.0057	10200~12800	3.7~11.8	.0030~.0057	6400~8000	2.0~3.9	.0006~.0012
R.0391 × 5/64	12000~14500	7.5~23.6	.0035~.0071	8300~10500	3.7~11.8	.0035~.0071	5300~6600	2.0~3.9	.0007~.0014
R3/64 × 3/32	9500~12000	7.5~23.6	.0044~.0093	6700~8500	3.7~11.8	.0044~.0093	4300~5300	2.0~3.9	.0009~.0018
R1/16 × 1/8	8000~10000	7.5~23.6	.0053~.0106	5500~7000	3.7~11.8	.0053~.0106	3500~4400	2.0~3.9	.0011~.0022

(Depth of Cut per one pass)

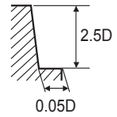


RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE TAPER - SIDE CUTTING

EM837 SERIES

MATERIAL	P			
	NON-ALLOYED STEELS ALLOY STEELS		ALLOY STEELS HEAT RESISTANT STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc45	
STRENGTH	~ 1000N/mm^2		1000 ~ 1500N/mm^2	
DIAMETER	RPM	FEED	RPM	FEED
2.0	8400	6.7	6300	4.9
3.0	4410	4.7	3570	3.9
4.0	3570	5.5	2840	4.5
5.0	3050	7.1	2410	5.7
6.0	2630	8.3	2100	6.7
8.0	2000	9.8	1580	7.1



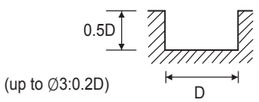
RPM = rev./min.
FEED = inch/min.

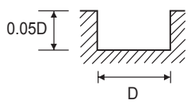
X-POWER END MILLS — RECOMMENDED CUTTING CONDITIONS

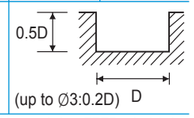
CARBIDE, 3 FLUTE - SLOTTING

EM895 SERIES

MATERIAL	P								M	
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS		STAINLESS STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc45		HRc45 ~ HRc55		HRc55 ~ HRc65			
STRENGTH	~ 1000N/mm^2		1000 ~ 1500N/mm^2		1500 ~ 2000N/mm^2		2000N/mm^2 ~			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0	11560	6.7	7560	4.3	5040	1.2			6300	3.2
3.0	8920	7.5	5560	5.1	3360	1.4	1900	1.6	4620	4.3
4.0	7560	10.6	4620	6.3	2940	1.4	1480	1.4	3880	5.1
5.0	6300	11.0	3780	6.7	2320	1.8	1260	1.4	3160	5.5
6.0	5560	12.2	3360	7.9	2000	2.0	1100	1.4	2840	6.3
8.0	4200	13.4	2520	7.1	1680	2.6	840	1.4	2100	6.3
10.0	3260	11.8	2000	5.5	1360	2.2	680	1.2	1680	5.7
12.0	2740	9.8	1680	4.7	1160	2.0	560	1.2	1360	4.7
16.0	2200	7.9	1360	3.9	900	1.4	440	0.8	1060	3.9
18.0	1940	6.9	1210	3.4	790	1.2	380	0.8	950	3.4
20.0	1680	5.9	1060	2.8	680	1.0	320	0.8	840	2.8





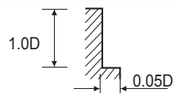


RPM = rev./min. FEED = inch/min.

CARBIDE, 3 FLUTE - SIDE CUTTING

EM895 SERIES

MATERIAL	P								M	
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS		STAINLESS STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc45		HRc45 ~ HRc55		HRc55 ~ HRc65			
STRENGTH	~ 1000N/mm^2		1000 ~ 1500N/mm^2		1500 ~ 2000N/mm^2		2000N/mm^2 ~			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0	11560	8.3	7560	5.5	5040	1.2			6300	4.5
3.0	8920	9.5	5560	5.9	3360	1.6	1900	1.8	4620	4.9
4.0	7560	16.9	4620	10.2	2940	1.8	1480	1.8	3880	8.3
5.0	6300	17.7	3780	10.6	2320	2.2	1260	1.8	3160	9.1
6.0	5560	19.7	3360	12.2	2000	2.4	1100	1.8	2840	9.8
8.0	4200	20.9	2520	11.4	1680	3.2	840	1.8	2100	10.4
10.0	3260	18.1	2000	9.1	1360	2.8	680	1.4	1680	9.1
12.0	2740	15.4	1680	7.5	1160	2.4	560	1.4	1360	7.1
16.0	2200	12.2	1360	5.9	900	1.8	440	0.8	1060	5.9
18.0	1940	11.0	1210	5.3	790	1.4	380	0.8	950	5.1
20.0	1680	9.5	1060	4.7	680	1.2	320	0.8	840	4.5



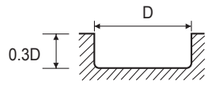
RPM = rev./min. FEED = inch/min.

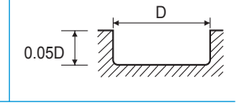
X-POWER END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE LONG CORNER RADIUS - SLOTTING

EM818 SERIES

MATERIAL	P							
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc45		HRc45 ~ HRc55		HRc55 ~ HRc65	
STRENGTH	~ 1000N/mm^2		1000 ~ 1500N/mm^2		1500 ~ 2000N/mm^2		2000N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3.0	6620	5.5	4280	2.8	2640	1.4	1870	0.7
4.0	5360	6.7	3410	3.4	2150	1.6	1470	0.8
5.0	4580	8.3	2900	3.9	1900	2.0	1260	1.0
6.0	3950	9.8	2520	4.9	1640	2.4	1160	1.4
8.0	3000	10.6	1900	4.9	1260	2.4	840	1.4
10.0	2520	10.6	1640	4.9	1010	2.4	670	1.4
12.0	2060	8.3	1390	4.5	840	2.0	550	1.0
16.0	1740	7.5	1070	3.5	670	1.6	440	0.8
20.0	1260	5.5	820	2.4	500	1.2	340	0.6



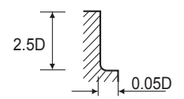


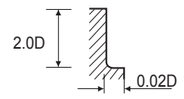
RPM = rev./min.
FEED = inch/min.

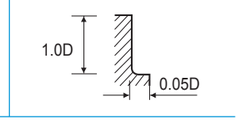
CARBIDE, 4 FLUTE LONG CORNER RADIUS - SIDE CUTTING

EM819 SERIES

MATERIAL	P							
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc45		HRc45 ~ HRc55		HRc55 ~ HRc65	
STRENGTH	~ 1000N/mm^2		1000 ~ 1500N/mm^2		1500 ~ 2000N/mm^2		2000N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3.0	6620	6.7	4280	5.1	2640	2.6	1870	1.2
4.0	5360	8.3	3410	5.9	2150	2.8	1470	1.4
5.0	4580	8.5	2900	7.1	1900	3.4	1260	1.6
6.0	3950	8.5	2520	7.1	1640	3.4	1160	2.0
8.0	3000	9.1	1900	7.1	1260	3.4	840	2.0
10.0	2520	9.1	1640	7.1	1010	3.4	670	2.0
12.0	2060	7.1	1390	6.3	840	2.8	550	1.6
16.0	1740	6.3	1070	4.9	670	2.4	440	1.4
20.0	1260	4.5	820	3.5	500	1.8	340	1.0







RPM = rev./min.
FEED = inch/min.

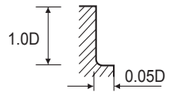
X-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE STUB CORNER RADIUS - SIDE CUTTING

EM839 SERIES

MATERIAL	P							
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc45		HRc45 ~ HRc55		HRc55 ~ HRc65	
STRENGTH	~ 1000N/mm^2		1000 ~ 1500N/mm^2		1500 ~ 2000N/mm^2		2000N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0	13870	13.4	9070	8.1	6050	2.4		
2.5	12290	14.2	7870	8.7	5040	2.6		
3.0	10700	15.2	6670	9.5	4030	2.8	2280	2.8
3.5	9890	21.1	6100	13.0	3780	2.8	2030	2.8
4.0	9070	27.0	5540	16.5	3530	2.8	1780	2.8
5.0	7560	28.4	4540	16.9	2780	3.4	1510	2.8
6.0	6670	31.1	4030	19.3	2400	3.7	1320	2.8
8.0	5040	33.5	3020	17.9	2020	5.1	1010	2.8
10.0	3910	28.7	2400	14.2	1630	4.3	820	2.4
12.0	3290	24.6	2020	11.8	1390	3.7	670	2.4
16.0	2640	19.3	1630	9.5	1080	2.8	530	1.4

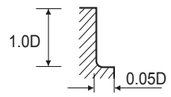


RPM = rev./min.
FEED = inch/min.

CARBIDE, 6 FLUTE STUB CORNER RADIUS - SIDE CUTTING

EM897 SERIES

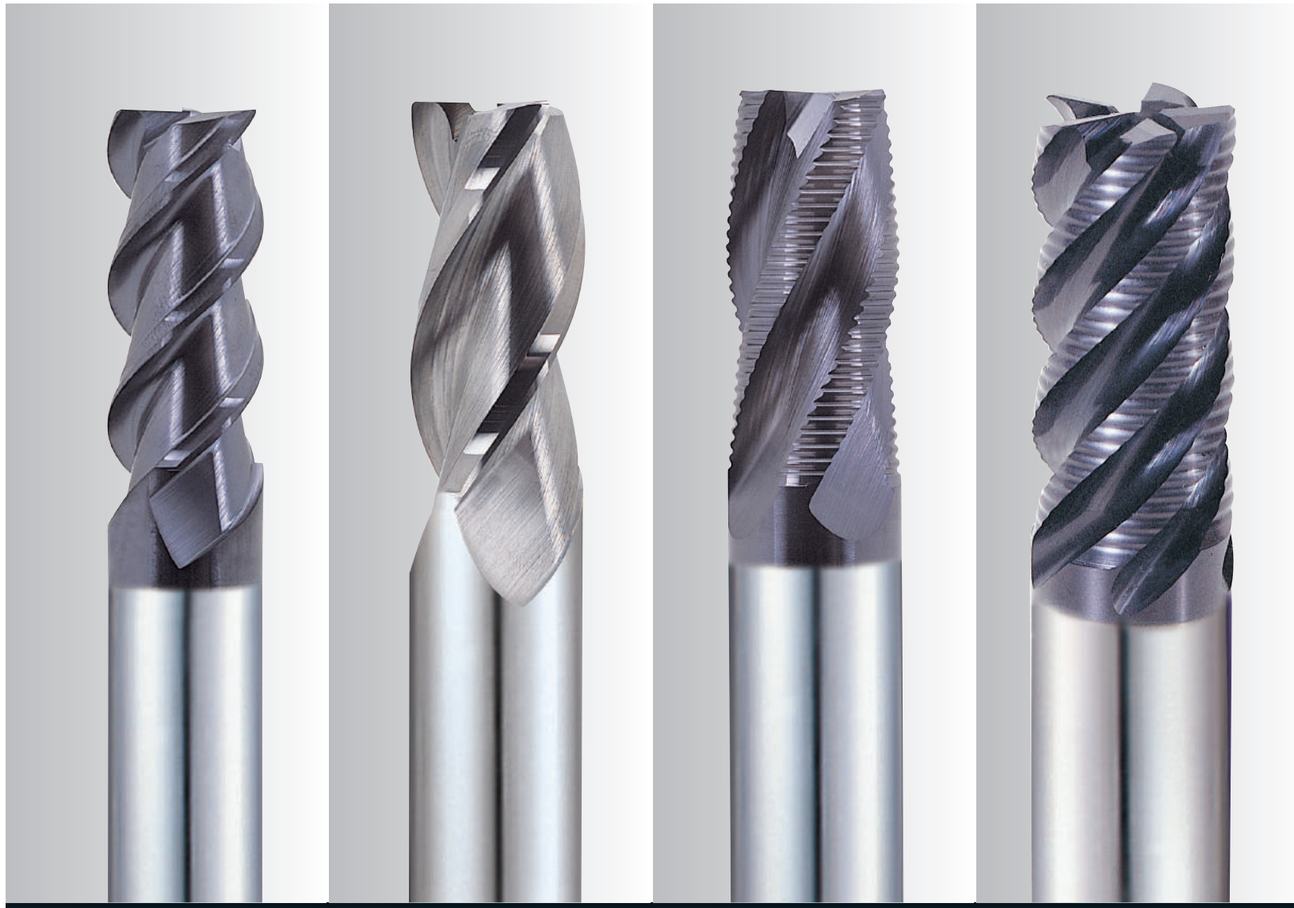
MATERIAL	P							
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc45		HRc45 ~ HRc55		HRc55 ~ HRc65	
STRENGTH	~ 1000N/mm^2		1000 ~ 1500N/mm^2		1500 ~ 2000N/mm^2		2000N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6.0	6670	31.1	4030	19.3	2400	3.7	1320	2.8
8.0	5040	33.5	3020	17.9	2020	5.1	1010	2.8
10.0	3910	28.7	2400	14.2	1630	4.3	820	2.4
12.0	3290	24.6	2020	11.8	1390	3.7	670	2.4



RPM = rev./min.
FEED = inch/min.

CARBIDE & HSS

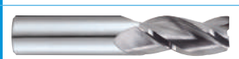
Being the best through innovation



JET-POWER END MILLS

- Exotic materials like Stainless Steels, Nickel alloys and Titanium

◎ : Excellent ○ : Good

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE	P: Carbon Steels ~HRc20	P: Alloy Steels HRc20~30	P: Prehardened Steels HRc30~40	P: Hardened Steels HRc40~45	P: Hardened Steels HRc45~55	H: High Hardened Steels HRc55~70	M: Stainless Steels	K: Cast Iron	N: Copper	N: Graphite	N: Aluminum	N: Acrylic	N: CFRP	S: Titanium	S: High Temperature Alloy
INCH																				
EH108		CARBIDE, 3&4 FLUTE 50° HELIX REGULAR LENGTH ◆	D1/8	D1	**938**	○	◎	◎	○			◎	○						○	○
EE882		YPM, 6 FLUTE 35° HELIX REGULAR LENGTH ◆	D3/4	D1-1/2	**939**	○	◎	◎	○			◎							◎	○
E5075 E5105		CARBIDE, 3 FLUTE 35° HELIX STUB LENGTH CORNER RADIUS - "HOSS" ◆	D1/8	D1	**940**	○	◎	○				◎	○							
E5074 E5104		CARBIDE, 3 FLUTE 35° HELIX REGULAR LENGTH CORNER RADIUS - "HOSS" ◆	D1/8	D1	**941**	○	◎	○				◎	○							
EH094		CARBIDE, MULTI FLUTE STUB LENGTH FINE PITCH ROUGHING ◆	D1/4	D1	**942**	○	◎	◎	○			◎							◎	○
EH095		CARBIDE, MULTI FLUTE LONG LENGTH FINE PITCH ROUGHING ◆	D1/4	D1	**943**	○	◎	◎	○			◎							◎	○
EH969		CARBIDE, MULTI FLUTE 45° HELIX LONG LENGTH FINE PITCH ROUGHING ◆	D3/16	D1	**944**	○	◎	◎	○			◎							◎	○
EH970		CARBIDE, MULTI FLUTE 45° HELIX LONG REACH FINE PITCH ROUGHING ◆	D1/4	D3/4	**945**	○	◎	◎	○			◎							◎	○
METRIC																				
EH830		CARBIDE, 3&4 FLUTE 50° HELIX LONG LENGTH ◇	D6.0	D25.0	**946**	○	◎	◎	○			◎							◎	○
EE515		PREMIUM HSS-PM, 4&6 FLUTE SHORT LENGTH ◇	D3.0	D25.0	**947**	○	◎	◎	○			◎							◎	○
EH852		CARBIDE, MULTI FLUTE SHORT FINE PITCH ROUGHING ◇	D6.0	D25.0	**948**	○	◎	◎	○			◎							◎	○
EH831		CARBIDE, MULTI FLUTE LONG LENGTH FINE PITCH ROUGHING ◇	D6.0	D25.0	**949**	○	◎	◎	○			◎							◎	○
EH917		CARBIDE, MULTI FLUTE 45° HELIX SHORT LENGTH FINE PITCH ROUGHING ◇	D6.0	D20.0	**950**	○	◎	◎	○			◎							◎	○
EH919		CARBIDE, MULTI FLUTE 45° HELIX LONG LENGTH FINE PITCH ROUGHING ◇	D4.0	D25.0	**951**	○	◎	◎	○			◎							◎	○
EH921		CARBIDE, MULTI FLUTE 45° HELIX LONG REACH FINE PITCH ROUGHING ◇	D6.0	D20.0	**952**	○	◎	◎	○			◎							◎	○
		RECOMMENDED CUTTING CONDITIONS			**953**															

◆ U.S.A Stock

◇ Call for Availability

JET-POWER END MILLS

EH108 SERIES PLAIN SHANK FLAT SHANK

CARBIDE, 3&4 FLUTE 50° HELIX REGULAR LENGTH

- Suitable for low hardness materials (under HRc 45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steels, inconel, nimonic, etc.
- Corner Protection against chipping.



MG | 3&4 | 50° | PLAIN | FLAT

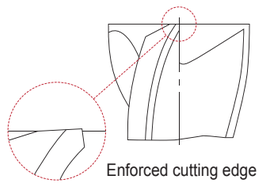
P.953

◆ U.S.A Stock

Unit : Inch

EDP No. PLAIN	EDP No. FLAT	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
95063	—	1/8	1/8	1/2	1-1/2	3
95064	—	3/16	3/16	5/8	2	3
95065	—	1/4	1/4	3/4	2-1/2	3
95066	—	5/16	5/16	13/16	2-1/2	3
—	95067	3/8	3/8	1	2-1/2	3
95115	—	7/16	7/16	1	2-3/4	3
—	95068	1/2	1/2	1	3	3
—	95069	5/8	5/8	1-1/4	3-1/2	3
—	95070	3/4	3/4	1-1/2	4	4
—	95071	1	1	1-1/2	4	4

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



◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	○			◎	○						○	○

JET-POWER END MILLS

EE882 SERIES FLAT SHANK

YPM, 6 FLUTE 35° HELIX REGULAR LENGTH

- Designed to machine low hardness materials (under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steel, inconel, nimonic, etc.
- High velocity milling operation and good surface finishes.



YPM | 6 | 35° | FLAT

P.954

◆ U.S.A Stock

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
95094	3/4	3/4	1-5/8	3-7/8
95095	7/8	7/8	1-7/8	4-1/8
95096	1	1	2	4-1/2
95097	1-1/4	1-1/4	2	4-1/2
95098	1-1/2	1-1/4	2	4-1/2

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	○			◎							◎	○

JET-POWER END MILLS

E5075 SERIES PLAIN SHANK Ø1/8~Ø5/16
E5105 SERIES FLAT SHANK Ø11/32~Ø1

CARBIDE, 3 FLUTE 35° HELIX STUB LENGTH CORNER RADIUS - "HOSS"

- ▶ #1 Choice for slotting, ramping & pocket work on stainless, monel & other alloys up to HRc35.
- ▶ Dry milling is recommended on steel alloys to reduce thermal shock and increase the life (YG:TYLON F or E COATING).



MG | 3 | 35° | PLAIN | FLAT

Ø1/8~Ø5/16 Ø11/32~Ø1

◆ U.S.A Stock

Unit : Inch

EDP No.					Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	R				
57558	**57558TN**	**57558TC**	**57558TF**	**57558TE**	.008~.010	**1/8**	1/8	1/4	1-1/2
57561	**57561TN**	**57561TC**	**57561TF**	**57561TE**	.008~.010	**5/32**	3/16	5/16	2
57565	**57565TN**	**57565TC**	**57565TF**	**57565TE**	.008~.010	**3/16**	3/16	5/16	2
57570	**57570TN**	**57570TC**	**57570TF**	**57570TE**	.015~.020	**7/32**	1/4	3/8	2
57573	**57573TN**	**57573TC**	**57573TF**	**57573TE**	.015~.020	**1/4**	1/4	3/8	2
57576	**57576TN**	**57576TC**	**57576TF**	**57576TE**	.015~.020	**9/32**	5/16	7/16	2
57579	**57579TN**	**57579TC**	**57579TF**	**57579TE**	.015~.020	**5/16**	5/16	7/16	2
57582	**57582TN**	**57582TC**	**57582TF**	**57582TE**	.015~.020	**11/32**	3/8	1/2	2
57584	**57584TN**	**57584TC**	**57584TF**	**57584TE**	.015~.020	**3/8**	3/8	1/2	2
57588	**57588TN**	**57588TC**	**57588TF**	**57588TE**	.015~.020	**7/16**	7/16	9/16	2-1/2
57593	**57593TN**	**57593TC**	**57593TF**	**57593TE**	.030~.035	**1/2**	1/2	5/8	2-1/2
57595	**57595TN**	**57595TC**	**57595TF**	**57595TE**	.030~.035	**5/8**	5/8	3/4	3
57598	**57598TN**	**57598TC**	**57598TF**	**57598TE**	.030~.035	**3/4**	3/4	1	3
57600	**57600TN**	**57600TC**	**57600TF**	**57600TE**	.030~.035	**1**	1	1-1/4	3

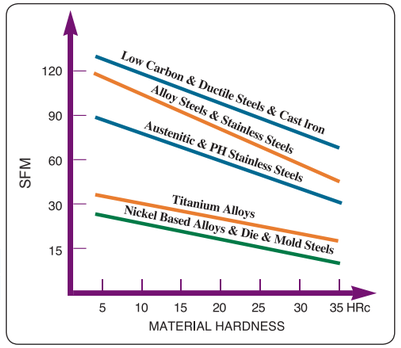
Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0003

RECOMMENDED CUTTING CONDITIONS

- ▶ Use stub length whenever possible
- ▶ Hardslick coating is recommended on soft gummy material
  Especially on tools 3/16 and under

CUTTING TOOL DIAMETER

1/8	.0003~.0015	**3/8**	.0015~.0035	**3/4**	.003~.006
3/16	.0004~.002	**7/16**	.002~.004	**1**	.003~.007
1/4	.001~.0025	**1/2**	.0025~.0045		
5/16	.0015~.003	**5/8**	.0025~.005		



◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	○				◎	○							

JET-POWER END MILLS

E5074 SERIES PLAIN SHANK Ø1/8~Ø5/16
E5104 SERIES FLAT SHANK Ø11/32~Ø1

CARBIDE, 3 FLUTE 35° HELIX REGULAR LENGTH CORNER RADIUS - "HOSS"

- ▶ #1 Choice for slotting, ramping & pocket work on stainless, monel & other alloys up to HRc35.
- ▶ Dry milling is recommended on steel alloys to reduce thermal shock and increase the life (YG:TYLON F or E COATING).



MG | 3 | 35° | PLAIN | FLAT

aØ1/8~Ø5/16 Ø11/32~Ø1

P.940

◆ U.S.A Stock

Unit : Inch

EDP No.					Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	R				
56558	**56558TN**	**56558TC**	**56558TF**	**56558TE**	.008~.010	**1/8**	1/8	1/2	1-1/2
56561	**56561TN**	**56561TC**	**56561TF**	**56561TE**	.008~.010	**5/32**	3/16	9/16	2
56565	**56565TN**	**56565TC**	**56565TF**	**56565TE**	.008~.010	**3/16**	3/16	9/16	2
56570	**56570TN**	**56570TC**	**56570TF**	**56570TE**	.015~.020	**7/32**	1/4	3/4	2-1/2
56573	**56573TN**	**56573TC**	**56573TF**	**56573TE**	.015~.020	**1/4**	1/4	3/4	2-1/2
56576	**56576TN**	**56576TC**	**56576TF**	**56576TE**	.015~.020	**9/32**	5/16	13/16	2-1/2
56579	**56579TN**	**56579TC**	**56579TF**	**56579TE**	.015~.020	**5/16**	5/16	13/16	2-1/2
56582	**56582TN**	**56582TC**	**56582TF**	**56582TE**	.015~.020	**11/32**	3/8	1	2-1/2
56584	**56584TN**	**56584TC**	**56584TF**	**56584TE**	.015~.020	**3/8**	3/8	1	2-1/2
56588	**56588TN**	**56588TC**	**56588TF**	**56588TE**	.015~.020	**7/16**	7/16	1	2-3/4
56593	**56593TN**	**56593TC**	**56593TF**	**56593TE**	.030~.035	**1/2**	1/2	1-1/4	3
56595	**56595TN**	**56595TC**	**56595TF**	**56595TE**	.030~.035	**5/8**	5/8	1-5/8	3-1/2
56598	**56598TN**	**56598TC**	**56598TF**	**56598TE**	.030~.035	**3/4**	3/4	1-5/8	4
56600	**56600TN**	**56600TC**	**56600TF**	**56600TE**	.030~.035	**1**	1	2	4

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	○				◎	○							

JET-POWER END MILLS

EH094 SERIES PLAIN SHANK

CARBIDE, MULTI FLUTE STUB LENGTH FINE PITCH ROUGHING

- Designed to machine low hardness materials (under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steel, inconel, nimonic.
- High velocity milling operation.
- Fast chip ejection.



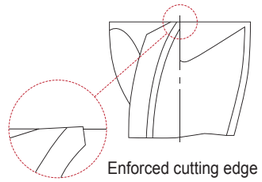
MG | FINE | 3-5 | 30° | PLAIN P.955

◆ U.S.A Stock

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
95072	**1/4**	1/4	5/16	2-1/8	3
95073	**5/16**	5/16	3/8	2-1/4	3
95074	**3/8**	3/8	9/16	2-1/2	3
95075	**1/2**	1/2	5/8	3	4
95076	**5/8**	5/8	7/8	3-1/4	4
95077	**3/4**	3/4	1	3-3/4	4
95078	**1**	1	1	4	5

Mill Dia. (inch)	Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
1/4~3/8	0 ~ -.0022	0 ~ -.0003
1/2~5/8	0 ~ -.0027	
3/4~1	0 ~ -.0033	



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	○			◎							◎	○

JET-POWER END MILLS

EH095 SERIES PLAIN SHANK

CARBIDE, MULTI FLUTE LONG LENGTH FINE PITCH ROUGHING

- Suitable for low hardness materials (under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steel, inconel, nimonic, etc.
- High velocity milling operation.
- Fast chip ejection.





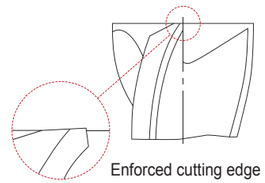
MG | FINE | 3-5 | 30° | PLAIN P.955

◆ U.S.A Stock

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
95079	**1/4**	1/4	3/4	2-1/2	3
95080	**5/16**	5/16	3/4	2-1/2	3
95081	**3/8**	3/8	7/8	2-1/2	3
95082	**1/2**	1/2	1	3	4
95083	**5/8**	5/8	1-1/4	3-1/2	4
95084	**3/4**	3/4	1-5/8	4	4
95085	**1**	1	1-3/4	4	5

Mill Dia. (inch)	Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
1/4~3/8	0 ~ -.0022	0 ~ -.0003
1/2~5/8	0 ~ -.0027	
3/4~1	0 ~ -.0033	



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	○			◎							◎	○

JET-POWER END MILLS

EH969 SERIES PLAIN SHANK

CARBIDE, MULTI FLUTE 45° HELIX LONG LENGTH FINE PITCH ROUGHING

- Suitable for low hardness materials (under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steel, titanium, inconel, nimonic, etc.
- High chip removed and minimizing breakages of cutting edges.
- Corner Protection against chipping.



MG | FINE | 3-6 | 45° | PLAIN

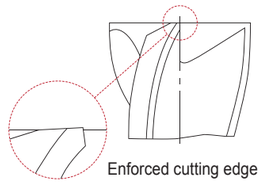
P.955

◆ U.S.A Stock

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
95107	**3/16**	1/4	1/2	2-1/4	3
95108	**1/4**	1/4	3/4	2-1/2	4
95109	**5/16**	5/16	3/4	2-1/2	4
95110	**3/8**	3/8	7/8	2-1/2	4
95111	**1/2**	1/2	1	3	4
95112	**5/8**	5/8	1-1/4	3-1/2	5
95113	**3/4**	3/4	1-5/8	4	6
95114	**1**	1	1-3/4	4	6

Mill Dia. (inch)	Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
3/16	0 ~ -.0019	0 ~ -.0003
1/4~3/8	0 ~ -.0022	
1/2~5/8	0 ~ -.0027	
3/4~1	0 ~ -.0033	



◎ : Excellent ○ : Good

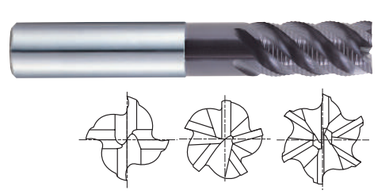
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	○			◎							◎	○

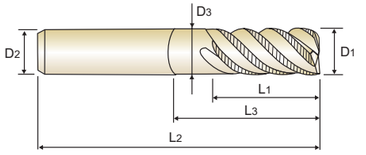
JET-POWER END MILLS

EH970 SERIES PLAIN SHANK

CARBIDE, MULTI FLUTE 45° HELIX LONG REACH FINE PITCH ROUGHING

- Suitable for low hardness materials (under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steel, titanium, inconel, nimonic, etc.
- High chip removed and minimizing breakages of cutting edges.
- Corner Protection against chipping.





MG | FINE | 4-6 | 45° | PLAIN

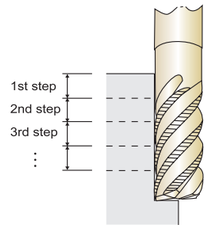
P.955

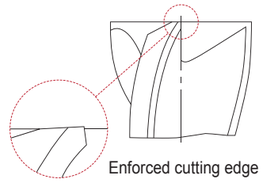
◆ U.S.A Stock

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	No. of Flute
	D_1	D_2	L_1	L_3	L_2	D_3	
95101	**1/4**	1/4	3/4	7/8	2-1/2	.230	4
95102	**5/16**	5/16	3/4	1	2-1/2	.292	4
95103	**3/8**	3/8	7/8	1-1/4	2-1/2	.355	4
95104	**1/2**	1/2	1	1-1/2	3	.480	4
95105	**5/8**	5/8	1-1/4	2	4	.605	5
95106	**3/4**	3/4	1-5/8	2-3/8	4-3/8	.719	6

Mill Dia. (inch)	Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
1/4~3/8	0 ~ -.0022	0 ~ -.0003
1/2~5/8	0 ~ -.0027	
3/4~1	0 ~ -.0033	





◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	○			◎							◎	○

JET-POWER END MILLS

EH830 SERIES PLAIN SHANK

CARBIDE, 3&4 FLUTE 50° HELIX LONG LENGTH

- ▶ Reduces chipping of corner edges
- ▶ Suitable for low hardness materials(under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steels, Inconel, nimonic, etc



MG | 3&4 | 50° | PLAIN

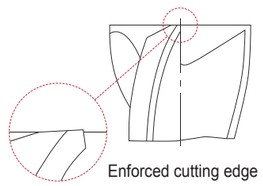
P.953

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flute
	Metric	Inch				
EH830060	6.0	.2362	6	13	50	3
EH830901	6.0	.2362	6	13	50	4
EH830080	8.0	.3150	8	19	60	3
EH830100	10.0	.3937	10	22	70	3
EH830120	12.0	.4724	12	25	75	3
EH830160	16.0	.6299	16	32	90	3
EH830180	18.0	.7087	18	32	90	3
EH830200	20.0	.7874	20	38	100	4
EH830250	25.0	.9843	25	45	120	4

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



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	○			◎							◎	○

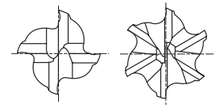
JET-POWER END MILLS

EE515 SERIES FLAT SHANK

PREMIUM HSS-PM, 4&6 FLUTE SHORT LENGTH

- ▶ Designed to machine low hardness materials (under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steel, inconel, nimonic, etc.
- ▶ High velocity milling operation and good surface finishes.





YPM | 4&6 | 30° | FLAT

P.954

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flute
	Metric	Inch				
EE515030	3.0	.1181	6	8	52	4
EE515040	4.0	.1575	6	11	55	4
EE515050	5.0	.1969	6	13	57	4
EE515060	6.0	.2362	6	13	57	4
EE515080	8.0	.3150	10	19	69	4
EE515100	10.0	.3937	10	22	72	4
EE515120	12.0	.4724	12	26	83	4
EE515140	14.0	.5512	12	26	83	4
EE515160	16.0	.6299	16	32	92	6
EE515180	18.0	.7087	16	32	92	6
EE515200	20.0	.7874	20	38	104	6
EE515250	25.0	.9843	25	45	121	6

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

◎ : Excellent ○ : Good

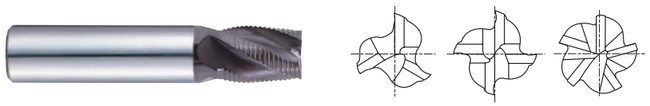
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	○			◎							◎	○

JET-POWER END MILLS

EH852 SERIES PLAIN SHANK

CARBIDE, MULTI FLUTE SHORT LENGTH FINE PITCH ROUGHING

- Designed to machine low hardness materials (under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steel, inconel, nimonic.
- High velocity milling operation.
- Fast chip ejection.



MG FINE 3-5 30° PLAIN P.955

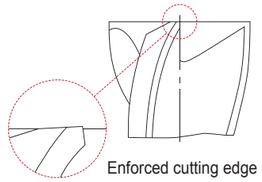
◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter Metric h10	Mill Diameter Inch h10	Shank Diameter h6	Length of Cut	Overall Length	No. of Flute
EH852060	6.0	.2362	6	7	54	3
EH852070	7.0	.2756	8	8	58	3
EH852080	8.0	.3150	8	9	58	3
EH852090	9.0	.3543	10	13	66	4
EH852100	10.0	.3937	10	14	66	4
EH852120	12.0	.4724	12	16	73	4
EH852140	14.0	.5512	14	18	75	4
EH852160	16.0	.6299	16	22	82	4
EH852180	18.0	.7087	18	24	84	4
EH852200	20.0	.7874	20	26	92	4
EH852250	25.0	.9843	25	25	110	5

Tolerances according to DIN 7160 & 7161

Tolerance range in µm, Nominal-Diameter in mm	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
h10	0 / − 40	0 / − 48	0 / − 58	0 / − 70	0 / − 84
h6	0 / − 6	0 / − 8	0 / − 9	0 / − 11	0 / − 13



◎ : Excellent ○ : Good

P Carbon Steels ~HRc20	P Alloy Steels HRc20~30	P Prehardened Steels HRc30~40	P Hardened Steels HRc40~45	P Hardened Steels HRc45~55	H High Hardened Steels HRc55~70	M Stainless Steels	K Cast Iron	N Copper	N Graphite	N Aluminum	N Acrylic	N CFRP	S Titanium	S High Temperature Alloy
○	◎	◎	○			◎							◎	○

JET-POWER END MILLS

EH831 SERIES PLAIN SHANK

CARBIDE, MULTI FLUTE LONG LENGTH FINE PITCH ROUGHING

- Designed to machine low hardness materials (under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steel, inconel, nimonic.
- High velocity milling operation.
- Fast chip ejection.



MG FINE 3-5 30° PLAIN P.955

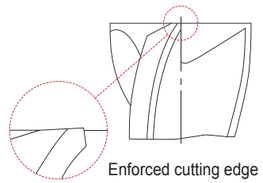
◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter Metric h10	Mill Diameter Inch h10	Shank Diameter h6	Length of Cut	Overall Length	No. of Flute
EH831060	6.0	.2362	6	16	57	3
EH831070	7.0	.2756	8	16	63	3
EH831080	8.0	.3150	8	16	63	3
EH831090	9.0	.3543	10	19	72	4
EH831100	10.0	.3937	10	22	72	4
EH831120	12.0	.4724	12	26	83	4
EH831140	14.0	.5512	14	26	83	4
EH831160	16.0	.6299	16	32	92	4
EH831180	18.0	.7087	18	32	92	4
EH831200	20.0	.7874	20	38	104	4
EH831250	25.0	.9843	25	45	121	5

Tolerances according to DIN 7160 & 7161

Tolerance range in µm, Nominal-Diameter in mm	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
h10	0 / − 40	0 / − 48	0 / − 58	0 / − 70	0 / − 84
h6	0 / − 6	0 / − 8	0 / − 9	0 / − 11	0 / − 13



◎ : Excellent ○ : Good

P Carbon Steels ~HRc20	P Alloy Steels HRc20~30	P Prehardened Steels HRc30~40	P Hardened Steels HRc40~45	P Hardened Steels HRc45~55	H High Hardened Steels HRc55~70	M Stainless Steels	K Cast Iron	N Copper	N Graphite	N Aluminum	N Acrylic	N CFRP	S Titanium	S High Temperature Alloy
○	◎	◎	○			◎							◎	○

JET-POWER END MILLS

EH917 SERIES PLAIN SHANK

CARBIDE, MULTI FLUTE 45° HELIX SHORT LENGTH FINE PITCH ROUGHING

- ▶ High chip removal and minimizing breakages of cutting edges.
- ▶ Suitable for low hardness materials(under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steels, Inconel, nimonic, etc



MG FINE 4-6 45° PLAIN P.955

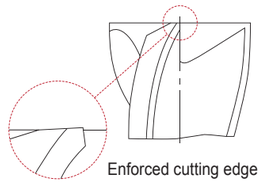
◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flute
	Metric	Inch				
	h10		h6			
EH917060	6.0	.2362	6	7	54	4
EH917080	8.0	.3150	8	9	58	4
EH917100	10.0	.3937	10	14	66	4
EH917120	12.0	.4724	12	16	73	4
EH917160	16.0	.6299	16	22	82	5
EH917200	20.0	.7874	20	26	92	6

Tolerances according to DIN 7160 & 7161

Tolerance range in µm					
Nominal-Diameter in mm					
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
h10	0 / − 40	0 / − 48	0 / − 58	0 / − 70	0 / − 84
h6	0 / 6	0 / 8	0 / 9	0 / 11	0 / 13



Enforced cutting edge

◎ : Excellent ○ : Good

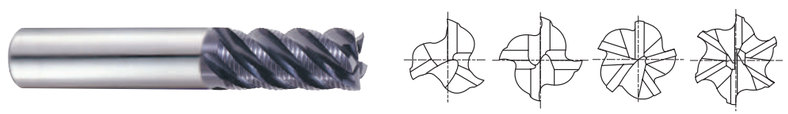
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	○			◎							◎	○

JET-POWER END MILLS

EH919 SERIES PLAIN SHANK

CARBIDE, MULTI FLUTE 45° HELIX LONG LENGTH FINE PITCH ROUGHING

- ▶ High chip removal and minimizing breakages of cutting edges.
- ▶ Suitable for low hardness materials(under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steels, Inconel, nimonic, etc



MG FINE 3-6 45° PLAIN P.955

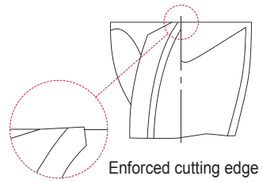
◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flute
	Metric	Inch				
	h10		h6			
EH919040	4.0	.1575	6	11	57	3
EH919050	5.0	.1969	6	13	57	4
EH919060	6.0	.2362	6	16	57	4
EH919070	7.0	.2756	8	16	63	4
EH919080	8.0	.3150	8	16	63	4
EH919090	9.0	.3543	10	19	72	4
EH919100	10.0	.3937	10	22	72	4
EH919120	12.0	.4724	12	26	83	4
EH919140	14.0	.5512	14	26	83	5
EH919160	16.0	.6299	16	32	92	5
EH919200	20.0	.7874	20	38	104	6
EH919250	25.0	.9843	25	45	121	6

Tolerances according to DIN 7160 & 7161

Tolerance range in µm					
Nominal-Diameter in mm					
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
h10	0 / − 40	0 / − 48	0 / − 58	0 / − 70	0 / − 84
h6	0 / − 6	0 / − 8	0 / − 9	0 / − 11	0 / − 13



Enforced cutting edge

◎ : Excellent ○ : Good

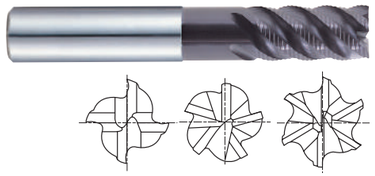
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	○			◎							◎	○

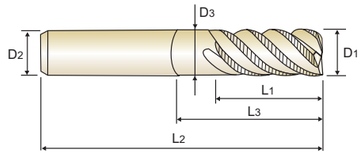
JET-POWER END MILLS

EH921 SERIES PLAIN SHANK

CARBIDE, MULTI FLUTE 45° HELIX LONG REACH FINE PITCH ROUGHING

- ▶Suitable for low hardness materials (under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steel, titanium, inconel, nimonic, etc.
- ▶High chip removed and minimizing breakages of cutting edges.
- ▶Corner Protection against chipping.





MG | FINE | 4-6 | 45° | PLAIN

P.955

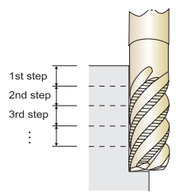
◇ Call for Availability

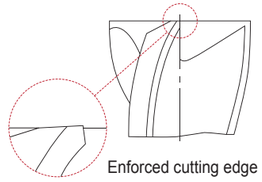
Unit : mm

EDP No.	Mill Diameter Metric D1	Mill Diameter Inch D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	No. of Flute
EH921060	6.0	.2362	6	16	20	57	5.5	4
EH921080	8.0	.3150	8	16	26	63	7.5	4
EH921100	10.0	.3937	10	22	31	72	9.5	4
EH921120	12.0	.4724	12	26	37	83	11.5	4
EH921160	16.0	.6299	16	32	51	100	15.5	5
EH921200	20.0	.7874	20	38	59	110	19.2	6

Tolerances according to DIN 7160 & 7161

	Tolerance range in µm, Nominal-Diameter in mm				
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
h10	0 / − 40	0 / − 48	0 / − 58	0 / − 70	0 / − 84
h6	0 / − 6	0 / − 8	0 / − 9	0 / − 11	0 / − 13





◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	○			◎							◎	○

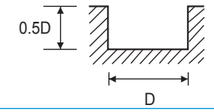
JET-POWER END MILLS

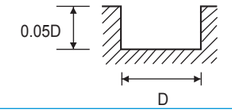
RECOMMENDED CUTTING CONDITIONS

CARBIDE, 3&4 FLUTE FINISH - SLOTTING

EH108, EH830 SERIES

MATERIAL	P				M		S			
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS		TITANIUM ALLOY		HIGH TEMPERATURE ALLOY	
HARDNESS	~HRc30		HRc30 ~ HRc45							
STRENGTH	~1000N/mm²		1000 ~ 1500N/mm²							
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	5560	12.2	3360	7.9	2840	6.3	1500	2.2	1160	1.6
5/16	4200	13.4	2520	7.1	2100	6.3	1090	2.2	840	1.6
3/8	3260	11.8	2000	5.5	1680	5.5	870	2.2	670	1.6
1/2	2740	9.8	1680	4.7	1370	4.7	730	1.8	560	1.2
5/8	2200	7.9	1360	3.9	1050	4.0	550	1.4	420	1.0
3/4	1750	6.9	1100	3.4	880	3.4	480	1.2	350	1.2
1	1360	4.5	840	2.4	670	2.4	350	0.8	270	0.6





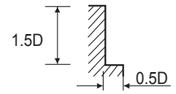
※ The Feed, in long & extra long types, should be reduced by around 50%.

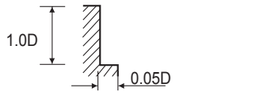
RPM = rev./min.
FEED = inch/min.

CARBIDE, 3&4 FLUTE FINISH - SIDE CUTTING

EH108, EH830 SERIES

MATERIAL	P				M		S			
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS		TITANIUM ALLOY		HIGH TEMPERATURE ALLOY	
HARDNESS	~HRc30		HRc30 ~ HRc45							
STRENGTH	~1000N/mm²		1000 ~ 1500N/mm²							
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	5560	15.8	3360	9.9	2840	8.3	1360	3.0	1050	2.2
5/16	4200	16.5	2520	9.1	2100	8.7	1090	2.8	840	2.0
3/8	3260	14.6	2000	7.1	1680	8.7	880	2.8	680	2.0
1/2	2740	12.2	1680	5.9	1370	7.1	730	2.6	560	1.8
5/8	2200	9.9	1360	4.7	1050	5.3	550	2.0	420	1.4
3/4	1750	8.7	1100	4.4	880	5.4	480	1.6	350	1.2
1	1360	5.9	840	3.0	670	4.5	350	1.4	270	1.0





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

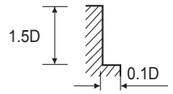
RPM = rev./min.
FEED = inch/min.

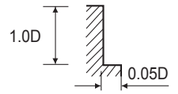
JET-POWER END MILLS — RECOMMENDED CUTTING CONDITIONS

YPM, 6 FLUTE - SIDE CUTTING

EE882 SERIES

MATERIAL	P				M		S			
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS		TITANIUM ALLOY		HIGH TEMPERATURE ALLOY	
HARDNESS	~HRc30		HRc30 ~ HRc45							
STRENGTH	~1000N/mm²		1000 ~ 1500N/mm²							
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/4	960	8.0	215	0.8	480	4.8	220	1.4	170	1.0
7/8	730	7.3	180	0.7	365	4.4	190	1.1	145	0.8
1	640	6.6	165	0.6	320	4.0	170	1.0	130	0.7
1-1/4	520	5.3	130	0.5	260	3.2	140	0.8	105	0.6
1-1/2	430	4.4	105	0.4	215	2.6	110	0.6	85	0.5





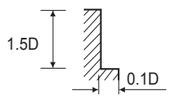
※ The Feed, in long & extra long types, should be reduced by around 50%.

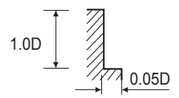
RPM = rev./min.
FEED = inch/min.

PREMIUM HSS-PM, 4&6 FLUTE SHORT- SIDE CUTTING

EE515 SERIES

MATERIAL	P				M		S	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS TITANIUM ALLOY		HIGH TEMPERATURE ALLOY	
HARDNESS	~ HRc30		HRc30 ~ HRc45					
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3.0	4400	7.3	1100	0.9	2200	4.3	880	1.1
4.0	3600	8.3	900	1.2	1800	4.9	720	1.5
5.0	3000	8.9	750	1.2	1500	5.3	600	1.4
6.0	2600	9.3	600	1.1	1300	5.5	480	1.4
8.0	2000	9.8	500	1.1	1000	5.9	400	1.3
10.0	1600	11.2	410	1.2	800	6.7	330	1.4
12.0	1320	9.8	340	1.1	660	5.9	270	1.4
14.0	1160	9.3	290	1.1	580	5.5	230	1.3
16.0	1000	8.9	250	1.0	500	5.3	200	1.2
18.0	900	8.3	225	0.9	450	4.9	180	1.1
20.0	800	7.9	200	0.7	400	4.7	160	0.8
25.0	640	6.5	165	0.6	320	3.9	130	0.7





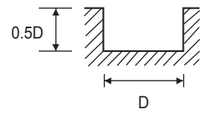
RPM = rev./min.
FEED = inch/min.

JET-POWER END MILLS — RECOMMENDED CUTTING CONDITIONS

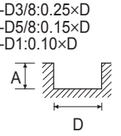
CARBIDE, MULTI FLUTE ROUGHING - SLOTTING

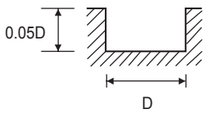
EH094, EH095, EH969, EH970, EH852, EH831, EH917, EH919, EH921 SERIES

MATERIAL	P				M		S			
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS		TITANIUM ALLOY		HIGH TEMPERATURE ALLOY	
HARDNESS	~HRc30		HRc30 ~ HRc45							
STRENGTH	~1000N/mm²		1000 ~ 1500N/mm²							
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	15600	91.4	12400	33.1	8400	22.5	3150	10.6	2400	7.5
5/16	11600	91.4	9200	33.1	6300	22.5	2350	9.8	1800	7.1
3/8	9200	91.4	7600	33.1	5100	22.5	1700	10.2	1300	7.5
1/2	8000	94.5	6000	31.5	4200	22.5	1560	10.2	1200	7.5
5/8	6000	94.5	4800	29.9	3300	20.1	1040	5.8	800	4.3
3/4	5200	91.4	4400	28.4	2500	16.6	910	5.5	675	4.0
1	4300	84.7	3200	24.4	2160	16.2	780	5.1	600	4.3



A: D1/4-D3/8:0.25×D
D1/2-D5/8:0.15×D
D3/4-D1:0.10×D





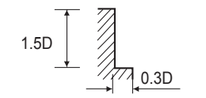
※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

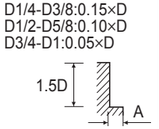
CARBIDE, MULTI FLUTE ROUGHING - SIDE CUTTING

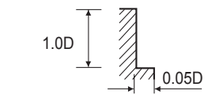
EH094, EH095, EH969, EH970, EH852, EH831, EH917, EH919, EH921 SERIES

MATERIAL	P				M		S			
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS		TITANIUM ALLOY		HIGH TEMPERATURE ALLOY	
HARDNESS	~HRc30		HRc30 ~ HRc45							
STRENGTH	~1000N/mm²		1000 ~ 1500N/mm²							
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	15600	91.4	12400	33.1	8400	22.5	3150	10.6	2400	7.5
5/16	11600	91.4	9200	33.1	6300	22.5	2350	9.8	1800	7.1
3/8	9200	91.4	7600	33.1	5100	22.5	1700	10.2	1300	7.5
1/2	8000	94.5	6000	31.5	4200	22.5	1560	10.2	1200	7.5
5/8	6000	94.5	4800	29.9	3300	22.1	1040	5.9	800	4.3
3/4	5200	91.4	4400	28.4	2700	16.6	910	5.5	700	4.0
1	4300	84.7	3200	24.4	2160	16.2	780	5.1	600	4.3



A: D1/4-D3/8:0.15×D
D1/2-D5/8:0.10×D
D3/4-D1:0.05×D

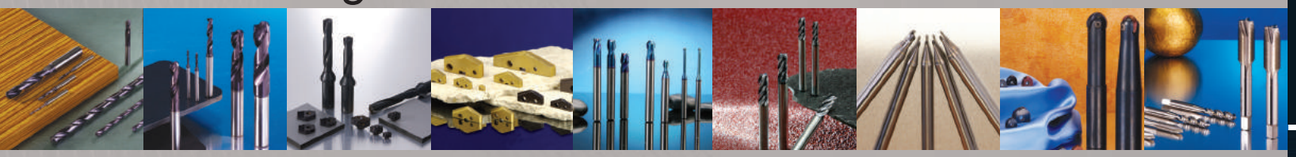




※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

Global Cutting Tool Leader **YG-1**



CARBIDE

Being the best through innovation



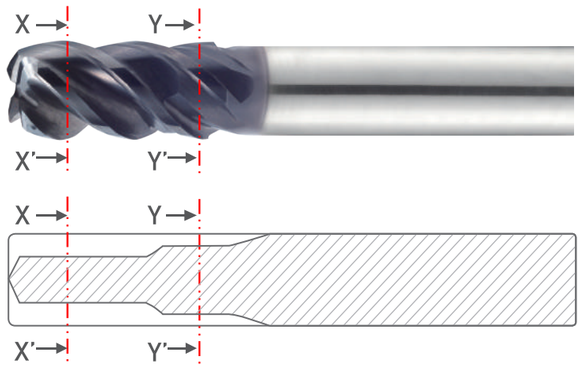


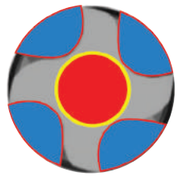
TitaNox-POWER END MILLS

- High Speed Machining for Exotic Materials:
  Titanium, Stainless Steels and Alloy Steels

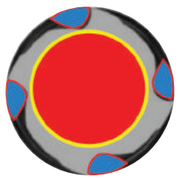
◎ : Excellent ○ : Good

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE	P: Carbon Steels ~HB225	P: Alloy Steels HB225~352	P: Prehardened Steels HRc30~40	P: Hardened Steels HRc40~45	P: Hardened Steels HRc45~55	H: High Hardened Steels HRc55~70	M: Stainless Steels	K: Cast Iron	N: Copper	N: Graphite	N: Aluminum	N: Acrylic	N: CFRP	S: Titanium	S: High Temperature Alloy
INCH																				
UGMG42		CARBIDE, 4 FLUTE CORNER RADIUS DOUBLE CORE STANDARD LENGTH	D1/4	D1	**960**	○	○	○				◎	○						◎	○
UGMG43		CARBIDE, 4 FLUTE CORNER RADIUS DOUBLE CORE STANDARD LENGTH	D3/8	D1	**962**	○	○	○				◎	○						◎	○
UGMH12		CARBIDE, 5 FLUTE STANDARD LENGTH	D1/8	D1-1/4	**963**	○	○	○				◎	○						◎	○
UGMG32		CARBIDE, 5 FLUTE STANDARD LENGTH	D1/8	D1	**963**	○	○	○				◎	○						◎	○
UGMG34		CARBIDE, 5 FLUTE CORNER RADIUS STANDARD LENGTH	D1/8	D1-1/4	**963**	○	○	○				◎	○						◎	○
UGMH06		CARBIDE, 5 FLUTE EXTENDED LENGTH	D1/8	D1	**966**	○	○	○				◎	○						◎	○
UGMH07		CARBIDE, 5 FLUTE CORNER RADIUS EXTENDED LENGTH	D1/8	D1	**966**	○	○	○				◎	○						◎	○
METRIC																				
GMG40		CARBIDE, 4 FLUTE CORNER RADIUS DOUBLE CORE EXTENDED LENGTH	D6.0	D25.0	**968**	○	○	○				◎	○						◎	○
GMG24 GMG26		CARBIDE, 5 FLUTE STANDARD LENGTH	D6.0	D25.0	**969**	○	○	○				◎	○						◎	○
GMG28 GMG30		CARBIDE, 5 FLUTE CORNER RADIUS STANDARD LENGTH	D6.0	D25.0	**970**	○	○	○				◎	○						◎	○
		RECOMMENDED CUTTING CONDITIONS			**971**															





SECTION X-X'
Excellent chip evacuation



SECTION Y-Y'
Higher rigidity

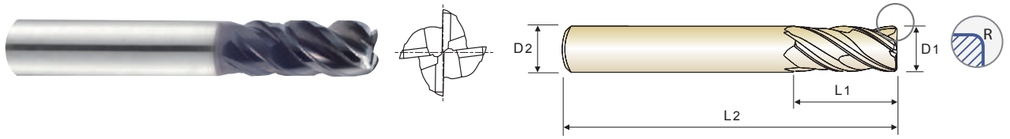
▲ The illustration above detailed along the X-X' axis shows how the 4-flute design starts the cut with aggressive chip evacuation. The Y-Y' axis shows how the double core comes into play, providing perfect slotting operations through its extra-rigid double-core design.

TitaNox-POWER END MILLS

UGMG42 SERIES CORNER RADIUS

CARBIDE, 4 FLUTE CORNER RADIUS DOUBLE CORE STANDARD LENGTH

- ▶ Double Core E/M has a Unique Flute Design for excellent chip evacuation and higher rigidity
- ▶ The double core adds stability and aids chip flow, reducing tool deflection, improving dimensional stability and workpiece accuracy



MG HM | 4 | 43°/45° | PLAIN

P.971~972

Unit : Inch

OD	SD	LOC	OAL	Corner Radius							
				.010	.015	.030	.060	.090	.125	.190	.250
D1	D2	L1	L2	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
1/4	1/4	9/16	2-1/2	UGMG42802	UGMG42016	UGMG42901	UGMG42902	–	–	–	–
		3/4	2-1/2	–	–	UGMG42924	UGMG42925	–	–	–	–
		1	3	–	–	UGMG42S926*	UGMG42S927*	–	–	–	–
3/8	3/8	1/2	2-1/2	–	–	UGMG42K998	UGMG42K999	UGMG42K801	–	–	–
		7/8	2-1/2	–	–	UGMG42928	UGMG42929	UGMG42930	–	–	–
		13/16	2-1/2	UGMG42931	–	UGMG42905	UGMG42906	UGMG42907	–	–	–
		1	3	UGMG42932	UGMG42803	UGMG42933	UGMG42934	UGMG42935	–	–	–
		1-1/4	3	UGMG42S936*	UGMG42S804*	UGMG42S937*	UGMG42S938*	UGMG42S939*	–	–	–
1/2	1/2	1	3	UGMG42940		UGMG42908	UGMG42909	UGMG42910	UGMG42911	–	–
		1-1/4	3-1/2	–	UGMG42805	UGMG42912	UGMG42941	UGMG42942	UGMG42943	–	–
		1-5/8	4	–	–	UGMG42S944*	UGMG42S945*	UGMG42S946*	UGMG42S947*	–	–
		2	4	–	–	UGMG42S806*	UGMG42S807*	UGMG42S808*	UGMG42S809*	–	–
5/8	5/8	1-1/4	3-1/2	–	–	UGMG42040	UGMG42913	UGMG42914	UGMG42915	–	–
		1-5/8	4	–	–	UGMG42948	UGMG42949	UGMG42950	UGMG42951	–	–
		2	4	–	–	UGMG42S952*	UGMG42S953*	UGMG42S954*	UGMG42S955*	–	–
		3-1/4	6	–	–	UGMG42S956*	UGMG42S957*	UGMG42S958*	UGMG42S959*	–	–

*Length of cut in excess of 3xD on 45° single-helix requires feed reduction of approximately 50%

▶ NEXT PAGE

◎ : Excellent ○ : Good

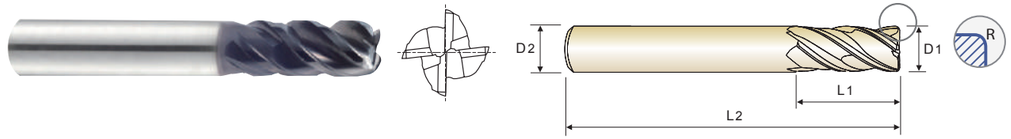
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	○	○				◎	○						◎	○

TitaNox-POWER END MILLS

UGMG42 SERIES CORNER RADIUS

CARBIDE, 4 FLUTE CORNER RADIUS DOUBLE CORE STANDARD LENGTH

- ▶ Double Core E/M has a Unique Flute Design for excellent chip evacuation and higher rigidity
- ▶ The double core adds stability and aids chip flow, reducing tool deflection, improving dimensional stability and workpiece accuracy



MG HM | 4 | 43°/45° | PLAIN

P.971~972

Unit : Inch

OD	SD	LOC	OAL	Corner Radius							
				.010	.015	.030	.060	.090	.125	.190	.250
D1	D2	L1	L2	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
3/4	3/4	1-1/2	4	–	–	UGMG42048	UGMG42916	UGMG42917	UGMG42918	UGMG42919	UGMG42960
		1-7/8	4	–	–	UGMG42961	UGMG42962	UGMG42963	UGMG42964	UGMG42965	UGMG42966
		2-1/4	5	–	–	UGMG42967	UGMG42968	UGMG42969	UGMG42970	UGMG42971	UGMG42972
		3-1/4	6	–	–	UGMG42S973*	UGMG42S974*	UGMG42S975*	UGMG42S976*	UGMG42S977*	UGMG42S978*
1	1	2	5	–	–	UGMG42064	UGMG42920	UGMG42921	UGMG42922	UGMG42923	UGMG42979
		2-5/8	5	–	–	UGMG42980	UGMG42981	UGMG42982	UGMG42983	UGMG42984	UGMG42985
		3	6	–	–	UGMG42986	UGMG42987	UGMG42988	UGMG42989	UGMG42990	UGMG42991
		4-1/4	7	–	–	UGMG42S992*	UGMG42S993*	UGMG42S994*	UGMG42S995*	UGMG42S996*	UGMG42S997*

*Length of cut in excess of 3xD on 45° single-helix requires feed reduction of approximately 50%

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

◎ : Excellent ○ : Good

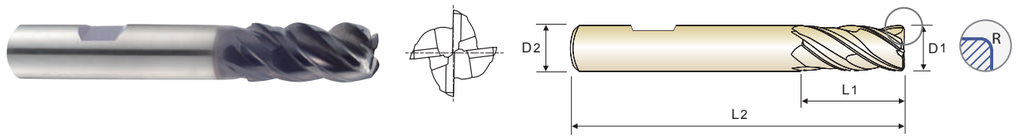
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	○	○				◎	○						◎	○

TitaNox-POWER END MILLS

UGMG43 SERIES — CORNER RADIUS

CARBIDE, 4 FLUTE CORNER RADIUS DOUBLE CORE STANDARD LENGTH

- Double Core E/M has a Unique Flute Design for excellent chip evacuation and higher rigidity
- The double core adds stability and aids chip flow, reducing tool deflection, improving dimensional stability and workpiece accuracy



MG HM | 4 | 43°/45° | FLAT

P.971~972

Unit : Inch

OD	SD	LOC	OAL	Corner Radius					
				.020	.030	.060	.090	.125	.190
D1	D2	L1	L2	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
3/8	3/8	13/16	2-1/2	UGMG43024	UGMG43905	UGMG43906	UGMG43907	–	–
1/2	1/2	1	3	UGMG43032	UGMG43908	UGMG43909	UGMG43910	UGMG43911	–
		1-1/4	3-1/2	–	UGMG43912	UGMG43924	–	–	–
5/8	5/8	1-1/4	3-1/2	–	UGMG43040	UGMG43913	UGMG43914	UGMG43915	–
3/4	3/4	1-1/2	4	–	UGMG43048	UGMG43916	UGMG43917	UGMG43818	UGMG43919
1	1	2	5	–	UGMG43064	UGMG43920	UGMG43921	UGMG43922	UGMG43923

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

◎ : Excellent ○ : Good

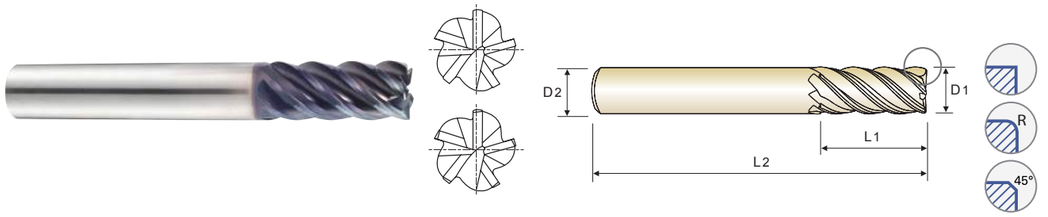
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	○	○				◎	○						◎	○

TitaNox-POWER END MILLS

UGMH12 SERIES — SQUARE
UGMG32 SERIES — CHAMFER
UGMG34 SERIES — CORNER RADIUS

CARBIDE, 5 FLUTE STANDARD LENGTH

- Excellent performance results and long tool life when machining Titanium and other tough materials
- This tool has high rigidity of flute so that is possible to use for heavy profile and high speed milling
- For protecting Corner chipping of end teeth, Corner Radius & Chamfer are adopted



MG HM | 5 | 43°/44°/45° | PLAIN | C x 45°

P.973

Unit : Inch

OD	SD	LOC	OAL	Square End	Chamfer	Corner Radius						
						.015	.030	.060	.090	.125	.190	.250
D1	D2	L1	L2	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	UGMH12008	UGMG32008	UGMG34008	UGMG34950	–	–	–	–	–
		3/8	1-1/2	UGMH12901	UGMG32901	UGMG34901	UGMG34951	–	–	–	–	–
		1/2	2-1/2	UGMH12S902*	–	UGMG34S952*	UGMG34S953*	–	–	–	–	–
		3/4	2-1/2	UGMH12S903*	–	UGMG34S954*	UGMG34S955*	–	–	–	–	–
3/16	3/16	5/16	2	UGMH12012	UGMG32012	UGMG34012	UGMG34956	–	–	–	–	–
		9/16	2	UGMH12904	UGMG32902	UGMG34902	UGMG34957	–	–	–	–	–
		3/4	2-1/2	UGMH12S905*	–	UGMG34S958*	UGMG34S959*	–	–	–	–	–
1/4	1/4	3/8	2	UGMH12016	UGMG32016	UGMG34960	UGMG34016	UGMG34961	–	–	–	–
		1/2	2-1/2	UGMH12906	–	UGMG34962	UGMG34963	UGMG34964	–	–	–	–
		3/4	2-1/2	UGMH12907	UGMG32903	UGMG34903	UGMG34904	UGMG34905	–	–	–	–
		1	3	UGMH12S908*	–	UGMG34S965*	UGMG34S966*	UGMG34S967*	–	–	–	–
		1-1/4	3	UGMH12S909*	–	UGMG34S968*	UGMG34S969*	UGMG34S970*	–	–	–	–
5/16	5/16	7/16	2"	UGMH12020	UGMG32020	UGMG34971	UGMG34020	UGMG34972	–	–	–	–
		13/16	2-1/2	UGMH12910	UGMG32904	UGMG34906	UGMG34907	UGMG34908	–	–	–	–
		1	3	UGMH12S911*	–	UGMG34S973*	UGMG34S974*	UGMG34S975*	–	–	–	–
3/8	3/8	1/2	2-1/2	UGMH12024	UGMG32024	UGMG34976	UGMG34024	UGMG34909	UGMG34977	–	–	–
		1	3	UGMH12912	UGMG32905	UGMG34910	UGMG34911	UGMG34912	UGMG34978	–		–
		1-1/4	3	UGMH12S913*	–	UGMG34S979*	UGMG34S980*	UGMG34S981*	UGMG34S982*	–	–	–
		1-1/2	4	UGMH12S914*	–	UGMG34S983*	UGMG34S984*	UGMG34S985*	UGMG34S986*	–	–	–
1/2	1/2	5/8	2-1/2	UGMH12032	UGMG32032	UGMG34032	UGMG34913	UGMG34914	UGMG34987	UGMG34988	–	–
		1	3	UGMH12915	UGMG32906	UGMG34915	UGMG34916	UGMG34917	UGMG34918	UGMG34919	–	–
		1-1/4	3-1/2	UGMH12916	UGMG32907	UGMG34920	UGMG34921	UGMG34922	UGMG34923	UGMG34924	–	–
		1-5/8	4	UGMH12S917*	–	UGMG34S989*	UGMG34S990*	UGMG34S991*	UGMG34S992*	UGMG34S993*	–	–
		2	4	UGMH12S918*	–	UGMG34S994*	UGMG34S995*	UGMG34S996*	UGMG34S997*	UGMG34S998*	–	–

*Length of cut in excess of 3xD on 45° single-helix requires feed reduction of approximately 50%

▶ NEXT PAGE

◎ : Excellent ○ : Good

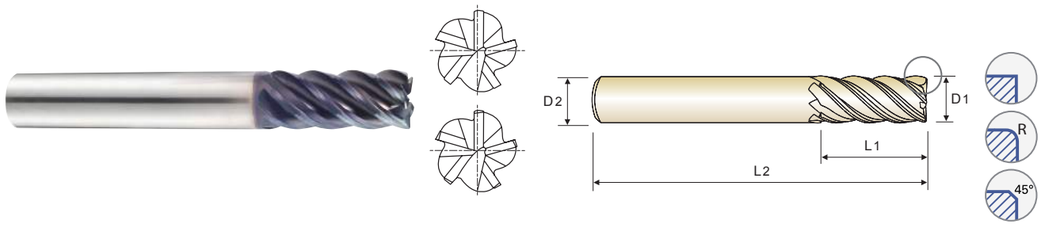
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	○	○				◎	○						◎	○

TitaNox-POWER END MILLS

UGMH12 SERIES SQUARE
UGMG32 SERIES CHAMFER
UGMG34 SERIES CORNER RADIUS

CARBIDE, 5 FLUTE STANDARD LENGTH

- Excellent performance results and long tool life when machining Titanium and other tough materials
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MG HM | 5 | 43°/44°/45° | PLAIN | C x 45° | P.973

Unit : Inch

OD	SD	LOC	OAL	Square End	Chamfer	Corner Radius						
						.015	.030	.060	.090	.125	.190	.250
D1	D2	L1	L2	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
5/8	5/8	3/4	3	UGMH12040	UGMG32040	–	UGMG34040	UGMG34925	UGMG34999	UGMG34801	–	–
		1-1/4	3-1/2	UGMH12919	UGMG32908	UGMG34926	UGMG34927	UGMG34928	UGMG34929	UGMG34930	–	–
		1-5/8	4	UGMH12920	–	–	UGMG34802	UGMG34803	UGMG34804	UGMG34805	–	–
		2-1/8	4-1/2	UGMH12S921*	–	–	UGMG34S806*	UGMG34S807*	UGMG34S808*	UGMG34S809*	–	–
		2-1/2	5	UGMH12S922*	–	–	UGMG34S810*	UGMG34S811*	UGMG34S812*	UGMG34S813*	–	–
3/4	3/4	1	3-1/2	UGMH12048	UGMG32048	–	UGMG34048	UGMG34931	UGMG34932	UGMG34814	UGMG34815	UGMG34816
		1-1/2	4	UGMH12923	UGMG32909	UGMG34933	UGMG34934	UGMG34935	UGMG34936	UGMG34937	UGMG34938	UGMG34817
		1-7/8	5	UGMH12924	–	–	UGMG34818	UGMG34819	UGMG34820	UGMG34821	UGMG34822	UGMG34823
		2-1/4	5	UGMH12925	–	–	UGMG34824	UGMG34825	UGMG34826	UGMG34827	UGMG34828	UGMG34829
		2-3/4	5	UGMH12S926*	–	–	UGMG34S830*	UGMG34S831*	UGMG34S832*	UGMG34S833*	UGMG34S834*	UGMG34S835*
		3-1/4	6	UGMH12S927*	–	–	UGMG34S836*	UGMG34S837*	UGMG34S838*	UGMG34S839*	UGMG34S840*	UGMG34S841*
1	1	1-1/8	4	UGMH12064	UGMG32064	–	UGMG34064	UGMG34939	UGMG34940	UGMG34842	UGMG34843	UGMG34844
		1-1/2	4	UGMH12928	UGMG32910	UGMG34941	UGMG34942	UGMG34943	UGMG34944	UGMG34945	UGMG34946	UGMG34845
		2	5	UGMH12929	UGMG32911	–	UGMG34947	UGMG34948	UGMG34949	UGMG34846	UGMG34847	UGMG34848
		2-5/8	5	UGMH12930	–	–	UGMG34849	UGMG34850	UGMG34851	UGMG34852	UGMG34853	UGMG34854
		3-1/4	6	UGMH12S931*	–	–	UGMG34S855*	UGMG34S856*	UGMG34S857*	UGMG34S858*	UGMG34S859*	UGMG34S860*
		4-1/4	7	UGMH12S932*	–	–	UGMG34S861*	UGMG34S862*	UGMG34S863*	UGMG34S864*	UGMG34S865*	UGMG34S866*

*Length of cut in excess of 3xD on 45° single-helix requires feed reduction of approximately 50%

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	○	○				◎	○						◎	○

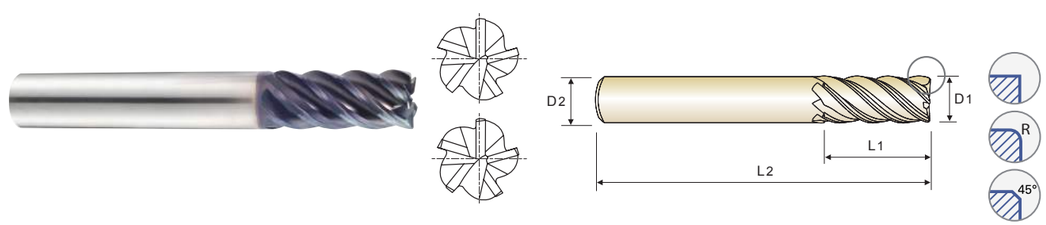
CARBIDE
HSS
CBN END MILLS
i-Xmill END MILLS
i-SMART MODULAR TYPE END MILLS
X5070 END MILLS
4G MILL END MILLS
X-POWER END MILLS
JET-POWER END MILLS
TitaNox -POWER END MILLS
V7 PLUS A END MILLS
V7 MILL INOX END MILLS
ALU-POWER HPC END MILLS
ALU-POWER END MILLS
D-POWER GRAPHITE END MILLS
D-POWER CFRP END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

TitaNox-POWER END MILLS

UGMH12 SERIES SQUARE
UGMG32 SERIES CHAMFER
UGMG34 SERIES CORNER RADIUS

CARBIDE, 5 FLUTE STANDARD LENGTH

- Excellent performance results and long tool life when machining Titanium and other tough materials
- This tool has high rigidity of flute so that is possible to use for heavy profile and high speed milling
- For protecting Corner chipping of end teeth, Corner Radius & Chamfer are adopted



MG HM | 5 | 43°/44°/45° | PLAIN | C x 45° | P.973

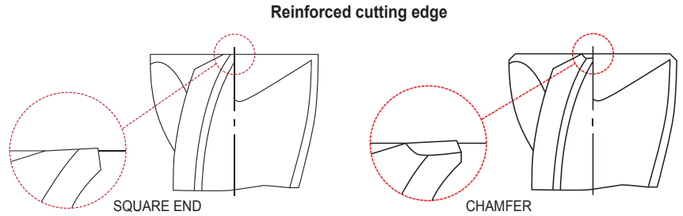
Unit : Inch

OD	SD	LOC	OAL	Square End	Chamfer	Corner Radius						
						.015	.030	.060	.090	.125	.190	.250
D1	D2	L1	L2	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
1-1/4	1-1/4	1-1/2	4-1/2	UGMH12116	–	–	–	UGMG34116	UGMG34867	UGMG34868	UGMG34869	UGMG34870
		2	4-1/2	UGMH12933	–	–	–	UGMG34871	UGMG34872	UGMG34873	UGMG34874	UGMG34875
		2-5/8	5-1/2	UGMH12934	–	–	–	UGMG34876	UGMG34877	UGMG34878	UGMG34879	UGMG34880
		3-1/4	6	UGMH12935	–	–	–	UGMG34881	UGMG34882	UGMG34883	UGMG34884	UGMG34885
		4-1/2	7	UGMH12S936*	–	–	–	UGMG34S886*	UGMG34S887*	UGMG34S888*	UGMG34S889*	UGMG34S890*

CHAMFER KEY

UGMG32

Mill Diameter (in.)	Chamfer Size
1/8	.004
3/16	.006
1/4	.007
5/16	.007
3/8	.011
1/2	.013
5/8	.015
3/4	.019
1	.019



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

◎ : Excellent ○ : Good

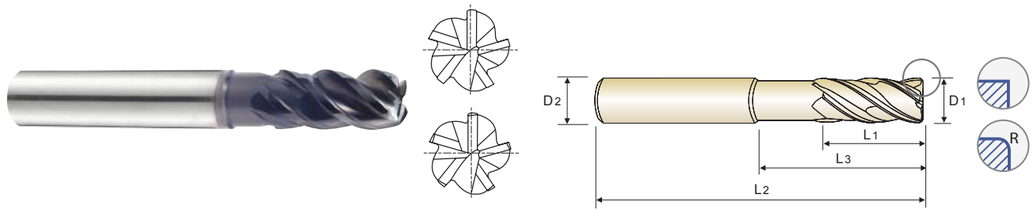
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	○	○				◎	○						◎	○

TitaNox-POWER END MILLS

UGMH06 SERIES SQUARE
UGMH07 SERIES CORNER RADIUS

CARBIDE, 5 FLUTE EXTENDED LENGTH

- ▶ Excellent performance results and long tool life when machining Titanium and other tough materials.
- ▶ This tool has high rigidity of flute so that is possible to use for heavy profile and high speed milling.
- ▶ For protecting Corner chipping of end teeth, Corner Radius & Chamfer are adopted.



MG HM | 5 | 43°/44°45° | PLAIN

P.973

Unit : Inch

OD	SD	LOC	LBS	OAL	Square End	Corner Radius					
						.030	.060	.090	.125	.190	.250
D1	D2	L1	L3	L2	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
1/8	1/8	5/32	3/8	3	UGMH06008	UGMH07008	–	–	–	–	–
		5/32	1/2	3	UGMH06901	UGMH07901	–	–	–	–	–
		5/32	5/8	3	UGMH06902	UGMH07902	–	–	–	–	–
3/16	3/16	7/32	1/2	3	UGMH06012	UGMH07012	–	–	–	–	–
		7/32	3/4	3	UGMH06903	UGMH07903	–	–	–	–	–
		7/32	1	3	UGMH06904	UGMH07904	–	–	–	–	–
1/4	1/4	3/8	3/4	4	UGMH06016	UGMH07016	UGMH07905	–	–	–	–
		3/8	1-1/8	4	UGMH06905	UGMH07906	UGMH07907	–	–	–	–
		3/8	2-1/8	4	UGMH06906	UGMH07908	UGMH07909	–	–	–	–
3/8	3/8	1/2	1-1/8	4	UGMH06024	UGMH07024	UGMH07910	UGMH07911	–	–	–
		1/2	2-1/8	4	UGMH06907	UGMH07912	UGMH07913	UGMH07914	–	–	–
		1/2	3-1/8	5	UGMH06923	UGMH07804	UGMH07805	UGMH07806	–	–	–
		1/2	3-1/8	6	UGMH06908	UGMH07915	UGMH07916	UGMH07917	–	–	–
		1/2	4-1/8	6	UGMH06909	UGMH07918	UGMH07919	UGMH07920	–	–	–
1/2	1/2	5/8	1-1/2	4	UGMH06032	UGMH07032	UGMH07921	UGMH07922	UGMH07923	–	–
		5/8	2-1/4	4	UGMH06910	UGMH07924	UGMH07925	UGMH07926	UGMH07927	–	–
		5/8	3-3/8	5	UGMH06924	UGMH07807	UGMH07808	UGMH07809	UGMH07810	–	–
		5/8	3-3/8	6	UGMH06911	UGMH07928	UGMH07929	UGMH07930	UGMH07931	–	–
		5/8	4-1/8	6	UGMH06912	UGMH07932	UGMH07933	UGMH07934	UGMH07935	–	–
5/8	5/8	3/4	1-5/8	4	UGMH06040	UGMH07040	UGMH07936	UGMH07937	UGMH07938	–	–
		3/4	2-3/8	6	UGMH06913	UGMH07939	UGMH07940	UGMH07941	UGMH07942	–	–
		3/4	3-3/8	6	UGMH06914	UGMH07943	UGMH07944	UGMH07945	UGMH07946	–	–
		3/4	4-1/8	6	UGMH06915	UGMH07947	UGMH07948	UGMH07949	UGMH07950	–	–

*Length of cut in excess of 3xD on 45° single-helix requires feed reduction of approximately 50%

▶ NEXT PAGE

◎ : Excellent ○ : Good

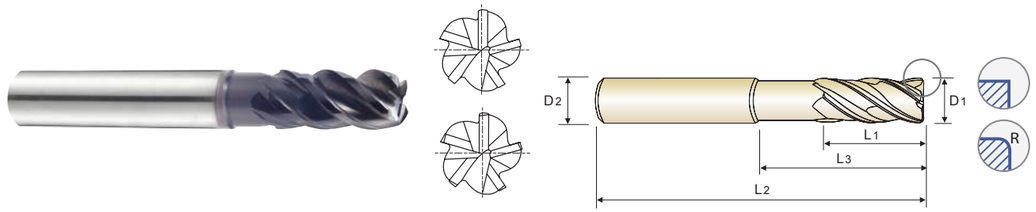
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	○	○				◎	○						◎	○

TitaNox-POWER END MILLS

UGMH06 SERIES SQUARE
UGMH07 SERIES CORNER RADIUS

CARBIDE, 5 FLUTE EXTENDED LENGTH

- ▶ Excellent performance results and long tool life when machining Titanium and other tough materials.
- ▶ This tool has high rigidity of flute so that is possible to use for heavy profile and high speed milling.
- ▶ For protecting Corner chipping of end teeth, Corner Radius & Chamfer are adopted.



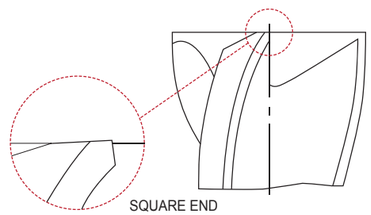
MG HM | 5 | 43°/44°45° | PLAIN

P.973

Unit : Inch

OD	SD	LOC	LBS	OAL	Square End	Corner Radius					
						.030	.060	.090	.125	.190	.250
D1	D2	L1	L3	L2	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
3/4	3/4	1-1/8	2	4	UGMH06048	UGMH07048	UGMH07951	UGMH07952	UGMH07953	UGMH07954	UGMH07955
		1-1/8	2-5/8	5	UGMH06916	UGMH07956	UGMH07957	UGMH07958	UGMH07959	UGMH07960	UGMH07961
		1-1/8	3-1/4	6	UGMH06917	UGMH07962	UGMH07963	UGMH07964	UGMH07965	UGMH07966	UGMH07967
		1-1/8	4-1/4	7	UGMH06918	UGMH07968	UGMH07969	UGMH07970	UGMH07971	UGMH07972	UGMH07973
1	1	1-1/4	2-1/4	4	UGMH06064	UGMH07064	UGMH07974	UGMH07975	UGMH07976	UGMH07977	UGMH07978
		1-1/4	2-5/8	5	UGMH06919	UGMH07979	UGMH07980	UGMH07981	UGMH07982	UGMH07983	UGMH07984
		1-1/4	3-1/4	6	UGMH06920	UGMH07985	UGMH07986	UGMH07987	UGMH07988	UGMH07989	UGMH07990
		1-1/4	4-1/4	7	UGMH06921	UGMH07991	UGMH07992	UGMH07993	UGMH07994	UGMH07995	UGMH07996
		1-1/4	5-1/4	8	UGMH06922	UGMH07997	UGMH07998	UGMH07999	UGMH07801	UGMH07802	UGMH07803

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



◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	○	○				◎	○						◎	○

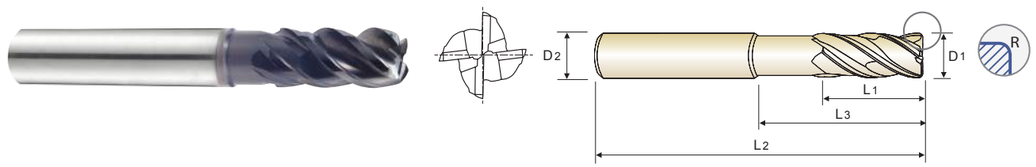
CARBIDE
HSS
CBN END MILLS
i-Xmill END MILLS
i-SMART MODULAR TYPE END MILLS
X5070 END MILLS
4G MILL END MILLS
X-POWER END MILLS
JET-POWER END MILLS
TitaNox -POWER END MILLS
V7 PLUS A END MILLS
V7 MILL INOX END MILLS
ALU-POWER HPC END MILLS
ALU-POWER END MILLS
D-POWER GRAPHITE END MILLS
D-POWER CFRP END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

TitaNox-POWER END MILLS

GMG40 SERIES CORNER RADIUS

CARBIDE, 4 FLUTE CORNER RADIUS DOUBLE CORE EXTENDED LENGTH

- ▶ Double Core E/M has a Unique Flute Design for excellent chip evacuation and higher rigidity
- ▶ The double core adds stability and aids chip flow, reducing tool deflection, improving dimensional stability and workpiece accuracy



MG HM | 4 | 43°/45° | PLAIN P.974~975

Unit : mm

OD D1 Metric	OD D1 Inch	SD D2	LOC L1	LBS L3	OAL L2	0.50 EDP No.	Corner Radius 1.00 EDP No.	1.50 EDP No.	2.00 EDP No.	3.00 EDP No.	3.50 EDP No.	4.00 EDP No.
6.0	.2362	6	13	20	57	GMG40060	GMG40901	–	–	–	–	–
8.0	.315	8	19	25	63	GMG40080	GMG40902	GMG40903	GMG40904	–	–	–
10.0	.3937	10	22	30	72	GMG40100	GMG40905	GMG40906	GMG40907	–	–	–
12.0	.4724	12	26	35	83	GMG40120	GMG40908	GMG40909	GMG40910	GMG4091	–	–
14.0	.5512	14	26	35	83	–	GMG40140	–	GMG40912	–	–	–
16.0	.6299	16	35	43	92	–	GMG40160	GMG40913	GMG40914	GMG40915	–	GMG40916
20.0	.7874	20	44	56	110	–	GMG40200	GMG40917	GMG40918	GMG40919	GMG40920	GMG40921
25.0	.9843	25	55	70	130	–	GMG40250	GMG40922	GMG40923	GMG40924	–	GMG40925

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

◎ : Excellent ○ : Good

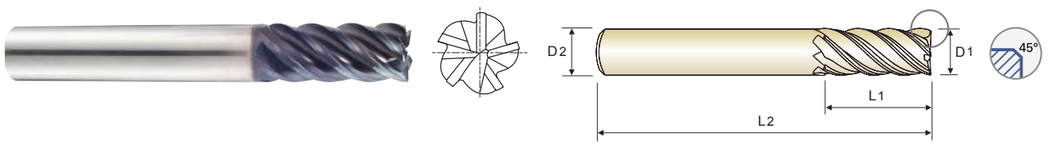
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	○	○				◎	○						◎	○

TitaNox-POWER END MILLS

GMG24 SERIES CHAMFER
GMG26 SERIES CHAMFER

CARBIDE, 5 FLUTE STANDARD LENGTH

- ▶ Excellent performance results and long tool life when machining Titanium and other tough materials
- ▶ This tool has high rigidity of flute so that is possible to use for heavy profile and high speed milling
- ▶ For protecting Corner chipping of end teeth, Corner Radius & Chamfer are adopted



MG HM | 5 | 43°/44°/45° | PLAIN | C x 45° P.976

Unit : mm

OD D1 Metric	OD D1 Inch	SD D2	LOC L1	OAL L2	Chamfer EDP No.
6.0	.2362	6	10	54	GMG24060
		6	13	57	GMG26060
8.0	.315	8	12	58	GMG24080
		8	19	63	GMG26080
10.0	.3937	10	14	66	GMG24100
		10	22	72	GMG26100
12.0	.4724	12	16	73	GMG24120
		12	26	83	GMG26120
16.0	.6299	16	22	82	GMG24160
		16	36	92	GMG26160
20.0	.7874	20	26	92	GMG24200
		20	44	104	GMG26200
25.0	.9843	25	29	100	GMG24250
		25	54	121	GMG26250

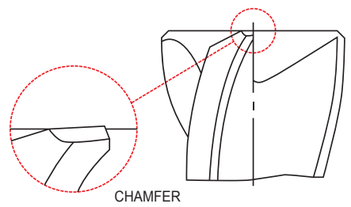
Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	h6

CHAMFER KEY

Unit : mm

Mill Diameter Metric	Mill Diameter Inch	Chamfer Size (mm)
6.0	.2362	0.20
8.0	.315	0.20
10.0	.3937	0.30
12.0	.4724	0.35
16.0	.6299	0.40
20.0	.7874	0.50
25.0	.9843	0.50

Reinforced cutting edge



◎ : Excellent ○ : Good

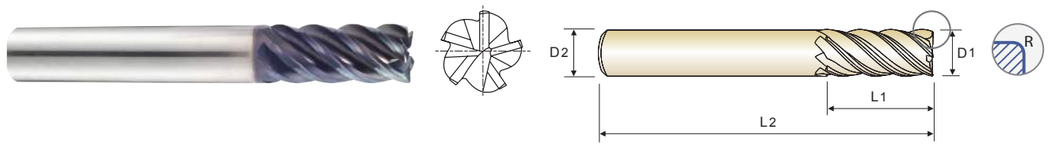
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	○	○				◎	○						◎	○

TitaNox-POWER END MILLS

GMG28 SERIES CORNER RADIUS
GMG30 SERIES CORNER RADIUS

CARBIDE, 5 FLUTE CORNER RADIUS STANDARD LENGTH

- ▶ Excellent performance results and long tool life when machining Titanium and other tough materials
- ▶ This tool has high rigidity of flute so that is possible to use for heavy profile and high speed milling
- ▶ For protecting Corner chipping of end teeth, Corner Radius & Chamfer are adopted



MG HM | 5 | 43°/44°/45° | PLAIN | P.976

Unit : mm

OD D1 Metric	OD D1 Inch	SD D2	LOC L1	OAL L2	Corner Radius 0.30 EDP No.	0.50 EDP No.	1.00 EDP No.	1.50 EDP No.	2.00 EDP No.	2.50 EDP No.	3.00 EDP No.	4.00 EDP No.	5.00 EDP No.
6.0	.2362	6	10	54	–	GMG28060	–	–	–	–	–	–	–
		6	13	57	GMG30060	GMG30901	GMG30902	–	–	–	–	–	–
8.0	.315	8	12	58	–	GMG28080	–	–	–	–	–	–	–
		8	19	63	–	GMG30080	GMG30903	GMG30904	GMG30905	–	–	–	–
10.0	.3937	10	14	66	–	GMG28100	–	–	–	–	–	–	–
		10	22	72	–	GMG30100	GMG30906	GMG30907	GMG30908	–	–	–	–
12.0	.4724	12	16	73	–	GMG28120	–	–	–	–	–	–	–
		12	26	83	–	GMG30120	GMG30909	GMG30910	GMG30911	GMG30912	GMG30913	–	–
16.0	.6299	16	22	82	–	–	GMG28160	–	–	–	–	–	–
		16	36	92	–	–	GMG30160	GMG30914	GMG30915	GMG30916	GMG30917	GMG30918	–
20.0	.7874	20	26	92	–	–	GMG28200	–	–	–	–	–	–
		20	44	104	–	–	GMG30200	GMG30919	GMG30920	GMG30921	GMG30922	GMG30923	GMG30924
25.0	.9843	25	29	100	–	–	GMG28250	–	–	–	–	–	–
		25	54	121	–	–	GMG30250	GMG30925	GMG30926	GMG30927	GMG30928	GMG30929	GMG30930

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HR c40~45	HRc45~55	HRc55~70									
○	○	○				◎	○						◎	○

TitaNox-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE DOUBLE CORE - INCH

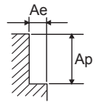
UGMG42, UGMG43 SERIES

ISO Hardness (Brinell)	Work Materials	Speed and Feed Recommendations: Type of Cut	Ap x D1	Ae x D1	Vc (SFM)	Parameters	Diameter (in.): 1/4	5/16	3/8	1/2	5/8	3/4	1
P <300	CARBON STEELS 10**, 11**, 12**, 12L**, 15**	Side Cutting	1 *(0.7)	0.4	525 (420-630)	RPM	8021	6417	5347	4010	3208	2674	2005
						Fz	.0011	.0014	.0017	.0021	.0025	.0030	.0033
						Feed (IPM)	34.11	35.37	35.37	33.47	31.83	32.42	26.53
		Slotting	1 *(0.7)	1	410 (328-492)	RPM	6266	5013	4178	3133	2507	2089	1567
						Fz	.0010	.0013	.0017	.0019	.0025	.0028	.0033
						Feed (IPM)	24.67	26.84	27.63	24.18	24.87	23.03	20.72
P <300 P <380	ALLOY STEELS 41**, 43**, 51**, 86**	Side Cutting	1 *(0.7)	0.4	492 (394-591)	RPM	7520	6016	5013	3760	3008	2507	1880
						Fz	.0010	.0014	.0017	.0019	.0025	.0028	.0033
						Feed (IPM)	29.61	33.16	33.16	29.01	29.84	27.63	24.87
		Slotting	1 *(0.7)	1	394 (315-472)	RPM	6016	4813	4010	3008	2406	2005	1504
						Fz	.0010	.0013	.0017	.0019	.0025	.0028	.0030
						Feed (IPM)	23.68	25.77	26.53	23.21	23.87	22.11	18.24
P <380	TOOL STEELS A2, D2, H13, P20, T15	Side Cutting	1 *(0.7)	0.4	492 (394-591)	RPM	7520	6016	5013	3760	3008	2507	1880
						Fz	.0011	.0014	.0018	.0021	.0026	.0030	.0033
						Feed (IPM)	31.97	33.16	36.32	31.38	31.74	30.39	24.87
		Slotting	1 *(0.7)	1	394 (315-472)	RPM	6016	4813	4010	3008	2406	2005	1504
						Fz	.0011	.0014	.0017	.0021	.0025	.0030	.0033
						Feed (IPM)	25.58	26.53	26.53	25.11	23.87	24.32	19.89
K <260	CAST IRON Gray, Malleable, Ductile	Side Cutting	1 *(0.7)	0.4	574 (459-689)	RPM	8773	7018	5849	4386	3509	2924	2193
						Fz	.0008	.0011	.0014	.0017	.0021	.0024	.0028
						Feed (IPM)	29.01	30.95	32.24	29.01	29.29	27.63	24.18
		Slotting	1 *(0.7)	1	459 (367-551)	RPM	7018	5615	4679	3509	2807	2339	1755
						Fz	.0008	.0011	.0014	.0017	.0021	.0024	.0026
						Feed (IPM)	23.21	24.76	25.79	23.21	23.43	22.11	18.51

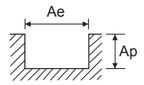
RPM = rev./min. Feed = in./min.
SFM = ft./min. Fz = in./tooth

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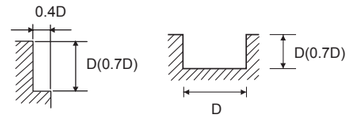
Side Cutting



Slotting



Axial cutting depth



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

* (0.7D): UGMG42K998, UGMG42K999, UGMGK801
0.7D cutting depth for slotting and side cutting applications due to short double-core length

TitaNox-POWER END MILLS — RECOMMENDED CUTTING CONDITIONS

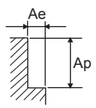
CARBIDE, 4 FLUTE DOUBLE CORE - INCH

UGMG42, UGMG43 SERIES

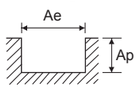
ISO Hardness (Brinell)	Work Materials	Speed and Feed Recommendations: Type of Cut	Ap x D1	Ae x D1	Vc (SFM)	Parameters	Diameter (in.): 1/4	5/16	3/8	1/2	5/8	3/4	1
M	STAINLESS STEELS 300 304, 316, 304L, 316L, SUS316	Side Cutting	1 *(0.7)	0.4	344 (276-413)	RPM	5264	4211	3509	2632	2106	1755	1316
						Fz	.0010	.0013	.0016	.0019	.0024	.0028	.0032
						Feed (IPM)	20.47	22.68	23.10	19.69	20.47	19.69	16.73
		Slotting	1 *(0.7)	1	279 (223-335)	RPM	4261	3409	2841	2131	1704	1420	1065
						Fz	.0010	.0013	.0016	.0019	.0024	.0028	.0032
						Feed (IPM)	16.57	18.36	18.70	15.94	16.57	15.94	13.55
M	STAINLESS STEELS 400 416, 420F, 430F, 440F	Side Cutting	1 *(0.7)	0.4	509 (407-610)	RPM	7770	6216	5180	3885	3108	2590	1943
						Fz	.0013	.0018	.0022	.0026	.0034	.0037	.0045
						Feed (IPM)	41.85	44.64	46.50	40.69	41.85	38.75	34.87
		Slotting	1 *(0.7)	1	410 (328-492)	RPM	6266	5013	4178	3133	2507	2089	1567
						Fz	.0013	.0018	.0022	.0026	.0032	.0037	.0041
						Feed (IPM)	33.75	36.00	37.50	32.81	31.87	31.25	25.78
M	STAINLESS STEELS (PH) 17-4PH, 15-5PH, 13-8PH	Side Cutting	0.6	0.4	144 (115-173)	RPM	2206	1765	1471	1103	882	735	551
						Fz	.0006	.0008	.0010	.0013	.0016	.0018	.0021
						Feed (IPM)	5.61	5.81	6.16	5.61	5.54	5.28	4.54
		Slotting	0.5	1	118 (94-142)	RPM	1805	1444	1203	902	722	602	451
						Fz	.0006	.0008	.0010	.0013	.0016	.0018	.0021
						Feed (IPM)	4.59	4.75	5.04	4.59	4.54	4.32	3.71
S	TITANIUM Ti6Al4V Ti5Al5V5Mo Ti7Al4Mo	Side Cutting	1 *(0.7)	0.4	230 (184-276)	RPM	3509	2807	2339	1755	1404	1170	877
						Fz	.0013	.0019	.0022	.0026	.0034	.0037	.0045
						Feed (IPM)	18.90	21.00	21.00	18.37	18.90	17.50	15.75
		Slotting	1 *(0.7)	1	180 (144-217)	RPM	2757	2206	1838	1379	1103	919	689
						Fz	.0013	.0018	.0022	.0026	.0034	.0037	.0041
						Feed (IPM)	14.85	15.84	16.50	14.44	14.85	13.75	11.34

RPM = rev./min. Feed = in./min.
SFM = ft./min. Fz = in./tooth

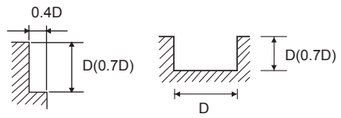
Side Cutting



Slotting



Axial cutting depth



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

* (0.7D): UGMG42K998, UGMG42K999, UGMGK801
0.7D cutting depth for slotting and side cutting applications due to short double-core length

TitaNox-POWER END MILLS — RECOMMENDED CUTTING CONDITIONS

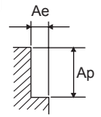
CARBIDE, 5 FLUTE - INCH

UGMH12, UGMG32, UGMG34, UGMH06, UGMH07 SERIES

ISO Hardness (Brinell)	Work Materials	Speed and Feed Recommendations: Type of cut	Ap x D1	Ae x D1	Vc (SFM)	Parameters	Diameter (in.): 1/8	3/16	1/4	5/16	3/8	1/2	9/16	5/8	11/16	3/4	1	1-1/4
P <300	CARBON STEELS 10**, 11**, 12**, 12L**, 15**	Side Cutting	1.5	0.3	472 (378-567)	RPM	14438	9625	7219	5775	4813	3609	3208	2888	2625	2406	1805	1444
						Fz	.0004	.0007	.0013	.0015	.0020	.0025	.0027	.0030	.0033	.0035	.0040	.0046
						Feed (IPM)	28.88	33.69	48.32	43.20	47.37	44.76	43.58	43.20	42.89	42.16	35.88	33.21
P <300 P <380	ALLOY STEELS 41**, 43**, 51**, 86**	Side Cutting	1.5	0.3	331 (265-398)	RPM	10127	6751	5063	4051	3376	2532	2250	2025	1841	1688	1266	1013
						Fz	.0004	.0007	.0013	.0015	.0020	.0025	.0027	.0030	.0033	.0035	.0040	.0046
						Feed (IPM)	20.25	23.63	33.89	30.30	33.22	31.40	30.57	30.30	30.08	29.57	25.17	23.29
P <380	TOOL STEELS A2, D2, H13, P20, T15	Side Cutting	1.5	0.3	197 (157-236)	RPM	6016	4010	3008	2406	2005	1504	1337	1203	1094	1003	752	602
						Fz	.0003	.0005	.0009	.0011	.0014	.0017	.0019	.0021	.0023	.0024	.0028	.0033
						Feed (IPM)	9.02	10.03	14.21	12.79	13.82	13.03	12.89	12.79	12.49	12.24	10.51	9.93
K <260	CAST IRON Gray, Malleable, Ductile	Side Cutting	1.5	0.3	348 (278-417)	RPM	10628	7085	5314	4251	3543	2657	2362	2126	1932	1771	1328	1063
						Fz	.0006	.0008	.0017	.0019	.0025	.0031	.0034	.0038	.0041	.0044	.0050	.0057
						Feed (IPM)	31.88	28.34	44.98	40.17	43.93	41.32	40.45	40.17	39.18	38.70	32.95	30.29
M	STAINLESS STEELS 300 304, 316, 304L, 316L, SUS316	Side Cutting	1.5	0.3	269 (215-323)	RPM	8222	5481	4111	3289	2741	2055	1827	1644	1495	1370	1028	822
						Fz	.0004	.0005	.0012	.0013	.0015	.0025	.0026	.0027	.0028	.0030	.0035	.0041
						Feed (IPM)	16.44	13.70	24.28	20.72	20.50	25.49	23.38	22.33	20.60	20.50	17.80	16.85
M	STAINLESS STEELS 400 416, 420F, 430F, 440F	Side Cutting	1.5	0.3	384 (307-461)	RPM	11731	7820	5865	4692	3910	2933	2607	2346	2133	1955	1466	1173
						Fz	.0003	.0004	.0009	.0010	.0012	.0018	.0020	.0021	.0022	.0024	.0028	.0033
						Feed (IPM)	17.60	15.64	27.71	23.09	23.09	26.56	26.17	24.94	23.93	23.48	20.49	19.36
M	STAINLESS STEELS (PH) 17-4PH, 15-5PH, 13-8PH	Side Cutting	1.5	0.3	194 (155-232)	RPM	5915	3944	2958	2366	1972	1479	1315	1183	1076	986	739	592
						Fz	.0004	.0005	.0012	.0013	.0015	.0025	.0026	.0027	.0028	.0030	.0035	.0041
						Feed (IPM)	11.83	9.86	17.47	14.91	14.75	18.34	16.82	16.07	14.82	14.75	12.81	12.13
S	TITANIUM Ti6Al4V Ti5Al5V5Mo Ti7Al4Mo	Side Cutting	1.5	0.2	226 (181-272)	RPM	6918	4612	3459	2767	2306	1730	1537	1384	1258	1153	865	692
						Fz	.0004	.0004	.0011	.0011	.0013	.0022	.0023	.0024	.0025	.0027	.0031	.0036
						Feed (IPM)	13.84	9.22	18.38	15.80	15.43	19.41	17.86	16.89	15.60	15.66	13.45	12.45

RPM = rev./min. Feed = in./min.
SFM = ft./min. Fz = in./tooth

Side Cutting



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
- Rcommendations above are based on ideal conditions. Adjust parameters accordingly for smaller taper machining centers or less rigid conditions

TitaNox-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE DOUBLE CORE - METRIC

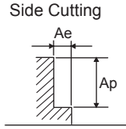
GMG40 SERIES

ISO Hardness (Brinell)	Work Materials	Speed and Feed Recommendations					Diameter (mm)							
		Type of Cut	Ap x D1	Ae x D1	Vc (SFM)	Parameters	6	8	10	12	14	16	20	25
P <300	CARBON STEELS 10**, 11**, 12**, 12L**, 15**	Side Cutting	1	0.4	525 (420-630)	RPM	8488	6366	5093	4244	3638	3183	2546	2037
						Fz	.0011	.0014	.0017	.0021	.0023	.0025	.0030	.0033
						Feed (IPM)	36.09	35.09	33.69	35.42	33.23	31.58	30.88	26.95
		Slotting	1	1	410 (328-492)	RPM	6631	4974	3979	3316	2842	2487	1989	1592
						Fz	.0010	.0013	.0017	.0019	.0022	.0025	.0028	.0033
						Feed (IPM)	26.11	26.63	26.32	25.59	25.06	24.67	21.93	21.05
P <300 P <380	ALLOY STEELS 41**, 43**, 51**, 86**	Side Cutting	1	0.4	492 (394-591)	RPM	7958	5968	4775	3979	3410	2984	2387	1910
						Fz	.0010	.0014	.0017	.0019	.0022	.0025	.0028	.0033
						Feed (IPM)	31.33	32.90	31.58	30.70	30.08	29.61	26.32	25.26
		Slotting	1	1	394 (315-472)	RPM	6366	4775	3820	3183	2728	2387	1910	1528
						Fz	.0010	.0013	.0017	.0019	.0022	.0025	.0028	.0030
						Feed (IPM)	25.06	25.57	25.26	24.56	24.06	23.69	21.05	18.53
P <380	TOOL STEELS A2, D2, H13, P20, T15	Side Cutting	1	0.4	492 (394-591)	RPM	7958	5968	4775	3979	3410	2984	2387	1910
						Fz	.0011	.0014	.0018	.0021	.0024	.0026	.0030	.0033
						Feed (IPM)	33.84	32.90	34.59	33.21	32.22	31.49	28.95	25.26
		Slotting	1	1	394 (315-472)	RPM	6366	4775	3820	3183	2728	2387	1910	1528
						Fz	.0011	.0014	.0017	.0021	.0023	.0025	.0030	.0033
						Feed (IPM)	27.07	26.32	25.26	26.57	24.92	23.69	23.16	20.21
K <260	CAST IRON Gray, Malleable, Ductile	Side Cutting	1	0.4	574 (459-689)	RPM	9284	6963	5570	4642	3979	3482	2785	2228
						Fz	.0008	.0011	.0014	.0017	.0019	.0021	.0024	.0028
						Feed (IPM)	30.70	30.70	30.70	30.70	30.08	29.06	26.32	24.56
		Slotting	1	1	459 (367-551)	RPM	7427	5570	4456	3714	3183	2785	2228	1783
						Fz	.0008	.0011	.0014	.0017	.0019	.0021	.0024	.0026
						Feed (IPM)	24.56	24.56	24.56	24.56	24.06	23.25	21.05	18.81
M	STAINLESS STEELS 300 304, 316, 304L, 316L, SUS316	Side Cutting	1	0.4	344 (276-413)	RPM	5570	4178	3342	2785	2387	2089	1671	1337
						Fz	.0010	.0013	.0016	.0019	.0022	.0024	.0028	.0032
						Feed (IPM)	21.67	22.50	22.00	20.83	20.68	20.31	18.75	17.00
		Slotting	1	1	279 (223-335)	RPM	4509	3382	2706	2255	1933	1691	1353	1082
						Fz	.0010	.0013	.0016	.0019	.0022	.0024	.0028	.0032
						Feed (IPM)	17.54	18.22	17.81	16.87	16.74	16.44	15.18	13.76

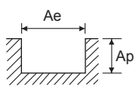
RPM = rev./min. Feed = in./min.
SFM = ft./min. Fz = in./tooth

▶ NEXT PAGE

Side Cutting



Slotting



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
- Reduce speed and feed recommendations for materials harder than listed
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CARBIDE
HSS
CBN END MILLS
i-Xmill END MILLS
i-SMART MODULAR TYPE END MILLS
X5070 END MILLS
4G MILL END MILLS
X-POWER END MILLS
JET-POWER END MILLS
TitaNox -POWER END MILLS
V7 PLUS A END MILLS
V7 MILL INOX END MILLS
ALU-POWER HPC END MILLS
ALU-POWER END MILLS
D-POWER GRAPHITE END MILLS
D-POWER CFRP END MILLS
ROUTERS CFRP
STANDARD CARBIDE END MILLS
ONLY ONE COATED PM60 END MILLS
SINE -POWER END MILLS
TANK-POWER END MILLS
STANDARD COBALT & HSS END MILLS
TECHNICAL DATA

TitaNox-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS

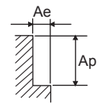
CARBIDE, 4 FLUTE DOUBLE CORE - METRIC

GMG40 SERIES

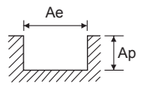
ISO Hardness (Brinell)	Work Materials	Speed and Feed Recommendations					Diameter (mm)							
		Type of Cut	Ap x D1	Ae x D1	Vc (SFM)	Parameters	6	8	10	12	14	16	20	25
M	STAINLESS STEELS 400 416, 420F, 430F, 440F	Side Cutting	1	0.4	509 (407-610)	RPM	8223	6167	4934	4112	3524	3084	2467	1974
						Fz	.0013	.0018	.0022	.0026	.0030	.0034	.0037	.0045
						Feed (IPM)	44.29	44.29	44.29	43.06	42.18	41.52	36.91	35.43
		Slotting	1	1	410 (328-492)	RPM	6631	4974	3979	3316	2842	2487	1989	1592
						Fz	.0013	.0018	.0022	.0026	.0029	.0032	.0037	.0041
						Feed (IPM)	35.72	35.72	35.72	34.72	33.12	31.62	29.76	26.19
M	STAINLESS STEELS (PH) 17-4PH, 15-5PH, 13-8PH	Side Cutting	0.6	0.4	144 (115-173)	RPM	2334	1751	1401	1167	1000	875	700	560
						Fz	.0006	.0008	.0010	.0013	.0014	.0016	.0018	.0021
						Feed (IPM)	5.94	5.76	5.87	5.94	5.67	5.50	5.03	4.61
		Slotting	0.5	1	118 (94-142)	RPM	1910	1432	1146	955	819	716	573	458
						Fz	.0006	.0008	.0010	.0013	.0014	.0016	.0018	.0021
						Feed (IPM)	4.86	4.71	4.80	4.86	4.64	4.50	4.11	3.77
S	TITANIUM Ti6Al4V Ti5Al5V5Mo Ti7Al4Mo	Side Cutting	1	0.4	230 (184-276)	RPM	3714	2785	2228	1857	1592	1393	1114	891
						Fz	.0013	.0019	.0022	.0026	.0030	.0034	.0037	.0045
						Feed (IPM)	20.00	20.83	20.00	19.45	19.05	18.75	16.67	16.00
		Slotting	1	1	180 (144-217)	RPM	2918	2188	1751	1459	1251	1094	875	700
						Fz	.0013	.0018	.0022	.0026	.0030	.0034	.0037	.0041
						Feed (IPM)	15.71	15.71	15.71	15.28	14.97	14.73	13.10	11.52

RPM = rev./min. Feed = in./min.
SFM = ft./min. Fz = in./tooth

Side Cutting



Slotting



NOTES:
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- Finish cuts typically require reduced feed rates and/or higher spindle speed, with radial width of 2% x D1 or less
- 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 END MILLS

RECOMMENDED CUTTING CONDITIONS

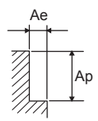
CARBIDE, 5 FLUTE - METRIC

GMG24, GMG26, GMG28, GMG30 SERIES

ISO Hardness (Brinell)	Work Materials	Speed and Feed Recommendations					Diameter (in.)								
		Type of Cut	Ap x D1	Ae x D1	Vc (SFM)	Parameters	6	8	10	12	14	16	18	20	25
P <300	CARBON STEELS 10**, 11**, 12**, 12L**, 15**	Side Cutting	1.5	0.3	472 (378-567)	RPM	7639	5730	4584	3820	3274	2865	2546	2292	1833
						Fz	.0013	.0015	.0020	.0025	.0027	.0030	.0033	.0035	.0040
						Feed (IPM)	51.13	42.86	45.11	47.37	44.47	42.86	41.61	40.15	36.45
P <300 P <380	ALLOY STEELS 41**, 43**, 51**, 86**	Side Cutting	1.5	0.3	331 (265-398)	RPM	5358	4019	3215	2679	2296	2009	1786	1607	1286
						Fz	.0013	.0015	.0020	.0025	.0027	.0030	.0033	.0035	.0040
						Feed (IPM)	35.86	30.06	31.64	33.23	31.19	30.06	29.18	28.16	25.57
P <380	TOOL STEELS A2, D2, H13, P20, T15	Side Cutting	1.5	0.3	197 (157-236)	RPM	3183	2387	1910	1592	1364	1194	1061	955	764
						Fz	.0009	.0011	.0014	.0017	.0019	.0021	.0023	.0024	.0028
						Feed (IPM)	15.04	12.69	13.16	13.79	13.16	12.69	12.11	11.65	10.68
K <260	CAST IRON Gray, Malleable, Ductile	Side Cutting	1.5	0.3	348 (278-417)	RPM	5623	4218	3374	2812	2410	2109	1874	1687	1350
						Fz	.0017	.0019	.0025	.0031	.0034	.0038	.0041	.0044	.0050
						Feed (IPM)	47.60	39.85	41.84	43.73	41.27	39.85	38.01	36.86	33.48
M	STAINLESS STEELS 300 304, 316, 304L, 316L, SUS316	Side Cutting	1.5	0.3	269 (215-323)	RPM	4350	3263	2610	2175	1864	1631	1450	1305	1044
						Fz	.0012	.0013	.0015	.0025	.0026	.0027	.0028	.0030	.0035
						Feed (IPM)	25.69	20.55	19.52	26.97	23.86	22.16	19.98	19.52	18.09
M	STAINLESS STEELS 400 416, 420F, 430F, 440F	Side Cutting	1.5	0.3	384 (307-461)	RPM	6207	4655	3724	3104	2660	2328	2069	1862	1490
						Fz	.0009	.0010	.0012	.0018	.0020	.0021	.0022	.0024	.0028
						Feed (IPM)	29.32	22.91	21.99	28.10	26.71	24.74	23.22	22.36	20.82
M	STAINLESS STEELS (PH) 17-4PH, 15-5PH, 13-8PH	Side Cutting	1.5	0.3	194 (155-232)	RPM	3130	2348	1878	1565	1341	1174	1043	939	751
						Fz	.0012	.0013	.0015	.0025	.0026	.0027	.0028	.0030	.0035
						Feed (IPM)	18.48	14.79	14.05	19.41	17.16	15.94	14.38	14.05	13.01
S	TITANIUM Ti6Al4V Ti5Al5V5Mo Ti7Al4Mo	Side Cutting	1.5	0.3	226 (181-272)	RPM	3661	2745	2196	1830	1569	1373	1220	1098	879
						Fz	.0011	.0011	.0013	.0022	.0023	.0024	.0025	.0027	.0031
						Feed (IPM)	19.46	15.67	14.70	20.54	18.22	16.75	15.13	14.92	13.66

RPM = rev./min. Feed = in./min.
SFM = ft./min. Fz = in./tooth

Side Cutting



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
- 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

CARBIDE

Being the best through innovation



V7 PLUS A END MILLS

- Silent Cutting of Steels up to HRc40
  Designed as Unequal Leads.

SOLID CARBIDE V7 PLUS A END MILLS

◎ : Excellent ○ : Good

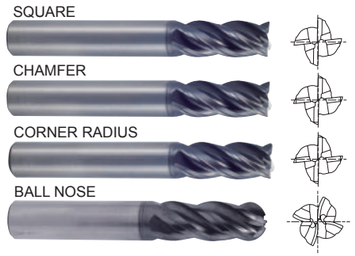
ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE	P: Carbon Steels ~HB225	P: Alloy Steels HB225~325	P: Prehardened Steels HRc30~40	P: Hardened Steels HRc40~45	P: Hardened Steels HRc45~55	H: High Hardened Steels HRc55~70	M: Stainless Steels	K: Cast Iron	N: Copper	N: Graphite	N: Aluminum	N: Acrylic	N: CFRP	S: Titanium	S: High Temperature Alloy
METRIC																				
GMF52 GMF56		CARBIDE, 4 FLUTE STANDARD LENGTH	D3.0	D25.0	996	◎	◎	◎	○			◎	◎						○	○
GMF54 GMF58		CARBIDE, 4 FLUTE CORNER RADIUS STANDARD LENGTH	D3.0	D25.0	996	◎	◎	◎	○			◎	◎						○	○
GMG55		CARBIDE, 4 FLUTE BALL NOSE STANDARD LENGTH	D3.0	D25.0	996	◎	◎	◎	○			◎	◎						○	○
GMF53 GMF57		CARBIDE, 4 FLUTE STANDARD LENGTH	D3.0	D25.0	998	◎	◎	◎	○			◎	◎						○	○
GMF55 GMF59		CARBIDE, 4 FLUTE CORNER RADIUS STANDARD LENGTH	D3.0	D25.0	998	◎	◎	◎	○			◎	◎						○	○
GMG56		CARBIDE, 4 FLUTE BALL NOSE STANDARD LENGTH	D3.0	D25.0	998	◎	◎	◎	○			◎	◎						○	○
GMF60		CARBIDE, 4 FLUTE EXTENDED LENGTH	D3.0	D20.0	1000	◎	◎	◎	○			◎	◎						○	○
GMF62		CARBIDE, 4 FLUTE CORNER RADIUS EXTENDED LENGTH	D3.0	D20.0	1000	◎	◎	◎	○			◎	◎						○	○
GMF61		CARBIDE, 4 FLUTE EXTENDED LENGTH	D3.0	D20.0	1002	◎	◎	◎	○			◎	◎						○	○
GMF63		CARBIDE, 4 FLUTE CORNER RADIUS EXTENDED LENGTH	D3.0	D20.0	1002	◎	◎	◎	○			◎	◎						○	○
GMG12 GMG14		CARBIDE, 6 FLUTE STANDARD LENGTH	D6.0	D25.0	1004	◎	◎	◎	○			◎	◎						○	○
GMG16 GMG18		CARBIDE, 6 FLUTE CORNER RADIUS STANDARD LENGTH	D6.0	D25.0	1004	◎	◎	◎	○			◎	◎						○	○
GMG13 GMG15		CARBIDE, 6 FLUTE STANDARD LENGTH	D6.0	D25.0	1005	◎	◎	◎	○			◎	◎						○	○
GMG17 GMG19		CARBIDE, 6 FLUTE CORNER RADIUS STANDARD LENGTH	D6.0	D25.0	1005	◎	◎	◎	○			◎	◎						○	○
		RECOMMENDED CUTTING CONDITIONS			1006															

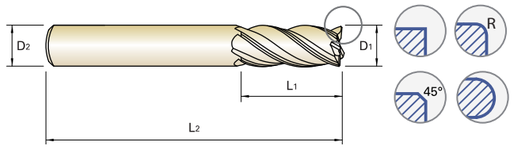
V7 PLUS A END MILLS

UGMF68 SQUARE
UGMF70 CORNER RADIUS
UGMF76 CHAMFER
UGMG53 BALL NOSE

CARBIDE, 4 FLUTE STANDARD 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





MG HM | 4 | 35°/37° | PLAIN | R ±.0008 | C x 45° | P.1006~1010

Unit : Inch

OD	SD	LOC	OAL	Square End	Chamfer	Corner Radius								Ball Nose
						.010	.015	.030	.060	.090	.125	.190	.250	
D1	D2	L1	L2	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
1/8	1/8	1/8	1-1/2	UGMF68008	–	UGMF70 008	–	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	UGMF76016	UGMF70016	–	UGMF70905	UGMF70906	–	–	–	–	UGMG53908
		1/2	2-1/2	UGMF68918	–	–	UGMF70964	UGMF70965	UGMF70966	–	–	–	–	UGMG53016
		3/4	2-1/2	UGMF68905	UGMF76902	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	UGMF76020	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
3/8	3/8	1/2	2-1/2	UGMF68024	UGMF76903	UGMF70024	–	UGMF70913	UGMF70914	UGMF70979	–	–	–	UGMG53915
		7/8	2-1/2	UGMF68907	UGMF76024	UGMF70915	–	UGMF70916	UGMF70917	UGMF70980	–	–	–	UGMG53024
		1	3	UGMF68923	–	UGMF70981	–	UGMF70982	UGMF70983	UGMF70984	–	–	–	UGMG53916
		1-1/4	3	*UGMF68S924	–	*UGMF70S985	–	*UGMF70S986	*UGMF70S987	*UGMF70S988	–	–	–	*UGMG53S917

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

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◎ : Excellent ○ : Good

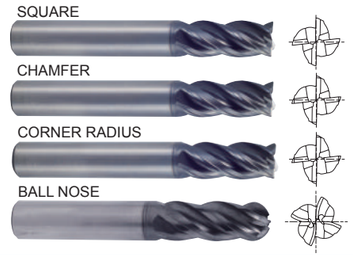
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

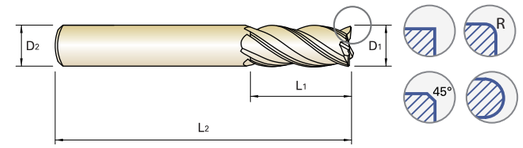
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MG HM | 4 | 35°/37° | PLAIN | R ±.0008 | C x 45° | P.1006~1010

Unit : Inch

OD	SD	LOC	OAL	Square End	Chamfer	Corner Radius								Ball Nose
						.010	.015	.030	.060	.090	.125	.190	.250	
D1	D2	L1	L2	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
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	UGMF76028	–	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	UGMF76032	UGMF70032	UGMF70922	UGMF70923	UGMF70924	UGMF70998	UGMF70999	–	–	UGMG53923
		1	3	UGMF68909	UGMF76904	UGMF70925	UGMF70801	UGMF70926	UGMF70927	UGMF70802	UGMF70928	–	–	UGMG53032
		1-1/4	3-1/2	UGMF68910	UGMF76901	UGMF70929	UGMF70930	UGMF70931	UGMF70932	UGMF70803	UGMF70933	–	–	UGMG53924
		1-5/8	4	*UGMF68S929	*UGMF76S905	–	*UGMF70S804	*UGMF70S805	*UGMF70S806	*UGMF70S807	*UGMF70S808	–	–	*UGMG53S925
		2	4	*UGMF68S939	–	–	*UGMF70S889	*UGMF70S890	*UGMF70S891	*UGMF70S892	*UGMF70S893	–	–	*UGMG53S939
		2-1/2	4-1/2	*UGMF68S940	*UGMF76S906	–	*UGMF70S894	*UGMF70S895	*UGMF70S896	*UGMF70S897	*UGMF70S898	–	–	*UGMG53S940
5/8	5/8	3/4	3	UGMF68040	–	UGMF70040	UGMF70809	UGMF70934	UGMF70935	UGMF70810	UGMF70811	–	–	UGMG53926
		1-1/4	3-1/2	UGMF68911	UGMF76040	UGMF70936	UGMF70937	UGMF70938	UGMF70939	UGMF70812	UGMF70940	–	–	UGMG53040
		1-5/8	4	UGMF68930	UGMF76907	–	UGMF70813	UGMF70814	UGMF70815	UGMF70816	UGMF70817	–	–	UGMG53927
		2	4	*UGMF68S931	–	–	*UGMF70S818	*UGMF70S819	*UGMF70S820	*UGMF70S821	*UGMF70S822	–	–	*UGMG53S928
		3-1/4	6	*UGMF68S932	–	–	*UGMF70S823	*UGMF70S824	*UGMF70S825	*UGMF70S826	*UGMF70S827	–	–	*UGMG53S929
3/4	3/4	3/4	3	UGMF68048	UGMF76908	–	UGMF70828	UGMF70048	UGMF70941	UGMF70829	UGMF70830	UGMF70831	UGMF70832	UGMG53930
		1-1/2	4	UGMF68912	UGMF76048	–	UGMF70942	UGMF70943	UGMF70944	UGMF70833	UGMF70945	UGMF70834	UGMF70835	UGMG53048
		1-7/8	4	UGMF68933	–	–	UGMF70836	UGMF70837	UGMF70838	UGMF70839	UGMF70840	UGMF70841	UGMF70842	UGMG53931
		2-1/4	5	UGMF68934	UGMF76909	–	UGMF70843	UGMF70844	UGMF70845	UGMF70846	UGMF70847	UGMF70848	UGMF70849	UGMG53932
		3-1/4	6	*UGMF68S935	–	–	*UGMF70S850	*UGMF70S851	*UGMF70S852	*UGMF70S853	*UGMF70S854	*UGMF70S855	*UGMF70S856	*UGMG53S933

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◎ : Excellent ○ : Good

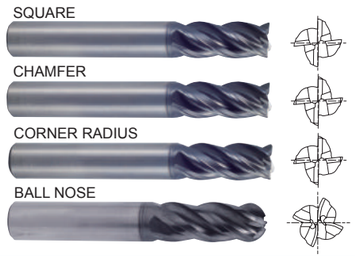
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

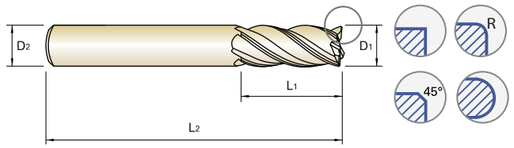
V7 PLUS A END MILLS

UGMF68 SQUARE **UGMF76** CHAMFER
UGMF70 CORNER RADIUS **UGMG53** BALL NOSE

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MG HM | 4 | 35°/37° | PLAIN | R ±.0008 | C x 45°

P.1006~1010

Unit : Inch

OD	SD	LOC	OAL	Square End	Chamfer	Corner Radius								Ball Nose
						.010	.015	.030	.060	.090	.125	.190	.250	
D1	D2	L1	L2	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
1	1	1	4	UGMF68064	UGMF76910	–	UGMF70064	UGMF70946	UGMF70947	UGMF70857	UGMF70858	UGMF70859	UGMF70860	UGMG53934
		1-1/2	4	UGMF68913	UGMF76064	–	UGMF70948	UGMF70949	UGMF70950	UGMF70861	UGMF70951	UGMF70862	UGMF70863	UGMG53064
		2	5	UGMF68914	UGMF76911	–	UGMF70952	UGMF70953	UGMF70954	UGMF70864	UGMF70865	UGMF70866	UGMF70867	UGMG53935
		2-5/8	5	UGMF68936	UGMF76912	–	UGMF70868	UGMF70869	UGMF70870	UGMF70871	UGMF70872	UGMF70873	UGMF70874	UGMG53936
		3	6	UGMF68937	–	–	UGMF70875	UGMF70876	UGMF70877	UGMF70878	UGMF70879	UGMF70880	UGMF70881	UGMG53937
		4-1/4	7	*UGMF68S938	–	–	*UGMF70S882	*UGMF70S883	*UGMF70S884	*UGMF70S885	*UGMF70S886	*UGMF70S887	*UGMF70S888	*UGMG53S938

CHAMFER KEY

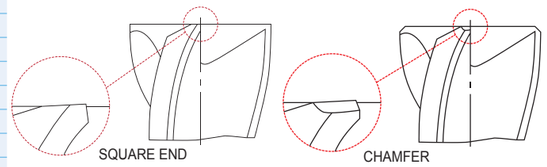
Mill Diameter	Chamfer Size
1/4	.007
5/16	.007
3/8	.011
7/16	.013
1/2	.013
5/8	.015
3/4	.019
1	.019

BALL NOSE KEY

Mill Diameter	Radius of Ball
1/8	1/16
5/32	5/64
3/16	3/32
7/32	7/64
1/4	1/8
9/32	9/64
5/16	5/32
11/32	11/64
3/8	3/16
7/16	7/32
1/2	1/4
5/8	5/16
3/4	3/8
1	1/2

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

Reinforced Cutting Edge



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

◎ : Excellent ○ : Good

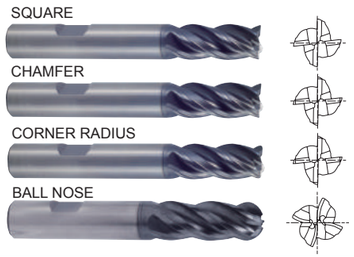
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

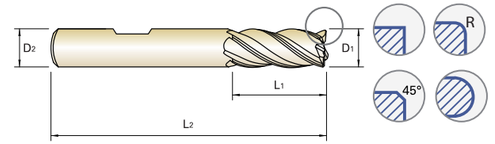
V7 PLUS A END MILLS

UGMF69 SQUARE **UGMF77** CHAMFER
UGMF71 CORNER RADIUS **UGMG54** BALL NOSE

CARBIDE, 4 FLUTE STANDARD 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





MG HM | 4 | 35°/37° | FLAT | R ±.0008 | C x 45°

P.1006~1010

Unit : Inch

OD	SD	LOC	OAL	Square End	Chamfer	Corner Radius						Ball Nose
						.010	.015	.030	.060	.090	.125	
D1	D2	L1	L2	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
11/32	3/8	1/2	2-1/2	UGMF69022	–	–	–	–	–	–	–	–
		13/16	2-1/2	–	–	–	–	–	–	–	–	UGMG54022
3/8	3/8	1/2	2-1/2	UGMF69024	UGMF77902	UGMF71024	–	UGMF71913	UGMF71914	–	–	–
		7/8	2-1/2	UGMF69907	UGMF77024	UGMF71915	–	UGMF71916	UGMF71917	–	–	UGMG54024
7/16	7/16	5/8	2-1/2	UGMF69028	–	–	UGMF71028	UGMF71918	–	–	–	–
		1	2-3/4	UGMF69908	–	UGMF71919	–	UGMF71920	UGMF71921	–	–	UGMG54028
1/2	1/2	5/8	2-1/2	UGMF69032	UGMF77032	UGMF71032	UGMF71922	UGMF71923	UGMF71924	–	–	–
		1	3	UGMF69909	UGMF77903	UGMF71925	–	UGMF71926	UGMF70927	–	UGMF71928	UGMG54032
		1-1/4	3-1/2	UGMF69910	UGMF77901	UGMF71929	UGMF71930	UGMF71931	UGMF71932	–	UGMF71933	–
		2	4	*UGMF69S915	–	–	*UGMF71S955	*UGMF71S956	*UGMF71S957	*UGMF71S958	*UGMF71S959	*UGMG54S901
		2-1/2	4-1/2	*UGMF69S916	–	–	*UGMF71S960	*UGMF71S961	*UGMF71S962	*UGMF71S963	*UGMF71S964	*UGMG54S902
5/8	5/8	3/4	3	UGMF69040	UGMF77904	UGMF71040	–	UGMF71934	UGMF71935	–	–	–
		1-1/4	3-1/2	UGMF69911	UGMF77040	UGMF71936	UGMF71937	UGMF71938	UGMF71939	–	UGMF71940	UGMG54040
3/4	3/4	3/4	3	UGMF69048	UGMF77905	–	–	UGMF71048	UGMF71941	–	–	–
		1-1/2	4	UGMF69912	UGMF77048	–	UGMF71942	UGMF71943	UGMF71944	–	UGMF71945	UGMG54048

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

▶ NEXT PAGE

◎ : Excellent ○ : Good

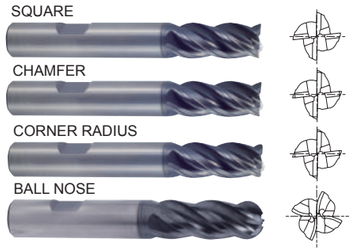
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

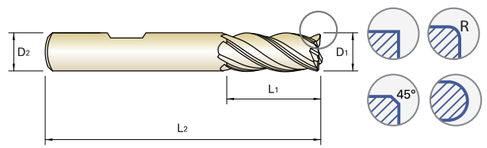
V7 PLUS A END MILLS

UGMF69 SQUARE
UGMF71 CORNER RADIUS
UGMF77 CHAMFER
UGMG54 BALL NOSE

CARBIDE, 4 FLUTE STANDARD 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





MG HM | 4 | 35°/37° | FLAT | R ±.0008 | C x 45° | P.1006~1010

Unit : Inch

OD	SD	LOC	OAL	Square End	Chamfer	Corner Radius						Ball Nose
						.010	.015	.030	.060	.090	.125	
D1	D2	L1	L2	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
1	1	1	4	UGMF69064	UGMF77906	-	UGMF71064	UGMF71946	UGMF71947	-	-	-
		1-1/2	4	UGMF69913	UGMF77064	-	UGMF71948	UGMF71949	UGMF71950	-	UGMF71951	UGMG54064
		2	5	UGMF69914	UGMF77907	-	UGMF71952	UGMF71953	UGMF71954	-	-	-

CHAMFER KEY

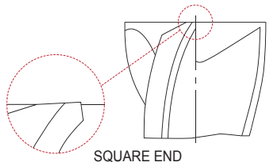
Mill Diameter	Chamfer Size
1/4	.007
5/16	.007
3/8	.011
7/16	.013
1/2	.013
5/8	.015
3/4	.019
1	.019

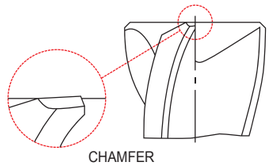
BALL NOSE KEY

Mill Diameter	Radius of Ball
1/8	1/16
5/32	5/64
3/16	3/32
7/32	7/64
1/4	1/8
9/32	9/64
5/16	5/32
11/32	11/64
3/8	3/16
7/16	7/32
1/2	1/4
5/8	5/16
3/4	3/8
1	1/2

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

REINFORCED CUTTING EDGE





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

◎ : Excellent ○ : Good

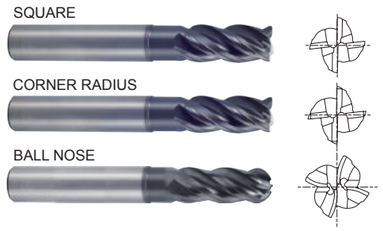
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

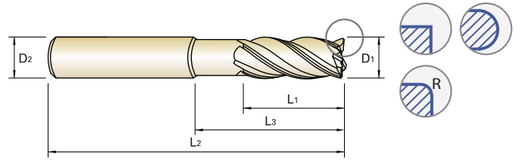
V7 PLUS A END MILLS

UGMF72 SERIES SQUARE
UGMF74 SERIES CORNER RADIUS
UGMH10 SERIES BALL NOSE

CARBIDE, 4 FLUTE EXTENDED LENGTH

- Special flute geometry and multiple helix eliminate vibrations
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- Advanced coating for superior performance and tool life





MG HM | 4 | 35°/37° | PLAIN | R ±.0008 | P.1006~1010

Unit : Inch

OD	SD	LOC	LBS	OAL	Square End	Corner Radius								Ball Nose
						.010	.015	.030	.060	.090	.125	.190	.250	
D1	D2	L1	L3	L2	EDP No.	EDP No.	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	UGMF72008	UGMF74008	-	UGMF74913	-	-	-	-	-	UGMH10008
		5/32	1/2	3	UGMF72913	UGMF74914	-	UGMF74915	-	-	-	-	-	UGMH10901
		5/32	5/8	3	UGMF72914	UGMF74916	-	UGMF74917	-	-	-	-	-	UGMH10902
3/16	3/16	7/32	1/2	3	UGMF72012	UGMF74012	-	UGMF74918	-	-	-	-	-	UGMH10012
		7/32	3/4	3	UGMF72915	UGMF74919	-	UGMF74920	-	-	-	-	-	UGMH10903
		7/32	1	3	UGMF72916	UGMF74921	-	UGMF74922	-	-	-	-	-	UGMH10904
1/4	1/4	3/8	3/4	4	UGMF72016	-	UGMF74016	UGMF74923	UGMF74924	-	-	-	-	UGMH10016
		3/8	1-1/8	4	UGMF72901	-	UGMF74901	UGMF74925	UGMF74926	-	-	-	-	UGMH10905
		3/8	2-1/8	4	UGMF72902	-	UGMF74902	UGMF74927	UGMF74928	-	-	-	-	UGMH10906
3/8	3/8	1/2	1-1/8	4	UGMF72024	-	UGMF74929	UGMF74024	UGMF74930	UGMF74931	-	-	-	UGMH10024
		1/2	2-1/8	4	UGMF72903	-	UGMF74932	UGMF74903	UGMF74933	UGMF74934	-	-	-	UGMH10907
		1/2	3-1/8	5	UGMF72922	-	UGMF74815	UGMF74816	UGMF74817	UGMF74818	-	-	-	UGMH10922
		1/2	3-1/8	6	UGMF72904	-	UGMF74935	UGMF74904	UGMF74936	UGMF74937	-	-	-	UGMH10908
		1/2	4-1/8	6	UGMF72917	-	UGMF74938	UGMF74939	UGMF74940	UGMF74941	-	-	-	UGMH10909

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◎ : Excellent ○ : Good

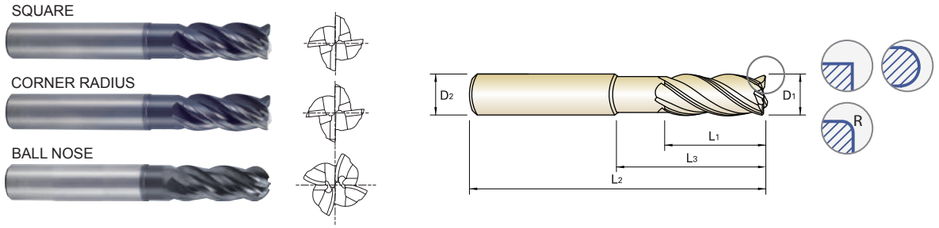
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

V7 PLUS A END MILLS

UGMF72 SERIES SQUARE
UGMF74 SERIES CORNER RADIUS
UGMH10 SERIES BALL NOSE

CARBIDE, 4 FLUTE EXTENDED LENGTH

- Special flute geometry and multiple helix eliminate vibrations
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MG HM | 4 | 35°/37° | PLAIN | R ±.0008 | P.1006~1010

Unit : Inch

OD	SD	LOC	LBS	OAL	Square End	Corner Radius								Ball Nose
						.010	.015	.030	.060	.090	.125	.190	.250	
D1	D2	L1	L3	L2	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	1-1/2	4	UGMF72032	–	UGMF74942	UGMF74032	UGMF74943	UGMF74944	UGMF74945	–	–	UGMH10032
		5/8	2-1/4	4	UGMF72905	–	UGMF74946	UGMF74905	UGMF74947	UGMF74948	UGMF74949	–	–	UGMH10910
		5/8	3-3/8	5	UGMF72923	–	UGMF74819	UGMF74820	UGMF74821	UGMF74822	UGMF74823	–	–	UGMH10923
		5/8	3-3/8	6	UGMF72906	–	UGMF74950	UGMF74906	UGMF74951	UGMF74952	UGMF74953	–	–	UGMH10911
		5/8	4-1/8	6	UGMF72918	–	UGMF74954	UGMF74955	UGMF74956	UGMF74957	UGMF74958	–	–	UGMH10912
5/8	5/8	3/4	1-5/8	4	UGMF72040	–	–	UGMF74040	UGMF74959	UGMF74960	UGMF74961	–	–	UGMH10040
		3/4	2-3/8	5	UGMF72924	–	–	UGMF74824	UGMF74825	UGMF74826	UGMF74827	–	–	UGMH10924
		3/4	3-3/8	5	UGMF72925	–	–	UGMF74828	UGMF74829	UGMF74830	UGMF74831	–	–	UGMH10925
		3/4	2-3/8	6	UGMF72907	–	–	UGMF74907	UGMF74962	UGMF74963	UGMF74964	–	–	UGMH10913
		3/4	3-3/8	6	UGMF72908	–	–	UGMF74908	UGMF74965	UGMF74966	UGMF74967	–	–	UGMH10914
		3/4	4-1/8	6	UGMF72919	–	–	UGMF74968	UGMF74969	UGMF74970	UGMF74971	–	–	UGMH10915
3/4	3/4	1	2	4	UGMF72048	–	–	UGMF74048	UGMF74972	UGMF74973	UGMF74974	UGMF74975	UGMF74976	UGMH10048
		1	3	5	UGMF72926	–	–	UGMF74832	UGMF74833	UGMF74834	UGMF74835	UGMF74836	UGMF74837	UGMH10926
		1	2-1/2	6	UGMF72920	–	–	UGMF74977	UGMF74978	UGMF74979	UGMF74980	UGMF74981	UGMF74982	UGMH10916
		1	3	6	UGMF72909	–	–	UGMF74909	UGMF74983	UGMF74984	UGMF74985	UGMF74986	UGMF74987	UGMH10917
		1	4	6	UGMF72910	–	–	UGMF74910	UGMF74988	UGMF74989	UGMF74990	UGMF74991	UGMF74992	UGMH10918

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

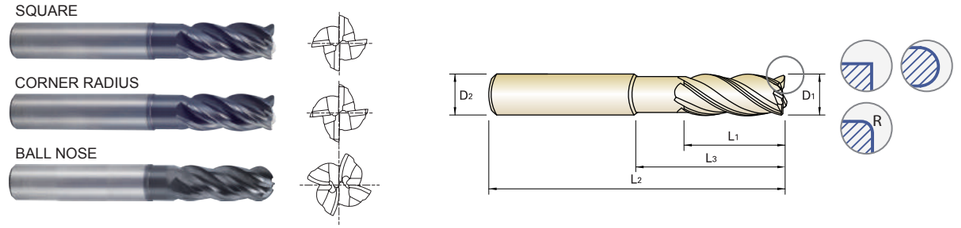
CARBIDE
HSS
CBN END MILLS
i-Xmill END MILLS
i-SMART MODULAR TYPE END MILLS
X5070 END MILLS
4G MILL END MILLS
X-POWER END MILLS
JET-POWER END MILLS
TitaNox -POWER END MILLS
V7 PLUS A END MILLS
V7 MILL INOX END MILLS
ALU-POWER HPC END MILLS
ALU-POWER END MILLS
D-POWER GRAPHITE END MILLS
D-POWER CFRP END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

V7 PLUS A END MILLS

UGMF72 SERIES SQUARE
UGMF74 SERIES CORNER RADIUS
UGMH10 SERIES BALL NOSE

CARBIDE, 4 FLUTE EXTENDED LENGTH

- Special flute geometry and multiple helix eliminate vibrations
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- Advanced coating for superior performance and tool life



MG HM | 4 | 35°/37° | PLAIN | R ±.0008 | P.1006~1010

Unit : Inch

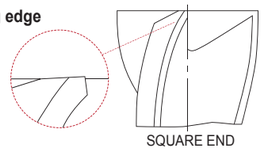
OD	SD	LOC	LBS	OAL	Square End	Corner Radius								Ball Nose
						.010	.015	.030	.060	.090	.125	.190	.250	
D1	D2	L1	L3	L2	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
1	1	1-1/8	2	4	UGMF72064	–	–	UGMF74064	UGMF74993	UGMF74994	UGMF74995	UGMF74996	UGMF74997	UGMH10064
		1-1/8	2-5/8	5	UGMF72927	–	–	UGMF74838	UGMF74839	UGMF74840	UGMF74841	UGMF74842	UGMF74843	UGMH10927
		1-1/8	3	5	UGMF72928	–	–	UGMF74844	UGMF74845	UGMF74846	UGMF74847	UGMF74848	UGMF74849	UGMH10928
		1-1/8	2-5/8	6	UGMF72921	–	–	UGMF74998	UGMF74999	UGMF74801	UGMF74802	UGMF74803	UGMF74804	UGMH10919
		1-1/8	3	6	UGMF72911	–	–	UGMF74911	UGMF74805	UGMF74806	UGMF74807	UGMF74808	UGMF74809	UGMH10920
		1-1/8	4	6	UGMF72912	–	–	UGMF74912	UGMF74810	UGMF74811	UGMF74812	UGMF74813	UGMF74814	UGMH10921

BALL NOSE KEY

Mill Diameter	Radius of Ball
1/8	1/16
5/32	5/64
3/16	3/32
7/32	7/64
1/4	1/8
9/32	9/64
5/16	5/32
11/32	11/64
3/8	3/16
7/16	7/32
1/2	1/4
5/8	5/16
3/4	3/8
1	1/2

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

Reinforced cutting edge



◎ : Excellent ○ : Good

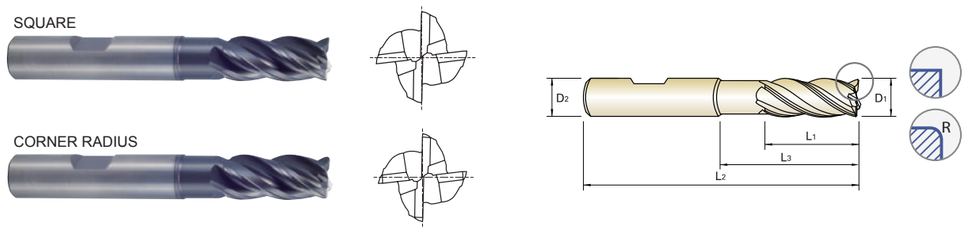
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

V7 PLUS A END MILLS

UGMF73 SERIES SQUARE
UGMF75 SERIES CORNER RADIUS

CARBIDE, 4 FLUTE EXTENDED 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



MG HM | 4 | 35°/37° | FLAT

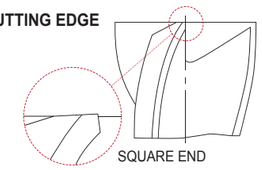
P.1006~1009

Unit : mm

OD	SD	LOC	LBS	OAL	Square End	Corner Radius
						.030
D_1	D_2	L_1	L_3	L_2	EDP No.	EDP No.
3/8	3/8	1/2	1-1/8	4	UGMF73024	UGMF75024
		1/2	2-1/8	4	UGMF73903	UGMF75903
		1/2	3-1/8	5	UGMF73913	UGMF75913
		1/2	3-1/8	6	UGMF73904	UGMF75904
1/2	1/2	5/8	1-1/2	4	UGMF73032	UGMF75032
		5/8	2-1/4	4	UGMF73905	UGMF75905
		5/8	3-3/8	5	UGMF73914	UGMF75914
		5/8	3-3/8	6	UGMF73906	UGMF75906
5/8	5/8	3/4	1-5/8	4	UGMF73040	UGMF75040
		3/4	2-3/8	5	UGMF73915	UGMF75915
		3/4	3-3/8	5	UGMF73916	UGMF75916
		3/4	2-3/8	6	UGMF73907	UGMF75907
		3/4	3-3/8	6	UGMF73908	UGMF75908
3/4	3/4	1	2	4	UGMF73048	UGMF75048
		1	3	5	UGMF73917	UGMF75917
		1	3	6	UGMF73909	UGMF75909
		1	4	6	UGMF73910	UGMF75910
1	1	1-1/8	2	4	UGMF73064	UGMF75064
		1-1/8	2-5/8	5	UGMF73918	UGMF75918
		1-1/8	3	5	UGMF73919	UGMF75919
		1-1/8	3	6	UGMF73911	UGMF75911
		1-1/8	4	6	UGMF73912	UGMF75912

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

REINFORCED CUTTING EDGE



◎ : Excellent ○ : Good

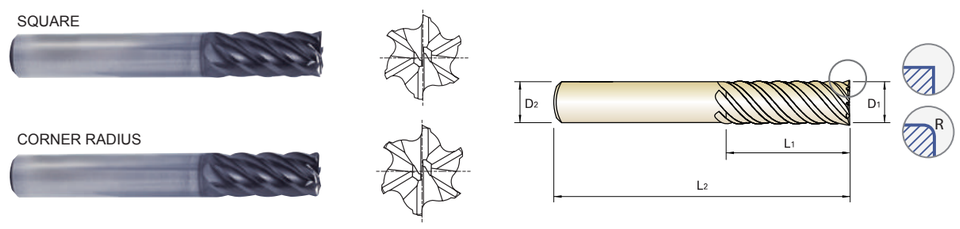
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

V7 PLUS A END MILLS

UGMG20 SERIES SQUARE
UGMG22 SERIES CORNER RADIUS

CARBIDE, 6 FLUTE STANDARD LENGTH

- The unique geometry of the variable pitch reduces chatter for high-speed and trochoidal milling
- Excellent performance for stainless steels, mild steels, cast iron and low/medium hardness materials up to HRc40
- Advanced coating for superior performance and tool life



MG HM | 6 | 45° | PLAIN

P.1011

Unit : Inch

OD	SD	LOC	LBS	Square End	Corner Radius							
					.015	.030	.060	.090	.120	.125	.190	.250
D_1	D_2	L_1	L_2	EDP No.	EDP No.	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	3-1/2	UGMG20907	UGMG22977	UGMG22919	UGMG22920	UGMG22921	UGMG22922	UGMG22978	-	-
		1-5/8	4	UGMG20918	UGMG22979	UGMG22980	UGMG22981	UGMG22982	-	UGMG22983	-	-
		2	4	UGMG20908	UGMG22984	UGMG22923	UGMG22924	UGMG22925	UGMG22926	UGMG22985	-	-
		2-5/8	5	UGMG20919	UGMG22986	UGMG22987	UGMG22988	UGMG22989	-	UGMG22990	-	-
		3	5	UGMG20909	UGMG22991	UGMG22927	UGMG22928	UGMG22929	UGMG22930	UGMG22992	-	-

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

V7 PLUS A END MILLS

UGMG20 SERIES SQUARE
UGMG22 SERIES CORNER RADIUS

CARBIDE, 6 FLUTE STANDARD LENGTH

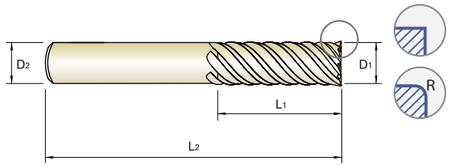
- ▶ The unique geometry of the variable pitch reduces chatter for high-speed and trochoidal milling
- ▶ Excellent performance for stainless steels, mild steels, cast iron and low/medium hardness materials up to HRc40
- ▶ Advanced coating for superior performance and tool life

SQUARE



CORNER RADIUS





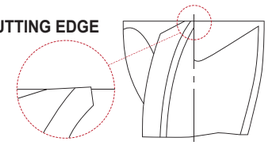
MG HM | 6 | 45° | PLAIN | P.1011

Unit : Inch

OD	SD	LOC	LBS	Square End	Corner Radius							
					.015	.030	.060	.090	.120	.125	.190	.250
D1	D2	L1	L2	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
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	-	-
		2-5/8	5	UGMG20922	UGMG22808	UGMG22809	UGMG22810	UGMG22811	-	UGMG22812	-	-
		3	5	UGMG20911	UGMG22813	UGMG22938	UGMG22939	UGMG22940	UGMG22941	UGMG22814	-	-
3/4	3/4	1	3-1/2	UGMG20923	UGMG22815	UGMG22816	UGMG22817	UGMG22818	-	UGMG22819	UGMG22820	UGMG22821
		1-1/2	4	UGMG20048	UGMG22822	UGMG22048	UGMG22942	UGMG22943	UGMG22944	UGMG22823	UGMG22824	UGMG22825
		1-7/8	5	UGMG20924	UGMG22826	UGMG22827	UGMG22828	UGMG22829	-	UGMG22830	UGMG22831	UGMG22832
		2-1/4	5	UGMG20925	UGMG22833	UGMG22834	UGMG22835	UGMG22836	-	UGMG22837	UGMG22838	UGMG22839
		2-3/4	5	UGMG20926	UGMG22840	UGMG22841	UGMG22842	UGMG22843	-	UGMG22844	UGMG22845	UGMG22846
		3	5-1/2	UGMG20912	UGMG22847	UGMG22945	UGMG22946	UGMG22947	UGMG22948	UGMG22848	UGMG22849	UGMG22850
1	1	1-1/2	4	UGMG20064	UGMG22851	UGMG22064	UGMG22949	UGMG22950	UGMG22951	UGMG22852	UGMG22853	UGMG22854
		2	5	UGMG20927	UGMG22855	UGMG22856	UGMG22857	UGMG22858	-	UGMG22859	UGMG22860	UGMG22861
		2-5/8	5	UGMG20928	UGMG22862	UGMG22863	UGMG22864	UGMG22865	-	UGMG22866	UGMG22867	UGMG22868
		3-1/4	6	UGMG20929	UGMG22869	UGMG22870	UGMG22871	UGMG22872	-	UGMG22873	UGMG22874	UGMG22875
		4	7	UGMG20913	UGMG22876	UGMG22952	UGMG22953	UGMG22954	UGMG22955	UGMG22877	UGMG22878	UGMG22879

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

REINFORCED CUTTING EDGE



SQUARE END

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

V7 PLUS A END MILLS

UGMG21 SERIES SQUARE
UGMG23 SERIES CORNER RADIUS

CARBIDE, 6 FLUTE STANDARD LENGTH

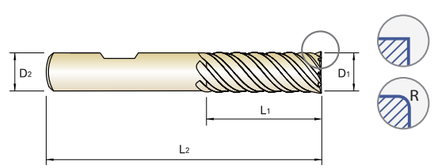
- ▶ The unique geometry of the variable pitch reduces chatter for high-speed and trochoidal milling
- ▶ Excellent performance for stainless steels, mild steels, cast iron and low/medium hardness materials up to HRc40
- ▶ Advanced coating for superior performance and tool life

SQUARE



CORNER RADIUS





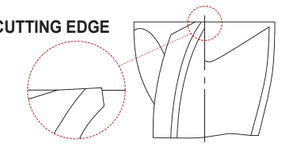
MG HM | 6 | 45° | FLAT | P.1011

Unit : Inch

OD	SD	LOC	LBS	Square End	Corner Radius				
					.015	.030	.060	.090	.120
D1	D2	L1	L2	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
3/8	3/8	1	3	UGMG21024	UGMG23024	UGMG23909	UGMG23910	-	-
		1-1/2	4	UGMG21905	UGMG23911	UGMG23912	UGMG23913	-	-
		2	4	UGMG21906	UGMG23914	UGMG23915	UGMG23916	-	-
1/2	1/2	1	3	UGMG21914	UGMG23032	UGMG23917	UGMG23918	-	-
		1	3-1/4	UGMG21032	-	-	-	-	-
		1-1/4	3-1/2	UGMG21907	-	UGMG23919	UGMG23920	UGMG23921	UGMG23922
		2	4	UGMG21908	-	UGMG23923	UGMG23924	UGMG23925	UGMG23926
		3	5	UGMG21909	-	UGMG23927	UGMG23928	UGMG23929	UGMG23930
5/8	5/8	1-1/4	3-1/2	UGMG21040	-	UGMG23040	UGMG23931	UGMG23932	UGMG23933
		2	4	UGMG21910	-	UGMG23934	UGMG23935	UGMG23936	UGMG23937
		3	5	UGMG21911	-	UGMG23938	UGMG23939	UGMG23940	UGMG23941
3/4	3/4	1-1/2	4	UGMG21048	-	UGMG23048	UGMG23942	UGMG23943	UGMG23944
		3	5-1/2	UGMG21912	-	UGMG23945	UGMG23946	UGMG23947	UGMG23948
1	1	1-1/2	4	UGMG21064	-	UGMG23064	UGMG23949	UGMG23950	UGMG23951
		4	7	UGMG21913	-	UGMG23952	UGMG23953	UGMG23954	UGMG23955

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

REINFORCED CUTTING EDGE



SQUARE END

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

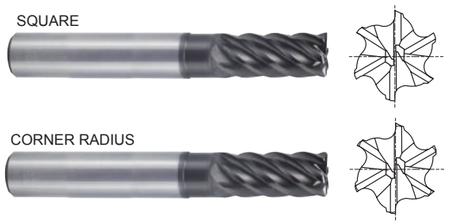
V7 PLUS A END MILLS

UGMH08 SERIES SQUARE
UGMH09 SERIES CORNER RADIUS

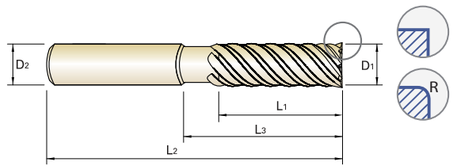
CARBIDE, 6 FLUTE EXTENDED LENGTH

- ► The unique geometry of the variable pitch reduces chatter for high-speed and trochoidal milling
- ► Excellent performance for stainless steels, mild steels, cast iron and low/medium hardness materials up to HRc40
- ► Advanced coating for superior performance and tool life

SQUARE



CORNER RADIUS



MG HM | 6 | 45° | PLAIN | P.1011

Unit : Inch

OD	SD	LOC	LBS	OAL	Square End	Corner Radius					
						.030	.060	.090	.125	.190	.250
D1	D2	L1	L3	L2	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
1/4	1/4	3/8	3/4	4	UGMH08016	UGMH09016	UGMH09901	-	-	-	-
		3/8	1-1/8	4	UGMH08901	UGMH09902	UGMH09903	-	-	-	-
		3/8	2-1/8	4	UGMH08902	UGMH09904	UGMH09905	-	-	-	-
		1/2	1-1/8	4	UGMH08024	UGMH09024	UGMH09906	UGMH09907	-	-	-
3/8	3/8	1/2	1-1/8	4	UGMH08903	UGMH09908	UGMH09909	UGMH09910	-	-	-
		1/2	2-1/8	4	UGMH08919	UGMH09999	UGMH09801	UGMH09802	-	-	-
		1/2	3-1/8	5	UGMH08904	UGMH09911	UGMH09912	UGMH09913	-	-	-
		1/2	3-1/8	6	UGMH08905	UGMH09914	UGMH09915	UGMH09916	-	-	-
		5/8	1-1/2	4	UGMH08032	UGMH09032	UGMH09917	UGMH09918	UGMH09919	-	-
		5/8	2-1/4	4	UGMH08906	UGMH09920	UGMH09921	UGMH09922	UGMH09923	-	-
1/2	1/2	5/8	3-3/8	5	UGMH08920	UGMH09803	UGMH09804	UGMH09805	UGMH09806	-	-
		5/8	3-3/8	6	UGMH08907	UGMH09924	UGMH09925	UGMH09926	UGMH09927	-	-
		5/8	4-1/8	6	UGMH08908	UGMH09928	UGMH09929	UGMH09930	UGMH09931	-	-
		3/4	1-5/8	4	UGMH08040	UGMH09040	UGMH09932	UGMH09933	UGMH09934	-	-
		3/4	2-3/8	5	UGMH08921	UGMH09807	UGMH09808	UGMH09809	UGMH09810	-	-
5/8	5/8	3/4	3-3/8	5	UGMH08922	UGMH09811	UGMH09812	UGMH09813	UGMH09814	-	-
		3/4	2-3/8	6	UGMH08909	UGMH09935	UGMH09936	UGMH09937	UGMH09938	-	-
		3/4	3-3/8	6	UGMH08910	UGMH09939	UGMH09940	UGMH09941	UGMH09942	-	-
		3/4	4-1/8	6	UGMH08911	UGMH09943	UGMH09944	UGMH09945	UGMH09946	-	-
		1-1/8	2	4	UGMH08048	UGMH09048	UGMH09947	UGMH09948	UGMH09949	UGMH09950	UGMH09951
		1-1/8	2-5/8	5	UGMH08912	UG MH09952	UGMH09953	UGMH09954	UGMH09955	UGMH09956	UGMH09957
3/4	3/4	1-1/8	3-1/4	6	UGMH08913	UGMH09958	UGMH09959	UGMH09960	UGMH09961	UGMH09962	UGMH09963
		1-1/8	4-1/4	7	UGMH08914	UGMH09964	UGMH09965	UGMH09966	UGMH09967	UGMH09968	UGMH09969

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

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

V7 PLUS A END MILLS

UGMH08 SERIES SQUARE
UGMH09 SERIES CORNER RADIUS

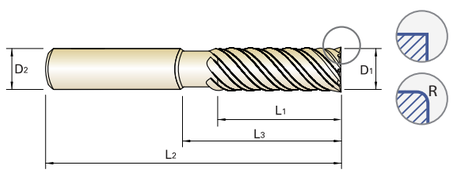
CARBIDE, 6 FLUTE EXTENDED LENGTH

- ► The unique geometry of the variable pitch reduces chatter for high-speed and trochoidal milling
- ► Excellent performance for stainless steels, mild steels, cast iron and low/medium hardness materials up to HRc40
- ► Advanced coating for superior performance and tool life

SQUARE



CORNER RADIUS



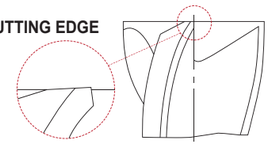
MG HM | 6 | 45° | PLAIN | P.1011

Unit : Inch

OD	SD	LOC	LBS	OAL	Square End	Corner Radius					
						.030	.060	.090	.125	.190	.250
D1	D2	L1	L3	L2	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
1	1	1-1/4	2-1/4	4	UGMH08064	UGMH09064	UGMH09970	UGMH09971	UGMH09972	UGMH09973	UGMH09974
		1-1/4	2-5/8	5	UGMH08915	UGMH09975	UGMH09976	UGMH09977	UGMH09978	UGMH09979	UGMH09980
		1-1/4	3-1/4	6	UGMH08916	UGMH09981	UGMH09982	UGMH09983	UGMH09984	UGMH09985	UGMH09986
		1-1/4	4-1/4	7	UGMH08917	UGMH09987	UGMH09988	UGMH09989	UGMH09990	UGMH09991	UGMH09992
		1-1/4	5-1/4	8	UGMH08918	UGMH09993	UGMH09994	UGMH09995	UGMH09996	UGMH09997	UGMH09998

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

REINFORCED CUTTING EDGE



SQUARE END

◎ : Excellent ○ : Good

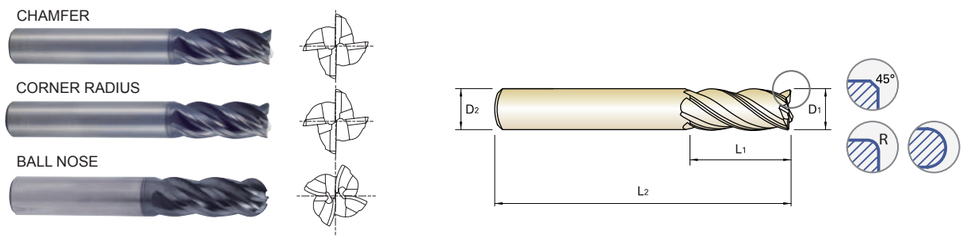
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

V7 PLUS A END MILLS

GMF52 / GMF56 SERIES CHAMFER
GMF54 / GMF58 SERIES CORNER RADIUS
GMG55 SERIES BALL NOSE

CARBIDE, 4 FLUTE STANDARD 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



MG HM | 4 | 35°/37° | PLAIN | C x 45° | R ±0.02 mm

P.1012~1014

Unit : mm

OD D1 Metric	OD D1 Inch	SD D2	LOC L1	OAL L2	Chamfer EDP No.	Corner Radius 0.30 EDP No.	Corner Radius 0.50 EDP No.	Corner Radius 1.00 EDP No.	Corner Radius 2.00 EDP No.	Corner Radius 3.00 EDP No.	Ball Nose EDP No.
3.0	.1181	6	7	54	GMF52030	GMF54030	GMF54901	-	-	-	-
		6	8	57	GMF56030	GMF58030	GMF58901	-	-	-	GMG55030
4.0	.1575	6	8	54	GMF52040	GMF54040	GMF54902	-	-	-	-
		6	11	57	GMF56040	GMF58040	GMF58902	-	-	-	GMG55040
5.0	.1969	6	10	54	GMF52050	GMF54050	GMF54903	-	-	-	-
		6	13	57	GMF56050	GMF58050	GMF58903	-	-	-	GMG55050
6.0	.2362	6	10	54	GMF52060	GMF54060	GMF54904	GMF54905	-	-	-
		6	13	57	GMF56060	GMF58060	GMF58904	GMF58905	-	-	GMG55060
8.0	.3150	8	12	58	GMF52080	-	GMF54080	GMF54906	-	-	-
		8	19	63	GMF56080	-	GMF58080	GMF58906	-	-	GMG55080
10.0	.3937	10	14	66	GMF52100	-	GMF54100	GMF54907	-	-	-
		10	22	72	GMF56100	-	GMF58100	GMF58907	-	-	GMG55100
12.0	.4724	12	16	73	GMF52120	-	GMF54120	GMF54908	GMF54909	-	-
		12	26	83	GMF56120	-	GMF58120	GMF58908	GMF58909	-	GMG55120
14.0	.5512	14	18	75	GMF52140	-	GMF54140	-	-	-	-
		14	26	83	GMF56140	-	GMF58140	-	-	-	-
16.0	.6299	16	22	82	GMF52160	-	-	GMF54160	GMF54912	GMF54913	-
		16	32	92	GMF56160	-	-	GMF58160	GMF58912	GMF58913	GMG55160

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

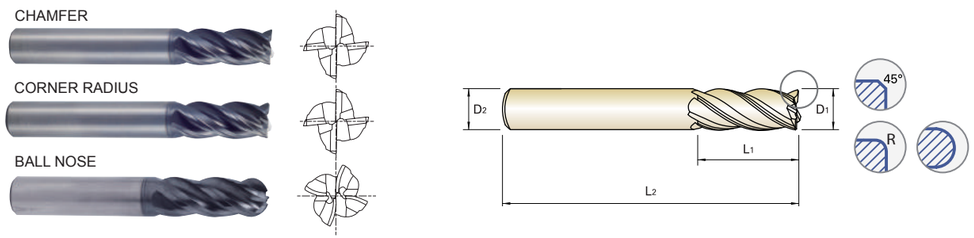
CARBIDE
HSS
CBN END MILLS
i-Xmill END MILLS
i-SMART MODULAR TYPE END MILLS
X5070 END MILLS
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V7 PLUS A END MILLS
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ALU-POWER HPC END MILLS
ALU-POWER END MILLS
D-POWER GRAPHITE END MILLS
D-POWER CFRP END MILLS
ROUTERS CFRP
STANDARD CARBIDE END MILLS
ONLY ONE COATED PM60 END MILLS
SINE -POWER END MILLS
TANK-POWER END MILLS
STANDARD COBALT & HSS END MILLS
TECHNICAL DATA

V7 PLUS A END MILLS

GMF52 / GMF56 SERIES CHAMFER
GMF54 / GMF58 SERIES CORNER RADIUS
GMG55 SERIES BALL NOSE

CARBIDE, 4 FLUTE STANDARD 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



MG HM | 4 | 35°/37° | PLAIN | C x 45° | R ±0.02 mm

P.1012~1014

Unit : mm

OD D1 Metric	OD D1 Inch	SD D2	LOC L1	OAL L2	Chamfer EDP No.	Corner Radius 0.30 EDP No.	Corner Radius 0.50 EDP No.	Corner Radius 1.00 EDP No.	Corner Radius 2.00 EDP No.	Corner Radius 3.00 EDP No.	Ball Nose EDP No.
18.0	.7087	18	24	84	GMF52180	-	-	GMF54180	-	-	-
		18	32	92	GMF56180	-	-	GMF58180	-	-	-
20.0	.7874	20	26	92	GMF52200	-	-	GMF54200	GMF54916	GMF54917	-
		20	38	104	GMF56200	-	-	GMF58200	GMF58916	GMF58917	GMG55200
25.0	.9843	25	38	104	GMF56250	-	-	GMF58250	-	-	GMG55250

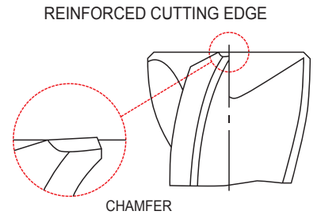
CHAMFER KEY

Mill Diameter Metric	Mill Diameter Inch	Chamfer Size (mm)
3.0	.1181	0.10
4.0	.1575	0.15
5.0	.1969	0.15
6.0	.2362	0.20
8.0	.3150	0.20
10.0	.3937	0.30
12.0	.4724	0.35
14.0	.5512	0.40
16.0	.6299	0.40
18.0	.7087	0.50
20.0	.7874	0.50
25.0	.9843	0.50

BALL NOSE KEY

Mill Diameter Metric	Mill Diameter Inch	Radius of Ball
3.0	.1181	1.5
4.0	.1575	2.0
5.0	.1969	2.5
6.0	.2362	3.0
8.0	.3150	4.0
10.0	.3937	5.0
12.0	.4724	6.0
16.0	.6299	8.0
20.0	.7874	10.0
25.0	.9843	12.5

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



◎ : Excellent ○ : Good

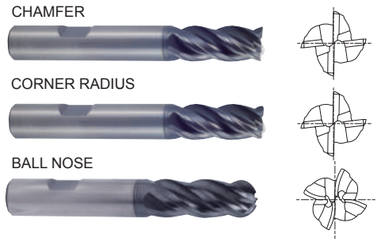
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

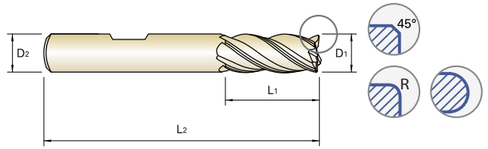
V7 PLUS A END MILLS

GMF53 / GMF57 SERIES CHAMFER
GMF55 / GMF59 SERIES CORNER RADIUS
GMG56 SERIES BALL NOSE

CARBIDE, 4 FLUTE STANDARD 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





MG HM | 4 | 35°/37° | FLAT | C x 45° | R ±0.02 mm | P.1012~1014

Unit : mm

OD D1 Metric	OD D1 Inch	SD D2	LOC L1	OAL L2	Chamfer EDP No.	Corner Radius 0.30 EDP No.	Corner Radius 0.50 EDP No.	Corner Radius 1.00 EDP No.	Corner Radius 2.00 EDP No.	Corner Radius 3.00 EDP No.	Ball Nose EDP No.
3.0	.1181	6	7	54	GMF53030	GMF55030	GMF55901	-	-	-	-
		6	8	57	GMF57030	GMF59030	GMF59901	-	-	-	GMG56030
4.0	.1575	6	8	54	GMF53040	GMF55040	GMF55902	-	-	-	-
		6	11	57	GMF57040	GMF59040	GMF59902	-	-	-	GMG56040
5.0	.1969	6	10	54	GMF53050	GMF55050	GMF55903	-	-	-	-
		6	13	57	GMF57050	GMF59050	GMF59903	-	-	-	GMG56050
6.0	.2362	6	10	54	GMF53060	GMF55060	GMF55904	GMF55905	-	-	-
		6	13	57	GMF57060	GMF59060	GMF59904	GMF59905	-	-	GMG56060
8.0	.3150	8	12	58	GMF53080	-	GMF55080	GMF55906	-	-	-
		8	19	63	GMF57080	-	GMF59080	GMF59906	-	-	GMG56080
10.0	.3937	10	14	66	GMF53100	-	GMF55100	GMF55907	-	-	-
		10	22	72	GMF57100	-	GMF59100	GMF59907	-	-	GMG56100
12.0	.4724	12	16	73	GMF53120	-	GMF55120	GMF55908	GMF55909	-	-
		12	26	83	GMF57120	-	GMF59120	GMF59908	GMF59909	-	GMG56120
14.0	.5512	14	18	75	GMF53140	-	GMF55140	-	-	-	-
		14	26	83	GMF57140	-	GMF59140	-	-	-	-
16.0	.6299	16	22	82	GMF53160	-	-	GMF55160	GMF55912	GMF55913	-
		16	32	92	GMF57160	-	-	GMF59160	GMF59912	GMF59913	GMG56160

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

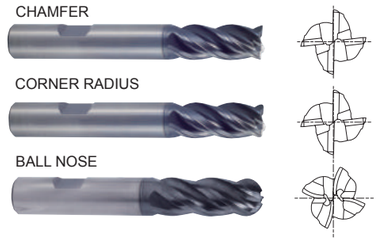
CARBIDE
HSS
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D-POWER CFRP END MILLS
ROUTERS CFRP
STANDARD CARBIDE END MILLS
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TANK-POWER END MILLS
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TECHNICAL DATA

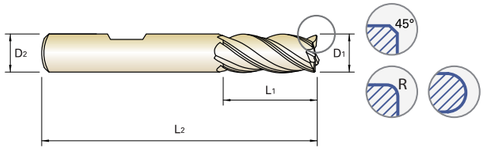
V7 PLUS A END MILLS

GMF53 / GMF57 SERIES CHAMFER
GMF55 / GMF59 SERIES CORNER RADIUS
GMG56 SERIES BALL NOSE

CARBIDE, 4 FLUTE STANDARD 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





MG HM | 4 | 35°/37° | FLAT | C x 45° | R ±0.02 mm | P.1012~1014

Unit : mm

OD D1 Metric	OD D1 Inch	SD D2	LOC L1	OAL L2	Chamfer EDP No.	Corner Radius 0.30 EDP No.	Corner Radius 0.50 EDP No.	Corner Radius 1.00 EDP No.	Corner Radius 2.00 EDP No.	Corner Radius 3.00 EDP No.	Ball Nose EDP No.
18.0	.7087	18	24	84	GMF53180	-	-	GMF55180	-	-	-
		18	32	92	GMF57180	-	-	GMF59180	-	-	-
20.0	.7874	20	26	92	GMF53200	-	-	GMF55200	GMF55916	GMF55917	-
		20	38	104	GMF57200	-	-	GMF59200	GMF59916	GMF59917	GMG56200
25.0	.9843	25	38	104	GMF57250	-	-	GMF59250	-	-	GMG56250

CHAMFER KEY

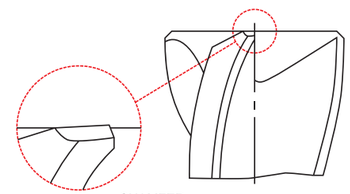
Mill Diameter Metric	Mill Diameter Inch	Chamfer Size (mm)
3.0	.1181	0.10
4.0	.1575	0.15
5.0	.1969	0.15
6.0	.2362	0.20
8.0	.3150	0.20
10.0	.3937	0.30
12.0	.4724	0.35
14.0	.5512	0.40
16.0	.6299	0.40
18.0	.7087	0.50
20.0	.7874	0.50
25.0	.9843	0.50

BALL NOSE KEY

Mill Diameter Metric	Mill Diameter Inch	Radius of Ball
3.0	.1181	1.5
4.0	.1575	2.0
5.0	.1969	2.5
6.0	.2362	3.0
8.0	.3150	4.0
10.0	.3937	5.0
12.0	.4724	6.0
16.0	.6299	8.0
20.0	.7874	10.0
25.0	.9843	12.5

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

REINFORCED CUTTING EDGE



◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

V7 PLUS A END MILLS

GMF60 SERIES CHAMFER
GMF62 SERIES CORNER RADIUS

CARBIDE, 4 FLUTE EXTENDED LENGTH

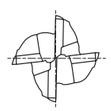
- ► Special flute geometry and multiple helix eliminate vibrations
- ► Excellent performance for stainless steels, mild steels, cast iron, low/medium hardness materials and all exotic materials up to HRc40
- ► Advanced coating for superior performance and tool life

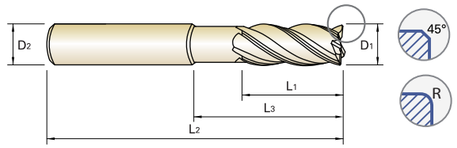
SQUARE



CORNER RADIUS







MG HM | 4 | 35°/37° | PLAIN | C x 45° | P.1012~1013

Unit : mm

OD D1 Metric	OD D1 Inch	SD D2	LOC L1	LBS L3	OAL L2	Chamfer EDP No.	Corner Radius 0.30 EDP No.	0.50 EDP No.	1.00 EDP No.	2.00 EDP No.	3.00 EDP No.
3.0	.1181	6	7	12	54	GMF60030	GMF62030	GMF62901	-	-	-
		6	7	17	57	GMF60901	GMF62902	GMF62903	-	-	-
		6	8	14	57	GMF60902	-	-	-	-	-
4.0	.1575	6	8	15	57	GMF60040	GMF62040	GMF62904	-	-	-
		6	8	22	63	GMF60903	GMF62905	GMF62906	-	-	-
		6	11	16	57	GMF60904	-	-	-	-	-
5.0	.1969	6	10	17	57	GMF60050	GMF62050	GMF62907	-	-	-
		6	10	27	67	GMF60905	GMF62908	GMF62909	-	-	-
		6	13	18	57	GMF60906	-	-	-	-	-
6.0	.2362	6	10	15	57	GMF60060	GMF62060	GMF62910	GMF62911	-	-
		6	10	20	62	GMF60907	GMF62912	GMF62913	GMF62914	-	-
		6	10	32	74	GMF60908	GMF62915	GMF62916	GMF62917	-	-
		6	13	21	57	GMF60909	-	-	-	-	-
8.0	.3150	8	12	20	63	GMF60080	-	GMF62080	GMF62918	-	-
		8	12	30	73	GMF60910	-	GMF62919	GMF62920	-	-
		8	12	46	90	GMF60911	-	GMF62921	GMF62922	-	-
		8	19	27	63	GMF60912	-	-	-	-	-
10.0	.3937	10	14	25	72	GMF60100	-	GMF62100	GMF62923	-	-
		10	14	35	82	GMF60913	-	GMF62924	GMF62925	-	-
		10	14	55	102	GMF60914	-	GMF62926	GMF62927	-	-
		10	22	32	72	GMF60915	-	-	-	-	-
12.0	.4724	12	16	30	83	GMF60120	-	GMF62120	GMF62928	GMF62929	-
		12	16	40	93	GMF60916	-	GMF62930	GMF62931	GMF62932	-
		12	16	64	117	GMF60917	-	GMF62933	GMF62934	GMF62935	-
		12	26	38	83	GMF60918	-	-	-	-	-

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

V7 PLUS A END MILLS

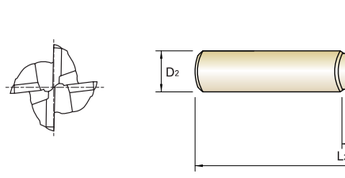
GMF60 SERIES CHAMFER
GMF62 SERIES CORNER RADIUS

CARBIDE, 4 FLUTE EXTENDED 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



MG HM | 4 | 35°/37° | PLAIN | C x 45° | P.1012~1013

Unit : mm

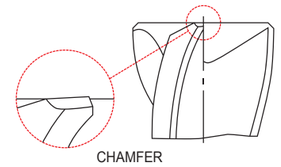
OD D1 Metric	OD D1 Inch	SD D2	LOC L1	LBS L3	OAL L2	Chamfer EDP No.	Corner Radius 0.30 EDP No.	0.50 EDP No.	1.00 EDP No.	2.00 EDP No.	3.00 EDP No.
16.0	.6299	16	22	38	92	-	-	-	GMF62160	GMF62936	GMF62937
		16	22	55	109	-	-	-	GMF62938	GMF62939	GMF62940
		16	22	87	141	-	-	-	GMF62941	GMF62942	GMF62943
		16	32	44	92	-	-	-	-	-	-
20.0	.7874	20	26	50	104	-	-	-	GMF62200	GMF62944	GMF62945
		20	26	70	124	-	-	-	GMF62946	GMF62947	GMF62948
		20	26	110	164	-	-	-	GMF62949	GMF62950	GMF62951
		20	38	54	104	-	-	-	-	-	-

CHAMFER KEY

Mill Diameter Metric	Mill Diameter Inch	Chamfer Size (mm)
3.0	.1181	0.10
4.0	.1575	0.15
5.0	.1969	0.15
6.0	.2362	0.20
8.0	.3150	0.20
10.0	.3937	0.30
12.0	.4724	0.35
16.0	.6299	0.40
20.0	.7874	0.50

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

REINFORCED CUTTING EDGE



CHAMFER

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

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

V7 PLUS A END MILLS

GMF61 SERIES CHAMFER
GMF63 SERIES CORNER RADIUS

CARBIDE, 4 FLUTE EXTENDED 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

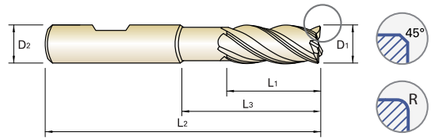
SQUARE



CORNER RADIUS







MG HM | 4 | 35°/37° | FLAT | C x 45° | P.1012~1013

Unit : mm

OD D1 Metric	OD D1 Inch	SD D2	LOC L1	LBS L3	OAL L2	Chamfer 0.10 EDP No.	Corner Radius 0.30 EDP No.	0.50 EDP No.	1.00 EDP No.	2.00 EDP No.	3.00 EDP No.
3.0	.1181	6	7	12	54	GMF61030	GMF63030	GMF63901	-	-	-
		6	7	17	57	GMF61901	GMF63902	GMF63903	-	-	-
		6	8	14	57	GMF61902	-	-	-	-	-
4.0	.1575	6	8	15	57	GMF61040	GMF63040	GMF63904	-	-	-
		6	8	22	63	GMF61903	GMF63905	GMF63906	-	-	-
		6	11	16	57	GMF61904	-	-	-	-	-
5.0	.1969	6	10	17	57	GMF61050	GMF63050	GMF63907	-	-	-
		6	10	27	67	GMF61905	GMF63908	GMF63909	-	-	-
		6	13	18	57	GMF61906	-	-	-	-	-
6.0	.2362	6	10	15	57	GMF61060	GMF63060	GMF63910	GMF63911	-	-
		6	10	20	62	GMF61907	GMF63912	GMF63913	GMF63914	-	-
		6	10	32	74	GMF61908	GMF63915	GMF63916	GMF63917	-	-
		6	13	21	57	GMF61909	-	-	-	-	-
8.0	.3150	8	12	20	63	GMF61080	-	GMF63080	GMF63918	-	-
		8	12	30	73	GMF61910	-	GMF63919	GMF63920	-	-
		8	12	46	90	GMF61911	-	GMF63921	GMF63922	-	-
		8	19	27	63	GMF61912	-	-	-	-	-
10.0	.3937	10	14	25	72	GMF61100	-	GMF63100	GMF63923	-	-
		10	14	35	82	GMF61913	-	GMF63924	GMF63925	-	-
		10	14	55	102	GMF61914	-	GMF63926	GMF63927	-	-
		10	22	32	72	GMF61915	-	-	-	-	-
12.0	.4724	12	16	30	83	GMF61120	-	GMF63120	GMF63928	GMF63929	-
		12	16	40	93	GMF61916	-	GMF63930	GMF63931	GMF63932	-
		12	16	64	117	GMF61917	-	GMF63933	GMF63934	GMF63935	-
		12	26	38	83	GMF61918	-	-	-	-	-

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

V7 PLUS A END MILLS

GMF61 SERIES CHAMFER
GMF63 SERIES CORNER RADIUS

CARBIDE, 4 FLUTE EXTENDED LENGTH

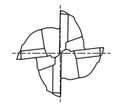
- ▶ Special flute geometry and multiple helix eliminate vibrations
- ▶ Excellent performance for stainless steels, mild steels, cast iron, low/medium hardness materials and all exotic materials up to HRc40
- ▶ Advanced coating for superior performance and tool life

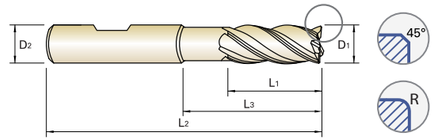
SQUARE



CORNER RADIUS







MG HM | 4 | 35°/37° | FLAT | C x 45° | P.1012~1013

Unit : mm

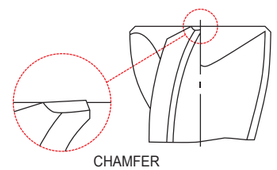
OD D1 Metric	OD D1 Inch	SD D2	LOC L1	LBS L3	OAL L2	Chamfer 0.10 EDP No.	Corner Radius 0.30 EDP No.	0.50 EDP No.	1.00 EDP No.	2.00 EDP No.	3.00 EDP No.
16.0	.6299	16	22	38	92	GMF61160	-	-	GMF63160	GMF63936	GMF63937
		16	22	55	109	GMF61919	-	-	GMF63938	GMF63939	GMF63940
		16	22	87	141	GMF61920	-	-	GMF63941	GMF63942	GMF63943
		16	32	44	92	GMF61921	-	-	-	-	-
20.0	.7874	20	26	50	104	GMF61200	-	-	GMF63200	GMF63944	GMF63945
		20	26	70	124	GMF61922	-	-	GMF63946	GMF63947	GMF63948
		20	26	110	164	GMF61923	-	-	GMF63949	GMF63950	GMF63951
		20	38	54	104	GMF61924	-	-	-	-	-

CHAMFER KEY

Mill Diameter Metric	Mill Diameter Inch	Chamfer Size (mm)
3.0	.1181	0.10
4.0	.1575	0.15
5.0	.1969	0.15
6.0	.2362	0.20
8.0	.3150	0.20
10.0	.3937	0.30
12.0	.4724	0.35
16.0	.6299	0.40
20.0	.7874	0.50

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

REINFORCED CUTTING EDGE



CHAMFER

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

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

V7 PLUS A END MILLS

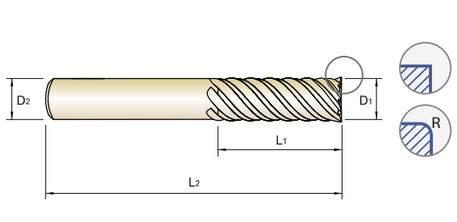
GMG12 / GMG14 SERIES SQUARE
GMG16 / GMG18 SERIES CORNER RADIUS

CARBIDE, 6 FLUTE STANDARD LENGTH

- ► The unique geometry of the variable pitch reduces chatter for high-speed and trochoidal milling
- ► Excellent performance for stainless steels, mild steels, cast iron and low/medium hardness materials up to HRc40
- ► Advanced coating for superior performance and tool life

SQUARE

CORNER RADIUS



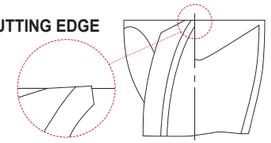
MG HM | 6 | 45° | PLAIN | P.1015

Unit : mm

OD D1 Metric	OD D1 Inch	SD D2	LOC L1	OAL L2	Square End EDP No.	Corner Radius 0.50 EDP No.	1.00 EDP No.	1.50 EDP No.	2.00 EDP No.	3.00 EDP No.	4.00 EDP No.	5.00 EDP No.
6.0	.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	-	-
		16	64	140	GMG14160	-	GMG18160	GMG18911	GMG18912	GMG18913	-	-
20.0	.7874	20	38	104	GMG12200	-	GMG16200	GMG16913	GMG16914	GMG16915	-	-
		20	80	150	GMG14200	-	GMG18200	GMG18914	GMG18915	GMG18916	GMG18917	GMG18918
25.0	.9843	25	44	104	GMG12250	-	GMG16250	GMG16916	GMG16917	GMG16918	-	-
		25	100	170	GMG14250	-	GMG18250	GMG18919	GMG18920	GMG18921	GMG18922	GMG18923

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

REINFORCED CUTTING EDGE



SQUARE END

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

V7 PLUS A END MILLS

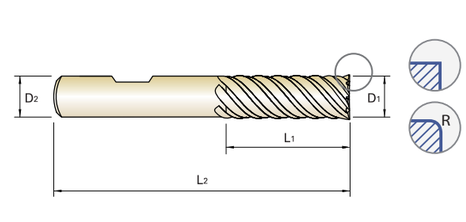
GMG13 / GMG15 SERIES SQUARE
GMG17 / GMG19 SERIES CORNER RADIUS

CARBIDE, 6 FLUTE STANDARD LENGTH

- ► The unique geometry of the variable pitch reduces chatter for high-speed and trochoidal milling
- ► Excellent performance for stainless steels, mild steels, cast iron and low/medium hardness materials up to HRc40
- ► Advanced coating for superior performance and tool life

SQUARE

CORNER RADIUS



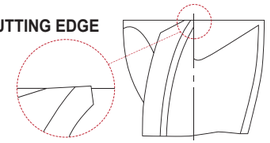
MG HM | 6 | 45° | FLAT | P.1015

Unit : mm

OD D1 Metric	OD D1 Inch	SD D2	LOC L1	OAL L2	Square End EDP No.	Corner Radius 0.50 EDP No.	1.00 EDP No.	1.50 EDP No.	2.00 EDP No.	3.00 EDP No.	4.00 EDP No.	5.00 EDP No.
6.0	.2362	6	13	57	GMG13060	GMG17060	GMG17901	-	-	-	-	-
		6	24	75	GMG15060	GMG19060	GMG19901	-	-	-	-	-
8.0	.3150	8	19	63	GMG13080	GMG17080	GMG17902	-	-	-	-	-
		8	32	75	GMG15080	GMG19080	GMG19902	-	GMG19903	-	-	-
10.0	.3937	10	22	72	GMG13100	GMG17100	GMG17903	GMG17904	GMG17905	-	-	-
		10	40	100	GMG15100	GMG19100	GMG19904	GMG19905	GMG19906	-	-	-
12.0	.4724	12	26	83	GMG13120	GMG17120	GMG17906	GMG17907	GMG17908	GMG17909	-	-
		12	48	120	GMG15120	GMG19120	GMG19907	GMG19908	GMG19909	GMG19910	-	-
16.0	.6299	16	32	92	GMG13160	-	GMG17160	GMG17910	GMG17911	GMG17912	-	-
		16	64	140	GMG15160	-	GMG19160	GMG19911	GMG19912	GMG19913	-	-
20.0	.7874	20	38	104	GMG13200	-	GMG17200	GMG17913	GMG17914	GMG17915	-	-
		20	80	150	GMG15200	-	GMG19200	GMG19914	GMG19915	GMG19916	GMG19917	GMG19918
25.0	.9843	25	44	104	GMG13250	-	GMG17250	GMG17916	GMG17917	GMG17918	-	-
		25	100	170	GMG15250	-	GMG19250	GMG19919	GMG19920	GMG19921	GMG19922	GMG19923

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

REINFORCED CUTTING EDGE



SQUARE END

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

V7 PLUS A END MILLS

RECOMMENDED CUTTING CONDITIONS

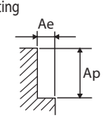
CARBIDE, 4 FLUTE - INCH

UGMF68, UGMF69, UGMF70, UGMF71, UGMF72, UGMF73, UGMF74, UGMF75, UGMF76, UGMF77 SERIES

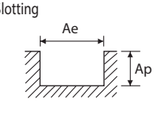
ISO Hardness (BHN)	Work Materials	Speed and Feed Recommendations				Diameter (in.)			
		Type of Cut	Ap x D1	Ae x D1	Parameters	1/8	5/32	3/16	7/32
P <300	CARBON STEEL 10**, 11**, 12**, 12L**, 15**	Side Cutting	1.5 (1.2)	0.5	SFM (VC)	499 (400-599)			499 (400-598)
					RPM	15249	12200	10166	8714
					FZ	.0002	.0003	.0004	.0005
					FEED	12.01	15.37	17.61	18.53
		Slotting	1 (0.8)	1	SFM (VC)	499 (400-599)			499 (400-598)
					RPM	15249	12200	10166	8714
					FZ	.0002	.0003	.0004	.0005
					FEED	12.01	15.37	17.61	18.53
P >300 P <380	ALLOY STEEL 41**, 43**, 51**, 86**	Side Cutting	1.5 (1.2)	0.5	SFM (VC)	351 (281-422)			351 (281-421)
					RPM	10727	8581	7151	6129
					FZ	.0002	.0003	.0004	.0005
					FEED	8.45	10.81	12.39	13.03
		Slotting	1 (0.8)	1	SFM (VC)	351 (281-422)			351 (281-421)
					RPM	10727	8581	7151	6129
					FZ	.0002	.0003	.0004	.0005
					FEED	8.45	10.81	12.39	13.03
P <380	TOOL STEEL A2, D2, H13, P20, T15	Side Cutting	1.5 (1.2)	0.5	SFM (VC)	210 (168-252)			
					RPM	6418	5134	4278	3667
					FZ	.0001	.0002	.0003	.0004
					FEED	3.03	4.85	5.39	5.49
		Slotting	1 (0.8)	1	SFM (VC)	210 (168-252)			
					RPM	6418	5134	4278	3667
					FZ	.0001	.0002	.0003	.0004
					FEED	3.03	4.85	5.39	5.49
K <260	CAST IRON GRAY, MALLEABLE, DUCTILE	Side Cutting	1.5 (1.2)	0.5	SFM (VC)	367 (294-440)			
					RPM	11216	8972	7477	6409
					FZ	.0002	.0004	.0006	.0007
					FEED	10.60	14.13	16.48	17.16
		Slotting	1 (0.8)	1	SFM (VC)	367 (294-440)			
					RPM	11216	8972	7477	6409
					FZ	.0002	.0004	.0006	.0007
					FEED	10.60	14.13	16.48	17.16

RPM = rev./min. FEED = in./min.
SFM = ft./min. FZ = in./tooth

Side Cutting



Slotting



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% x D1

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

V7 PLUS A END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE - INCH

UGMF68, UGMF69, UGMF70, UGMF71, UGMF72, UGMF73, UGMF74, UGMF75, UGMF76, UGMF77 SERIES

Diameter (in.)									
1/4	9/32	5/16	11/32	3/8	7/16	1/2	5/8	3/4	1
499 (400-599)	499 (400-598)	499 (400-599)	525 (420-630)	551 (441-662)	551 (441-661)	551 (441-662)			
7625	6778	6100	5834	5613	4811	4210	3368	2806	2105
.0006	.0008	.0011	.0013	.0015	.0017	.0019	.0021	.0026	.0025
19.21	22.95	25.94	29.86	33.59	32.20	31.16	28.11	28.73	21.21
499 (400-599)	499 (400-598)	499 (400-599)	525 (420-630)	551 (441-662)	551 (441-661)	551 (441-662)			
7625	6778	6100	5834	5613	4811	4210	3368	2806	2105
.0006	.0008	.0011	.0013	.0015	.0017	.0019	.0021	.0026	.0025
19.21	22.95	25.94	29.86	33.59	32.20	31.16	28.11	28.73	21.21
351 (281-422)	351 (281-421)	351 (281-422)	368 (295-441)	384 (308-461)	384 (308-460)	384 (308-461)			
5363	4767	4291	4089	3912	3353	2934	2347	1956	1467
.0006	.0008	.0011	.0013	.0015	.0017	.0019	.0021	.0026	.0025
13.51	16.14	18.24	20.93	23.41	22.44	21.71	19.59	20.02	14.78
351 (281-422)	351 (281-421)	351 (281-422)	368 (295-441)	384 (308-461)	384 (308-460)	384 (308-461)			
5363	4767	4291	4089	3912	3353	2934	2347	1956	1467
.0006	.0008	.0011	.0013	.0015	.0017	.0019	.0021	.0023	.0025
13.51	16.14	18.24	20.93	23.41	22.44	21.71	19.59	18.17	14.78
210 (168-252)			220 (176-264)	230 (184-276)					
3209	2852	2567	2445	2343	2008	1757	1406	1171	879
.0004	.0006	.0007	.0009	.0011	.0012	.0013	.0015	.0018	.0018
5.56	6.74	7.68	8.86	9.96	9.33	8.86	8.19	8.30	6.23
210 (168-252)			220 (176-264)	230 (184-276)					
3209	2852	2567	2445	2343	2008	1757	1406	1171	879
.0004	.0006	.0007	.0009	.0011	.0012	.0013	.0015	.0018	.0018
5.56	6.74	7.68	8.86	9.96	9.33	8.86	8.19	8.30	6.23
367 (294-440)			386 (309-463)	404 (324-484)					
5608	4985	4486	4290	4115	3527	3087	2469	2058	1543
.0008	.0011	.0013	.0016	.0019	.0021	.0023	.0026	.0032	.0031
17.66	21.19	24.02	27.70	31.11	29.44	28.19	25.28	26.25	19.20
367 (294-440)			386 (309-463)	404 (324-484)					
5608	4985	4486	4290	4115	3527	3087	2469	2058	1543
.0008	.0011	.0013	.0016	.0019	.0021	.0023	.0026	.0032	.0031
17.66	21.19	24.02	27.70	31.11	29.44	28.19	25.28	26.25	19.20

RPM = rev./min. FEED = in./min.
SFM = ft./min. FZ = in./tooth

NEXT PAGE ▶

*Axial cutting depth		D(0.8D)* / D	0.5D / 1.5D (1.2D)*
Length of Cut	<1.5XD	0.8XD	1.2XD
	≥1.5XD	1XD	1.5XD

V7 PLUS A END MILLS

RECOMMENDED CUTTING CONDITIONS

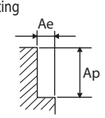
CARBIDE, 4 FLUTE - INCH

UGMF68, UGMF69, UGMF70, UGMF71, UGMF72, UGMF73, UGMF74, UGMF75, UGMF76, UGMF77 SERIES

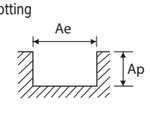
ISO Hardness (BHN)	Work Materials	Speed And Feed Recommendations: Type Of Cut	Ap x D1	Ae x D1	Parameters	Diameter (in.): 1/8	5/32	3/16	7/32
M	STAINLESS STEELS 300 304, 316, 304L, 316LSUS316	Side Cutting	1.5 (1.2)	0.5	SFM (VC)	348 (279-417)			
					RPM	10635	8508	7090	6077
					FZ	.0002	.0003	.0005	.0006
					FEED	8.37	10.72	14.51	14.83
		Slotting	1 (0.8)	1	SFM (VC)	348 (279-417)			
					RPM	10635	8508	7090	6077
					FZ	.0002	.0003	.0005	.0006
					FEED	8.37	10.72	14.51	14.83
M	STAINLESS STEELS 400 416, 420F, 430F, 440F	Side Cutting	1.5 (1.2)	0.5	SFM (VC)	486 (389-583)			
					RPM	14852	11882	9901	8487
					FZ	.0002	.0002	.0004	.0004
					FEED	9.36	11.23	14.03	14.70
		Slotting	1 (0.8)	1	SFM (VC)	486 (389-583)			
					RPM	14852	11882	9901	8487
					FZ	.0002	.0002	.0004	.0004
					FEED	9.36	11.23	14.03	14.70
M	STAINLESS STEELS (PH) 17-4PH, 15-5PH, 13-8PH	Side Cutting	1.5 (1.2)	0.5	SFM (VC)	312 (250-374)			
					RPM	9535	7628	6356	5448
					FZ	.0002	.0003	.0005	.0006
					FEED	7.51	9.61	13.01	13.30
		Slotting	1 (0.8)	1	SFM (VC)	312 (250-374)			
					RPM	9535	7628	6356	5448
					FZ	.0002	.0003	.0005	.0006
					FEED	7.51	9.61	13.01	13.30
S	TITANIUM TI6AL4V, TI5AL5V5MO, TI7AL4MO	Side Cutting	1	0.35	SFM (VC)	190 (152-228)			
					RPM	5806	4645	3871	3318
					FZ	.0002	.0003	.0004	.0005
					FEED	3.66	5.12	6.71	7.05
		Slotting	0.5	1	SFM (VC)	190 (152-228)			
					RPM	5806	4645	3871	3318
					FZ	.0002	.0003	.0004	.0005
					FEED	3.66	5.12	6.71	7.05
S	HIGH-TEMPERATURE ALLOY INCONEL, HASTALLOY, RENE	Side Cutting	1	0.25	SFM (VC)	85 (68-102)			
					RPM	2598	2078	1732	1484
					FZ	.0002	.0003	.0003	.0004
					FEED	2.05	2.29	2.18	2.34
		Slotting	0.5	1	SFM (VC)	85 (68-102)			
					RPM	2598	2078	1732	1484
					FZ	.0002	.0003	.0003	.0004
					FEED	2.05	2.29	2.18	2.34

RPM = rev./min. FEED = in./min.
SFM = ft./min. FZ = in./tooth

Side Cutting



Slotting



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% x D1

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

V7 PLUS A END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE - INCH

UGMF68, UGMF69, UGMF70, UGMF71, UGMF72, UGMF73, UGMF74, UGMF75, UGMF76, UGMF77 SERIES

Diameter (in.): 1/4	9/32	5/16	11/32	3/8	7/16	1/2	5/8	3/4	1
348 (279-417)									
5317	4727	4254	3867	3545	3039	2659	2127	1772	1329
.0007	.0009	.0011	.0015	.0019	.0020	.0022	.0024	.0030	.0030
15.07	17.12	18.76	23.14	26.80	24.64	23.03	20.77	21.49	16.12
348 (279-417)									
5317	4727	4254	3867	3545	3039	2659	2127	1772	1329
.0007	.0009	.0011	.0015	.0019	.0020	.0022	.0024	.0030	.0030
15.07	17.12	18.76	23.14	26.80	24.64	23.03	20.77	21.49	16.12
486 (389-583)									
7426	6601	5941	5401	4951	4243	3713	2970	2475	1857
.0005	.0007	.0009	.0011	.0013	.0014	.0015	.0018	.0022	.0022
15.20	18.48	20.58	23.81	26.51	24.39	22.80	21.05	21.44	16.08
486 (389-583)									
7426	6601	5941	5401	4951	4243	3713	2970	2475	1857
.0005	.0007	.0009	.0011	.0013	.0014	.0015	.0018	.0022	.0022
15.20	18.19	20.58	23.81	26.51	24.39	22.80	21.05	21.44	16.08
312 (250-374)									
4767	4238	3814	3467	3178	2724	2384	1907	1589	1192
.0007	.0009	.0011	.0015	.0019	.0020	.0022	.0024	.0030	.0030
13.51	15.35	16.82	20.75	24.02	22.09	20.65	18.62	19.02	14.26
312 (250-374)									
4767	4238	3814	3467	3178	2724	2384	1907	1589	1192
.0007	.0009	.0011	.0015	.0019	.0020	.0022	.0024	.0030	.0030
13.51	15.35	16.82	20.75	24.02	22.09	20.65	18.62	19.02	14.26
190 (152-228)									
2903	2581	2323	2111	1935	1659	1452	1161	968	726
.0006	.0008	.0010	.0013	.0017	.0018	.0020	.0022	.0027	.0027
7.32	8.33	9.14	11.14	12.80	12.02	11.43	10.06	10.36	7.89
190 (152-228)									
2903	2581	2323	2111	1935	1659	1452	1161	968	726
.0006	.0008	.0010	.0013	.0017	.0018	.0020	.0022	.0027	.0027
7.32	8.33	9.14	11.14	12.80	12.02	11.43	10.06	10.36	7.89
85 (68-102)									
1299	1154	1039	945	866	742	649	520	433	325
.0005	.0006	.0007	.0010	.0013	.0014	.0015	.0017	.0021	.0020
2.45	2.82	3.11	3.87	4.50	4.15	3.89	3.52	3.68	2.66
85 (68-102)									
1299	1154	1039	945	866	742	649	520	433	325
.0005	.0006	.0007	.0010	.0013	.0014	.0015	.0017	.0021	.0020
2.45	2.82	3.11	3.87	4.50	4.15	3.89	3.52	3.68	2.66

RPM = rev./min. FEED = in./min.
SFM = ft./min. FZ = in./tooth

*Axial cutting depth		D(0.8D)* / D	0.5D / 1.5D (1.2D)*
Length of Cut	<1.5XD	0.8XD	1.2XD
	≥1.5XD	1XD	1.5XD

V7 PLUS A END MILLS

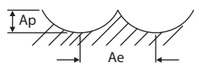
RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE - INCH

UGMG53, UGMG54, UGMH10 SERIES

ISO Hardness (BHN)	Work Materials	Speed and Feed Recommendations				Diameter (in.)										
		Type of Cut	Ap x D1	Ae x D1	Parameters	1/8	3/16	13/64	1/4	5/16	3/8	1/2	5/8	11/16	3/4	1
P <300	CARBON STEEL 10**, 11**, 12**, 12L**, 15**		1	0.5	SFM (VC)	531 (425-637)										
					RPM	16227	10818	9986	8114	6491	5409	4057	3245	2950	2705	2028
					Fz	.0010	.0011	.0012	.0016	.0024	.0026	.0028	.0030	.0031	.0035	.0039
					FEED	63.89	46.00	47.18	51.11	61.33	55.37	44.72	38.33	37.17	38.33	31.62
P >300 P <380	ALLOY STEEL 41**, 43**, 51**, 86**		1	0.5	SFM (VC)	371 (297-445)										
					RPM	11338	7559	6977	5669	4535	3779	2834	2268	2061	1890	1417
					Fz	.0010	.0011	.0012	.0016	.0024	.0026	.0028	.0029	.0031	.0035	.0039
					FEED	44.64	32.14	32.96	35.71	42.85	38.69	31.25	26.43	25.65	26.78	22.10
P <380	TOOL STEEL A2, D2, H13, P20, T15		1	0.5	SFM (VC)	223 (178-268)										
					RPM	6815	4543	4194	3407	2726	2272	1704	1363	1239	1136	852
					Fz	.0007	.0007	.0008	.0011	.0017	.0018	.0019	.0020	.0022	.0025	.0028
					FEED	18.24	13.59	13.87	15.02	18.03	16.10	13.15	11.16	10.93	11.27	9.39
K <260	CAST IRON GRAY, MALLEABLE, DUCTILE		1	0.5	SFM (VC)	390 (312-468)										
					RPM	11918	7946	7334	5959	4767	3973	2980	2384	2167	1986	1490
					Fz	.0012	.0013	.0015	.0020	.0029	.0032	.0034	.0037	.0039	.0044	.0049
					FEED	58.18	41.29	42.74	46.92	55.56	50.68	40.82	34.91	33.78	35.04	29.09
M	STAINLESS STEELS 300 304, 316, 304L, 316LSUS316		1	0.5	SFM (VC)	279 (223-335)										
					RPM	8526	5684	5247	4263	3410	2842	2132	1705	1550	1421	1066
					Fz	.0008	.0008	.0010	.0016	.0018	.0020	.0022	.0024	.0025	.0026	.0027
					FEED	26.85	17.90	20.66	27.53	24.17	22.38	18.46	16.11	15.62	14.55	11.41
M	STAINLESS STEELS 400 416, 420F, 430F, 440F		1	0.5	SFM (VC)	253 (202-304)										
					RPM	7732	5154	4758	3866	3093	2577	1933	1546	1406	1289	966
					Fz	.0006	.0006	.0010	.0012	.0016	.0018	.0020	.0021	.0023	.0023	.0023
					FEED	18.26	12.18	18.73	18.26	19.48	18.26	15.22	13.15	13.06	11.77	8.98
M	STAINLESS STEELS (PH) 17-4PH, 15-5PH, 13-8PH		1	0.5	SFM (VC)	253 (202-304)										
					RPM	7732	5154	4758	3866	3093	2577	1933	1546	1406	1289	966
					Fz	.0008	.0008	.0010	.0016	.0018	.0020	.0022	.0024	.0025	.0026	.0027
					FEED	24.35	16.23	18.73	24.96	21.92	20.29	16.74	14.61	14.17	13.19	10.35
S	TITANIUM TI6AL4V, TI5AL5V5MO, TI7AL4MO		0.3	0.5	SFM (VC)	154 (123-185)										
					RPM	4706	3137	2896	2353	1882	1569	1177	941	856	784	588
					Fz	.0007	.0007	.0009	.0015	.0016	.0018	.0019	.0021	.0023	.0023	.0024
					FEED	13.34	8.89	10.03	13.71	11.86	11.12	9.08	8.00	7.82	7.16	5.65
S	HIGH-TEMPERATURE ALLOY INCONEL, HASTALLOY, RENE		0.3	0.2	SFM (VC)	69 (55-83)										
					RPM	2109	1406	1298	1054	843	703	527	422	383	351	264
					Fz	.0006	.0006	.0007	.0011	.0012	.0014	.0015	.0017	.0018	.0018	.0019
					FEED	4.65	3.10	3.47	4.65	4.12	3.87	3.15	2.79	2.72	2.49	1.99

RPM = rev./min. FEED = in./min.
SFM = ft./min. FZ = in./tooth



SEE NOTES ON NEXT PAGE

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

V7 PLUS A END MILLS

RECOMMENDED CUTTING CONDITIONS

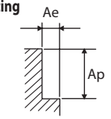
CARBIDE, 6 FLUTE - INCH

UGMG20, UGMG21, UGMG22, UGMG23, UGMH08, UGMH09 SERIES

ISO Hardness (BHN)	Work Materials	Speed and Feed Recommendations				Diameter (in.)						
		Type of Cut	Ap x D1	Ae x D1	Parameters	1/4	5/16	3/8	1/2	5/8	3/4	1
P <300	CARBON STEEL 10**, 11**, 12**, 12L**, 15**	Side Cutting	2 (*)	0.05	SFM (VC)	984 (787-1181)						
					RPM	15036	12028	10024	7518	6014	5012	3759
					Fz	.0027	.0046	.0057	.0068	.0080	.0089	.0091
					FEED	241.52	329.60	340.96	307.22	286.98	266.38	206.00
P >300 P <380	ALLOY STEEL 41**, 43**, 51**, 86**	Side Cutting	2 (*)	0.05	SFM (VC)	666 (533-799)						
					RPM	10176	8141	6784	5088	4071	3392	2544
					Fz	.0020	.0033	.0042	.0050	.0059	.0066	.0069
					FEED	120.19	163.46	169.88	153.85	143.27	133.82	104.57
P <380	TOOL STEEL A2, D2, H13, P20, T15	Side Cutting	2 (*)	0.05	SFM (VC)	328 (262-394)						
					RPM	5012	4009	3341	2506	2005	1671	1253
					Fz	.0016	.0028	.0035	.0041	.0048	.0054	.0057
					FEED	48.54	67.25	69.46	62.15	58.25	54.06	42.62
M	STAINLESS STEELS 300 304, 316, 304L, 316LSUS316	Side Cutting	2 (*)	0.05	SFM (VC)	482 (386-578)						
					RPM	7365	5892	4910	3682	2946	2455	1841
					Fz	.0016	.0028	.0035	.0041	.0048	.0054	.0056
					FEED	71.33	98.82	102.07	91.34	85.60	79.45	62.20
M	STAINLESS STEELS 400 416, 420F, 430F, 440F	Side Cutting	2 (*)	0.05	SFM (VC)	699 (559-839)						
					RPM	10681	8545	7120	5340	4272	3560	2670
					Fz	.0019	.0033	.0041	.0049	.0057	.0064	.0066
					FEED	123.63	169.55	174.93	157.69	147.34	136.24	105.97
M	STAINLESS STEELS (PH) 17-4PH, 15-5PH, 13-8PH	Side Cutting	2 (*)	0.05	SFM (VC)	440 (352-528)						
					RPM	6723	5379	4482	3362	2689	2241	1681
					Fz	.0016	.0028	.0035	.0041	.0048	.0054	.0056
					FEED	65.11	90.21	93.17	83.38	78.14	72.53	56.38
S	TITANIUM TI6AL4V, TI5AL5V5MO, TI7AL4MO	Side Cutting	2 (*)	0.05	SFM (VC)	381 (305-457)						
					RPM	5822	4657	3881	2911	2329	1941	1455
					Fz	.0013	.0022	.0028	.0033	.0038	.0044	.0046
					FEED	45.38	60.51	64.18	57.07	53.36	51.80	40.22
S	HIGH-TEMPERATURE ALLOY INCONEL, HASTALLOY, RENE	Side Cutting	2 (*)	0.05	SFM (VC)	108 (86-130)						
					RPM	1650	1320	1100	825	660	550	413
					Fz	.0013	.0022	.0028	.0032	.0038	.0044	.0045
					FEED	12.86	17.15	18.19	15.98	15.13	14.55	11.21

RPM = rev./min. FEED = in./min.
SFM = ft./min. FZ = in./tooth

Side cutting



NOTES:
* 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"
* Finish cuts typically require reduced cutting feeds and speeds; also, it is recommended the radial width of cut (AE) should not exceed 2% x D1
* 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

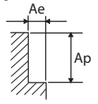
CARBIDE, 4 FLUTE - METRIC

GMF52, GMF53, GMF54, GMF55, GMF56, GMF57, GMF58, GMF59, GMF60, GMF61, GMF62, GMF63 SERIES

ISO Hardness (BHN)	Work Materials	Speed and Feed Recommendations				Diameter (mm)											
		Type of Cut	Ap x D1	Ae x D1	Parameters	3	4	5	6	8	10	12	14	16	18	20	25
P <300	CARBON STEEL 1.1191 (C45) 1.0726 (35 S 20) 1.0715 (9 SMN 28) 1.0718 (9 SMNPB 28)	Side Cutting	1.5 (1.2)	0.5	SFM (VC)	499 (399-598)					551 (441-661)						
					RPM	16128	12096	9677	8064	6048	5348	4456	3820	3342	2971	2674	2139
					Fz	.0002	.0003	.0004	.0006	.0011	.0015	.0019	.0019	.0021	.0023	.0026	.0025
					FEED	12.70	15.24	16.76	20.32	25.72	32.00	32.98	29.47	27.90	27.60	27.37	21.56
		Slotting	1 (0.8)	1	SFM (VC)	499 (399-598)					551 (441-661)						
					RPM	16128	12096	9677	8064	6048	5348	4456	3820	3342	2971	2674	2139
					FZ	.0002	.0003	.0004	.0006	.0011	.0015	.0019	.0019	.0021	.0023	.0026	.0025
					FEED	12.70	15.24	16.76	20.32	25.72	32.00	32.98	29.47	27.90	27.60	27.37	21.56
P >300 P <380	ALLOY STEEL 1.2330 (35 CRMO 4) 1.6565 (40NICRMO6) 1.7033 (34CR4) 1.6523 (21 NICRMO2)	Side Cutting	1.5 (1.2)	0.5	SFM (VC)	351 (281-421)					384 (307-461)						
					RPM	11353	8515	6812	5677	4257	3724	3104	2660	2328	2069	1862	1490
					FZ	.0002	.0003	.0004	.0006	.0011	.0015	.0019	.0019	.0021	.0023	.0026	.0025
					FEED	8.94	10.73	11.80	14.30	18.10	22.29	22.97	20.53	19.43	19.22	19.06	15.01
		Slotting	1 (0.8)	1	SFM (VC)	351 (281-421)					384 (307-461)						
					RPM	11353	8515	6812	5677	4257	3724	3104	2660	2328	2069	1862	1490
					FZ	.0002	.0003	.0004	.0006	.0011	.0015	.0019	.0019	.0021	.0023	.0026	.0025
					FEED	8.94	10.73	11.80	14.30	18.10	22.29	22.97	20.53	19.43	19.22	19.06	15.01
P <380	TOOL STEEL 1.2363 (X100 CRMOV 5 1) 1.2379 (X155 CRVMO 12 1) 1.2344 (X40 CRMOV 5 1) 1.3243 (S 6-5-2-5)	Side Cutting	1.5 (1.2)	0.5	SFM (VC)	210 (168-252)					230 (184-276)						
					RPM	6791	5093	4074	3395	2546	2228	1857	1592	1393	1238	1114	891
					FZ	.0001	.0002	.0003	.0004	.0007	.0011	.0013	.0013	.0015	.0016	.0018	.0018
					FEED	3.21	4.81	5.13	5.88	7.62	9.47	9.36	8.52	8.11	7.99	7.90	6.32
		Slotting	1 (0.8)	1	SFM (VC)	210 (168-252)					230 (184-276)						
					RPM	6791	5093	4074	3395	2546	2228	1857	1592	1393	1238	1114	891
					FZ	.0001	.0002	.0003	.0004	.0007	.0011	.0013	.0013	.0015	.0016	.0018	.0018
					FEED	3.21	4.81	5.13	5.88	7.62	9.47	9.36	8.52	8.11	7.99	7.90	6.32
K < 260	CAST IRON 0.6020 (GG20) 0.8145 (GTS-45-06) 0.7060 (GGG-60)	Side Cutting	1.5 (1.2)	0.5	SFM (VC)	367 (294-441)					404 (323-484)						
					RPM	11884	8913	7130	5942	4456	3915	3263	2797	2447	2175	1958	1566
					FZ	.0002	.0004	.0006	.0008	.0013	.0019	.0023	.0024	.0026	.0029	.0032	.0031
					FEED	11.23	14.04	15.72	18.71	23.86	29.60	29.80	26.86	25.05	25.01	24.97	19.48
		Slotting	1 (0.8)	1	SFM (VC)	367 (294-441)					404 (323-484)						
					RPM	11884	8913	7130	5942	4456	3915	3263	2797	2447	2175	1958	1566
					FZ	.0002	.0004	.0006	.0008	.0013	.0019	.0023	.0024	.0026	.0029	.0032	.0031
					FEED	11.23	14.04	15.72	18.71	23.86	29.60	29.80	26.86	25.05	25.01	24.97	19.48
M	STAINLESS STEELS 300 1.4301 (X5 CRNI 18 10) 1.4436 (X3 CRNIMO 17 13 3) 1.4306 (X2 CRNI 19 11) 1.4435 (X2 CRNIMO 18 14 3)	Side Cutting	1.5 (1.2)	0.5	SFM (VC)	348 (278-417)											
					RPM	11247	8435	6748	5623	4218	3374	2812	2410	2109	1874	1687	1350
					FZ	.0002	.0003	.0005	.0007	.0011	.0019	.0022	.0023	.0024	.0028	.0030	.0030
					FEED	8.86	10.63	13.82	15.94	18.60	25.50	24.35	22.39	20.59	20.66	20.46	16.37
		Slotting	1 (0.8)	1	SFM (VC)	348 (278-417)											
					RPM	11247	8435	6748	5623	4218	3374	2812	2410	2109	1874	1687	1350
					FZ	.0002	.0003	.0005	.0007	.0011	.0019	.0022	.0023	.0024	.0028	.0030	.0030
					FEED	8.86	10.63	13.82	15.94	18.60	25.50	24.35	22.39	20.59	20.66	20.46	16.37

RPM = rev./min. FEED = in./min.
SFM = ft./min. FZ = in./tooth

Side Cutting



Slotting

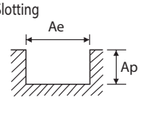
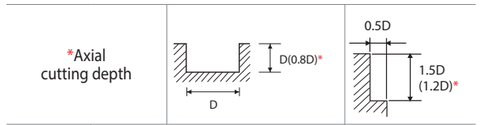


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V7 PLUS A END MILLS
RECOMMENDED CUTTING CONDITIONS
CARBIDE, 4 FLUTE - METRIC
GMF52, GMF53, GMF54, GMF55, GMF56, GMF57, GMF58, GMF59, GMF60, GMF61, GMF62, GMF63 SERIES

ISO Hardness (BHN)	Work Materials	Speed and Feed Recommendations				Diameter (mm)											
		Type of Cut	Ap x D1	Ae x D1	Parameters	3	4	5	6	8	10	12	14	16	18	20	25
M	STAINLESS STEELS 400 1.4005 (X12 CRS 13) 1.4104 (X12 CRMOS 17)	Side Cutting	1.5 (1.2)	0.5	SFM (VC)	486 (388-583)											
					RPM	15703	11777	9422	7852	5889	4711	3926	3365	2944	2617	2355	1884
					FZ	.0002	.0002	.0004	.0005	.0009	.0013	.0015	.0017	.0018	.0020	.0022	.0022
					FEED	9.89	11.13	13.35	16.07	20.40	25.22	24.11	22.26	20.87	20.61	20.40	16.32
		Slotting	1 (0.8)	1	SFM (VC)	486 (388-583)											
					RPM	15703	11777	9422	7852	5889	4711	3926	3365	2944	2617	2355	1884
					FZ	.0002	.0002	.0004	.0005	.0009	.0013	.0015	.0017	.0018	.0020	.0022	.0022
					FEED	9.89	11.13	13.35	16.07	20.40	25.22	24.11	22.26	20.87	20.61	20.40	16.32
M	STAINLESS STEELS (PH) 1.4594 (Z7 CNU 15.05)	Side Cutting	1.5 (1.2)	0.5	SFM (VC)	312 (249-374)											
					RPM	10080	7560	6048	5040	3780	3024	2520	2160	1890	1680	1512	1210
					FZ	.0002	.0003	.0005	.0007	.0011	.0019	.0022	.0023	.0024	.0027	.0030	.0030
					FEED	7.94	9.52	12.38	14.29	16.67	22.86	21.83	20.07	18.45	18.25	18.10	14.48
		Slotting	1 (0.8)	1	SFM (VC)	312 (249-374)											
					RPM	10080	7560	6048	5040	3780	3024	2520	2160	1890	1680	1512	1210
					FZ	.0002	.0003	.0005	.0007	.0011	.0019	.0022	.0023	.0024	.0027	.0030	.0030
					FEED	7.94	9.52	12.38	14.29	16.67	22.86	21.83	20.07	18.45	18.25	18.10	14.48
S	TITANIUM TI6AL4V TI5AL5V5MO TI7AL4MO	Side Cutting	1	0.35	SFM (VC)	190 (152-228)											
					RPM	6154	4615	3692	3077	2308	1846	1538	1319	1154	1026	923	738
					FZ	.0002	.0003	.0004	.0006	.0010	.0017	.0020	.0021	.0022	.0024	.0027	.0027
					FEED	3.88	5.09	6.40	7.75	9.09	12.21	12.11	11.01	9.99	10.01	9.89	8.02
		Slotting	0.5	1	SFM (VC)	190 (152-228)											
					RPM	6154	4615	3692	3077	2308	1846	1538	1319	1154	1026	923	738
					FZ	.0002	.0003	.0004	.0006	.0010	.0017	.0020	.0021	.0022	.0024	.0027	.0027
					FEED	3.88	5.09	6.40	7.75	9.09	12.21	12.11	11.01	9.99	10.01	9.89	8.02
S	HIGH-TEMPERATURE ALLOY INCONEL HASTALLOY RENE	Side Cutting	1	0.25	SFM (VC)	85 (68-102)											
					RPM	2759	2069	1655	1379	1035	828	690	591	517	460	414	331
					FZ	.0002	.0003	.0003	.0005	.0007	.0013	.0015	.0016	.0017	.0019	.0021	.0020
					FEED	2.17	2.28	2.09	2.61	3.10	4.30	4.13	3.72	3.50	3.48	3.52	2.71
		Slotting	0.5	1	SFM (VC)	85 (68-102)											
					RPM	2759	2069	1655	1379	1035	828	690	591	517	460	414	331
					FZ	.0002	.0003	.0003	.0005	.0007	.0013	.0015	.0016	.0017	.0019	.0021	.0020
					FEED	2.17	2.28	2.09	2.61	3.10	4.30	4.13	3.72	3.50	3.48	3.52	2.71

RPM = rev./min. FEED = in./min.
SFM = ft./min. FZ = in./tooth



Length of Cut	<1.5XD	0.8XD	1.2XD
	≥1.5XD	1XD	1.5XD

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% x D1

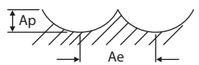
V7 PLUS A END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE - METRIC

UGMG55, UGMG56 SERIES

ISO Hardness (BHN)	Work Materials	Speed and Feed Recommendations				Diameter (mm)										
		Type of Cut	Ap x D1	Ae x D1	Parameters	3	4	5	6	8	10	12	16	18	20	25
P < 300	CARBON STEEL 10**, 11**, 12**, 12L**, 15**		1	0.5	SFM (VC)	531 (425-638)										
					RPM	17189	12892	10313	8594	6446	5157	4297	3223	2865	2578	2063
					Fz	.0010	.0011	.0012	.0016	.0024	.0026	.0028	.0030	.0031	.0035	.0039
					FEED	67.67	54.81	48.72	54.14	60.90	52.78	47.37	38.07	36.09	36.54	32.16
P > 300 P < 380	ALLOY STEEL 41**, 43**, 51**, 86**		1	0.5	SFM (VC)	371 (297-445)										
					RPM	11990	8992	7194	5995	4496	3597	2997	2248	1998	1798	1439
					FZ	.0010	.0011	.0012	.0016	.0024	.0026	.0028	.0029	.0031	.0035	.0039
					FEED	47.20	38.23	33.99	37.76	42.48	36.82	33.04	26.20	24.86	25.49	22.43
P < 380	TOOL STEEL A2, D2, H13, P20, T15		1	0.5	SFM (VC)	223 (178-268)										
					RPM	7215	5411	4329	3608	2706	2165	1804	1353	1203	1082	866
					FZ	.0007	.0007	.0008	.0011	.0017	.0018	.0019	.0020	.0022	.0025	.0028
					FEED	19.32	16.19	14.32	15.91	17.90	15.34	13.92	11.08	10.60	10.74	9.54
K < 260	CAST IRON GRAY, MALLEABLE, DUCTILE		1	0.5	SFM (VC)	390 (312-469)										
					RPM	12626	9470	7576	6313	4735	3788	3157	2367	2104	1894	1515
					FZ	.0012	.0013	.0015	.0020	.0029	.0032	.0034	.0037	.0039	.0044	.0049
					FEED	61.64	49.21	44.14	49.71	55.18	48.32	43.25	34.67	32.81	33.40	29.59
M	STAINLESS STEELS 300 304, 316, 304L, 316LSUS316		1	0.5	SFM (VC)	279 (223-335)										
					RPM	9019	6764	5411	4509	3382	2706	2255	1691	1503	1353	1082
					FZ	.0008	.0008	.0010	.0016	.0018	.0020	.0022	.0024	.0025	.0026	.0027
					FEED	28.41	21.30	21.30	29.12	23.97	21.30	19.53	15.98	15.15	13.85	11.59
M	STAINLESS STEELS 400 416, 420F, 430F, 440F		1	0.5	SFM (VC)	253 (202-303)										
					RPM	8170	6127	4902	4085	3064	2451	2042	1532	1362	1225	980
					FZ	.0006	.0006	.0010	.0012	.0016	.0018	.0020	.0021	.0023	.0023	.0023
					FEED	19.30	14.47	19.30	19.30	19.30	17.37	16.08	13.03	12.65	11.19	9.11
M	STAINLESS STEELS (PH) 17-4PH, 15-5PH, 13-8PH		1	0.5	SFM (VC)	253 (202-303)										
					RPM	8170	6127	4902	4085	3064	2451	2042	1532	1362	1225	980
					FZ	.0008	.0008	.0010	.0016	.0018	.0020	.0022	.0024	.0025	.0026	.0027
					FEED	25.73	19.30	19.30	26.38	21.71	19.30	17.69	14.47	13.72	12.54	10.50
S	TITANIUM TI6AL4V TI5AL5V5MO TI7AL4MO		0.3	0.5	SFM (VC)	154 (123-185)										
					RPM	4987	3740	2992	2493	1870	1496	1247	935	831	748	598
					FZ	.0007	.0007	.0009	.0015	.0016	.0018	.0019	.0021	.0023	.0023	.0024
					FEED	14.14	10.60	10.37	14.53	11.78	10.60	9.62	7.95	7.59	6.83	5.75
S	HIGH-TEMPERATURE ALLOY INCONEL HASTALLOY, RENE		0.3	0.2	SFM (VC)	69 (55-83)										
					RPM	2228	1671	1337	1114	836	668	557	418	371	334	267
					FZ	.0006	.0006	.0007	.0011	.0012	.0014	.0015	.0017	.0018	.0018	.0019
					FEED	4.91	3.68	3.58	4.91	4.08	3.68	3.33	2.76	2.63	2.37	2.02



RPM = rev./min. FEED = in./min.
SFM = ft./min. FZ = in./tooth

See notes on next page

V7 PLUS A END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 6 FLUTE - METRIC

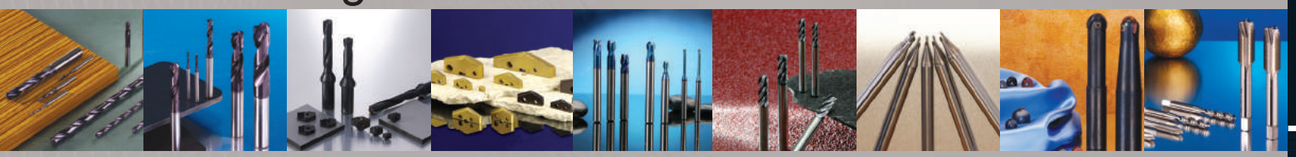
GMG12, GMG13, GMG14, GMG15, GMG16, GMG17, GMG18, GMG19 SERIES

ISO Hardness (BHN)	Work Materials	Speed and Feed Recommendations				Diameter (mm)						
		Type of Cut	Ap x D1	Ae x D1	Parameters	6	8	10	12	16	20	25
P < 300	CARBON STEEL 10**, 11**, 12**, 12L**, 15**	Side Cutting 	2 (*)	0.05	SFM (VC)	984 (787-1181)						
					RPM	15915	11937	9549	7958	5968	4775	3820
					Fz	.0027	.0046	.0057	.0068	.0080	.0089	.0091
					FEED	255.65	327.08	324.83	325.20	284.79	253.77	209.33
P > 300 P < 380	ALLOY STEEL 41**, 43**, 51**, 86**	Side Cutting 	2 (*)	0.05	SFM (VC)	666 (533-799)						
					RPM	10769	8077	6462	5385	4039	3231	2585
					FZ	.0020	.0033	.0042	.0050	.0059	.0066	.0069
					FEED	127.20	162.18	161.80	162.81	142.14	127.45	106.24
P < 380	TOOL STEEL A2, D2, H13, P20, T15	Side Cutting 	2 (*)	0.05	SFM (VC)	328 (262-394)						
					RPM	5305	3979	3183	2653	1989	1592	1273
					FZ	.0016	.0028	.0035	.0041	.0048	.0054	.0057
					FEED	51.38	66.73	66.17	65.79	57.80	51.51	43.31
M	STAINLESS STEELS 300 304, 316, 304L, 316LSUS316	Side Cutting 	2 (*)	0.05	SFM (VC)	482 (386-579)						
					RPM	7799	5849	4679	3899	2924	2340	1872
					FZ	.0016	.0028	.0035	.0041	.0048	.0054	.0056
					FEED	75.53	98.10	97.27	96.71	84.97	75.71	63.22
M	STAINLESS STEELS 400 416, 420F, 430F, 440F	Side Cutting 	2 (*)	0.05	SFM (VC)	699 (559-839)						
					RPM	11300	8475	6780	5650	4238	3390	2712
					FZ	.0019	.0033	.0041	.0049	.0057	.0064	.0066
					FEED	130.80	168.17	166.56	166.83	146.14	129.73	107.63
M	STAINLESS STEELS (PH) 17-4PH, 15-5PH, 13-8PH	Side Cutting 	2 (*)	0.05	SFM (VC)	440 (352-528)						
					RPM	7109	5332	4265	3554	2666	2133	1706
					FZ	.0016	.0028	.0035	.0041	.0048	.0054	.0056
					FEED	68.85	89.42	88.67	88.16	77.46	69.02	57.23
S	TITANIUM TI6AL4V TI5AL5V5MO TI7AL4MO	Side Cutting 	2 (*)	0.05	SFM (VC)	381 (304-457)						
					RPM	6154	4615	3692	3077	2308	1846	1477
					FZ	.0013	.0022	.0028	.0033	.0038	.0044	.0046
					FEED	47.97	59.97	61.06	60.33	52.88	49.28	40.82
S	HIGH-TEMPERATURE ALLOY INCONEL HASTALLOY, RENE	Side Cutting 	2 (*)	0.05	SFM (VC)	108 (87-130)						
					RPM	1751	1313	1050	875	657	525	420
					FZ	.0013	.0022	.0028	.0032	.0038	.0044	.0045
					FEED	13.65	17.06	17.37	16.96	15.04	13.90	11.41

RPM = rev./min. FEED = in./min.
SFM = ft./min. FZ = in./tooth

NOTES:
* 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 12mm
* Finish cuts typically require reduced cutting feeds and speeds; also, it is recommended the radial width of cut (AE) should not exceed 2% x D1
* If product's length of cut (L.O.C.) is below 2D, it must be applied L.O.C. x 90%

Global Cutting Tool Leader **YG-1**



CARBIDE

Being the best through innovation



V7 MILL INOX END MILLS

- Silent Cutting of Stainless Steels up to HRc40.
  Designed as Variable Leads, YG-1's Patent.

◎ : Excellent ○ : Good

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE	P: Carbon Steels ~HRc20	P: Alloy Steels HRc20~30	P: Prehardened Steels HRc30~40	P: Hardened Steels HRc40~45	P: Hardened Steels HRc45~55	H: High Hardened Steels HRc55~70	M: Stainless Steels	K: Cast Iron	N: Copper	N: Graphite	N: Aluminum	N: Acrylic	N: CFRP	S: Titanium	S: High Temperature Alloy
INCH																				
EMC75 EMD60		CARBIDE, 4 FLUTE STUB LENGTH ◆	D1/8	D1	1020	◎	○	○				◎							◎	○
EMC76 EMD61		CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS ◆	D1/8	D1	1021	◎	○	○				◎							◎	○
EMB12 EMB37		CARBIDE, 4 FLUTE REGULAR LENGTH ◆	D1/8	D1	1022	◎	○	○				◎							◎	○
EMB13 EMB38		CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS ◆	D1/8	D1	1023	◎	○	○				◎							◎	○
EMB20		CARBIDE, 4 FLUTE EXTENDED LENGTH LONG REACH ◆	D1/4	D1	1024	◎	○	○				◎							◎	○
EMB78 EMB79		CARBIDE, 4 FLUTE REGULAR LENGTH BALL NOSE ◆	R1/16	R1/2	1025	◎	○	○				◎							◎	○
EMB76 EMB77		CARBIDE, 5 FLUTE REGULAR LENGTH ◆	D1/4	D1	1026	◎	○	○				◎							◎	○

◆ U.S.A Stock

METRIC

EMB41 EMB42		CARBIDE, 4 FLUTE SHORT LENGTH ◇	D3.0	D20.0	1027	◎	○	○				◎							◎	○
EMB43 EMB44		CARBIDE, 4 FLUTE SHORT LENGTH CORNER RADIUS ◇	D3.0	D20.0	1028	◎	○	○				◎							◎	○
EMB14 EMB39		CARBIDE, 4 FLUTE REGULAR LENGTH ◇	D3.0	D25.0	1029	◎	○	○				◎							◎	○
EMB15 EMB40		CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS ◇	D3.0	D25.0	1030	◎	○	○				◎							◎	○
EMB74 EMB75		CARBIDE, 4 FLUTE REGULAR LENGTH BALL NOSE ◇	R1.5	R12.5	1031	◎	○	○				◎							◎	○
EMB72 EMB73		CARBIDE, 5 FLUTE REGULAR LENGTH ◇	D6.0	D25.0	1032	◎	○	○				◎							◎	○
		RECOMMENDED CUTTING CONDITIONS			1033															

◇ Call for Availability

V7 MILL INOX END MILLS

EMC75 SERIES PLAIN SHANK
EMD60 SERIES FLAT SHANK

CARBIDE, 4 FLUTE STUB LENGTH

- Special flute geometry eliminates vibrations
- Designed for mild steels, stainless steel, cast iron, tool steels, titanium alloys, prehardened steels and low hardness material
- Excellent work piece finishes
- Higher speeds, deeper cuts and metal removal rates



MG 4 PLAIN FLAT P.1033

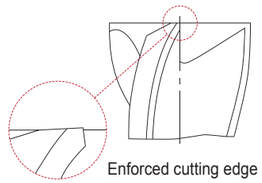
◆ U.S.A Stock

Unit : Inch

EDP No. PLAIN	EDP No. FLAT	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EMC75008	-	**1/8**	1/8	1/8	1-1/2
EMC75010	-	**5/32**	3/16	3/16	2
EMC75012	-	**3/16**	3/16	3/16	2
EMC75014	-	**7/32**	1/4	1/4	2
EMC75016	-	**1/4**	1/4	1/4	2
EMC75020	-	**5/16**	5/16	5/16	2
-	**EMD60024**	**3/8**	3/8	3/8	2
-	**EMD60028**	**7/16**	7/16	7/16	2-1/2
-	**EMD60032**	**1/2**	1/2	1/2	2-1/2
-	**EMD60040**	**5/8**	5/8	5/8	3
-	**EMD60048**	**3/4**	3/4	3/4	3
-	**EMD60064**	**1**	1	1	4

▶ Shanks 3/8″ and over come standard with Flats.

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



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○	○				◎							◎	○

V7 MILL INOX END MILLS

EMC76 SERIES PLAIN SHANK
EMD61 SERIES FLAT SHANK

CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS

- Special flute geometry eliminates vibrations
- Designed for mild steels, stainless steel, cast iron, tool steels, titanium alloys, prehardened steels and low hardness material
- Excellent work piece finishes
- Higher speeds, deeper cuts and metal removal rates





MG 4 PLAIN FLAT P.1033

◆ U.S.A Stock

Unit : Inch

EDP No. PLAIN	EDP No. FLAT	Corner Radius R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EMC76008	-	R.015	**1/8**	1/8	1/8	1-1/2
EMC76010	-	R.015	**5/32**	3/16	3/16	2
EMC76012	-	R.015	**3/16**	3/16	3/16	2
EMC76014	-	R.020	**7/32**	1/4	1/4	2
EMC76016	-	R.020	**1/4**	1/4	1/4	2
EMC76020	-	R.020	**5/16**	5/16	5/16	2
-	**EMD61024**	R.020	**3/8**	3/8	3/8	2
-	**EMD61028**	R.020	**7/16**	7/16	7/16	2-1/2
-	**EMD61032**	R.030	**1/2**	1/2	1/2	2-1/2
-	**EMD61040**	R.040	**5/8**	5/8	5/8	3
-	**EMD61048**	R.040	**3/4**	3/4	3/4	3
-	**EMD61064**	R.040	**1**	1	1	4

▶ Shanks 3/8″ and over come standard with Flats.

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○	○				◎							◎	○

V7 MILL INOX END MILLS

EMB12 SERIES PLAIN SHANK
EMB37 SERIES FLAT SHANK

CARBIDE, 4 FLUTE REGULAR LENGTH

- Special flute geometry eliminates vibrations
- Designed for mild steels, stainless steel, cast iron, tool steels, titanium alloys, prehardened steels and low hardness material
- Excellent work piece finishes
- Higher speeds, deeper cuts and metal removal rates



MG 4 PLAIN FLAT P.1033

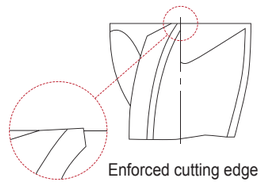
◆ U.S.A Stock

Unit : Inch

EDP No. PLAIN	EDP No. FLAT	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EMB12008	-	**1/8**	1/8	3/8	1-1/2
EMB12010	-	**5/32**	3/16	7/16	2
EMB12012	-	**3/16**	3/16	7/16	2
EMB12014	-	**7/32**	1/4	7/16	2-1/2
EMB12016	-	**1/4**	1/4	1/2	2-1/2
EMB12018	-	**9/32**	5/16	5/8	2-1/2
EMB12020	-	**5/16**	5/16	13/16	2-1/2
EMB12022	-	**11/32**	3/8	13/16	2-1/2
-	**EMB37024**	**3/8**	3/8	7/8	2-1/2
-	**EMB37026**	**13/32**	7/16	15/16	2-3/4
-	**EMB37028**	**7/16**	7/16	1	2-3/4
-	**EMB37030**	**15/32**	1/2	1	3
-	**EMB37032**	**1/2**	1/2	1	3
-	**EMB37036**	**9/16**	9/16	1-1/8	3-1/2
-	**EMB37040**	**5/8**	5/8	1-1/4	3-1/2
-	**EMB37048**	**3/4**	3/4	1-1/2	4
-	**EMB37064**	**1**	1	1-1/2	4

▶ Shanks 3/8″ and over come standard with Flats.

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



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○	○				◎							◎	○

V7 MILL INOX END MILLS

EMB13 SERIES PLAIN SHANK
EMB38 SERIES FLAT SHANK

CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS

Special flute geometry eliminates vibrations
Designed for mild steels, stainless steel, cast iron, tool steels, titanium alloys, prehardened steels and low hardness material
Excellent work piece finishes
Higher speeds, deeper cuts and metal removal rates





MG 4 PLAIN FLAT P.1033

◆ U.S.A Stock

Unit : Inch

EDP No. PLAIN	EDP No. FLAT	Corner Radius R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EMB13008	-	R.015	**1/8**	1/8	3/8	1-1/2
EMB13012	-	R.015	**3/16**	3/16	7/16	2
EMB13016	-	R.020	**1/4**	1/4	1/2	2-1/2
EMB13020	-	R.020	**5/16**	5/16	13/16	2-1/2
-	**EMB38024**	R.020	**3/8**	3/8	7/8	2-1/2
-	**EMB38028**	R.020	**7/16**	7/16	1	2-3/4
-	**EMB38032**	R.030	**1/2**	1/2	1	3
-	**EMB38036**	R.030	**9/16**	9/16	1-1/8	3-1/2
-	**EMB38040**	R.040	**5/8**	5/8	1-1/4	3-1/2
-	**EMB38048**	R.040	**3/4**	3/4	1-1/2	4
-	**EMB38064**	R.040	**1**	1	1-1/2	4

▶ Shanks 3/8″ and over come standard with Flats.

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○	○				◎							◎	○

V7 MILL INOX END MILLS

EMB20 SERIES PLAIN SHANK / FLAT SHANK

CARBIDE, 4 FLUTE EXTENDED LENGTH, LONG REACH

- Higher speeds, deeper cuts and metal removal rates.
- Improved surface finishes
- New “NANO” AlTiN coating





MG | 4 | PLAIN | FLAT

P.1033

◆ U.S.A Stock

Unit : Inch

EDP No. PLAIN	EDP No. FLAT	Mill Diameter	Shank Diameter	Length of Cut	Reach Length	Overall Length
EMB20160	-	**1/4**	1/4	3/8	1-1/4	4
-	**EMB20240**	**3/8**	3/8	1/2	1-7/8	4
-	**EMB20320**	**1/2**	1/2	5/8	2-1/4	4
-	**EMB20400**	**5/8**	5/8	3/4	2-1/4	4-1/8
-	**EMB20401**	**5/8**	5/8	3/4	3-1/4	5
-	**EMB20480**	**3/4**	3/4	1	2-1/4	4-1/4
-	**EMB20481**	**3/4**	3/4	1	3-1/4	5-1/2
-	**EMB20640**	**1**	1	1-1/8	2-1/4	4-1/2
-	**EMB20641**	**1**	1	1-1/8	3-1/4	5-1/2
-	**EMB20642**	**1**	1	1-1/8	4-1/4	6-1/2

▶ Shanks 3/8″ and over come standard with Flats.

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○	○				◎							◎	○

V7 MILL INOX END MILLS

EMB78 SERIES PLAIN SHANK
EMB79 SERIES FLAT SHANK

CARBIDE, 4 FLUTE REGULAR LENGTH BALL NOSE

- Special flute geometry eliminates vibrations
- Designed for mild steels, stainless steel, cast iron, tool steels, titanium alloys, prehardened steels and low hardness material
- Excellent work piece finishes
- Higher speeds, deeper cuts and metal removal rates



MG | 4 | R ±.0004" | PLAIN | FLAT

P.1034

◆ U.S.A Stock

Unit : Inch

EDP No. PLAIN	EDP No. FLAT	Radius of Ball Nose R (±.0004)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EMB78008	-	R1/16	**1/8**	1/8	3/8	1-1/2
EMB78010	-	R5/64	**5/32**	3/16	7/16	2
EMB78012	-	R3/32	**3/16**	3/16	7/16	2
EMB78016	-	R1/8	**1/4**	1/4	1/2	2-1/2
EMB78020	-	R5/32	**5/16**	5/16	13/16	2-1/2
-	**EMB79024**	R3/16	**3/8**	3/8	7/8	2-1/2
-	**EMB79032**	R1/4	**1/2**	1/2	1	3
-	**EMB79040**	R5/16	**5/8**	5/8	1-1/4	3-1/2
-	**EMB79048**	R3/8	**3/4**	3/4	1-1/2	4
-	**EMB79064**	R1/2	**1**	1	1-1/2	4

▶ Shanks 3/8″ and over come standard with Flats.

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○	○				◎							◎	○

V7 MILL INOX END MILLS

EMB76 SERIES PLAIN SHANK
EMB77 SERIES FLAT SHANK

CARBIDE, 5 FLUTE REGULAR LENGTH

- Special flute geometry eliminates vibrations
- Designed for mild steels, stainless steel, cast iron, tool steels, titanium alloys, prehardened steels and low hardness material
- Excellent work piece finishes
- Higher speeds, deeper cuts and metal removal rates



MG | 5 | PLAIN | FLAT | P.1034

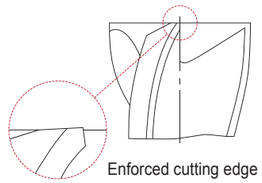
◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT				
EMB76016	-	1/4	1/4	1/2	2-1/2
EMB76020	-	5/16	5/16	13/16	2-1/2
EMB76024	EMB77024	3/8	3/8	7/8	2-1/2
-	EMB77032	1/2	1/2	1	3
-	EMB77036	9/16	9/16	1-1/8	3-1/2
-	EMB77040	5/8	5/8	1-1/4	3-1/2
-	EMB77048	3/4	3/4	1-1/2	4
-	EMB77064	1	1	1-1/2	4

▶ Shanks 3/8″ and over come standard with Flats.

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



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N						S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○	○				◎							◎	○

V7 MILL INOX END MILLS

EMB41 SERIES PLAIN SHANK
EMB42 SERIES FLAT SHANK

CARBIDE, 4 FLUTE SHORT LENGTH

- Special flute geometry eliminates vibrations
- Designed for mild steels, stainless steel, cast iron, tool steels, titanium alloys, prehardened steels and low hardness material
- Excellent work piece finishes
- Higher speeds, deeper cuts and metal removal rates



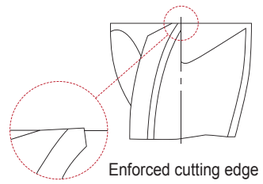
MG | 4 | PLAIN | FLAT | P.1033

◇ Call for Availability

Unit : mm

EDP No.		Mill Diameter		Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	Metric	Inch			
EMB41030	EMB42030	3.0	.1181	6	7	54
EMB41040	EMB42040	4.0	.1575	6	8	54
EMB41050	EMB42050	5.0	.1969	6	10	54
EMB41060	EMB42060	6.0	.2362	6	10	54
EMB41080	EMB42080	8.0	.3150	8	12	58
EMB41100	EMB42100	10.0	.3937	10	14	66
EMB41120	EMB42120	12.0	.4724	12	16	73
EMB41140	EMB42140	14.0	.5512	14	18	75
EMB41160	EMB42160	16.0	.6299	16	22	82
EMB41180	EMB42180	18.0	.7087	18	24	84
EMB41200	EMB42200	20.0	.7874	20	26	92

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



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N						S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○	○				◎							◎	○

V7 MILL INOX END MILLS

EMB43 SERIES PLAIN SHANK
EMB44 SERIES FLAT SHANK

CARBIDE, 4 FLUTE SHORT LENGTH CORNER RADIUS

- Special flute geometry eliminates vibrations
- Designed for mild steels, stainless steel, cast iron, tool steels, titanium alloys, prehardened steels and low hardness material
- Excellent work piece finishes
- Higher speeds, deeper cuts and metal removal rates



MG 4 PLAIN FLAT P.1033

◇ Call for Availability

Unit : mm

EDP No.		Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R	Metric	Inch			
EMB43030	EMB44030	R0.3	3.0	.1181	6	7	54
EMB43040	EMB44040	R0.3	4.0	.1575	6	8	54
EMB43050	EMB44050	R0.3	5.0	.1969	6	10	54
EMB43060	EMB44060	R0.5	6.0	.2362	6	10	54
EMB43080	EMB44080	R0.5	8.0	.3150	8	12	58
EMB43100	EMB44100	R0.5	10.0	.3937	10	14	66
EMB43120	EMB44120	R0.7	12.0	.4724	12	16	73
EMB43140	EMB44140	R0.7	14.0	.5512	14	18	75
EMB43160	EMB44160	R1.0	16.0	.6299	16	22	82
EMB43180	EMB44180	R1.0	18.0	.7087	18	24	84
EMB43200	EMB44200	R1.0	20.0	.7874	20	26	92

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○	○				◎							◎	○

V7 MILL INOX END MILLS

EMB14 SERIES PLAIN SHANK
EMB39 SERIES FLAT SHANK

CARBIDE, 4 FLUTE REGULAR LENGTH

- Special flute geometry eliminates vibrations
- Designed for mild steels, stainless steel, cast iron, tool steels, titanium alloys, prehardened steels and low hardness material
- Excellent work piece finishes
- Higher speeds, deeper cuts and metal removal rates



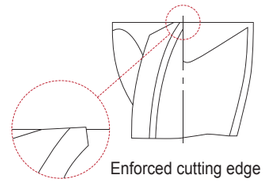
MG 4 PLAIN FLAT P.1033

◇ Call for Availability

Unit : mm

EDP No.		Mill Diameter		Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	Metric	Inch			
EMB14030	-	3.0	.1181	6	8	57
EMB14040	-	4.0	.1575	6	11	57
EMB14050	-	5.0	.1969	6	13	57
EMB14060	-	6.0	.2362	6	13	57
EMB14080	-	8.0	.3150	8	19	63
EMB14100	-	10.0	.3937	10	22	72
-	EMB39120	12.0	.4724	12	26	83
-	EMB39140	14.0	.5512	14	26	83
-	EMB39160	16.0	.6299	16	32	92
-	EMB39180	18.0	.7087	18	32	92
-	EMB39200	20.0	.7874	20	38	104
-	EMB39250	25.0	.9800	25	38	104

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



◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○	○				◎							◎	○

V7 MILL INOX END MILLS

EMB15 SERIES PLAIN SHANK
EMB40 SERIES FLAT SHANK

CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS

- Special flute geometry eliminates vibrations
- Designed for mild steels, stainless steel, cast iron, tool steels, titanium alloys, prehardened steels and low hardness material
- Excellent work piece finishes
- Higher speeds, deeper cuts and metal removal rates



MG 4 PLAIN FLAT

P.1033

◇ Call for Availability

Unit : mm

EDP No.		Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R	Metric	Inch			
EMB15030	-	R0.3	3.0	.1181	6	8	57
EMB15040	-	R0.3	4.0	.1575	6	11	57
EMB15050	-	R0.3	5.0	.1969	6	13	57
EMB15060	-	R0.5	6.0	.2362	6	13	57
EMB15080	-	R0.5	8.0	.3150	8	19	63
EMB15100	-	R0.5	10.0	.3937	10	22	72
-	EMB40120	R0.7	12.0	.4724	12	26	83
-	EMB40140	R0.7	14.0	.5512	14	26	83
-	EMB40160	R1.0	16.0	.6299	16	32	92
-	EMB40180	R1.0	18.0	.7087	18	32	92
-	EMB40200	R1.0	20.0	.7874	20	38	104
-	EMB40250	R1.0	25.0	.9800	25	38	104

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○	○				◎							◎	○

V7 MILL INOX END MILLS

EMB74 SERIES PLAIN SHANK
EMB75 SERIES FLAT SHANK

CARBIDE, 4 FLUTE REGULAR LENGTH BALL NOSE

- Special flute geometry eliminates vibrations
- Designed for mild steels, stainless steel, cast iron, tool steels, titanium alloys, prehardened steels and low hardness material
- Excellent work piece finishes
- Higher speeds, deeper cuts and metal removal rates



MG 4 R ±0.01 PLAIN FLAT

P.1034

◇ Call for Availability

Unit : mm

EDP No.		Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R (±0.01)	Metric	Inch			
EMB74030	EMB75030	R1.5	3.0	.1181	6	8	57
EMB74040	EMB75040	R2.0	4.0	.1575	6	11	57
EMB74050	EMB75050	R2.5	5.0	.1969	6	13	57
EMB74060	EMB75060	R3.0	6.0	.2362	6	13	57
EMB74080	EMB75080	R4.0	8.0	.3150	8	19	63
EMB74100	EMB75100	R5.0	10.0	.3937	10	22	72
EMB74120	EMB75120	R6.0	12.0	.4724	12	26	83
EMB74160	EMB75160	R8.0	16.0	.6299	16	32	92
EMB74200	EMB75200	R10.0	20.0	.7874	20	38	104
EMB74250	EMB75250	R12.5	25.0	.9800	25	38	104

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○	○				◎							◎	○

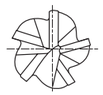
V7 MILL INOX END MILLS

EMB72 SERIES PLAIN SHANK
EMB73 SERIES FLAT SHANK

CARBIDE, 5 FLUTE REGULAR LENGTH

- Special flute geometry eliminates vibrations
- Designed for mild steels, stainless steel, cast iron, tool steels, titanium alloys, prehardened steels and low hardness material
- Excellent work piece finishes
- Higher speeds, deeper cuts and metal removal rates





MG | 5 | PLAIN | FLAT

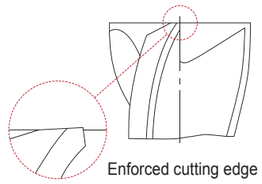
P.1034

◇ Call for Availability

Unit : mm

EDP No.		Mill Diameter		Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	Metric	Inch			
EMB72060	EMB73060	6.0	.2362	6	13	57
EMB72080	EMB73080	8.0	.3150	8	19	63
EMB72100	EMB73100	10.0	.3937	10	22	72
EMB72120	EMB73120	12.0	.4724	12	26	83
EMB72140	EMB73140	14.0	.5512	14	26	83
EMB72160	EMB73160	16.0	.6299	16	32	92
EMB72180	EMB73180	18.0	.7087	18	32	92
EMB72200	EMB73200	20.0	.7874	20	38	104
EMB72250	EMB73250	25.0	.9800	25	38	104

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



◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○	○				◎							◎	○

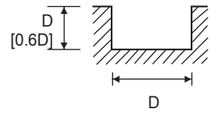
V7 MILL INOX END MILLS

RECOMMENDED CUTTING CONDITIONS

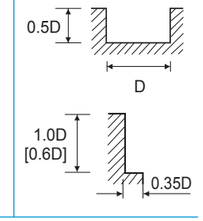
CARBIDE, 4 FLUTE

EMC75, EMD60, EMC76, EMD61, EMB12, EMB37, EMB13, EMB38, EMB20
EMB41, EMB42, EMB43, EMB44, EMB14, EMB39, EMB15, EMB40 SERIES

MATERIAL	P		M				S			
	ALLOY STEELS CAST IRON		STAINLESS STEELS 300SERIES		STAINLESS STEELS 400SERIES		TITANIUM		HIGH TEMPERATURE ALLOY	
HARDNESS	~HRc 20									
STRENGTH	~1000N/mm²									
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	12735	10.2	9625	7.3	13475	7.6	8320	7.6	2565	2.1
3/16	8490	10.9	6385	8.3	12000	8.4	5550	8.4	1685	1.8
1/4	6370	11.5	4810	9.6	6815	9.6	4160	9.6	1285	2.5
5/16	5100	13.0	3850	10.7	5390	10.7	3330	10.7	1025	2.8
3/8	4245	18.4	3210	15.4	4490	15.4	2770	15.4	855	4.1
7/16	4010	24.5	2750	20.9	3850	20.9	2380	20.7	735	5.5
1/2	3500	25.9	2400	21.0	3370	21.0	2080	21.0	640	5.6
9/16	3110	26.0	2140	21.2	2990	21.2	1850	21.2	570	5.7
5/8	2800	26.1	1925	21.2	2700	21.2	1660	21.2	510	5.6
3/4	2340	24.0	1600	19.4	2250	19.4	1390	19.4	425	5.2
1	1755	17.4	1200	14.7	1685	15.1	1040	15.1	315	4.3



∗( ) : Short length Type
∗[ ] : Stub length Type



∗1.2 x D Axial cutting depth should be applied for Short length series DIA over 5/16mm
∗0.6 x D Axial cutting depth should be applied for Stub length series.

RPM = rev./min.
FEED = inch/min.

V7 MILL INOX END MILLS

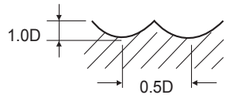
RECOMMENDED CUTTING CONDITIONS

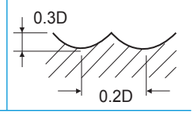
CARBIDE, 4 FLUTE BALL NOSE

EMB78, EMB79, EMB74, EMB75 SERIES

MATERIAL	P		M				S			
	ALLOY STEELS CAST IRON		STAINLESS STEELS 300SERIES		STAINLESS STEELS 400SERIES		TITANIUM		HIGH TEMPERATURE ALLOY	
HARDNESS	~HRc20									
STRENGTH	~1000N/mm²									
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	13530	53.2	7770	24.2	7020	16.4	5510	10.4	3010	5.2
3/16	9020	42.6	5180	20.3	4680	18.2	3680	8.7	2010	3.3
1/4	6770	40.7	3880	24.9	3510	16.4	2760	8.6	1500	3.7
5/16	5410	50.8	3110	21.9	2810	17.5	2210	10.4	1200	4.8
3/8	4510	42.6	2590	20.3	2340	16.6	1840	8.7	1000	4.2
7/16	3870	39.5	2220	18.3	2010	15.0	1580	8.6	860	4.4
1/2	3380	37.2	1940	16.8	1750	13.8	1380	8.6	750	4.5
9/16	3010	34.2	1730	15.6	1560	12.8	1230	8.0	670	4.5
5/8	2710	31.8	1550	14.7	1400	11.9	1100	7.6	600	4.4
3/4	2260	32.0	1290	13.3	1170	10.8	920	8.7	500	4.2
1	1690	26.5	970	10.7	880	8.2	690	7.4	380	3.1

RPM = rev./min.
FEED = inch/min.

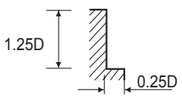


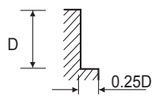


CARBIDE, 5 FLUTE

EMB76, EMB77, EMB72, EMB73 SERIES

MATERIAL	P		M				S			
	ALLOY STEELS CAST IRON		STAINLESS STEELS 300SERIES		STAINLESS STEELS 400SERIES		TITANIUM		HIGH TEMPERATURE ALLOY	
HARDNESS	~HRc20									
STRENGTH	~1000N/mm²									
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	6870	46.1	5710	34.2	5310	31.8	4200	24.9	1350	4.4
5/16	5490	41.3	4570	28.6	4250	26.5	3360	20.6	1080	4.3
3/8	4580	45.5	3810	28.5	3540	26.3	2800	20.7	900	4.5
7/16	3920	44.0	3270	32.6	3040	23.9	2400	20.8	770	4.7
1/2	3430	42.8	2860	35.7	2660	22.1	2100	20.8	680	4.8
9/16	3050	41.7	2540	32.7	2360	29.6	1860	20.9	600	5.4
5/8	2750	41.4	2290	30.9	2130	28.4	1680	20.7	540	5.1
3/4	2290	39.6	1900	28.6	1770	26.4	1400	20.7	450	5.4
1	1720	34.2	1430	24.8	1330	23.2	1050	18.3	340	5.1





RPM = rev./min.
FEED = inch/min.

CARBIDE

Being the best through innovation



ALU-POWER HPC END MILLS

- High Performance with High Feed, RPM and Chip Removal(Heavy Cutting)
- For Aluminum, Non-Ferrous and Non-Metallic Materials

SELECTION GUIDE

SOLID CARBIDE ALU-POWER HPC END MILLS

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
INCH					
JAG95		CARBIDE, 3 FLUTE STANDARD LENGTH - DLC COATED	D1/4	D1	1038
JAG97		CARBIDE, 3 FLUTE CORNER RADIUS STANDARD LENGTH - DLC COATED	D1/8	D1	1038
E5G95		CARBIDE, 3 FLUTE STANDARD LENGTH	D1/8	D1	1040
E5G97		CARBIDE, 3 FLUTE CORNER RADIUS STANDARD LENGTH	D1/8	D1	1040
JAG96		CARBIDE, 3 FLUTE EXTENDED LENGTH - DLC COATED	D1/4	D1	1042
JAG98		CARBIDE, 3 FLUTE CORNER RADIUS EXTENDED LENGTH - DLC COATED	D1/4	D1	1042
E5G96		CARBIDE, 3 FLUTE EXTENDED LENGTH	D1/4	D1	1043
E5G98		CARBIDE, 3 FLUTE CORNER RADIUS EXTENDED LENGTH	D1/4	D1	1043
		RECOMMENDED CUTTING CONDITIONS			1044

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Tempera Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				
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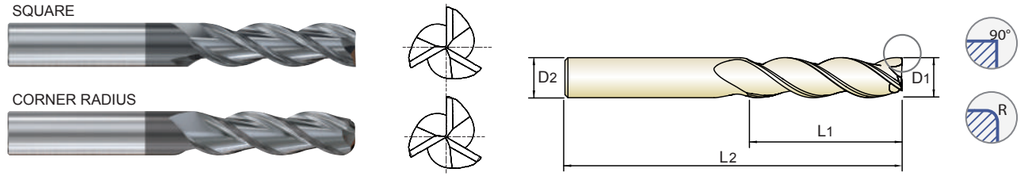
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COMPOSITE MATERIALS

ALU-POWER HPC END MILLS

JAG95 SERIES SQUARE
JAG97 SERIES CORNER RADIUS

CARBIDE, 3 FLUTE STANDARD LENGTH - DLC COATED

- Longer tool life
- 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



MG | 3 | 37° | PLAIN

P.1044~1045

Unit : Inch

OD	SD	LOC	OAL	Square End	Corner Radius						
					.010	.030	.060	.090	.120	.190	.250
D1	D2	L1	L2	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	JAG97901	–	–	–	–	–
		3/8	1-1/2	JAG95901	JAG97902	JAG97903	–	–	–	–	–
3/16	3/16	5/16	2	JAG95012	JAG97012	JAG97904	–	–	–	–	–
		9/16	2	JAG95902	JAG97905	JAG97906	–	–	–	–	–
1/4	1/4	3/8	2	JAG95016	JAG97016	JAG97907	JAG97908	–	–	–	–
		5/8	2-1/2	JAG95903	JAG97909	JAG97910	JAG97911	–	–	–	–
		1-1/4	3-1/4	JAG95904	JAG97912	JAG97913	JAG97914	–	–	–	–
5/16	5/16	7/16	2	JAG95020	JAG97020	JAG97915	JAG97916	JAG97917	–	–	–
		5/8	2-1/2	JAG95905	JAG97918	JAG97919	JAG97920	JAG97921	–	–	–
		1-1/4	3-1/2	JAG95906	JAG97922	JAG97923	JAG97924	JAG97925	–	–	–
3/8	3/8	1/2	2	JAG95024	JAG97024	JAG97926	JAG97927	JAG97928	JAG97929	–	–
		1	2-1/2	JAG95907	JAG97930	JAG97931	JAG97932	JAG97933	JAG97934	–	–
		1-1/2	3-1/2	JAG95908	JAG97935	JAG97936	JAG97937	JAG97938	JAG97939	–	–
		2	4	JAG95909	JAG97940	JAG97941	JAG97942	JAG97943	JAG97944	–	–
7/16	7/16	9/16	2-1/2	JAG95028	JAG97028	JAG97945	JAG97946	JAG97947	JAG97948	–	–
		1-1/4	2-3/4	JAG95910	JAG97949	JAG97950	JAG97951	JAG97952	JAG97953	–	–
		2	4	JAG95911	JAG97954	JAG97955	JAG97956	JAG97957	JAG97958	–	–
1/2	1/2	5/8	2-1/2	JAG95032	JAG97032	JAG97959	JAG97960	JAG97961	JAG97962	JAG97963	–
		1	3	JAG95927	JAG97879	JAG97880	JAG97881	JAG97882	JAG97883	JAG97884	–
		1-1/4	3	JAG95912	JAG97964	JAG97965	JAG97966	JAG97967	JAG97968	JAG97969	–
		1-5/8	4	JAG95913	JAG97970	JAG97971	JAG97972	JAG97973	JAG97974	JAG97975	–
		2	4	JAG95914	JAG97976	JAG97977	JAG97978	JAG97979	JAG97980	JAG97981	–
		2-1/2	5	JAG95915	JAG97982	JAG97983	JAG97984	JAG97985	JAG97986	JAG97987	–
		3	5	JAG95916	JAG97988	JAG97989	JAG97990	JAG97991	JAG97992	JAG97993	–

▶ NEXT PAGE

◎ : Excellent ○ : Good

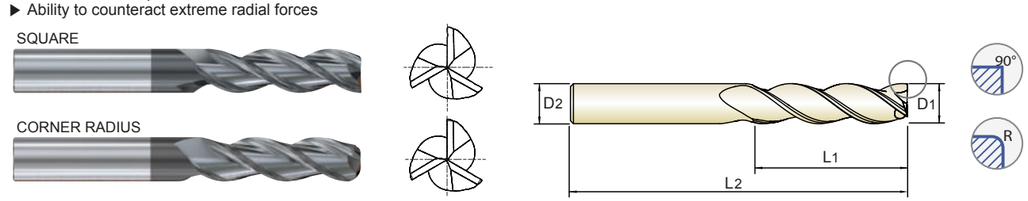
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER HPC END MILLS

JAG95 SERIES SQUARE
JAG97 SERIES CORNER RADIUS

CARBIDE, 3 FLUTE STANDARD LENGTH - DLC COATED

- Longer tool life
- 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



MG | 3 | 37° | PLAIN

P.1044~1045

Unit : Inch

OD	SD	LOC	OAL	Square End	Corner Radius						
					.010	.030	.060	.090	.120	.190	.250
D1	D2	L1	L2	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
5/8	5/8	3/4	3	JAG95040	JAG97040	JAG97994	JAG97995	JAG97996	JAG97997	JAG97998	–
		1-5/8	3-1/2	JAG95917	JAG97999	JAG97801	JAG97802	JAG97803	JAG97804	JAG97805	–
		2-1/2	5	JAG95918	JAG97806	JAG97807	JAG97808	JAG97809	JAG97810	JAG97811	–
		3	5-1/4	JAG95919	JAG97812	JAG97813	JAG97814	JAG97815	JAG97816	JAG97817	–
3/4	3/4	1	3	JAG95048	JAG97048	JAG97818	JAG97819	JAG97820	JAG97821	JAG97822	JAG97823
		1-5/8	4	JAG95920	JAG97824	JAG97825	JAG97826	JAG97827	JAG97828	JAG97829	JAG97830
		2-1/4	5	JAG95921	JAG97831	JAG97832	JAG97833	JAG97834	JAG97835	JAG97836	JAG97837
		3-1/4	6	JAG95922	JAG97838	JAG97839	JAG97840	JAG97841	JAG97842	JAG97843	JAG97844
		4	6-1/4	JAG95923	JAG97845	JAG97846	JAG97847	JAG97848	JAG97849	JAG97850	JAG97851
1	1	1-1/4	3	JAG95064	JAG97064	JAG97852	JAG97853	JAG97854	JAG97855	JAG97856	JAG97857
		1-1/4	4	JAG95928	JAG97885	JAG97886	JAG97887	JAG97888	JAG97889	JAG97890	JAG97891
		2	5	JAG95924	JAG97858	JAG97859	JAG97860	JAG97861	JAG97862	JAG97863	JAG97864
		3-1/4	6	JAG95925	JAG97865	JAG97866	JAG97867	JAG97868	JAG97869	JAG97870	JAG97871
		4	7	JAG95926	JAG97872	JAG97873	JAG97874	JAG97875	JAG97876	JAG97877	JAG97878

Outside Diameter Tolerences (inch)		Shank Dimeter Tolerance
Diameter	Tolerance	
1/8 – 3/16	+0/-.00032	h6
1/4 – 3/8	+0/-.00035	
1/2 – 5/8	+0/-.00043	
3/4 – 1	+0/-.00051	

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

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

ALU-POWER HPC END MILLS

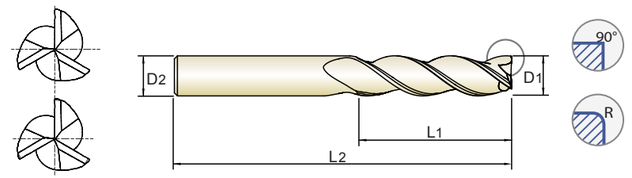
E5G95 SERIES SQUARE
E5G97 SERIES CORNER RADIUS

CARBIDE, 3 FLUTE STANDARD LENGTH

- Longer tool life
- 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



MG | 3 | 37° | PLAIN

P.1044~1045

Unit : Inch

OD	SD	LOC	OAL	Square End	Corner Radius						
					.010	.030	.060	.090	.120	.190	.250
D1	D2	L1	L2	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	E5G97901	–	–	–	–	–
		3/8	1-1/2	E5G95901	E5G97902	E5G97903	–	–	–	–	–
3/16	3/16	5/16	2	E5G95012	E5G97012	E5G97904	–	–	–	–	–
		9/16	2	E5G95902	E5G97905	E5G97906	–	–	–	–	–
1/4	1/4	3/8	2	E5G95016	E5G97016	E5G97907	E5G97908	–	–	–	–
		5/8	2-1/2	E5G95903	E5G97909	E5G97910	E5G97911	–	–	–	–
		1-1/4	3-1/4	E5G95904	E5G97912	E5G97913	E5G97914	–	–	–	–
5/16	5/16	7/16	2	E5G95020	E5G97020	E5G97915	E5G97916	E5G97917	–	–	–
		5/8	2-1/2	E5G95905	E5G97918	E5G97919	E5G97920	E5G97921	–	–	–
		1-1/4	3-1/2	E5G95906	E5G97922	E5G97923	E5G97924	E5G97925	–	–	–
3/8	3/8	1/2	2	E5G95024	E5G97024	E5G97926	E5G97927	E5G97928	E5G97929	–	–
		1	2-1/2	E5G95907	E5G97930	E5G97931	E5G97932	E5G97933	E5G97934	–	–
		1-1/2	3-1/2	E5G95908	E5G97935	E5G97936	E5G97937	E5G97938	E5G97939	–	–
		2	4	E5G95909	E5G97940	E5G97941	E5G97942	E5G97943	E5G97944	–	–
7/16	7/16	9/16	2-1/2	E5G95028	E5G97028	E5G97945	E5G97946	E5G97947	E5G97948	–	–
		1-1/4	2-3/4	E5G95910	E5G97949	E5G97950	E5G97951	E5G97952	E5G97953	–	–
		2	4	E5G95911	E5G97954	E5G97955	E5G97956	E5G97957	E5G97958	–	–
1/2	1/2	5/8	2-1/2	E5G95032	E5G97032	E5G97959	E5G97960	E5G97961	E5G97962	E5G97963	–
		1	3	E5G95927	E5G97879	E5G97880	E5G97881	E5G97882	E5G97883	E5G97884	–
		1-1/4	3	E5G95912	E5G97964	E5G97965	E5G97966	E5G97967	E5G97968	E5G97969	–
		1-5/8	4	E5G95913	E5G97970	E5G97971	E5G97972	E5G97973	E5G97974	E5G97975	–
		2	4	E5G95914	E5G97976	E5G97977	E5G97978	E5G97979	E5G97980	E5G97981	–
		2-1/2	5	E5G95915	E5G97982	E5G97983	E5G97984	E5G97985	E5G97986	E5G97987	–
		3	5	E5G95916	E5G97988	E5G97989	E5G97990	E5G97991	E5G97992	E5G97993	–

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER HPC END MILLS

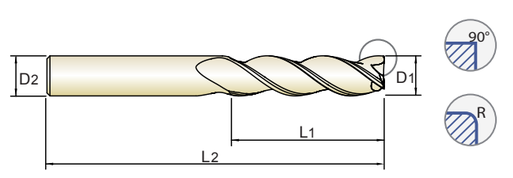
E5G95 SERIES SQUARE
E5G97 SERIES CORNER RADIUS

CARBIDE, 3 FLUTE STANDARD LENGTH

- Longer tool life
- 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



MG | 3 | 37° | PLAIN

P.1044~1045

Unit : Inch

OD	SD	LOC	OAL	Square End	Corner Radius						
					.010	.030	.060	.090	.120	.190	.250
D1	D2	L1	L2	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
5/8	5/8	3/4	3	E5G95040	E5G97040	E5G97994	E5G97995	E5G97996	E5G97997	E5G97998	–
		1-5/8	3-1/2	E5G95917	E5G97999	E5G97801	E5G97802	E5G97803	E5G97804	E5G97805	–
		2-1/2	5	E5G95918	E5G97806	E5G97807	E5G97808	E5G97809	E5G97810	E5G97811	–
		3	5-1/4	E5G95919	E5G97812	E5G97813	E5G97814	E5G97815	E5G97816	E5G97817	–
3/4	3/4	1	3	E5G95048	E5G97048	E5G97818	E5G97819	E5G97820	E5G97821	E5G97822	E5G97823
		1-5/8	4	E5G95920	E5G97824	E5G97825	E5G97826	E5G97827	E5G97828	E5G97829	E5G97830
		2-1/4	5	E5G95921	E5G97831	E5G97832	E5G97833	E5G97834	E5G97835	E5G97836	E5G97837
		3-1/4	6	E5G95922	E5G97838	E5G97839	E5G97840	E5G97841	E5G97842	E5G97843	E5G97844
		4	6-1/4	E5G95923	E5G97845	E5G97846	E5G97847	E5G97848	E5G97849	E5G97850	E5G97851
1	1	1-1/4	3	E5G95064	E5G97064	E5G97852	E5G97853	E5G97854	E5G97855	E5G97856	E5G97857
		1-1/4	4	E5G95928	E5G97885	E5G97886	E5G97887	E5G97888	E5G97889	E5G97890	E5G97891
		2	5	E5G95924	E5G97858	E5G97859	E5G97860	E5G97861	E5G97862	E5G97863	E5G97864
		3-1/4	6	E5G95925	E5G97865	E5G97866	E5G97867	E5G97868	E5G97869	E5G97870	E5G97871
		4	7	E5G95926	E5G97872	E5G97873	E5G97874	E5G97875	E5G97876	E5G97877	E5G97878

Outside Diameter Tolerences (inch)		Shank Dimeter Tolerance
Diameter	Tolerance	
1/8 – 3/16	+0/-.00032	h6
1/4 – 3/8	+0/-.00035	
1/2 – 5/8	+0/-.00043	
3/4 – 1	+0/-.00051	

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

CARBIDE
HSS
CBN END MILLS
i-Xmill END MILLS
i-SMART MODULAR TYPE END MILLS
X5070 END MILLS
4G MILL END MILLS
X-POWER END MILLS
JET-POWER END MILLS
TitaNox -POWER END MILLS
V7 PLUS A END MILLS
V7 MILL INOX END MILLS
ALU-POWER HPC END MILLS
ALU-POWER END MILLS
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ROUTERS CFRP
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TANK-POWER END MILLS
STANDARD COBALT & HSS END MILLS
TECHNICAL DATA

ALU-POWER HPC END MILLS

JAG96 SERIES SQUARE
JAG98 SERIES CORNER RADIUS

CARBIDE, 3 FLUTE EXTENDED LENGTH - DLC COATED

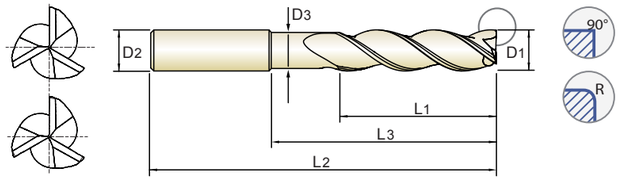
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SQUARE



CORNER RADIUS





MG | 3 | 37° | PLAIN

P.1044~1045

Unit : Inch

OD	SD	LOC	LBS	Neck Dia.	OAL	Square End	Corner Radius						
							.010	.030	.060	.090	.120	.190	.250
D1	D2	L1	L3	D3	L2	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
1/4	14	3/8	3/4	.220	2-1/2	JAG96016	JAG98016	JAG98901	JAG98902	–	–	–	–
		3/8	1-1/8	.220	3	JAG96901	JAG98903	JAG98904	JAG98905	–	–	–	–
3/8	3/8	1/2	1-1/8	.345	3	JAG96024	JAG98024	JAG98906	JAG98907	JAG98908	JAG98909	–	–
		1/2	2-1/8	.345	4	JAG96902	JAG98910	JAG98911	JAG98912	JAG98913	JAG98914	–	–
1/2	1/2	5/8	1-3/8	.470	3	JAG96032	JAG98032	JAG98915	JAG98916	JAG98917	JAG98918	JAG98919	–
		5/8	2-1/4	.470	4	JAG96903	JAG98920	JAG98921	JAG98922	JAG98923	JAG98924	JAG98925	–
		5/8	3-3/8	.470	5	JAG96904	JAG98926	JAG98927	JAG98928	JAG98929	JAG98930	JAG98931	–
		5/8	4-1/4	.470	6	JAG96905	JAG98932	JAG98933	JAG98934	JAG98935	JAG98936	JAG98937	–
5/8	5/8	3/4	1-5/8	.585	4	JAG96040	JAG98040	JAG98938	JAG98939	JAG98940	JAG98941	JAG98942	–
		3/4	3-3/8	.585	6	JAG96906	JAG98943	JAG98944	JAG98945	JAG98946	JAG98947	JAG98948	–
3/4	3/4	1	2	.710	4	JAG96048	JAG98048	JAG98949	JAG98950	JAG98951	JAG98952	JAG98953	JAG98954
		1	3-3/8	.710	6	JAG96907	JAG98955	JAG98956	JAG98957	JAG98958	JAG98959	JAG98960	JAG98961
		1	5	.710	7	JAG96908	JAG98962	JAG98963	JAG98964	JAG98965	JAG98966	JAG98967	JAG98968
1	1	1-1/4	2-5/8	.960	5	JAG96064	JAG98064	JAG98969	JAG98970	JAG98971	JAG98972	JAG98973	JAG98974
		1-1/4	3-3/8	.960	6	JAG96909	JAG98975	JAG98976	JAG98977	JAG98978	JAG98979	JAG98980	JAG98981
		1-1/4	4-3/8	.960	7	JAG96910	JAG98982	JAG98983	JAG98984	JAG98985	JAG98986	JAG98987	JAG98988
		1-1/4	6	.960	9	JAG96911	JAG98989	JAG98990	JAG98991	JAG98992	JAG98993	JAG98994	JAG98995

Outside Diameter Tolerences (inch)		Shank Dimeter Tolerance
Diameter	Tolerance	
1/8 – 3/16	+0/-.00032	h6
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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER HPC END MILLS

E5G96 SERIES SQUARE
E5G98 SERIES CORNER RADIUS

CARBIDE, 3 FLUTE EXTENDED LENGTH

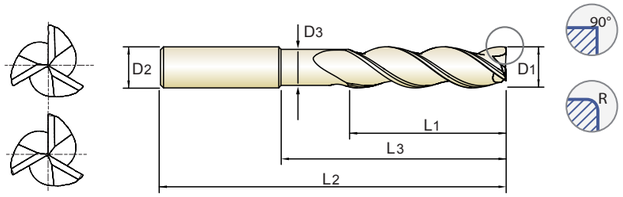
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SQUARE



CORNER RADIUS





MG | 3 | 37° | PLAIN

P.1044~1045

Unit : Inch

OD	SD	LOC	LBS	Neck Dia.	OAL	Square End	Corner Radius						
							.010	.030	.060	.090	.120	.190	.250
D1	D2	L1	L3	D3	L2	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
1/4	14	3/8	3/4	.220	2-1/2	E5G96016	E5G98016	E5G98901	E5G98902	–	–	–	–
		3/8	1-1/8	.220	3	E5G96901	E5G98903	E5G98904	E5G98905	–	–	–	–
3/8	3/8	1/2	1-1/8	.345	3	E5G96024	E5G98024	E5G98906	E5G98907	E5G98908	E5G98909	–	–
		1/2	2-1/8	.345	4	E5G96902	E5G98910	E5G98911	E5G98912	E5G98913	E5G98914	–	–
1/2	1/2	5/8	1-3/8	.470	3	E5G96032	E5G98032	E5G98915	E5G98916	E5G98917	E5G98918	E5G98919	–
		5/8	2-1/4	.470	4	E5G96903	E5G98920	E5G98921	E5G98922	E5G98923	E5G98924	E5G98925	–
		5/8	3-3/8	.470	5	E5G96904	E5G98926	E5G98927	E5G98928	E5G98929	E5G98930	E5G98931	–
		5/8	4-1/4	.470	6	E5G96905	E5G98932	E5G98933	E5G98934	E5G98935	E5G98936	E5G98937	–
5/8	5/8	3/4	1-5/8	.585	4	E5G96040	E5G98040	E5G98938	E5G98939	E5G98940	E5G98941	E5G98942	–
		3/4	3-3/8	.585	6	E5G96906	E5G98943	E5G98944	E5G98945	E5G98946	E5G98947	E5G98948	–
3/4	3/4	1	2	.710	4	E5G96048	E5G98048	E5G98949	E5G98950	E5G98951	E5G98952	E5G98953	E5G98954
		1	3-3/8	.710	6	E5G96907	E5G98955	E5G98956	E5G98957	E5G98958	E5G98959	E5G98960	E5G98961
		1	5	.710	7	E5G96908	E5G98962	E5G98963	E5G98964	E5G98965	E5G98966	E5G98967	E5G98968
1	1	1-1/4	2-5/8	.960	5	E5G96064	E5G98064	E5G98969	E5G98970	E5G98971	E5G98972	E5G98973	E5G98974
		1-1/4	3-3/8	.960	6	E5G96909	E5G98975	E5G98976	E5G98977	E5G98978	E5G98979	E5G98980	E5G98981
		1-1/4	4-3/8	.960	7	E5G96910	E5G98982	E5G98983	E5G98984	E5G98985	E5G98986	E5G98987	E5G98988
		1-1/4	6	.960	9	E5G96911	E5G98989	E5G98990	E5G98991	E5G98992	E5G98993	E5G98994	E5G98995

Outside Diameter Tolerences (inch)		Shank Dimeter Tolerance
Diameter	Tolerance	
1/8 – 3/16	+0/-.00032	h6
1/4 – 3/8	+0/-.00035	
1/2 – 5/8	+0/-.00043	
3/4 – 1	+0/-.00051	

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER HPC END MILLS

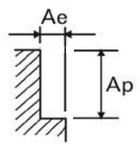
RECOMMENDED CUTTING CONDITIONS

CARBIDE, 3 FLUTE STANDARD LENGTH – INCH

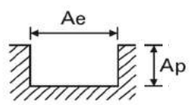
JAG95, JAG96, JAG97, JAG98, E5G95, E5G96, E5G97, E5G98 SERIES

Speed and Feed Recommendations							Diameter (D)						
ISO Hardness (BHN)	Coolant	Cutting Method	Ap x D	Ae x D	Vc (SFM)	Parameters	1/8	1/4	3/8	1/2	5/8	3/4	1
N< 16% Silicon Aluminum Alloys: 2024, 5052, 5086, 6061,6063,7075	Emulsion	Slotting	1	1	2000	RPM	61100	30500	20400	15300	12200	10200	7600
					1300~10000	Fz	.0010	.0030	.0045	.0060	.0066	.0075	.0100
						Feed (IPM)	183	275	275	275	242	230	228
		Profiling	1.5	0.5	3000	RPM	91700	45800	30600	23000	18300	15300	11500
					1600~10000	Fz	.0010	.0030	.0045	.0060	.0066	.0075	.0100
						Feed (IPM)	275	412	413	414	362	344	345
		HSM	2	0.05	8000	RPM	244500	122200	81500	61100	48900	40700	30600
					1600~10000	Fz	.0021	.0055	.0105	.0140	.0150	.0165	.0195
						Feed (IPM)	1540	2016	2567	2566	2201	2015	1790
N> 16% Silicon Aluminum Die Cast Alloys: A-390, A392, B-390 [YG-1 recommends the use of coated tools only]	Emulsion	Slotting	1	1	600	RPM	18336	9168	6112	4584	3667	3056	2292
					(480-720)	Fz	.0010	.0030	.0045	.0060	.0066	.0075	.0100
						Feed (IPM)	55	83	83	83	73	69	69
		Profiling	1.5	0.5	800	RPM	24448	12224	8149	6112	4890	4075	3056
					(640-960)	Fz	.0010	.0030	.0045	.0060	.0066	.0075	.0100
						Feed (IPM)	73	110	110	110	97	92	92
		HSM	2	0.05	1200	RPM	36672	18336	12224	9168	7334	6112	4584
					(960-1440)	Fz	.0021	.0055	.0105	.0140	.0150	.0165	.0195
						Feed (IPM)	231	303	385	385	330	303	268
N Non-Ferrous Alloys: Copper Alloys, Aluminum Bronze, Brass, Naval Brass, Red Brass	Emulsion	Slotting	1	1	880	RPM	26893	13446	8964	6723	5379	4482	3362
					(704-1056)	Fz	.0008	.0020	.0040	.0050	.0055	.0060	.0070
						Feed (IPM)	65	81	108	101	89	81	71
		Profiling	1.5	0.5	1150	RPM	35144	17572	11715	8786	7029	5857	4393
					(920-1380)	Fz	.0008	.0020	.0040	.0050	.0055	.0060	.0070
						Feed (IPM)	84	105	141	132	116	105	92
		HSM	2	0.05	1850	RPM	56536	28268	18845	14134	11307	9423	7067
					(1480-2220)	Fz	.0017	.0045	.0085	.0115	.0130	.0140	.0160
						Feed (IPM)	288	382	481	488	441	396	339

Profiling / HSM



Slotting



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

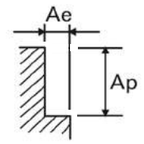
RECOMMENDED CUTTING CONDITIONS

CARBIDE, 3 FLUTE STANDARD LENGTH – INCH

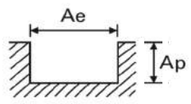
JAG95, JAG96, JAG97, JAG98, E5G95, E5G96, E5G97, E5G98 SERIES

Speed and Feed Recommendations							Diameter (D)						
ISO Hardness (BHN)	Coolant	Cutting Method	Ap x D	Ae x D	Vc (SFM)	Parameters	1/8	1/4	3/8	1/2	5/8	3/4	1
N Non-Ferrous Alloys: Copper Alloys, Beryllium Copper, C110, Manganese Bronze, Tin Bronze	Emulsion	Slotting	1	1	300	RPM	9168	4584	3056	2292	1834	1528	1146
					(240-360)	Fz	.0008	.0020	.0040	.0050	.0055	.0060	.0070
						Feed (IPM)	22	28	37	34	30	28	24
		Profiling	1.5	0.5	450	RPM	13752	6876	4584	3438	2750	2292	1719
					(360-540)	Fz	.0008	.0020	.0040	.0050	.0055	.0060	.0070
						Feed (IPM)	33	41	55	52	45	41	36
		HSM	2	0.05	750	RPM	22920	11460	7640	5730	4584	3820	2865
					(600-900)	Fz	.0017	.0045	.0085	.0115	.0130	.0140	.0160
						Feed (IPM)	117	155	195	198	179	160	138
Plastics: ABS, Polycarbonate, PVC, Polycarbolene	Air	Slotting	1	1	1670	RPM	51035	25518	17012	12759	10207	8506	6379
					(1336-2004)	Fz	.0015	.0040	.0075	.0100	.0110	.0120	.0140
						Feed (IPM)	230	306	383	383	337	306	268
		Profiling	1.5	0.5	2070	RPM	63259	31630	21086	15815	12652	10543	7907
					(1656-2484)	Fz	.0015	.0040	.0075	.0100	.0110	.0120	.0140
						Feed (IPM)	285	380	474	474	418	380	332
		HSM	2	0.05	3350	RPM	102376	51188	34125	25594	20475	17063	12797
					(2680-4020)	Fz	.0034	.0090	.0170	.0230	.0250	.0275	.0320
						Feed (IPM)	1044	1382	1740	1766	1536	1408	1229

Profiling / HSM



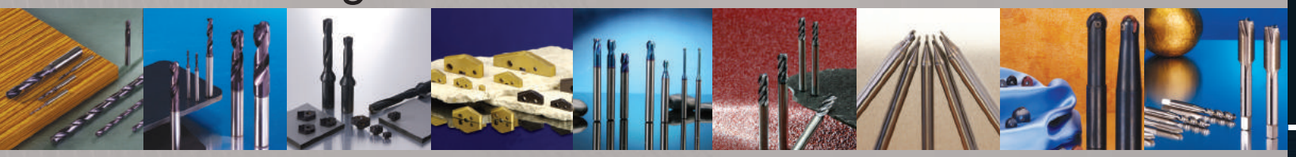
Slotting



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

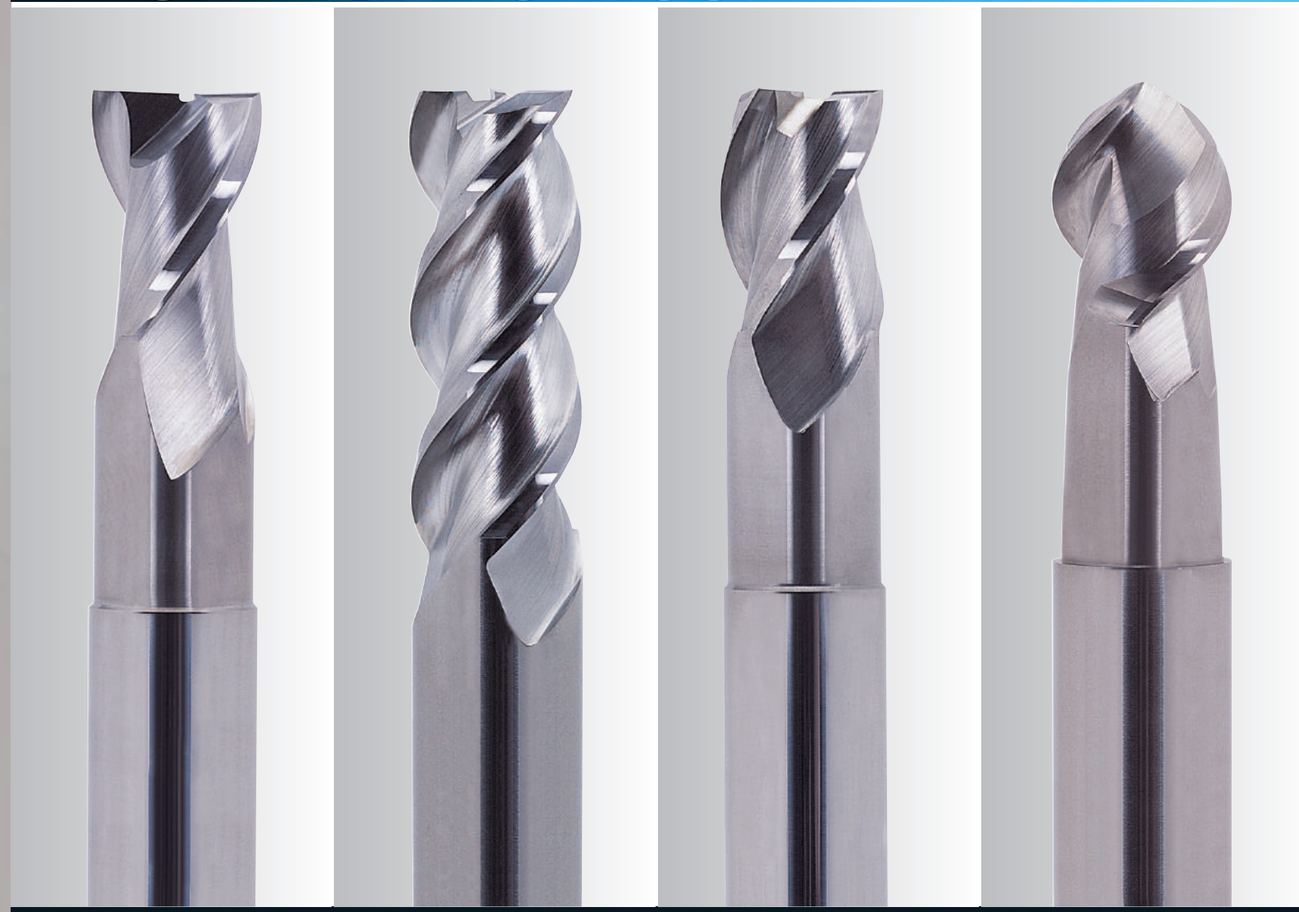
CARBIDE
HSS
CBN END MILLS
i-Xmill END MILLS
i-SMART MODULAR TYPE END MILLS
X5070 END MILLS
4G MILL END MILLS
X-POWER END MILLS
JET-POWER END MILLS
TitaNox -POWER END MILLS
V7 PLUS A END MILLS
V7 MILL INOX END MILLS
ALU-POWER HPC END MILLS
ALU-POWER END MILLS
D-POWER GRAPHITE END MILLS
D-POWER CFRP END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

Global Cutting Tool Leader **YG-1**



CARBIDE & HSS

Being the best through innovation



ALU-POWER END MILLS

- Silent Cutting of Aluminium Alloys, Mirror Surface

SOLID CARBIDE & HSS ALU-POWER END MILLS

◎ : Excellent ○ : Good

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE	P: Carbon Steels ~HRc20	P: Alloy Steels HRc20~30	P: Prehardened Steels HRc30~40	P: Hardened Steels HRc40~45	P: Hardened Steels HRc45~55	H: High Hardened Steels HRc55~70	M: Stainless Steels	K: Cast Iron	N: Copper	N: Graphite	N: Aluminum	N: Acrylic	N: CFRP	S: Titanium	S: High Temperature Alloy
INCH																				
E5253		CARBIDE, 2 FLUTE 42° HELIX REGULAR LENGTH - "BANSHEE" (FLAT SHANK) ◆	D1/4	D1	**1052**											◎				
E5254		CARBIDE, 2 FLUTE 42° HELIX REGULAR LENGTH - "BANSHEE" (PLAIN SHANK) ◆	D1/16	D1	**1053**											◎				
E5976		CARBIDE, 2 FLUTE 37° HELIX with EXTENDED NECK ◆	D1/4	D1	**1054**											◎				
E5980		CARBIDE, 3 FLUTE 45° HELIX STUB LENGTH ◆	D1/8	D1	**1055**											◎				
E5981		CARBIDE, 3 FLUTE 45° HELIX REGULAR LENGTH ◆	D1/8	D1	**1056**											◎				
E5983		CARBIDE, 3 FLUTE, 45° HELIX REGULAR LENGTH CORNER RADIUS ◆	D1/2	D1	**1056**											◎				
E5982		CARBIDE, 3 FLUTE 45° HELIX LONG LENGTH ◆	D1/4	D1	**1057**											◎				
E5984		CARBIDE, 3 FLUTE 45° HELIX LONG LENGTH CORNER RADIUS ◆	D1/2	D1	**1057**											◎				
E5E44		CARBIDE, 3 FLUTE ROUGHING ◆	D1/4	D1	**1058**											◎				
E5E98		CARBIDE, 3 FLUTE ROUGHING with NECK ◆	D1/4	D1	**1058**											◎				
E5E45		CARBIDE, 3 FLUTE 37° ROUGHING BALL NOSE ◆	D1/4	D1	**1059**											◎				
E5977		CARBIDE, 3 FLUTE 37° HELIX with EXTENDED NECK ◆	D1/4	D1	**1060**											◎				
E5985		CARBIDE, 3 FLUTE 37° HELIX with EXTENDED NECK CORNER RADIUS ◆	D1/2	D1	**1061**											◎				
E5973		CARBIDE, 2 FLUTE CORNER RADIUS with NECK ◆	D5/32	D3/4	**1062**											◎				
E5974		CARBIDE, 2 FLUTE 50° HELIX STUB CUT LENGTH BALL NOSE with NECK ◆	R1/8	R3/8	**1063**											◎				
E5978		CARBIDE, 2 FLUTE 37° HELIX LONG REACH BALL NOSE ◆	R1/8	R1/2	**1064**											◎				
E5975		CARBIDE, 3 FLUTE 40° HELIX LONG LENGTH BALL NOSE with NECK ◆	R3/64	R5/16	**1065**											◎				

◆ U.S.A Stock

◎ : Excellent ○ : Good

ITEM	MODEL	DESCRIPTION		SIZE MIN	SIZE MAX	PAGE	P: Carbon Steels ~HRc20	P: Alloy Steels HRc20~30	P: Prehardened Steels HRc30~40	P: Hardened Steels HRc40~45	P: Hardened Steels HRc45~55	H: High Hardened Steels HRc55~70	M: Stainless Steels	K: Cast Iron	N: Copper	N: Graphite	N: Aluminum	N: Acrylic	N: CFRP	S: Titanium	S: High Temperature Alloy
METRIC - CARBIDE																					
E5522 EG522		CARBIDE, 2 FLUTE 45° HELIX LONG LENGTH TiCN COATED	◇	D3.0	D20.0	1066										◎				
EG930		CARBIDE, 2 FLUTE 25° HELIX STUB CUT LENGTH CORNER RADIUS TiCN COATED	◇	D2.0	D20.0	1067										◎				
EG909		CARBIDE, 2 FLUTE STUB CUT LENGTH CORNER RADIUS with NECK TiCN COATED	◇	D4.0	D20.0	1068										◎				
EG910		CARBIDE 2 FLUTE 50° HELIX STUB CUT LENGTH BALL NOSE with NECK TiCN COATED	◇	R3.0	R10.0	1069										◎				
EG908		CARBIDE, 3 FLUTE 40° HELIX LONG LENGTH BALL NOSE with NECK TiCN COATED	◇	R1.0	R8.0	1070										◎				

◇ Call for Availability

INCH / SPEED FREEK - HSS POWDERED METAL

EK191		T15, 3 FLUTE 42° HELIX REGULAR LENGTH ROUGHING for ALUMINUM	◆	D1/2	D2	1071										◎				
EK191		T15, 3 FLUTE 42° HELIX REGULAR LENGTH ROUGHING with CORNER RADIUS for ALUMINUM	◆	D3/4	D1-1/4	1071										◎				
EK226		T15, 3 FLUTE 42° HELIX MEDIUM LENGTH ROUGHING for ALUMINUM	◆	D3/4	D2	1072										◎				
EK226		T15, 3 FLUTE 42° HELIX MEDIUM LENGTH ROUGHING with CORNER RADIUS for ALUMINUM	◆	D3/4	D1-1/4	1072										◎				
EK192		T15, 3 FLUTE 42° HELIX LONG LENGTH ROUGHING for ALUMINUM	◆	D1/2	D2	1073										◎				
EK192		T15, 3 FLUTE 42° HELIX LONG LENGTH ROUGHING with CORNER RADIUS for ALUMINUM	◆	D3/4	D1-1/4	1074										◎				
EK196		3 FLUTE BALL NOSE 42° HELIX ROUGHING BALL NOSE REGULAR LENGTH for ALUMINUM	◆	R1/4	R5/8	1075										◎				
EK193 EK132		3 FLUTE FINISHING with & without CORNER RADIUS REGULAR & MEDIUM & LONG LENGTH	◆	D1/2	D1-1/2	1076										◎				

◆ U.S.A Stock

EP922		PREMIUM HSS-PM, 3 FLUTE, 42° HELIX SHORT LENGTH ROUGHING for ALUMINUM	◇	D12.0	D32.0	1078										◎				
EP924		PREMIUM HSS-PM, 3 FLUTE 42° HELIX LONG LENGTH ROUGHING for ALUMINUM	◇	D12.0	D32.0	1079										◎				
		RECOMMENDED CUTTING CONDITIONS				1080														

◇ Call for Availability

ALU-POWER END MILLS

E5253 SERIES FLAT SHANK

CARBIDE, 2 FLUTE 42° HELIX REGULAR LENGTH - “BANSHEE”

- ▶ High velocity milling of aluminum & other non ferrous materials.
- ▶ Excellent plunging capabilities.
- ▶ Improved surface roughness-cylindrical margin which is controlled tightly.
- ▶ Maximum-metal removal rate.
- ▶ Superior chip evacuation.
- ▶ Mirror face-excellent surface finish.



MG | 2 | 42° | FLAT | P.1080

◆ U.S.A Stock

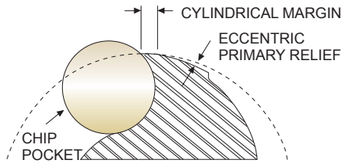
Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
17574	**17574TN**	**17574TC**	**17574TF**	**17574TE**	**1/4**	3/8	3/4	2-1/2
17580	**17580TN**	**17580TC**	**17580TF**	**17580TE**	**5/16**	3/8	13/16	2-1/2
17584	**17584TN**	**17584TC**	**17584TF**	**17584TE**	**3/8**	3/8	1	2-1/2
17593	**17593TN**	**17593TC**	**17593TF**	**17593TE**	**1/2**	1/2	1	3
18593	**18593TN**	**18593TC**	**18593TF**	**18593TE**	**1/2**	1/2	2	4
17901	**17901TN**	**17901TC**	**17901TF**	**17901TE**	**1/2**	1/2	1-1/4	3-1/4
17595	**17595TN**	**17595TC**	**17595TF**	**17595TE**	**5/8**	5/8	1-1/4	3-1/2
17598	**17598TN**	**17598TC**	**17598TF**	**17598TE**	**3/4**	3/4	1-1/2	4
18598	**18598TN**	**18598TC**	**18598TF**	**18598TE**	**3/4**	3/4	3	5-1/2
17600	**17600TN**	**17600TC**	**17600TF**	**17600TE**	**1**	1	1-1/2	4
18600	**18600TN**	**18600TC**	**18600TF**	**18600TE**	**1**	1	3	5-1/2

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



- High performance in machining aluminum and non-ferrous materials
- Special designed geometry with high rigidity cutting edge
- Improved surface roughness - cylindrical margin which is controlled tightly.
- Excellent chip removal - higher rake angle, higher helix angle(42°), bigger chip pocket.



◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER END MILLS

E5254 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE 42° HELIX REGULAR LENGTH - “ BANSHEE”

- ▶ High velocity milling of aluminum & other non ferrous materials.
- ▶ Excellent plunging capabilities.
- ▶ Improved surface roughness-cylindrical margin which is controlled tightly.
- ▶ Maximum-metal removal rate.
- ▶ Superior chip evacuation.
- ▶ Mirror face-excellent surface finish.



MG | 2 | 42° | PLAIN | P.1080

◆ U.S.A Stock

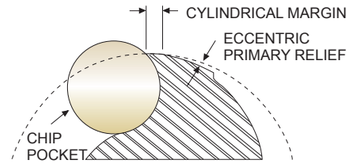
Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
21554	**21554TN**	**21554TC**	**21554TF**	**21554TE**	**1/16**	1/8	1/8	1-1/2
21556	**21556TN**	**21556TC**	**21556TF**	**21556TE**	**3/32**	1/8	1/4	1-1/2
21601	**21601TN**	**21601TC**	**21601TF**	**21601TE**	**1/8**	1/4	5/16	1-3/4
21566	**21566TN**	**21566TC**	**21566TF**	**21566TE**	**3/16**	1/4	7/16	2
21574	**21574TN**	**21574TC**	**21574TF**	**21574TE**	**1/4**	3/8	3/4	2-1/2
21580	**21580TN**	**21580TC**	**21580TF**	**21580TE**	**5/16**	3/8	13/16	2-1/2
21584	**21584TN**	**21584TC**	**21584TF**	**21584TE**	**3/8**	3/8	1	2-1/2
21588	**21588TN**	**21588TC**	**21588TF**	**21588TE**	**7/16**	7/16	1	2-3/4
21593	**21593TN**	**21593TC**	**21593TF**	**21593TE**	**1/2**	1/2	1	3
21904	**21904TN**	**21904TC**	**21904TF**	**21904TE**	**1/2**	1/2	1-1/4	3
21901	**21901TN**	**21901TC**	**21901TF**	**21901TE**	**1/2**	1/2	2	4
21595	**21595TN**	**21595TC**	**21595TF**	**21595TE**	**5/8**	5/8	1-1/4	3-1/2
21598	**21598TN**	**21598TC**	**21598TF**	**21598TE**	**3/4**	3/4	1-1/2	4
21902	**21902TN**	**21902TC**	**21902TF**	**21902TE**	**3/4**	3/4	3	5-1/2
21600	**21600TN**	**21600TC**	**21600TF**	**21600TE**	**1**	1	1-1/2	4
21903	**21903TN**	**21903TC**	**21903TF**	**21903TE**	**1**	1	3	5-1/2

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



- High performance in machining aluminum and non-ferrous materials
- Special designed geometry with high rigidity cutting edge
- Improved surface roughness - cylindrical margin which is controlled tightly.
- Excellent chip removal - higher rake angle, higher helix angle(42°), bigger chip pocket.



◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER END MILLS

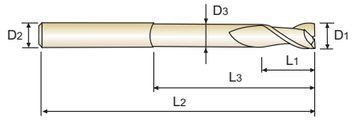
E5976 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE 37° HELIX with EXTENDED NECK

- ▶ High velocity milling of aluminum & other non-ferrous materials.
- ▶ Excellent plunging capabilities.
- ▶ Improved surface roughness-cylindrical margin which is controlled tightly.
- ▶ Maximum-metal removal rate.
- ▶ Superior chip evacuation.
- ▶ Mirror face-excellent surface finish.







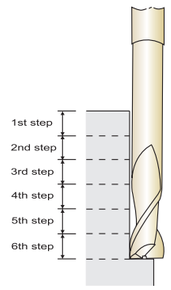
MG | 2 | 37° | PLAIN P.1083

◆ 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	D_1	D_2	L_1	L_3	L_2	D_3
39573	**39573TC**	**1/4**	1/4	3/8	2-1/4	4	.220
39584	**39584TC**	**3/8**	3/8	1/2	2-1/4	4	.345
39593	**39593TC**	**1/2**	1/2	5/8	2-1/4	5	.470
39908	**39908TC**	**1/2**	1/2	5/8	3-1/4	6	.470
39901	**39901TC**	**1/2**	1/2	5/8	4	6	.470
39595	**39595TC**	**5/8**	5/8	3/4	2-1/4	5	.585
39902	**39902TC**	**5/8**	5/8	3/4	3-1/4	6	.585
39903	**39903TC**	**5/8**	5/8	3/4	4-1/4	7	.585
39598	**39598TC**	**3/4**	3/4	1	2-1/4	5	.710
39904	**39904TC**	**3/4**	3/4	1	3-1/4	6	.710
39905	**39905TC**	**3/4**	3/4	1	4-1/4	7	.710
39600	**39600TC**	**1**	1	1-1/8	2-1/4	5	.960
39906	**39906TC**	**1**	1	1-1/8	3-1/4	6	.960
39907	**39907TC**	**1**	1	1-1/8	4-1/4	7	.960

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



STEP MILLING

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER END MILLS

E5980 SERIES PLAIN SHANK

CARBIDE, 3 FLUTE 45° HELIX STUB LENGTH

- ▶ Designed to machine aluminium at high speed condition.
- ▶ Improved surface roughness-cylindrical margin which is controlled tightly.
- ▶ Mirror face-excellent surface finish.





MG | 3 | 45° | PLAIN P.1081

◆ U.S.A Stock

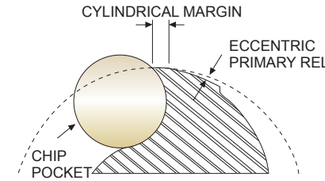
Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED				
25558	**25558TC**	**1/8**	1/8	1/4	1-1/2
25565	**25565TC**	**3/16**	3/16	5/16	2
25573	**25573TC**	**1/4**	1/4	3/8	2
25579	**25579TC**	**5/16**	5/16	7/16	2
25584	**25584TC**	**3/8**	3/8	1/2	2
25588	**25588TC**	**7/16**	7/16	9/16	2-1/2
25593	**25593TC**	**1/2**	1/2	5/8	2-1/2
25595	**25595TC**	**5/8**	5/8	3/4	3
25598	**25598TC**	**3/4**	3/4	1	3
25600	**25600TC**	**1**	1	1-1/4	3

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



- High performance in machining aluminum and non-ferrous materials
- Special designed geometry with high rigidity cutting edge
- Improved surface roughness - cylindrical margin which is controlled tightly.
- Excellent chip removal - higher rake angle, higher helix angle(45°), bigger chip pocket.



◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

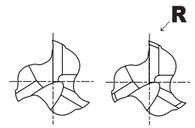
ALU-POWER END MILLS

E5981 SERIES PLAIN SHANK
E5983 SERIES PLAIN SHANK

CARBIDE, 3 FLUTE 45° HELIX REGULAR LENGTH & CORNER RADIUS

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





MG | 3 | 45° | PLAIN P.1081

◆ U.S.A Stock

■ SQUARE

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED				
28558	**28558TC**	**1/8**	1/8	3/8	1-1/2
28565	**28565TC**	**3/16**	3/16	9/16	2
28573	**28573TC**	**1/4**	1/4	5/8	2-1/2
28579	**28579TC**	**5/16**	5/16	5/8	2-1/2
28584	**28584TC**	**3/8**	3/8	1	2-1/2
28588	**28588TC**	**7/16**	7/16	1-1/4	2-3/4
28593	**28593TC**	**1/2**	1/2	1-1/4	3
28595	**28595TC**	**5/8**	5/8	1-5/8	3-1/2
28598	**28598TC**	**3/4**	3/4	1-5/8	4
28600	**28600TC**	**1**	1	2	5

■ CORNER RADIUS

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED	R				
EA50321	**EA50321C**	R.060	**1/2**	1/2	1-1/4	3
EA50401	**EA50401C**	R.060	**5/8**	5/8	1-5/8	3-1/2
EA50481	**EA50481C**	R.060	**3/4**	3/4	1-5/8	4
EA50641	**EA50641C**	R.065	**1**	1	2	5
EA20321	**EA20321C**	R.120	**1/2**	1/2	1-1/4	3
EA20401	**EA20401C**	R.120	**5/8**	5/8	1-5/8	3-1/2
EA20481	**EA20481C**	R.120	**3/4**	3/4	1-5/8	4
EA20641	**EA20641C**	R.120	**1**	1	2	5

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

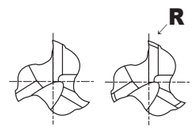
ALU-POWER END MILLS

E5982 SERIES PLAIN SHANK
E5984 SERIES PLAIN SHANK

CARBIDE, 3 FLUTE 45° HELIX LONG LENGTH & CORNER RADIUS

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





MG | 3 | 45° | PLAIN P.1081

◆ U.S.A Stock

■ SQUARE

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
36598	**36598TC**	**3/4**	3/4	3-1/4	6
36600	**36600TC**	**1**	1	3-1/4	6

■ CORNER RADIUS

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED	R				
EA60321	**EA60321C**	R.060	**1/2**	1/2	2	4
EA60401	**EA60401C**	R.060	**5/8**	5/8	2-1/2	5
EA60481	**EA60481C**	R.060	**3/4**	3/4	3-1/4	6
EA60641	**EA60641C**	R.060	**1**	1	3-1/4	6
EA30321	**EA30321C**	R.120	**1/2**	1/2	2	4
EA30401	**EA30401C**	R.120	**5/8**	5/8	2-1/2	5
EA30481	**EA30481C**	R.120	**3/4**	3/4	3-1/4	6
EA30641	**EA30641C**	R.120	**1**	1	3-1/4	6

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER END MILLS

E5E44 SERIES PLAIN SHANK
E5E98 SERIES PLAIN SHANK

CARBIDE, 3 FLUTE ROUGHING / ROUGHING with NECK

- Excellent cutting qualities on aluminum, copper
- Increased tool life and superior chip evacuation
- Reduces chipping of corner edges





* WITH NECK

MG | 3 | 30° | PLAIN | P.1088

◆ U.S.A Stock

■ ROUGHING

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
44016	1/4	1/4	3/4	2-1/2
44024	3/8	3/8	7/8	2-1/2
44032	1/2	1/2	1	3
44040	5/8	5/8	1-1/4	3-1/2
44048	3/4	3/4	1-5/8	4
44064	1	1	1-3/4	4

■ ROUGHING WITH NECK

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
98016	1/4	1/4	3/4	1	2-1/2	.210
98024	3/8	3/8	7/8	1-1/4	3	.335
98032	1/2	1/2	1	1-3/8	3-1/4	.440
98040	5/8	5/8	1-1/4	1-3/4	3-3/4	.565
98048	3/4	3/4	1-5/8	2-1/4	4-1/2	.690
98064	1	1	1-3/4	2-1/2	5	.940

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

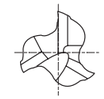
ALU-POWER END MILLS

E5E45 SERIES PLAIN SHANK

CARBIDE, 3 FLUTE ROUGHING BALL NOSE

- Excellent cutting qualities on aluminum, copper
- Increased tool life and superior chip evacuation
- Reduces chipping of corner edges





MG | 3 | 30° | PLAIN | P.1088

◆ U.S.A Stock

Unit : Inch

SAB CODE	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of FLUTE
45016	1/4	1/4	3/4	2-1/2	3
45024	3/8	3/8	7/8	2-1/2	3
45032	1/2	1/2	1	3	3
45040	5/8	5/8	1-1/4	3-1/2	3
45048	3/4	3/4	1-5/8	4	3
45064	1	1	1-3/4	4	3

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER END MILLS

E5977 SERIES PLAIN SHANK

CARBIDE, 3 FLUTE 37° HELIX with EXTENDED NECK

- High velocity milling of aluminum & other non-ferrous materials.
- 3flute and 37° helix allow harmonic balance at high speed condition and smooth cutting.
- Improved surface roughness-cylindrical margin which is controlled tightly.
- Maximum-metal removal rate.
- Superior chip evacuation.
- Mirror face-excellent surface finish.



MG | 3 | 37° | PLAIN

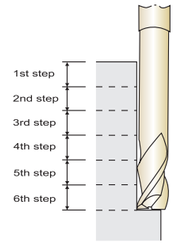
P.1082

◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
UNCOATED	TiCN COATED	D1	D2	L1	L3	L2	D3
40573	40573TC	1/4	1/4	3/8	2-1/4	4	.220
40584	40584TC	3/8	3/8	1/2	2-1/4	4	.345
40593	40593TC	1/2	1/2	5/8	2-1/4	5	.470
40901	40901TC	1/2	1/2	5/8	3-1/4	6	.470
40902	40902TC	1/2	1/2	5/8	4	6	.470
40595	40595TC	5/8	5/8	3/4	2-1/4	5	.585
40903	40903TC	5/8	5/8	3/4	3-1/4	6	.585
40904	40904TC	5/8	5/8	3/4	4-1/4	7	.585
40598	40598TC	3/4	3/4	1	2-1/4	5	.710
40905	40905TC	3/4	3/4	1	3-1/4	6	.710
40906	40906TC	3/4	3/4	1	4-1/4	7	.710
40600	40600TC	1	1	1-1/8	2-1/4	5	.960
40907	40907TC	1	1	1-1/8	3-1/4	6	.960
40908	40908TC	1	1	1-1/8	4-1/4	7	.960

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



STEP MILLING

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER END MILLS

E5985 SERIES PLAIN SHANK

CARBIDE, 3 FLUTE 37° HELIX with EXTENDED NECK CORNER RADIUS

- High velocity milling of aluminum & other non-ferrous materials.
- 3flute and 37° helix allow harmonic balance at high speed condition and smooth cutting.
- Improved surface roughness-cylindrical margin which is controlled tightly.
- Maximum-metal removal rate.
- Superior chip evacuation.
- Mirror face-excellent surface finish.



MG | 3 | 37° | PLAIN

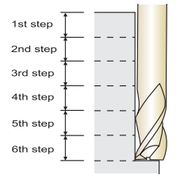
P.1082

◆ U.S.A Stock

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
UNCOATED	TiCN COATED	R	D1	D2	L1	L3	L2	D3
EA40321	EA40321C	R.060	1/2	1/2	5/8	3-1/4	6	.470
EA40322	EA40322C	R.060	1/2	1/2	5/8	4	6	.470
EA40401	EA40401C	R.060	5/8	5/8	3/4	2-1/4	5	.585
EA40402	EA40402C	R.060	5/8	5/8	3/4	3-1/4	6	.585
EA40403	EA40403C	R.060	5/8	5/8	3/4	4-1/4	7	.585
EA40481	EA40481C	R.060	3/4	3/4	1	2-1/4	5	.710
EA40482	EA40482C	R.060	3/4	3/4	1	3-1/4	6	.710
EA40483	EA40483C	R.060	3/4	3/4	1	4-1/4	7	.710
EA40641	EA40641C	R.060	1	1	1-1/8	2-1/4	5	.960
EA40642	EA40642C	R.060	1	1	1-1/8	3-1/4	6	.960
EA40643	EA40643C	R.060	1	1	1-1/8	4-1/4	7	.960
EA10321	EA10321C	R.120	1/2	1/2	5/8	3-1/4	6	.470
EA10322	EA10322C	R.120	1/2	1/2	5/8	4	6	.470
EA10401	EA10401C	R.120	5/8	5/8	3/4	2-1/4	5	.585
EA10402	EA10402C	R.120	5/8	5/8	3/4	3-1/4	6	.585
EA10403	EA10403C	R.120	5/8	5/8	3/4	4-1/4	7	.585
EA10481	EA10481C	R.120	3/4	3/4	1	2-1/4	5	.710
EA10482	EA10482C	R.120	3/4	3/4	1	3-1/4	6	.710
EA10483	EA10483C	R.120	3/4	3/4	1	4-1/4	7	.710
EA10641	EA10641C	R.120	1	1	1-1/8	2-1/4	5	.960
EA10642	EA10642C	R.120	1	1	1-1/8	3-1/4	6	.960
EA10643	EA10643C	R.120	1	1	1-1/8	4-1/4	7	.960

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



STEP MILLING

◎ : Excellent ○ : Good

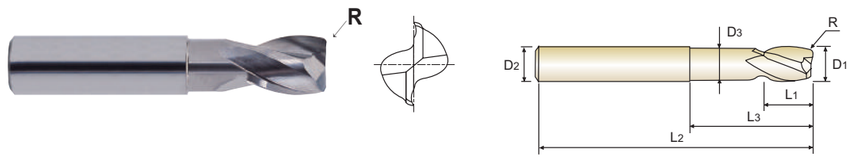
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER END MILLS

E5973 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE CORNER RADIUS with NECK

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



MG | 2 | 30° | R ±.001 | PLAIN

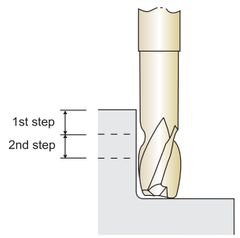
P.1083

◆ 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	D_1	D_2	L_1	L_3	L_2	D_3
24562	**24562TC**	R.012	**5/32**	1/4	3/16	3/8	2	.140
24573	**24573TC**	R.020	**1/4**	1/4	5/16	3/4	2-3/8	.226
24579	**24579TC**	R.024	**5/16**	5/16	3/8	1-1/8	2-3/4	.282
24584	**24584TC**	R.031	**3/8**	3/8	1/2	1-1/2	3-1/8	.336
24593	**24593TC**	R.040	**1/2**	1/2	9/16	1-1/2	3-1/2	.460
24595	**24595TC**	R.051	**5/8**	5/8	3/4	1-3/4	4	.566
24598	**24598TC**	R.063	**3/4**	3/4	1	1-3/4	4	.670

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



STEP MILLING

◎ : Excellent ○ : Good

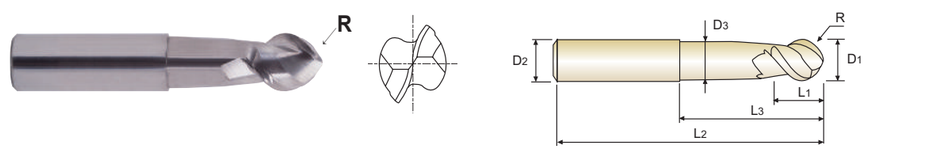
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER END MILLS

E5974 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE 50° HELIX STUB CUT LENGTH BALL NOSE with NECK

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



MG | 2 | 50° | R ±.0005 | PLAIN

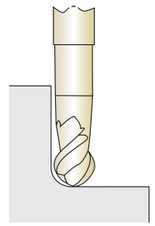
P.1085

◆ 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**	R 1/8	**1/4**	1/4	7/32	1	2-1/4	.226
37579	**37579TC**	R 5/32	**5/16**	5/16	9/32	1-1/8	2-1/2	.280
37584	**37584TC**	R 3/16	**3/8**	3/8	11/32	1-3/8	3	.335
37593	**37593TC**	R 1/4	**1/2**	1/2	13/32	1-1/2	3	.460
37595	**37595TC**	R 5/16	**5/8**	5/8	9/16	2	3-1/2	.566
37598	**37598TC**	R 3/8	**3/4**	3/4	11/16	2	4	.671

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



◎ : Excellent ○ : Good

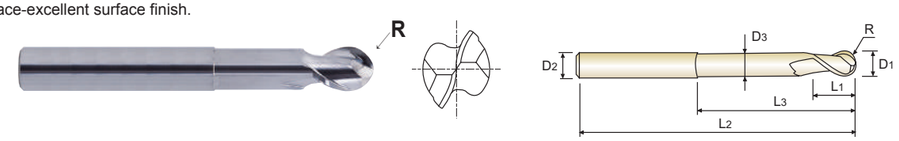
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER END MILLS

E5978 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE 37° HELIX LONG REACH BALL NOSE

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



MG | 2 | 37° | R ±.001 | PLAIN

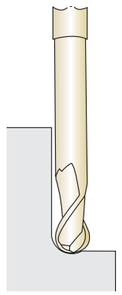
P.1084

◆ U.S.A Stock

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
UNCOATED	TiCN COATED	R (±.001)	D1	D2	L1	L3	L2	D3
89573	**89573TC**	R 1/8	**1/4**	1/4	3/8	2-1/4	4	.220
89584	**89584TC**	R 3/16	**3/8**	3/8	1/2	2-1/4	4	.345
89593	**89593TC**	R 1/4	**1/2**	1/2	5/8	2-1/4	5	.470
89901	**89901TC**	R 1/4	**1/2**	1/2	5/8	3-1/4	6	.470
89902	**89902TC**	R 1/4	**1/2**	1/2	5/8	4	6	.470
89595	**89595TC**	R 5/16	**5/8**	5/8	3/4	2-1/4	5	.585
89903	**89903TC**	R 5/16	**5/8**	5/8	3/4	3-1/4	6	.585
89904	**89904TC**	R 5/16	**5/8**	5/8	3/4	4-1/4	7	.585
89598	**89598TC**	R 3/8	**3/4**	3/4	1	2-1/4	5	.710
89905	**89905TC**	R 3/8	**3/4**	3/4	1	3-1/4	6	.710
89906	**89906TC**	R 3/8	**3/4**	3/4	1	4-1/4	7	.710
89600	**89600TC**	R1/2	**1**	1	1-1/8	2-1/4	5	.960
89907	**89907TC**	R1/2	**1**	1	1-1/8	3-1/4	6	.960
89908	**89908TC**	R1/2	**1**	1	1-1/8	4-1/4	7	.960

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



◎ : Excellent ○ : Good

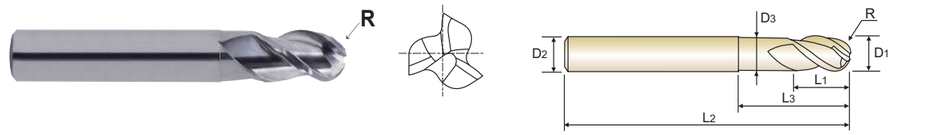
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER END MILLS

E5975 SERIES PLAIN SHANK

CARBIDE, 3 FLUTE 40° HELIX LONG LENGTH BALL NOSE with NECK

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



MG | 3 | 40° | R ±.0005 | PLAIN

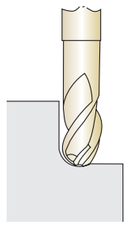
P.1085

◆ U.S.A Stock

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
UNCOATED	TiCN COATED	R (±.0005)	D1	D2	L1	L3	L2	D3
38602	**38602TC**	R 3/64	**3/32**	1/4	1/8	3/16	2-3/8	.090
38601	**38601TC**	R 1/16	**1/8**	1/4	3/16	1/4	2-3/8	.117
38566	**38566TC**	R 3/32	**3/16**	1/4	1/4	3/8	2-1/2	.172
38573	**38573TC**	R 1/8	**1/4**	1/4	3/8	1/2	3	.235
38579	**38579TC**	R 5/32	**5/16**	5/16	1/2	1	3	.289
38584	**38584TC**	R 3/16	**3/8**	3/8	5/8	1-1/4	3-1/8	.351
38593	**38593TC**	R 1/4	**1/2**	1/2	3/4	1-3/8	3-1/2	.476
38595	**38595TC**	R 5/16	**5/8**	5/8	1	1-1/2	4	.601

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



◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER END MILLS

E5522 SERIES PLAIN SHANK
EG522 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE 45° HELIX LONG LENGTH - TiCN COATED

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



MG | 2 | 45° | PLAIN

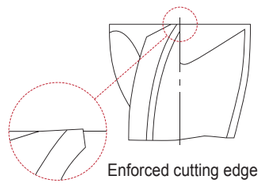
P.1086

◇ Call for Availability

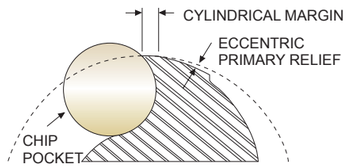
Unit : mm

EDP No.		Mill Diameter		Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED	Metric	Inch			
E5522030	EG522030	3.0	.1181	6	8	57
E5522040	EG522040	4.0	.1575	6	11	57
E5522050	EG522050	5.0	.1969	6	13	57
E5522060	EG522060	6.0	.2362	6	13	57
E5522080	EG522080	8.0	.3150	8	19	63
E5522100	EG522100	10.0	.3937	10	22	72
E5522120	EG522120	12.0	.4724	12	26	83
E5522140	EG522140	14.0	.5512	14	26	83
E5522160	EG522160	16.0	.6299	16	32	92
E5522180	EG522180	18.0	.7087	18	32	92
E5522200	EG522200	20.0	.7874	20	38	104

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



- High performance in machining aluminum and non-ferrous materials
- Special designed geometry with high rigidity cutting edge
- Improved surface roughness - cylindrical margin which is controlled tightly.
- Excellent chip removal - higher rake angle, higher helix angle(45°), bigger chip pocket.



◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

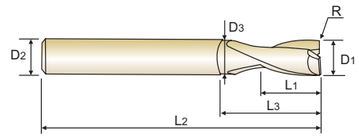
ALU-POWER END MILLS

EG930 SERIES PLAIN SHANK

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

- Designed for the machining aluminum and its alloys, non-ferrous materials.
- Increased tool life and higher cutting accuracy.
- Maximum-stock removal, chip ejection, stability.
- Corner Radius for avoiding the chipping.
- Mirror face-excellent surface finish.





MG | 2 | 25° | R ±0.025 | PLAIN

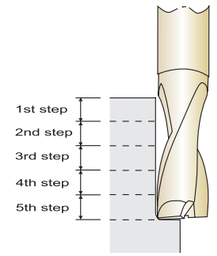
P.1086

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (±0.025)	D1		D2	L1	L3	L2	D3
EG930020	RO.2	2.0	.0787	3	3	6	40	1.9
EG930030	RO.2	3.0	.1181	3	4	8	40	2.9
EG930040	RO.2	4.0	.1575	4	5	12	50	3.8
EG930050	RO.2	5.0	.1969	5	8	14	50	4.8
EG930060	RO.2	6.0	.2362	6	8	18	65	5.7
EG930080	RO.2	8.0	.3150	8	10	22	70	7.7
EG930100	RO.2	10.0	.3937	10	14	28	80	9.7
EG930120	RO.2	12.0	.4724	12	16	35	90	11.5
EG930160	RO.2	16.0	.6299	16	20	40	90	15.5
EG930200	RO.2	20.0	.7874	20	25	50	100	19.5

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



STEP MILLING

◎ : Excellent ○ : Good

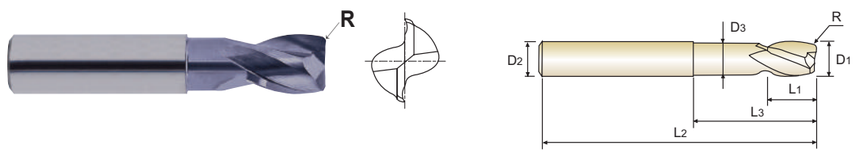
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER END MILLS

EG909 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE STUB CUT LENGTH CORNER RADIUS with NECK TiCN COATED

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



MG | 2 | 30° | R ±0.025 | PLAIN

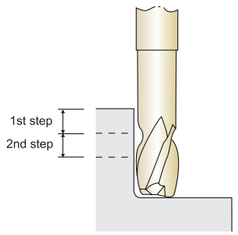
P.1087

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R (±0.025)	D1		D2	L1	L3	L2	D3
EG909040	R0.3	4.0	.1575	6	5	10	50	3.6
EG909060	R0.5	6.0	.2362	6	8	20	60	5.4
EG909080	R0.6	8.0	.3150	8	10	30	70	7.2
EG909100	R0.8	10.0	.3937	10	12	36	80	9.0
EG909120	R1.0	12.0	.4724	12	14	40	90	11.0
EG909160	R1.3	16.0	.6299	16	18	45	100	14.5
EG909200	R1.6	20.0	.7874	20	24	45	100	18.0

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



STEP MILLING

◎ : Excellent ○ : Good

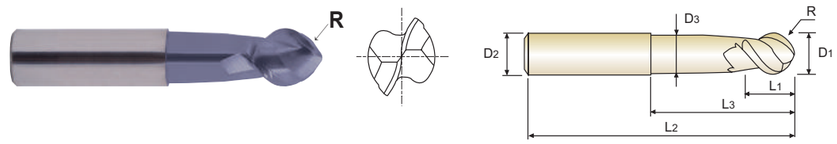
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER END MILLS

EG910 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE 50° HELIX STUB CUT LENGTH BALL NOSE with NECK TiCN COATED

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



MG | 2 | 50° | R ±0.01 | PLAIN

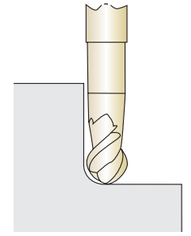
P.1087

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R (±0.01)	D1		D2	L1	L3	L2	D3
EG910060	R 3.0	6.0	.2362	6	5.5	25	55	5.4
EG910080	R 4.0	8.0	.3150	8	7	30	65	7.2
EG910100	R 5.0	10.0	.3937	10	8.5	35	75	9.0
EG910120	R 6.0	12.0	.4724	12	10.5	40	75	11.0
EG910160	R 8.0	16.0	.6299	16	14	50	90	14.5
EG910200	R 10.0	20.0	.7874	20	17	50	100	18.0

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



◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

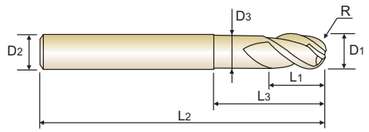
ALU-POWER END MILLS

EG908 SERIES PLAIN SHANK

CARBIDE, 3 FLUTE 40° HELIX LONG LENGTH BALL NOSE with NECK TiCN COATED

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





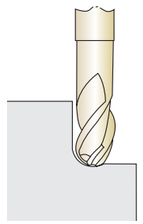
MG | 3 | 40° | R ±0.01 | PLAIN | P.1088

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R (±0.01)	D1		D2	L1	L3	L2	D3
EG908020	R1.0	2.0	.0787	6	3	2.5	60	1.9
EG908025	R1.25	2.5	.0984	6	4	6	60	2.4
EG908030	R1.5	3.0	.1181	6	4.5	6.5	60	2.8
EG908035	R1.75	3.5	.1378	6	5	7	65	3.2
EG908040	R2.0	4.0	.1575	6	6	8	65	3.7
EG908050	R2.5	5.0	.1969	6	7.5	10	65	4.6
EG908060	R3.0	6.0	.2362	6	9	12	75	5.6
EG908080	R4.0	8.0	.3150	8	12	25	75	7.4
EG908100	R5.0	10.0	.3937	10	15	30	80	9.4
EG908120	R6.0	12.0	.4724	12	18	36	90	11.4
EG908160	R8.0	16.0	.6299	16	24	40	100	15.4

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



◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER END MILLS

EK191 SERIES FLAT SHANK

T15, 3 FLUTE 42° HELIX REGULAR LENGTH ROUGHING for ALUMINUM

- High performance metal removal in aluminum alloys.
- Corner radius against chipping





T15 | ALU | 3 | 42° | FLAT | P.1090

◆ U.S.A Stock

■ SQUARE

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED				
66515	66515 PC	1/2	1/2	1-1/4	3-1/4
66519	66519 PC	5/8	5/8	1-5/8	3-3/4
66524	66524 PC	3/4	3/4	1-5/8	3-7/8
66540	66540 PC	1	1	2	4-1/2
66541	66541 PC	1-1/4	1-1/4	2	4-1/2
66542	66542 PC	1-1/2	1-1/4	2	4-1/2
*66543	*66543 PC	2	2	2	5-3/4

*Combination Shank

T15 | ALU | 3 | 42° | R ±.001 | FLAT | P.1090

◆ U.S.A Stock

■ with CORNER RADIUS

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED	R				
66903	66903 PC	R .060	3/4	3/4	1-5/8	3-7/8
66904	66904 PC	R .090	3/4	3/4	1-5/8	3-7/8
66905	66905 PC	R .120	3/4	3/4	1-5/8	3-7/8
66906	66906 PC	R .060	1	1	2	4-1/2
66907	66907 PC	R .090	1	1	2	4-1/2
66908	66908 PC	R .120	1	1	2	4-1/2
66909	66909 PC	R .060	1-1/4	1-1/4	2	4-1/2
66910	66910 PC	R .090	1-1/4	1-1/4	2	4-1/2
66911	66911 PC	R .120	1-1/4	1-1/4	2	4-1/2

■ The TiN coated, or TiAlN coated is available on your request.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER END MILLS

EK226 SERIES FLAT SHANK

T15, 3 FLUTE 42° HELIX & MEDIUM LENGTH ROUGHING for ALUMINUM

▶ High performance metal removal in aluminum alloys.
▶ Corner radius against chipping



T15 | ALU | 3 | 42° | FLAT

P.1090

◆ U.S.A Stock

■ SQUARE

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED				
80524	80524 PC	3/4	3/4	2-1/4	4-5/8
80540	80540 PC	1	1	3	5-1/2
80541	80541 PC	1-1/4	1-1/4	3	5-1/2
80542	80542 PC	1-1/2	1-1/4	3	5-1/2
*80543	*80543 PC	2	2	3	6-3/4

*Combination Shank

T15 | ALU | 3 | 42° | R ±.001 | FLAT

P.1090

◆ U.S.A Stock

■ with CORNER RADIUS

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED	R				
80901	80901 PC	R .060	3/4	3/4	2-1/4	4-5/8
80902	80902 PC	R .090	3/4	3/4	2-1/4	4-5/8
80903	80903 PC	R .120	3/4	3/4	2-1/4	4-5/8
80904	80904 PC	R .060	1	1	3	5-1/2
80905	80905 PC	R .090	1	1	3	5-1/2
80906	80906 PC	R .120	1	1	3	5-1/2
80907	80907 PC	R .060	1-1/4	1-1/4	3	5-1/2
80908	80908 PC	R .090	1-1/4	1-1/4	3	5-1/2
80909	80909 PC	R .120	1-1/4	1-1/4	3	5-1/2

■ The TiN coated, or TiAlN coated is available on your request.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER END MILLS

EK192 SERIES FLAT SHANK

T15, 3 FLUTE 42° HELIX LONG LENGTH ROUGHING for ALUMINUM

▶ High performance metal removal in aluminum alloys.



T15 | ALU | 3 | 42° | FLAT

P.1090

◆ U.S.A Stock

■ SQUARE

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED				
67515	67515 PC	1/2	1/2	2	4
67519	67519 PC	5/8	5/8	2-1/2	4-5/8
67524	67524 PC	3/4	3/4	3	5-1/4
67540	67540 PC	1	1	4	6-1/2
67541	67541 PC	1-1/4	1-1/4	4	6-1/2
67542	67542 PC	1-1/2	1-1/4	4	6-1/2
*67543	*67543 PC	2	2	4	7-3/4
67544	67544 PC	1-1/4	1-1/4	6	8-1/2
67545	67545 PC	1-1/2	1-1/4	6	8-1/2
*67546	*67546 PC	2	2	6	9-3/4

*Combination Shank

■ with NECK

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
UNCOATED	TiCN COATED						
EK10482	EK10482C	3/4	3/4	1-1/2	3	5-1/4	.705
EK10483	EK10483C	3/4	3/4	1-1/2	4	6-1/4	.705
EK10642	EK10642C	1	1	1-1/2	3	5-1/2	.950
EK10643	EK10643C	1	1	2	4	6-1/2	.950
EK10644	EK10644C	1	1	2	6	8-1/2	.950
EK11601	EK11601C	1-1/4	1-1/4	2	4	6-1/2	1.200
EK11602	EK11602C	1-1/4	1-1/4	2	6	8-1/2	1.200

■ The TiN coated, or TiAlN coated is available on your request.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER END MILLS

EK192 SERIES FLAT SHANK

T15, 3 FLUTE 42° HELIX LONG LENGTH ROUGHING with CORNER RADIUS for ALUMINUM

- ▶ High performance metal in aluminum alloys.
- ▶ Corner radius against chipping



T15 | ALU | 3 | 42° | R ±.001 | FLAT

P.1090

◆ U.S.A Stock

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED	R				
67904	**67904 PC**	R .060	**3/4**	3/4	3	5-1/4
67905	**67905 PC**	R .090	**3/4**	3/4	3	5-1/4
67906	**67906 PC**	R .120	**3/4**	3/4	3	5-1/4
67907	**67907 PC**	R .060	**1**	1	4	6-1/2
67908	**67908 PC**	R .090	**1**	1	4	6-1/2
67909	**67909 PC**	R .120	**1**	1	4	6-1/2
67910	**67910 PC**	R .060	**1-1/4**	1-1/4	4	6-1/2
67911	**67911 PC**	R .090	**1-1/4**	1-1/4	4	6-1/2
67912	**67912 PC**	R .120	**1-1/4**	1-1/4	4	6-1/2
67913	**67913 PC**	R .060	**1-1/4**	1-1/4	6	8-1/2
67914	**67914 PC**	R .090	**1-1/4**	1-1/4	6	8-1/2
67915	**67915 PC**	R .120	**1-1/4**	1-1/4	6	8-1/2

■ The TiN coated, or TiAlN coated is available on your request.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER END MILLS

EK196 SERIES FLAT SHANK

T15, 3 FLUTE 42° HELIX ROUGHING BALL NOSE REGULAR LENGTH for ALUMINUM

- ▶ High performance metal removal in aluminum alloys.



T15 | ALU | 3 | 42° | R ±.001 | FLAT

P.1089

◆ U.S.A Stock

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED	R (±.001)				
EP12032	**EP12032C**	R1/4	**1/2**	1/2	1-1/4	3-1/4
EP12040	**EP12040C**	R5/16	**5/8**	5/8	1-5/8	3-3/4
EP12048	**EP12048C**	R3/8	**3/4**	3/4	1-5/8	3-7/8
EP12064	**EP12064C**	R1/2	**1**	1	2	4-1/2
EP12110	**EP12110C**	R5/8	**1-1/4**	1-1/4	2	4-1/2

■ The TiN coated, or TiAlN coated is available on your request.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER END MILLS

EK193 SERIES FLAT SHANK
EK132 SERIES FLAT SHANK

T15, 3 FLUTE FINISHING
REGULAR LENGTH & MEDIUM LENGTH & LONG LENGTH

▶ High performance metal removal in aluminum alloys.



T15 | 3 | 42° | FLAT | P.1089

◆ U.S.A Stock

■ SQUARE

Unit : Inch

EDP No. UNCOATED	EDP No. TiCN COATED	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EP10323	EP10323C	1/2	1/2	1-1/4	3-1/4
EP10324	EP10324C	1/2	1/2	2	4
EP10403	EP10403C	5/8	5/8	1-5/8	3-3/4
EP10404	EP10404C	5/8	5/8	2-1/2	4-5/8
EP10484	EP10484C	3/4	3/4	1-5/8	3-7/8
EP10485	EP10485C	3/4	3/4	2-1/4	4-5/8
EP10486	EP10486C	3/4	3/4	3	5-1/4
EP10644	EP10644C	1	1	2	4-1/2
EP10645	EP10645C	1	1	3	5-1/2
EP10646	EP10646C	1	1	4	6-1/2
EP11165	EP11165C	1-1/4	1-1/4	2	4-1/2
EP11166	EP11166C	1-1/4	1-1/4	3	5-1/2
EP11167	EP11167C	1-1/4	1-1/4	4	6-1/2
EP11324	EP11324C	1-1/2	1-1/4	2	4-1/2
EP11325	EP11325C	1-1/2	1-1/4	3	5-1/2
EP11326	EP11326C	1-1/2	1-1/4	4	6-1/2

■ SQUARE with NECK

EDP No. UNCOATED	EDP No. TiCN COATED	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
EK13210	EK13210C	3/4	3/4	1-1/2	3	5-1/4	.705
EK13211	EK13211C	3/4	3/4	1-1/2	4	6-1/4	.705
EK13212	EK13212C	1	1	1-1/2	3	5-1/2	.950
EK13213	EK13213C	1	1	2	4	6-1/2	.950
EK13214	EK13214C	1	1	2	6	8-1/2	.950
EK13215	EK13215C	1-1/4	1-1/4	2	4	6-1/2	1.200
EK13216	EK13216C	1-1/4	1-1/4	2	6	8-1/2	1.200

Mill Dia. Tolerance (inch)	
0~+.0010	**0~+.0015

■ The TiN coated, or TiAlN coated is available on your request.

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER END MILLS

EK193 SERIES FLAT SHANK

T15, 3 FLUTE FINISHING CORNER RADIUS
REGULAR LENGTH & MEDIUM LENGTH & LONG LENGTH

▶ High performance metal removal in aluminum alloys.
▶ Corner radius against chipping



T15 | 3 | 42° | FLAT | P.1089

◆ U.S.A Stock

Unit : Inch

EDP No. UNCOATED	EDP No. TiCN COATED	Corner Radius R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EP10321	EP10321C	R.120	1/2	1/2	1-1/4	3-1/4
EP10322	EP10322C	R.120	1/2	1/2	2	4
EP10401	EP10401C	R.120	5/8	5/8	1-5/8	3-3/4
EP10402	EP10402C	R.120	5/8	5/8	2-1/2	4-5/8
EP10481	EP10481C	R.120	3/4	3/4	1-5/8	3-7/8
EP10482	EP10482C	R.120	3/4	3/4	2-1/4	4-5/8
EP10483	EP10483C	R.120	3/4	3/4	3	5-1/4
EP10641	EP10641C	R.120	1	1	2	4-1/2
EP10642	EP10642C	R.120	1	1	3	5-1/2
EP10643	EP10643C	R.120	1	1	4	6-1/2
EP11162	EP11162C	R.120	1-1/4	1-1/4	2	4-1/2
EP11163	EP11163C	R.120	1-1/4	1-1/4	3	5-1/2
EP11164	EP11164C	R.120	1-1/4	1-1/4	4	6-1/2
EP11321	EP11321C	R.120	1-1/2	1-1/4	2	4-1/2
EP11322	EP11322C	R.120	1-1/2	1-1/4	3	5-1/2
EP11323	EP11323C	R.120	1-1/2	1-1/4	4	6-1/2

■ The TiN coated, or TiAlN coated is available on your request.

Mill Dia. Tolerance (inch)	
0~+.0010	**0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER END MILLS

EP922 SERIES PLAIN SHANK

PREMIUM HSS-PM, 3 FLUTE 42° HELIX SHORT LENGTH ROUGHING for ALUMINUM

- Maximum stock removal rates at High Speed Condition.
- Reduces vibrations and improves surface roughness.





YPM ALU 3 42° PLAIN P.1090

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter Metric	Mill Diameter Inch	Shank Diameter	Length of Cut	Overall Length
	js12		h6		
EP922120	12.0	.4724	12	26	83
EP922140	14.0	.5512	12	26	83
EP922160	16.0	.6299	16	32	92
EP922180	18.0	.7087	16	32	92
EP922200	20.0	.7874	20	38	104
EP922220	22.0	.8661	20	38	104
EP922250	25.0	.9843	25	45	121
EP922280	28.0	1.1024	25	45	121
EP922320	32.0	1.2598	32	53	133

Tolerances according to DIN 7160 & 7161

Tolerance range in µm						
Nominal-Diameter in mm						
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30	over 30 to 50
js12	± 50	± 60	± 75	± 90	± 105	± 125
h6	0 / − 6	0 / − 8	0 / − 9	0 / − 11	0 / − 13	0 / − 16

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER END MILLS

EP924 SERIES PLAIN SHANK

PREMIUM HSS-PM, 3 FLUTE 42° HELIX LONG LENGTH ROUGHING for ALUMINUM

- Maximum stock removal rates at High Speed Condition.
- Reduces vibrations and improves surface roughness.





YPM ALU 3 42° PLAIN P.1090

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter Metric	Mill Diameter Inch	Shank Diameter	Length of Cut	Overall Length
	js12		h6		
EP924120	12.0	.4724	12	53	110
EP924140	14.0	.5512	12	53	110
EP924160	16.0	.6299	16	63	123
EP924180	18.0	.7087	16	63	123
EP924200	20.0	.7874	20	75	141
EP924220	22.0	.8661	20	75	141
EP924250	25.0	.9843	25	90	166
EP924280	28.0	1.1024	25	90	166
EP924320	32.0	1.2598	32	106	186

Tolerances according to DIN 7160 & 7161

Tolerance range in µm						
Nominal-Diameter in mm						
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30	over 30 to 50
js12	± 50	± 60	± 75	± 90	± 105	± 125
h6	0 / − 6	0 / − 8	0 / − 9	0 / − 11	0 / − 13	0 / − 16

◎ : Excellent ○ : Good

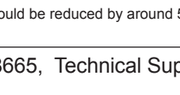
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE 42° HELIX - “BANSHEE”

E5253, E5254 SERIES

MATERIAL	N			
	ALUMINUM NON FERROUS METALS		ALUMINUM NON FERROUS METALS	
DIAMETER	RPM	FEED	RPM	FEED
1/8	10000	27.6	10000	35.4
5/32	10000	35.4	10000	43.3
3/16	10000	39.4	10000	51.2
1/4	10000	47.2	10000	59.1
5/16	8000	55.1	8000	70.9
3/8	8000	66.9	8000	82.7
1/2	8000	82.7	8000	102.4
9/16	6000	70.9	6000	86.6
5/8	6000	74.8	6000	94.5
11/16	4000	55.1	4000	70.9
13/16	4000	63.0	4000	74.8





A : Ø1/8 ~ Ø3/8 = 0.25×D
Ø1/2 ~ Ø13/16 = 0.5×D

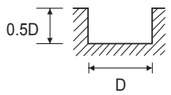
※ The Feed, in long & extra long types, should be reduced by around 50%.

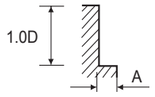
RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE 42° HELIX TiCN COATED - “BANSHEE”

EG253, EG254 SERIES

MATERIAL	N			
	ALUMINUM NON FERROUS METALS		ALUMINUM NON FERROUS METALS	
DIAMETER	RPM	FEED	RPM	FEED
1/8	15600	42.5	12000	56.7
5/32	15600	56.7	12000	66.1
3/16	15600	61.4	12000	80.3
1/4	15600	70.9	12000	94.5
5/16	12000	85.1	9600	108.7
3/8	12000	103.9	9600	127.6
1/2	12000	127.6	9600	160.6
9/16	9600	108.7	7200	132.2
5/8	9600	118.1	7200	146.5
11/16	6000	85.0	4800	108.7
13/16	6000	94.5	4800	118.1





A : Ø1/8 ~ Ø3/8 = 0.25×D
Ø1/2 ~ Ø13/16 = 0.5×D

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

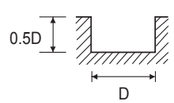
RPM = rev./min.
FEED = inch/min.

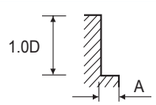
ALU-POWER END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 3 FLUTE 45° HELIX FINISH

E5980, E5981, E5982, E5983, E5984 SERIES

MATERIAL	N			
	ALUMINUM NON FERROUS METALS		ALUMINUM NON FERROUS METALS	
DIAMETER	RPM	FEED	RPM	FEED
1/8	10000	33.1	10000	42.5
5/32	10000	42.5	10000	52.0
3/16	10000	47.3	10000	61.4
1/4	10000	56.7	10000	70.9
5/16	8000	66.2	8000	85.1
3/8	8000	80.3	8000	99.2
1/2	8000	99.2	8000	122.9
9/16	6000	85.1	6000	104.0
5/8	6000	89.8	6000	113.4
11/16	4000	66.2	4000	85.1
13/16	4000	75.6	4000	89.8





A : Ø1/8 ~ Ø3/8 = 0.25×D
Ø1/2 ~ Ø13/16 = 0.5×D

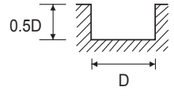
※ The Feed, in long & extra long types, should be reduced by around 50%.

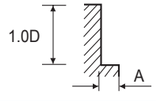
RPM = rev./min.
FEED = inch/min.

CARBIDE, 3 FLUTE 45° HELIX FINISH TiCN COATED

EG980, EG981, EG982, EG983, EG984 SERIES

MATERIAL	N			
	ALUMINUM NON FERROUS METALS		ALUMINUM NON FERROUS METALS	
DIAMETER	RPM	FEED	RPM	FEED
1/8	15600	43.0	12000	55.3
5/32	15600	55.3	12000	67.6
3/16	15600	61.4	12000	79.8
1/4	15600	73.7	12000	92.2
5/16	12000	86.0	9600	110.6
3/8	12000	104.4	9600	129.0
1/2	12000	128.9	9600	159.8
9/16	9600	110.6	7200	135.2
5/8	9600	116.7	7200	147.4
11/16	6000	86.0	4800	110.6
13/16	6000	98.3	4800	116.7





A : Ø1/8 ~ Ø3/8 = 0.25×D
Ø1/2 ~ Ø13/16 = 0.5×D

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

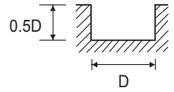
RPM = rev./min.
FEED = inch/min.

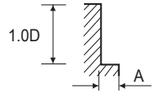
ALU-POWER END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 3 FLUTE 37° HELIX with EXTENDED NECK

E5977, E5985 SERIES

MATERIAL	N			
	ALUMINUM NON FERROUS METALS		ALUMINUM NON FERROUS METALS	
DIAMETER	RPM	FEED	RPM	FEED
1/4	8000	45.4	8000	56.7
3/8	6400	64.3	6400	79.4
1/2	6400	79.4	6400	98.3
5/8	4800	71.8	4800	90.7
3/4	3200	70.9	3200	87.4
1	2600	63.8	2600	78.7





A : Ø1/4 ~ Ø3/8 = 0.25×D
Ø1/2 ~ Ø1 = 0.5×D

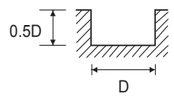
※ The Feed, in long & extra long types, should be reduced by around 50%.

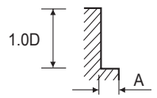
RPM = rev./min.
FEED = inch/min.

CARBIDE, 3 FLUTE 37° HELIX with EXTENDED NECK TiCN COATED

EG977, EG985 SERIES

MATERIAL	N			
	ALUMINUM NON FERROUS METALS		ALUMINUM NON FERROUS METALS	
DIAMETER	RPM	FEED	RPM	FEED
1/4	10500	59.0	10500	73.7
3/8	8300	83.5	8300	103.2
1/2	8300	103.2	8300	127.7
5/8	6200	93.4	6200	117.9
3/4	4200	92.1	4200	113.6
1	3400	83.0	3400	102.0





A : Ø1/4 ~ Ø3/8 = 0.25×D
Ø1/2 ~ Ø1 = 0.5×D

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

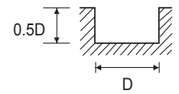
RPM = rev./min.
FEED = inch/min.

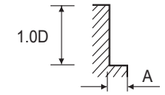
ALU-POWER END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE CORNER RADIUS with NECK

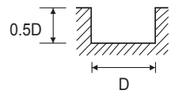
E5973 SERIES

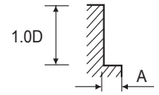
MATERIAL	N							
	ALUMINUM NON FERROUS METALS				COPPER ALLOYS			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R.012 × 5/32	10000	36.4	10000	42.4	3000	9.1	3000	10.6
R.020 × 1/4	10000	45.4	10000	60.6	3000	11.5	3000	15.2
R.024 × 5/16	8000	54.5	8000	69.6	2300	13.6	2300	17.6
R.031 × 3/8	8000	66.6	8000	81.8	2300	16.7	2300	20.6
R.040 × 1/2	8000	81.8	8000	103.0	2300	20.6	2300	25.8
R.051 × 5/8	6000	75.7	6000	93.9	1800	19.1	1800	23.6
R.063 × 3/4	4000	60.6	4000	75.7	1150	15.2	1150	19.1





A : Ø5/32 ~ Ø3/8 = 0.25×D
Ø1/2 ~ Ø3/4 = 0.5×D





A : Ø5/32 ~ Ø3/8 = 0.25×D
Ø1/2 ~ Ø3/4 = 0.5×D

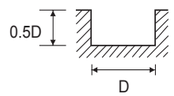
※ The Feed, in long & extra long types, should be reduced by around 50%.

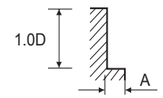
RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE 37° HELIX with EXTENDED NECK

E5976 SERIES

MATERIAL	N			
	ALUMINUM NON FERROUS METALS		ALUMINUM NON FERROUS METALS	
DIAMETER	RPM	FEED	RPM	FEED
1/4	8000	37.8	8000	47.3
3/8	6400	53.6	6400	66.2
1/2	6400	66.2	6400	81.9
5/8	4800	59.9	4800	75.6
3/4	3200	59.1	3200	72.9
1	2600	53.2	2600	65.6





A : Ø1/4 ~ Ø3/8 = 0.25×D
Ø1/2 ~ Ø1 = 0.5×D

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

RPM = rev./min.
FEED = inch/min.

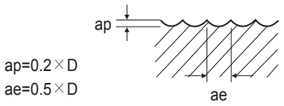
ALU-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE 37° HELIX LONG REACH BALL NOSE

E5978 SERIES

MATERIAL	N	
	ALUMINUM NON FERROUS METALS	
DIAMETER	RPM	FEED
R1/8 × 1/4	11200	55.1
R5/32 × 5/16	8600	63.0
R3/16 × 3/8	8600	74.0
R1/4 × 1/2	8600	94.5
R5/16 × 5/8	6800	85.0
R3/8 × 3/4	4300	69.3



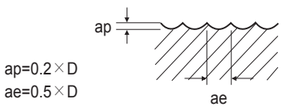
※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE 37° HELIX LONG REACH BALL NOSE TiCN COATED

EG978 SERIES

MATERIAL	N	
	ALUMINUM NON FERROUS METALS	
DIAMETER	RPM	FEED
R1/8 1/4	14500	71.7
R5/32 5/16	11200	81.9
R3/16 3/8	11200	96.2
R1/4 1/2	11200	122.9
R5/16 5/8	8800	110.5
R3/8 3/4	5600	104.0



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

RPM = rev./min.
FEED = inch/min.

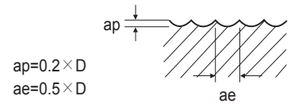
ALU-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE 50° HELIX BALL NOSE with NECK

E5974 SERIES

MATERIAL	N			
	ALUMINUM ALUMINUM ALLOYS		COPPER ALLOYS	
DIAMETER	RPM	FEED	RPM	FEED
R1/8 × 1/4	14000	53.0	4200	13.3
R5/32 × 5/16	10800	60.5	3200	15.1
R3/16 × 3/8	10800	71.2	3200	17.5
R1/4 × 1/2	10800	90.8	3200	22.7
R5/16 × 5/8	8500	81.8	2500	20.3
R3/8 × 3/4	5400	66.6	1600	16.7



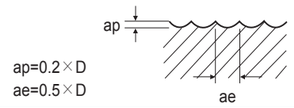
※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

CARBIDE, 3 FLUTE 40° HELIX BALL NOSE with NECK

E5975 SERIES

MATERIAL	N			
	ALUMINUM ALUMINUM ALLOYS		COPPER ALLOYS	
DIAMETER	RPM	FEED	RPM	FEED
R3/64 × 3/32	20700	28.8	6200	7.3
R1/16 × 1/8	13800	28.8	4200	7.3
R3/32 × 3/16	13800	40.9	4200	10.3
R1/8 × 1/4	13800	53.0	4200	13.3
R5/32 × 5/16	10800	60.6	3200	15.2
R3/16 × 3/8	10800	71.2	3200	17.6
R1/4 × 1/2	10800	90.9	3200	22.7
R5/16 × 5/8	8500	81.8	2500	20.3



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

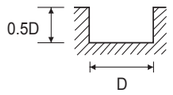
RPM = rev./min.
FEED = inch/min.

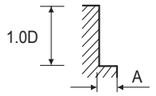
ALU-POWER END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE

E5522 SERIES

MATERIAL	N			
	ALUMINUM LOW SILICON ALUMINUM			
DIAMETER	RPM	FEED	RPM	FEED
3.0	10000	27.6	10000	35.4
4.0	10000	35.4	10000	43.3
5.0	10000	39.4	10000	51.2
6.0	10000	47.2	10000	59.1
8.0	8000	55.1	8000	70.9
10.0	8000	66.9	8000	82.7
12.0	8000	82.7	8000	102.4
14.0	6000	70.9	6000	86.6
16.0	6000	74.8	6000	94.5
18.0	4000	55.1	4000	70.9
20.0	4000	63.0	4000	74.8





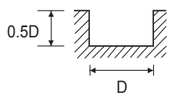
A : Ø3 ~ Ø10 = 0.25 × D
Ø12 ~ Ø20 = 0.5 × D

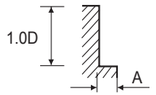
RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE TiCN COATED

EG522, EG930 SERIES

MATERIAL	N			
	ALUMINUM LOW SILICON ALUMINUM			
DIAMETER	RPM	FEED	RPM	FEED
3.0	13000	35.4	13000	47.2
4.0	13000	47.2	13000	55.1
5.0	13000	51.2	13000	66.9
6.0	13000	59.1	13000	78.7
8.0	10000	70.9	10000	90.6
10.0	10000	86.6	10000	106.3
12.0	10000	106.3	10000	133.9
14.0	8000	90.6	8000	110.2
16.0	8000	98.4	8000	122.1
18.0	5000	70.9	5000	90.6
20.0	5000	78.7	5000	98.4





A : Ø3 ~ Ø10 = 0.25 × D
Ø12 ~ Ø20 = 0.5 × D

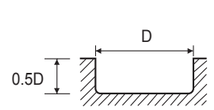
RPM = rev./min.
FEED = inch/min.

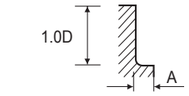
ALU-POWER END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE CORNER RADIUS TiCN COATED

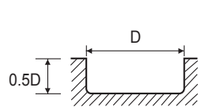
EG909 SERIES

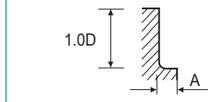
MATERIAL	N							
	ALUMINUM ALUMINUM ALLOYS				COPPER ALLOYS			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
4.0	13000	47.2	13000	55.1	3900	11.8	3900	13.8
6.0	13000	59.1	13000	78.7	3900	15.0	3900	19.7
8.0	10000	70.9	10000	90.6	3000	17.7	3000	22.8
10.0	10000	86.6	10000	106.3	3000	21.7	3000	26.8
12.0	10000	106.3	10000	133.9	3000	26.8	3000	33.5
16.0	8000	98.4	8000	122.1	2400	24.8	2400	30.7
20.0	5000	78.7	5000	98.4	1500	19.7	1500	24.8





A : ~Ø10=0.25D
Ø12~Ø20=0.5D





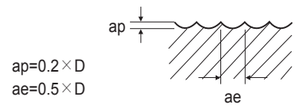
A : ~Ø10=0.25D
Ø12~Ø20=0.5D

RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE 50° HELIX BALL NOSE TiCN COATED

EG910 SERIES

MATERIAL	N			
	ALUMINUM ALUMINUM ALLOYS		COPPER ALLOYS	
DIAMETER	RPM	FEED	RPM	FEED
R3.0 × 6.0	18000	68.9	5500	17.3
R4.0 × 8.0	14000	78.7	4200	19.7
R5.0 × 10.0	14000	92.5	4200	22.8
R6.0 × 12.0	14000	118.1	4200	29.5
R8.0 × 16.0	11000	106.3	3300	26.4
R10.0 × 20.0	7000	86.6	2100	21.7



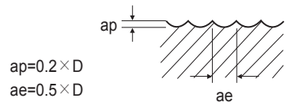
RPM = rev./min.
FEED = inch/min.

ALU-POWER END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 3 FLUTE 40° HELIX BALL NOSE TiCN COATED

EG908 SERIES

MATERIAL	N			
	ALUMINUM LOW SILICON ALUMINUM		COPPER ALLOYS	
DIAMETER	RPM	FEED	RPM	FEED
R1.0 ×2.0	27000	37.4	8000	9.5
R1.25×2.5	22000	37.4	6500	9.5
R1.5 ×3.0	18000	37.4	5500	9.5
R2.0 ×4.0	18000	49.2	5500	12.2
R2.5 ×5.0	18000	53.2	5500	13.4
R3.0 ×6.0	18000	68.9	5500	17.3
R4.0 ×8.0	14000	78.7	4200	19.7
R5.0 ×10.0	14000	92.5	4200	22.8
R6.0 ×12.0	14000	118.1	4200	29.5
R8.0 ×16.0	11000	106.3	3300	26.4

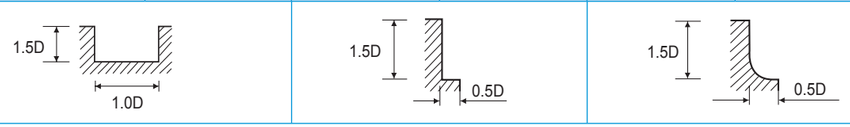


RPM = rev./min.
FEED = inch/min.

CARBIDE, 3 FLUTE ROUGHING

E5E44, E5E98, E5E45 SERIES

MATERIAL	N					
	ALUMINUM ALUMINUM ALLOYS					
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
1/4	7000	20.7	10000	29.5	10000	29.5
3/8	4700	16.1	6700	22.8	6700	22.8
1/2	3600	16.3	5100	23.0	5100	23.0
5/8	2800	16.9	4000	24.0	4000	24.0
3/4	2300	18.5	3300	26.4	3300	26.4
1	1800	17.3	2500	24.4	2500	24.4



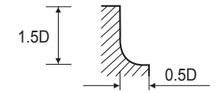
RPM = rev./min.
FEED = inch/min.

ALU-POWER END MILLS — RECOMMENDED CUTTING CONDITIONS

T15, 3 FLUTE 42° HELIX SPEED-FREAK BALL NOSE

EK196 SERIES

MATERIAL	N	
	ALUMINUM ALUMINUM ALLOYS	
DIAMETER	RPM	FEED
1/4	4500	7.9
5/16	3100	9.1
3/8	2500	13.8
1/2	2000	15.8
5/8	1600	17.7



※ The FEED, in long & long reach types, should be reduced by around 50%

RPM = rev./min.
FEED = inch/min.

T15, 3 FLUTE, 42° HELIX FINISHING with CORNER RADIUS

EK193 SERIES

MATERIAL	N			
	ALUMINUM ALUMINUM ALLOYS			
DIAMETER	RPM	FEED	RPM	FEED
1/2	4500	38	4095	38
5/8	3500	26	3185	39
3/4	2300	27	2093	41
1	2000	27	1820	40
1-1/4	1600	26	1456	38
1-1/2	1350	25	1229	38



※ The FEED, in long & long reach types, should be reduced by around 50%

RPM = rev./min.
FEED = inch/min.

ALU-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS

PREMIUM HSS-PM, 3 FLUTE 42° HELIX ROUGHING TiAlN COATED

EP922, EP924 SERIES

MATERIAL	N			
	ALUMINUM ALUMINUM ALLOYS			
DIAMETER	RPM	FEED	RPM	FEED
12.0	2800	16.1	2800	21.7
16.0	2200	18.3	2200	24.6
20.0	1700	20.7	1700	27.6
25.0	1400	18.3	1400	24.6
32.0	1100	20.7	1100	27.6

※ The FEED, in long & long reach types, should be reduced by around 50%

RPM = rev./min.
FEED = inch/min.

SPEED FREEK

YG T-15 3 FLUTE ALUMINUM ROUGHER

SPEEDS & FEEDS

MATERIAL	UNCOATED	TiCN	CHIP LOAD PER TOOTH & CUTTING DIAMETER				
	SFM	SFM	1/2	3/4	1.00	1.25	2.00
ALUMINUM [SOFT]	250-500	400-2,500	.005	.007	.010	.012	.015
AIRCRAFT ALUMINUM [UNDER 10% SILICON]	250-750	500-3,250	.005	.007	.010	.012	.015

3/4 DIA. / TiCN COATED / 10,186 RPM [2,000 SFM] @ 213 IPM

SFM	0.262 × CUTTER DIA × RPM
RPM	$3.82 \times \frac{SFM}{CUTTER\ DIA}$
IPM	FPT × N × RPM

FPT	$\frac{IPM}{N \times RPM}$
IPR	$\frac{IPM}{RPM}$
CUTTING TIME	$\frac{LENGTH\ OF\ CUT}{IPM}$

SFM = SURFACE FEET PER MINUTE
RPM = REVOLUTIONS PER MINUTE
N = NUMBER OF TEETH
IPR = INCHES PER REVOLUTION
IPM = INCHES PER MINUTE
FPT = FEED PER TOOTH

CARBIDE

Being the best through innovation



D-POWER GRAPHITE END MILLS

- Diamond Coated Carbide End Mills for Graphite

SOLID CARBIDE D-POWER GRAPHITE END MILLS

◎ : Excellent ○ : Good

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE	P: Carbon Steels ~HRc20	P: Alloy Steels HRc20~30	P: Prehardened Steels HRc30~40	P: Hardened Steels HRc40~45	P: Hardened Steels HRc45~55	H: High Hardened Steels HRc55~70	M: Stainless Steels	K: Cast Iron	N: Copper	N: Graphite	N: Aluminum	N: Acrylic	N: CFRP	S: Titanium	S: High Temperature Alloy
INCH																				
EI107		CARBIDE, 4(2) FLUTE REGULAR LENGTH ◆	D1/64	D1/2	**1094**										◎	○				
EI099		CARBIDE, 2 FLUTE REGULAR LENGTH BALL NOSE ◆	R.0391	R1/4	**1095**										◎	○				
EI106		CARBIDE, 4 FLUTE REGULAR LENGTH BALL NOSE ◆	R.0391	R1/4	**1095**										◎	○				
EI971		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE ◆	R.0391	R1/4	**1096**										◎	○				
EI972		CARBIDE, 2 FLUTE LONG REACH BALL NOSE ◆	R.0391	R5/32	**1097**										◎	○				
EIB07		CARBIDE, 4 FLUTE REGULAR LENGTH BALL NOSE with NECK ◆	R.0156	R.0625	**1098**										◎	○				
EIB05		CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS ◆	D1/16	D1/2	**1099**										◎	○				
EIB06		CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS with NECK ◆	D1/32	D3/8	**1100**										◎	○				
METRIC																				
EI880		CARBIDE, 2 FLUTE SHORT LENGTH BALL NOSE ◇	R1.0	R6.0	**1101**										◎	○				
EI881		CARBIDE, 3 FLUTE SHORT LENGTH BALL NOSE ◇	R1.0	R6.0	**1101**										◎	○				
EI451		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE ◇	R1.0	R6.0	**1102**										◎	○				
EI450		CARBIDE, 2 FLUTE LONG REACH BALL NOSE ◇	R1.0	R4.0	**1103**										◎	○				
		RECOMMENDED CUTTING CONDITIONS			**1104**															

◆ U.S.A Stock

◇ Call for Availability

D-POWER GRAPHITE END MILLS

EI107 SERIES PLAIN SHANK

CARBIDE, 4(2) FLUTE REGULAR LENGTH

- ▶ Higher hardness of film and excellent wear-resistance increase the tool life dramatically.
- ▶ Ultra fine film of YG-1's diamond coated carbide end mills ensure the smooth and excellent surface on work materials.
- ▶ High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass, etc.
- ▶ YG-1's diamond coated carbide end mills may have good result for the machining of non-ferrous metals and non-metallic materials.



MG | 4 | 30° | PLAIN P.1105

for GRAPHITE
◆ U.S.A Stock

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
★ 99686	1/64	1/8	3/65	1-1/2
99629	1/8	1/8	1/2	1-1/2
99630	3/16	3/16	5/8	2
99631	1/4	1/4	3/4	2-1/2
99632	5/16	5/16	13/16	2-1/2
99633	3/8	3/8	7/8	2-1/2
99635	1/2	1/2	1	3

★ 2Flute

▶Recommended Cutting Condition
▶Cutting speed : 500~1200 SFPM
▶ Feed : .002~.006 inch/tooth

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

◎ : Excellent ○ : Good

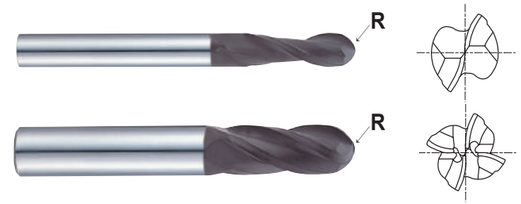
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
									◎	○				

D-POWER GRAPHITE END MILLS

EI099 SERIES PLAIN SHANK
EI106 SERIES PLAIN SHANK

CARBIDE, 2&4 FLUTE REGULAR LENGTH BALL NOSE

- ▶ Higher hardness of film and excellent wear-resistance increase the tool life dramatically.
- ▶ Ultra fine film of YG-1's diamond coated carbide ball end mills ensure the smooth and excellent surface on work materials.
- ▶ High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass, etc.
- ▶ YG-1's diamond coated carbide ball end mills may have good result for the machining of non-ferrous metals and non-metallic materials.



MG | 2 | 30° | R ±.0008 | PLAIN P.1104

for GRAPHITE
◆ U.S.A Stock

EI099(2 FLUTE), EI106(4 FLUTE) Series

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
2 FLUTE	4 FLUTE	R (±.0008)				
99572	99621	R .0391	5/64	1/8	1/4	1-1/2
99573	99622	R 3/64	3/32	1/8	3/8	1-1/2
99574	99623	R 1/16	1/8	1/8	1/2	1-1/2
99575	99624	R 3/32	3/16	3/16	5/8	2
99576	99625	R 1/8	1/4	1/4	3/4	2-1/2
99577	99626	R 5/32	5/16	5/16	13/16	2-1/2
99578	99627	R 3/16	3/8	3/8	7/8	2-1/2
99583	99628	R 1/4	1/2	1/2	1	3

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

◎ : Excellent ○ : Good

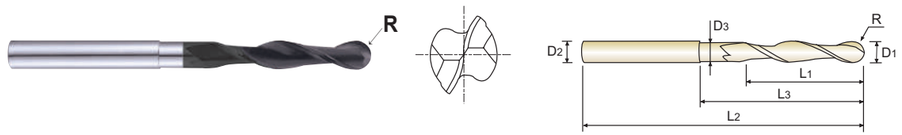
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
									◎	○				

D-POWER GRAPHITE END MILLS

EI971 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE

- Higher hardness of film and excellent wear-resistance increase the tool life dramatically.
- Ultra fine film of YG-1's diamond coated carbide ball end mills ensure the smooth and excellent surface on work materials.
- High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass, etc.
- YG-1's diamond coated carbide ball end mills may have good result for the machining of non-ferrous metals and non-metallic materials.



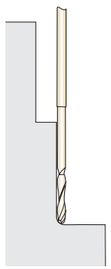
MG | 2 | 30° | R ±.0008 | PLAIN P.1104

for GRAPHITE
◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (±.0008)	D1	D2	L1	L3	L2	D3
99671	R.0391	**5/64**	1/8	3/8	3/4	3-1/4	.076
99672	R 1/16	**1/8**	1/8	5/8	1	3-1/4	.120
99973	R 3/32	**3/16**	3/16	1-1/8	2	4	.182
99673	R 3/32	**3/16**	1/4	1-1/8	2	4	.185
99674	R 1/8	**1/4**	1/4	1-1/8	2	4	.230
99675	R 5/32	**5/16**	5/16	1-1/2	2-3/8	4-1/2	.293
99676	R 3/16	**3/8**	3/8	2	2-3/4	4-3/4	.355
99677	R1/4	**1/2**	1/2	2-1/8	3	5-1/8	.480

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



◎ : Excellent ○ : Good

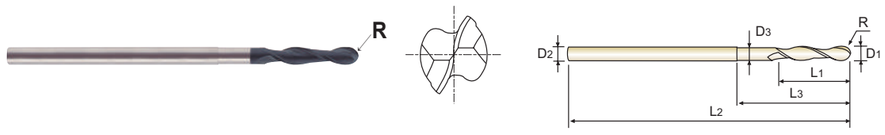
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
									◎	○				

D-POWER GRAPHITE END MILLS

EI972 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG REACH BALL NOSE

- Higher hardness of film and excellent wear-resistance increase the tool life dramatically.
- Ultra fine film of YG-1's diamond coated carbide ball end mills ensure the smooth and excellent surface on work materials.
- High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass, etc.
- YG-1's diamond coated carbide ball end mills may have good result for the machining of non-ferrous metals and non-metallic materials.



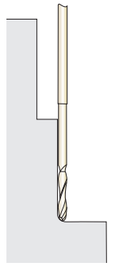
MG | 2 | 30° | R ±.0008 | PLAIN P.1104

for GRAPHITE
◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (±.0008)	D1	D2	L1	L3	L2	D3
99678	R.0391	**5/64**	1/8	3/8	3/4	4	.076
99679	R1/16	**1/8**	1/8	5/8	1	4	.120
99980	R3/32	**3/16**	3/16	1-1/8	2	4-3/4	.182
99680	R3/32	**3/16**	1/4	1-1/8	2	4-3/4	.186
99681	R1/8	**1/4**	1/4	1-1/8	2	6	.230
99682	R5/32	**5/16**	5/16	1-1/2	2-3/8	6	.293

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



◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
									◎	○				

D-POWER GRAPHITE END MILLS

EIB07 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE REGULAR LENGTH BALL NOSE with NECK

- ▶ Higher hardness of film and excellent wear-resistance increase the tool life dramatically.
- ▶ Ultra fine film of YG-1's diamond coated carbide ball end mills ensure the smooth and excellent surface on work materials.
- ▶ High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass, etc.
- ▶ YG-1's diamond coated carbide ball end mills may have good result for the machining of non-ferrous metals and non-metallic materials.



MG | 4 | 30° | R ±.0008 | PLAIN | P.1104

for GRAPHITE
◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (±.0008)	D1	D2	L1	L3	L2	D3
EIB07002	R.0156	**1/32**	1/8	3/32	3/8	3	.028
EIB07901	R.0156	**1/32**	1/8	3/32	1/2	3	.028
EIB07003	R.0234	**3/64**	1/8	9/64	9/16	3	.043
EIB07902	R.0234	**3/64**	1/8	9/64	3/4	3	.043
EIB07004	R.0312	**1/16**	1/8	3/16	3/4	3	.057
EIB07903	R.0312	**1/16**	1/8	3/16	1	3	.057
EIB07006	R.0469	**3/32**	1/8	9/32	1	3	.086
EIB07904	R.0469	**3/32**	1/8	9/32	1-1/2	3	.086
EIB07008	R.0625	**1/8**	1/8	3/8	1-1/2	3	.115
EIB07905	R.0625	**1/8**	1/8	3/8	2	3	.115

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
									◎	○				

D-POWER GRAPHITE END MILLS

EIB05 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS

- ▶ Higher hardness of film and excellent wear-resistance increase the tool life dramatically.
- ▶ Ultra fine film of YG-1's diamond coated carbide ball end mills ensure the smooth and excellent surface on work materials.
- ▶ High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass, etc.
- ▶ YG-1's diamond coated carbide ball end mills may have good result for the machining of non-ferrous metals and non-metallic materials.



MG | 4 | 30° | R ±.001 | PLAIN | P.1104

for GRAPHITE
◆ U.S.A Stock

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (±.001)	D1	D2	L1	L3	L2	D3
EIB05004	R.010	**1/16**	1/8	3/16	-	1-1/2	-
EIB05901	R.015	**1/16**	1/8	3/16	-	1-1/2	-
EIB05006	R.010	**3/32**	1/8	3/8	-	1-1/2	-
EIB05008	R.015	**1/8**	1/8	1/2	-	1-1/2	-
EIB05902	R.020	**1/8**	1/8	1/2	-	1-1/2	-
EIB05012	R.020	**3/16**	3/16	5/8	-	2	-
EIB05911	R.020	**3/16**	3/16	3/16	1-1/2	4	.169
EIB05903	R.030	**3/16**	3/16	5/8	-	2	-
EIB05016	R.020	**1/4**	1/4	3/4	-	2-1/2	-
EIB05913	R.020	**1/4**	1/4	1/4	2	4	.230
EIB05912	R.020	**1/4**	1/4	1/4	2	6	.230
EIB05904	R.030	**1/4**	1/4	3/4	-	2-1/2	-
EIB05024	R.020	**3/8**	3/8	7/8	-	2-1/2	-
EIB05908	R.020	**3/8**	3/8	3/8	2	4	.355
EIB05907	R.020	**3/8**	3/8	3/8	-	4	-
EIB05905	R.030	**3/8**	3/8	7/8	-	2-1/2	-
EIB05032	R.030	**1/2**	1/2	1	-	3	-
EIB05906	R.060	**1/2**	1/2	1	-	3	-
EIB05909	R.030	**1/2**	1/2	1-1/2	-	4	-
EIB05910	R.030	**1/2**	1/2	3	-	6	-

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
									◎	○				

D-POWER GRAPHITE END MILLS

EIB06 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS with NECK

- ▶ Higher hardness of film and excellent wear-resistance increase the tool life dramatically.
- ▶ Ultra fine film of YG-1's diamond coated carbide ball end mills ensure the smooth and excellent surface on work materials.
- ▶ High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass, etc.
- ▶ YG-1's diamond coated carbide ball end mills may have good result for the machining of non-ferrous metals and non-metallic materials.



MG | 4 | 30° | R ±.001 | PLAIN | P.1105

for GRAPHITE
◆ U.S.A Stock

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (±.001)	D1	D2	L1	L3	L2	D3
EIB06002	R.005	**1/32**	1/8	3/32	3/8	3	.028
EIB06901	R.005	**1/32**	1/8	3/32	1/2	3	.028
EIB06003	R.010	**3/64**	1/8	9/64	9/16	3	.043
EIB06902	R.010	**3/64**	1/8	9/64	3/4	3	.043
EIB06004	R.010	**1/16**	1/8	3/16	3/4	3	.057
EIB06903	R.010	**1/16**	1/8	3/16	1	3	.057
EIB06006	R.010	**3/32**	1/8	9/32	1	3	.086
EIB06904	R.010	**3/32**	1/8	9/32	1-1/2	3	.086
EIB06008	R.010	**1/8**	1/8	3/8	1-1/2	3	.115
EIB06905	R.010	**1/8**	1/8	3/8	2	3	.115
EIB06906	R.015	**1/8**	1/8	3/16	.800	2-1/2	.115
EIB06907	R.020	**3/8**	3/8	3/8	3	6	.355

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

◎ : Excellent ○ : Good

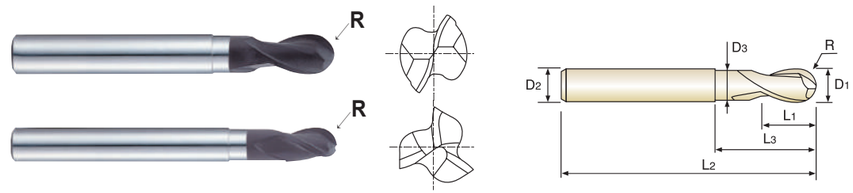
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
									◎	○				

D-POWER GRAPHITE END MILLS

EI880 SERIES PLAIN SHANK
EI881 SERIES PLAIN SHANK

CARBIDE, 2&3 FLUTE SHORT LENGTH BALL NOSE

- ▶ Higher hardness of film and excellent wear-resistance increase the tool life dramatically.
- ▶ Ultra fine film of YG-1's diamond coated carbide ball end mills ensure the smooth and excellent surface on work materials.
- ▶ High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass, etc.
- ▶ YG-1's diamond coated carbide ball end mills may have good result for the machining of non-ferrous metals and non-metallic materials.



MG | 2&3 | 30° | R ±0.01 | PLAIN | P.1105

for GRAPHITE
◇ Call for Availability

EI880(2 FLUTE), EI881(3 FLUTE) Series

Unit : mm

EDP No.		Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
			Metric	Inch					
2 FLUTE	3 FLUTE	R (±0.01)	D1		D2	L1	L3	L2	D3
EI880020	**EI881020**	R1.0	**2.0**	**.0787**	6	3	5	60	1.9
EI880025	**EI881025**	R1.25	**2.5**	**.0984**	6	4	6	60	2.4
EI880030	**EI881030**	R1.5	**3.0**	**.1181**	6	4.5	6.5	60	2.8
EI880035	**EI881035**	R1.75	**3.5**	**.1378**	6	5	7	65	3.2
EI880040	**EI881040**	R2.0	**4.0**	**.1575**	6	6	8	65	3.7
EI880050	**EI881050**	R2.5	**5.0**	**.1969**	6	7.5	10	65	4.6
EI880060	**EI881060**	R3.0	**6.0**	**.2362**	6	9	12	75	5.6
EI880080	**EI881080**	R4.0	**8.0**	**.3150**	8	12	25	75	7.4
EI880100	**EI881100**	R5.0	**10.0**	**.3937**	10	15	30	80	9.4
EI880120	**EI881120**	R6.0	**12.0**	**.4724**	12	18	36	90	11.4

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

◎ : Excellent ○ : Good

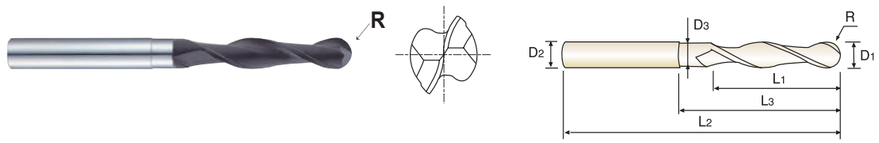
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
									◎	○				

D-POWER GRAPHITE END MILLS

EI451 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE

- Higher hardness of film and excellent wear-resistance increase the tool life dramatically.
- Ultra fine film of YG-1's diamond coated carbide ball end mills ensure the smooth and excellent surface on work materials.
- High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass, etc.
- YG-1's diamond coated carbide ball end mills may have good result for the machining of non-ferrous metals and non-metallic materials.



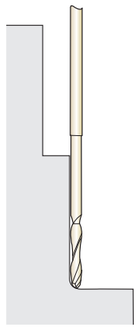
MG | 2 | 30° | R ±0.01 | PLAIN P.1105

for GRAPHITE
◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R (±0.01)	D1		D2	L1	L3	L2	D3
99558	R1.0	2.0	.0787	4	10	20	80	1.95
99559	R1.5	3.0	.1181	4	15	25	80	2.9
99560	R2.0	4.0	.1575	4	20	30	80	3.9
99561	R2.5	5.0	.1969	6	30	50	100	4.9
99562	R3.0	6.0	.2362	6	30	50	100	5.5
99563	R4.0	8.0	.3150	8	40	60	110	7.5
99564	R5.0	10.0	.3937	10	50	70	120	9.5
99565	R6.0	12.0	.4724	12	55	75	130	11.5

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



◎ : Excellent ○ : Good

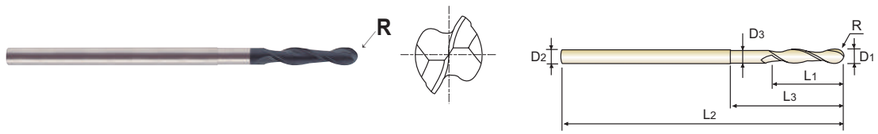
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
									◎	○				

D-POWER GRAPHITE END MILLS

EI450 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG REACH BALL NOSE

- Higher hardness of film and excellent wear-resistance increase the tool life dramatically.
- Ultra fine film of YG-1's diamond coated carbide ball end mills ensure the smooth and excellent surface on work materials.
- High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass, etc.
- YG-1's diamond coated carbide ball end mills may have good result for the machining of non-ferrous metals and non-metallic materials.



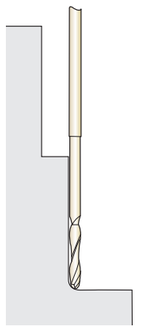
MG | 2 | 30° | R ±0.01 | PLAIN P.1105

for GRAPHITE
◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R (±0.01)	D1		D2	L1	L3	L2	D3
99566	R1.0	2.0	.0787	4	10	20	100	1.95
99567	R1.5	3.0	.1181	4	15	25	100	2.9
99568	R2.0	4.0	.1575	4	20	30	100	3.9
99569	R2.5	5.0	.1969	6	30	50	120	4.9
99570	R3.0	6.0	.2362	6	30	50	150	5.5
99571	R4.0	8.0	.3150	8	40	60	150	7.5

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



◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
									◎	○				

D-POWER GRAPHITE END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE BALL NOSE

EI106 SERIES

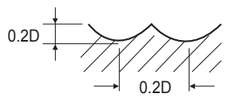
MATERIAL	N	
	GRAPHITE	
DIAMETER	RPM	FEED
5/64	16000	63.0
3/32	16000	88.2
1/8	16000	114.2
9/64	16000	137.8
5/32	16000	165.4
3/16	15500	200.8
1/4	15000	232.3
5/16	13000	236.2
3/8	11500	324.2
1/2	10500	248.0

RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE BALL NOSE

EI099, EI971, EI972 SERIES

MATERIAL	N	
	GRAPHITE	
DIAMETER	RPM	FEED
5/64	16000	31.5
3/32	16000	44.1
1/8	16000	57.1
9/64	16000	58.9
5/32	16000	82.7
3/16	15500	100.4
1/4	15000	116.1
5/16	13000	118.1
3/8	11500	120.1
1/2	10500	124.0

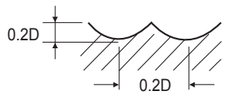


RPM = rev./min.
FEED = inch/min.

CARBIDE, 4 FLUTE BALL NOSE with NECK

EIB07 SERIES

MATERIAL	N	
	GRAPHITE	
DIAMETER	RPM	FEED
1/32	20000	37.9
3/64	20000	42.5
1/16	20000	51.7
5/64	16000	56.7
3/32	16000	79.4
1/8	16000	101.8
9/64	16000	124.7
5/32	16000	147.4
3/16	15500	182.0
1/4	15000	210.5
5/16	13000	211.5
3/8	11500	216.8
1/2	10500	224.7

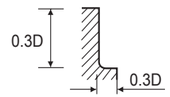


RPM = rev./min.
FEED = inch/min.

CARBIDE, 4 FLUTE CORNER RADIUS

EIB05 SERIES

MATERIAL	N	
	GRAPHITE	
DIAMETER	RPM	FEED
1/16	40000	126.0
5/64	40000	157.5
1/8	40000	220.5
5/32	40000	315.0
3/16	40000	378.0
1/4	40000	440.9
5/16	32000	440.9
3/8	26000	451.4
1/2	21000	430.5



RPM = rev./min.
FEED = inch/min.

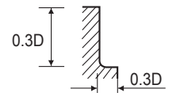
D-POWER GRAPHITE END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE CORNER RADIUS with NECK

EIB06 SERIES

MATERIAL	N	
	GRAPHITE	
DIAMETER	RPM	FEED
1/32	40000	44.1
3/64	40000	66.1
1/16	40000	88.2
5/64	40000	110.2
1/8	40000	154.3
5/32	40000	220.5
3/16	40000	264.6
1/4	40000	308.7
5/16	32000	308.7
3/89	26000	316.1
1/2	21000	301.4

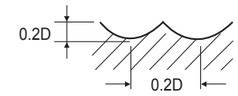


RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE BALL NOSE

EI880, EI451, EI450 SERIES

MATERIAL	N	
	GRAPHITE	
DIAMETER	RPM	FEED
2.0	16000	31.5
2.5	16000	44.1
3.0	16000	57.1
3.5	16000	68.9
4.0	16000	82.7
5.0	15500	100.4
6.0	15000	116.1
8.0	13000	118.1
10.0	11500	120.1
12.0	10500	124.0

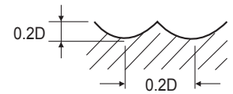


RPM = rev./min.
FEED = inch/min.

CARBIDE, 3 FLUTE BALL NOSE

EI881 SERIES

MATERIAL	N	
	GRAPHITE	
DIAMETER	RPM	FEED
2.0	16000	47.2
2.5	16000	66.9
3.0	16000	84.7
3.5	16000	104.3
4.0	16000	122.1
5.0	15500	149.6
6.0	15000	175.2
8.0	13000	177.2
10.0	11500	181.1
12.0	10500	187.0

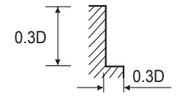


RPM = rev./min.
FEED = inch/min.

CARBIDE, 4 FLUTE

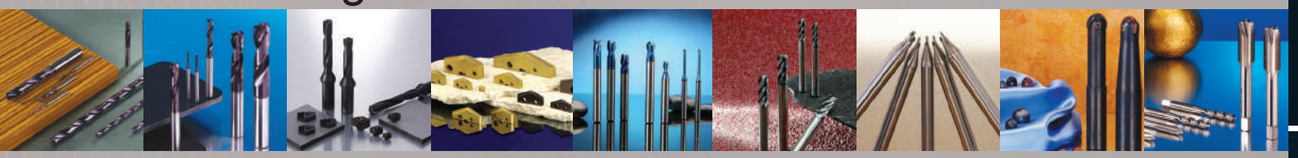
EI107 SERIES

MATERIAL	N	
	GRAPHITE	
DIAMETER	RPM	FEED
1/64	40000	31.5
1/8	40000	63.0
3/16	40000	126.0
1/4	40000	189.0
5/16	32000	196.9
3/8	26000	204.7
1/2	20000	189.0



RPM = rev./min.
FEED = inch/min.

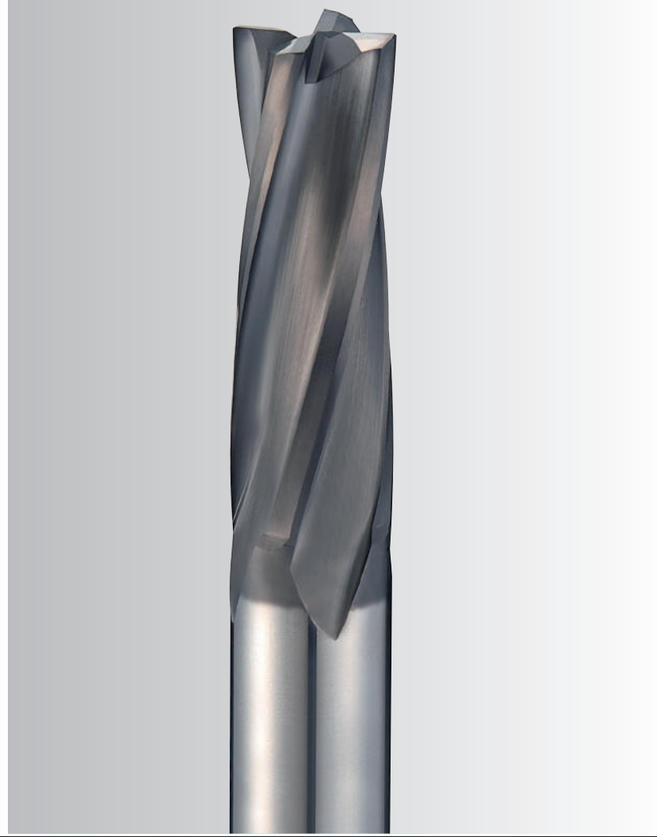
Global Cutting Tool Leader **YG-1**



CARBIDE

Being the best through innovation





D-POWER CFRP END MILLS

- For composite materials including CFRP, GFRP

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
GUG82		CARBIDE, MULTI FLUTE DUAL HELIX	D1/4	D1/2	1110
GUG83		CARBIDE, 4 FLUTE	D1/4	D1/2	1111
		RECOMMENDED CUTTING CONDITIONS			1112

SOLID CARBIDE D-POWER CFRP END MILLS

◎ : Excellent ○ : Good

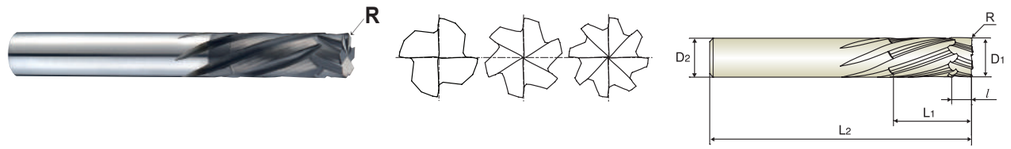
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
									○			◎		
									○			◎		

D-POWER CFRP END MILLS

GUG82 SERIES PLAIN SHANK

CARBIDE, MULTI FLUTE DUAL HELIX

- For composite materials - CFRP, GFRP.
- Reduce delamination and burrs.
- Diamond coating with excellent abrasion resistance



MG 4-8 20°/20° PLAIN

for CFRP

P.1112

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
	R	D_1	D_2	$L_1(l)$	L_2	
GUG82016	R.020	**1/4**	1/4	1/2(1/8)	2-1/2	4
GUG82024	R.020	**3/8**	3/8	3/4(3/16)	3	6
GUG82032	R.020	**1/2**	1/2	1(1/4)	3-1/2	8

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
									○			◎		

D-POWER CFRP END MILLS

GUG83 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE

- For composite materials - CFRP, GFRP.
- Reduce delamination and burrs.
- Diamond coating with excellent abrasion resistance



MG 4 15° PLAIN

for CFRP

P.1112

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
	R	D_1	D_2	$L_1(l)$	L_2	
GUG83016	R.010	**1/4**	1/4	3/4	2-1/2	4
GUG83024	R.015	**3/8**	3/8	1-1/4	3-1/4	4
GUG83032	R.015	**1/2**	1/2	1-1/2	4	4

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
									○			◎		

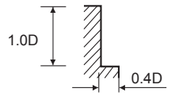
D-POWER CFRP END MILLS

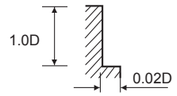
RECOMMENDED CUTTING CONDITIONS

CARBIDE, MULTI FLUTE DUAL HELIX

GUG82 SERIES

MATERIAL	N							
	CFRP		GFRP		CFRP		GFRP	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	7520	41.45	4010	15.79	10026	74.21	5013	27.63
3/8	5013	65.13	2674	23.37	6684	121.58	3342	35.53
1/2	3760	76.97	2005	27.16	5013	145.26	2507	39.47



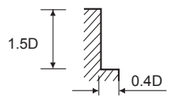


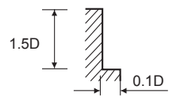
RPM = rev./min.
FEED = inch/min.

CARBIDE, 4 FLUTE

GUG83 SERIES

MATERIAL	N							
	CFRP		GFRP		CFRP		GFRP	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	10026	55.26	5013	19.74	10026	44.21	5013	19.74
3/8	6684	57.89	3342	19.47	6684	46.32	3342	16.84
1/2	5013	51.32	2507	16.97	5013	41.05	2507	13.82

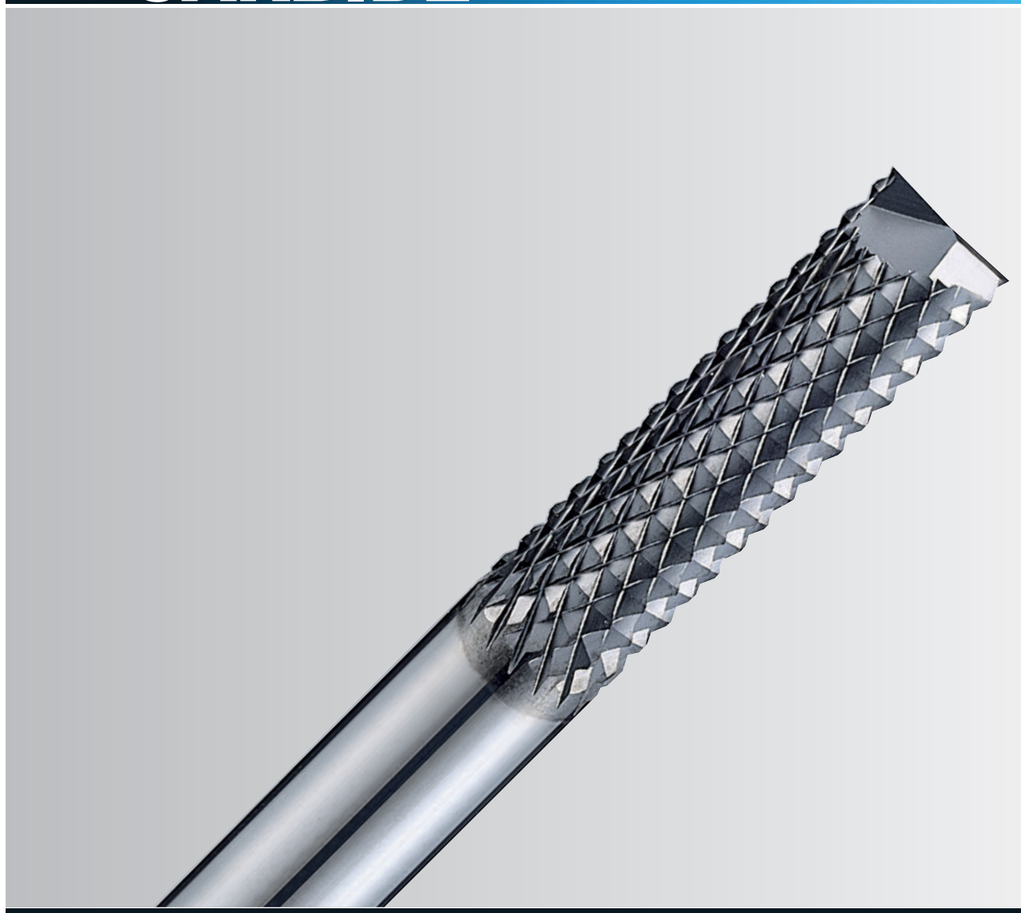




RPM = rev./min.
FEED = inch/min.

CARBIDE

Being the best through innovation



ROUTERS CFRP

- For composite materials including CFRP, GFRP

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
RTI105		CARBIDE, ROUTER END MILL TYPE	D1/4	D1/2	1116
		RECOMMENDED CUTTING CONDITIONS			1117

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
												◎		

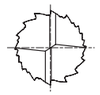
ROUTERS

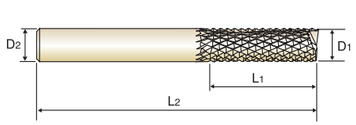
RTI105 SERIES PLAIN SHANK

CARBIDE, ROUTER END MILL TYPE

- For composite materials - CFRP, GFRP.
- Reduce delamination and burrs.
- Diamond coating with excellent abrasion resistance





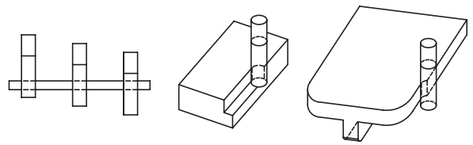


MG PLAIN P.1117

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
RTI105016	1/4	1/4	3/4	2-1/4
RTI105024	3/8	3/8	1-1/4	3-1/2
RTI105032	1/2	1/2	1-1/2	4

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
-.0008~-.003	h6



ROUTERS

RECOMMENDED CUTTING CONDITIONS

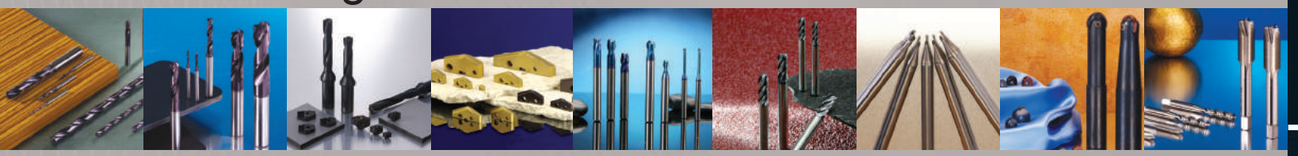
CARBIDE, ROUTER END MILL TYPE

RTI105 SERIES

MATERIAL	N					
	CFRP			GFRP		
DIAMETER	RPM	FEED	SFM	RPM	FEED	SFM
1/4	10030	82.78	656	5010	41.34	328
3/8	6680	126.20	656	3340	63.10	328
1/2	5010	126.24	656	2510	63.12	329

RPM = rev./min.
FEED = inch/min.
SFM = ft/min.

Global Cutting Tool Leader **YG-1**



CARBIDE

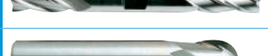
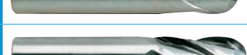
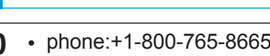
Being the best through innovation



STANDARD CARBIDE END MILLS

- General Purpose

◎ : Excellent ○ : Good

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE	P: Carbon Steels ~HRc20	P: Alloy Steels HRc20~30	P: Prehardened Steels HRc30~40	P: Hardened Steels HRc40~45	P: Hardened Steels HRc45~55	H: High Hardened Steels HRc55~70	M: Stainless Steels	K: Cast Iron	N: Copper	N: Graphite	N: Aluminum	N: Acrylic	N: CFRP	S: Titanium	S: High Temperature Alloy
INCH																				
UGMF90		CARBIDE, 2 FLUTE REGULAR LENGTH	D1/8	D1	1124	◎	◎	◎				○	○	○		○				
E5020		CARBIDE, 2 FLUTE REGULAR LENGTH	D1/32	D1	1125	◎	◎	◎				○	○	○		○				
UGMF89		CARBIDE, 4 FLUTE REGULAR LENGTH	D1/16	D1	1126	◎	◎	◎				○	○	○		○				
E5021		CARBIDE, 4 FLUTE REGULAR LENGTH	D1/16	D1	1127	◎	◎	◎				○	○	○		○				
E5244		CARBIDE, 2 FLUTE STUB LENGTH	D1/16	D3/4	1128	◎	◎	◎				○	○	○		○				
UGMGF57		CARBIDE, 4 FLUTE STUB LENGTH	D1/16	D3/4	1129	◎	◎	◎				○	○	○		○				
E5245		CARBIDE, 4 FLUTE STUB LENGTH	D1/16	D3/4	1130	◎	◎	◎				○	○	○		○				
E5011		CARBIDE, 2 FLUTE LONG LENGTH	D1/8	D1	1131	◎	◎	◎				○	○	○		○				
E5012		CARBIDE, 4 FLUTE LONG LENGTH	D1/8	D1	1131	◎	◎	◎				○	○	○		○				
UGMGF58		CARBIDE, 4 FLUTE LONG LENGTH	D1/8	D1	1132	◎	◎	◎				○	○	○		○				
E5026		CARBIDE, 2 FLUTE EXTRA LONG LENGTH	D1/8	D1	1133	◎	◎	◎				○	○	○		○				
UGMGF59		CARBIDE, 4 FLUTE EXTRA LONG LENGTH	D1/8	D1	1134	◎	◎	◎				○	○	○		○				
E5065		CARBIDE, 4 FLUTE EXTRA LONG LENGTH	D1/8	D1	1135	◎	◎	◎				○	○	○		○				
E5022		CARBIDE, 2 FLUTE STUB LENGTH DOUBLE	D1/32	D1/2	1136	◎	◎	◎				○	○	○		○				
E5023		CARBIDE, 4 FLUTE STUB LENGTH DOUBLE	D1/16	D1/2	1137	◎	◎	◎				○	○	○		○				
E5025		CARBIDE, 2 FLUTE REGULAR LENGTH DOUBLE	D1/8	D1/2	1138	◎	◎	◎				○	○	○		○				
E5024		CARBIDE, 4 FLUTE REGULAR LENGTH DOUBLE	D1/8	D1/2	1138	◎	◎	◎				○	○	○		○				
E5249		CARBIDE, 2 FLUTE REGULAR LENGTH BALL NOSE	R1/16	R1/2	1139	◎	◎	◎	○				○	○		○				
E5250		CARBIDE, 4 FLUTE REGULAR LENGTH BALL NOSE	R1/16	R1/2	1139	◎	◎	◎	○				○	○		○				
UGMF91		CARBIDE, 4 FLUTE REGULAR LENGTH BALL NOSE	R1/16	R1/2	1140	◎	◎	◎	○				○	○		○				
E5014		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE	R1/16	R1/2	1141	◎	◎	◎	○				○	○		○				

STANDARD CARBIDE END MILLS

◎ : Excellent ○ : Good

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE	P: Carbon Steels ~HRc20	P: Alloy Steels HRc20~30	P: Prehardened Steels HRc30~40	P: Hardened Steels HRc40~45	P: Hardened Steels HRc45~55	H: High Hardened Steels HRc55~70	M: Stainless Steels	K: Cast Iron	N: Copper	N: Graphite	N: Aluminum	N: Acrylic	N: CFRP	S: Titanium	S: High Temperature Alloy
INCH																				
E5060		CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE	R1/16	R1/2	1141	◎	◎	◎	○				○	○		○				
E5018		CARBIDE, 2 FLUTE EXTRA LONG LENGTH BALL NOSE	R1/16	R1/2	1142	◎	◎	◎	○				○	○		○				
E5062		CARBIDE, 4 FLUTE EXTRA LONG LENGTH BALL NOSE	R1/16	R1/2	1143	◎	◎	◎	○			○	○	○		○				
E5251 E5252		CARBIDE, 2&4 FLUTE STUB LENGTH DOUBLE BALL NOSE	R7/64	R1/4	1144	◎	◎	◎	○			◎	○	○					○	○
E5216		CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS	D1/8	D1	1145	◎	◎	◎	○			◎	○	○					○	○
E5069		CARBIDE, 5 FLUTE 45° HELIX REGULAR LENGTH CORNER RADIUS	D1/4	D1	1147	◎	◎	◎	○			◎	○	○					○	○
E5243		CARBIDE, 3 FLUTE 45° HELIX REGULAR LENGTH	D1/8	D1	1148	◎	◎	◎	○			◎	○	○					○	○
E5059		CARBIDE, 3 FLUTE 50° HELIX STUB & REGULAR & LONG LENGTH	D1/4	D3/4	1149	◎	◎	◎	○			◎	○	○					○	○
E5246		CARBIDE, 3 FLUTE 60° HELIX REGULAR LENGTH	D1/8	D1	1150	◎	◎	◎	○			◎	○	○					○	○
E5066		CARBIDE, 5 FLUTE 45° HELIX STUB LENGTH	D1/8	D1	1151	◎	◎	◎	○			◎	○	○					○	○
E5067		CARBIDE, 5 FLUTE 45° HELIX REGULAR LENGTH	D1/8	D1	1152	◎	◎	◎	○			◎	○	○					○	○
E5068		CARBIDE, 5 FLUTE 45° HELIX MEDIUM & LONG LENGTH	D1/4	D1	1153	◎	◎	◎	○			◎	○	○					○	○
E5073		CARBIDE, 5 FLUTE 45° HELIX EXTRA LONG LENGTH	D5/16	D1	1154	◎	◎	◎	○			◎	○	○					○	○
E5058		CARBIDE, 6 FLUTE 40° HELIX REGULAR LENGTH	D3/16	D3/4	1155	◎	◎	◎	○			◎	○	○					○	○
E5056 E5057		CARBIDE, 5 FLUTE 45° HELIX STUB & REGULAR LENGTH FINE PITCH ROUGHING CARBIDE	D3/8	D1	1156	○	◎	◎	○			◎							○	
E5077		CARBIDE, 3 FLUTE TAPER	D3/32	D1/4	1157	◎	◎	◎				○	○	○		○				
E5078		CARBIDE, 3 FLUTE TAPER BALL NOSE	R.047	R.125	1158	◎	◎	◎				○	○	○		○				
METRIC																				
EH527		CARBIDE, 2 FLUTE LONG LENGTH TiAlN 'F' COATED	D3.5	D20.0	1159	◎	◎	◎	○			○	○	○		○				
EH540		CARBIDE, 4 FLUTE LONG LENGTH TiAlN 'F' COATED	D3.5	D20.0	1160	◎	◎	◎	○			○	○	○		○				
EH882		CARBIDE, 3 FLUTE 35° HELIX CORNER RADIUS TiAlN 'F' COATED	D3.0	D20.0	1161	◎	◎	◎	○				○	◎		◎				
		RECOMMENDED CUTTING CONDITIONS			1163															

CARBIDE END MILLS

UGMF90 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE REGULAR LENGTH

- These are designed for slotting, drilling, pocketing and general operation.
- Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



MG | 2 | 30° | PLAIN P.1164

Unit : Inch

EDP No. Y-COATED	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UGMF90008	1/8	1/8	1/2	1-1/2
UGMF90012	3/16	3/16	5/8	2
UGMF90016	1/4	1/4	3/4	2-1/2
UGMF90024	3/8	3/8	1	2-1/2
UGMF90032	1/2	1/2	1	3
UGMF90040	5/8	5/8	1-1/4	3-1/2
UGMF90048	3/4	3/4	1-1/2	4
UGMF90064	1	1	1-1/2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○				○	○			○				

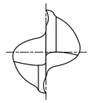
CARBIDE END MILLS

E5020 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE REGULAR LENGTH

- These are designed for slotting, drilling, pocketing and general operation.
- Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.





MG | 2 | 30° | PLAIN P.1165

Unit : Inch

EDP No. UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
01552	01552TN	01552TC	01552TF	01552TE	1/32	1/8	5/64	1-1/2
01553	01553TN	01553TC	01553TF	01553TE	3/64	1/8	7/64	1-1/2
01554	01554TN	01554TC	01554TF	01554TE	1/16	1/8	3/16	1-1/2
01555	01555TN	01555TC	01555TF	01555TE	5/64	1/8	3/16	1-1/2
01556	01556TN	01556TC	01556TF	01556TE	3/32	1/8	3/8	1-1/2
01557	01557TN	01557TC	01557TF	01557TE	7/64	1/8	3/8	1-1/2
01558	01558TN	01558TC	01558TF	01558TE	1/8	1/8	1/2	1-1/2
01560	01560TN	01560TC	01560TF	01560TE	9/64	3/16	1/2	2
01562	01562TN	01562TC	01562TF	01562TE	5/32	3/16	9/16	2
01564	01564TN	01564TC	01564TF	01564TE	11/64	3/16	5/8	2
01565	01565TN	01565TC	01565TF	01565TE	3/16	3/16	5/8	2
01569	01569TN	01569TC	01569TF	01569TE	13/64	1/4	5/8	2-1/2
01570	01570TN	01570TC	01570TF	01570TE	7/32	1/4	5/8	2-1/2
01572	01572TN	01572TC	01572TF	01572TE	15/64	1/4	3/4	2-1/2
01573	01573TN	01573TC	01573TF	01573TE	1/4	1/4	3/4	2-1/2
01579	01579TN	01579TC	01579TF	01579TE	5/16	5/16	13/16	2-1/2
01584	01584TN	01584TC	01584TF	01584TE	3/8	3/8	1	2-1/2
01588	01588TN	01588TC	01588TF	01588TE	7/16	7/16	1	2-3/4
01593	01593TN	01593TC	01593TF	01593TE	1/2	1/2	1	3
01595	01595TN	01595TC	01595TF	01595TE	5/8	5/8	1-1/4	3-1/2
01598	01598TN	01598TC	01598TF	01598TE	3/4	3/4	1-1/2	4
01600	01600TN	01600TC	01600TF	01600TE	1	1	1-1/2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○	○	○		○				

CARBIDE END MILLS

UGMF89 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE REGULAR LENGTH

- These are designed for slotting, drilling, pocketing and general operation.
- Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



MG | 4 | 30° | PLAIN P.1163

Unit : Inch

EDP No. Y-COATED	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UGMF89004	1/16	1/8	3/16	1-1/2
UGMF89005	5/64	1/8	3/16	1-1/2
UGMF89006	3/32	1/8	3/8	1-1/2
UGMF89007	7/64	1/8	3/8	1-1/2
UGMF89008	1/8	1/8	1/2	1-1/2
UGMF89009	9/64	3/16	1/2	2
UGMF89010	5/32	3/16	9/16	2
UGMF89011	11/64	3/16	5/8	2
UGMF89012	3/16	3/16	5/8	2
UGMF89013	13/64	1/4	5/8	2-1/2
UGMF89014	7/32	1/4	5/8	2-1/2
UGMF89015	15/64	1/4	3/4	2-1/2
UGMF89016	1/4	1/4	3/4	2-1/2
UGMF89018	9/32	5/16	3/4	2-1/2
UGMF89020	5/16	5/16	13/16	2-1/2
UGMF89024	3/8	3/8	1	2-1/2
UGMF89028	7/16	7/16	1	2-3/4
UGMF89032	1/2	1/2	1	3
UGMF89036	9/16	9/16	1-1/4	3-1/2
UGMF89040	5/8	5/8	1-1/4	3-1/2
UGMF89048	3/4	3/4	1-1/2	4
UGMF89056	7/8	7/8	1-1/2	4
UGMF89064	1	1	1-1/2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○				○	○			○				

CARBIDE END MILLS

E5021 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE REGULAR LENGTH

- Possible for high-speed cutting, suitable for high efficiency maching for hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



MG | 4 | 30° | PLAIN P.1166

Unit : Inch

EDP No. UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
07554	07554TN	07554TC	07554TF	07554TE	1/16	1/8	3/16	1-1/2
07555	07555TN	07555TC	07555TF	07555TE	5/64	1/8	3/16	1-1/2
07556	07556TN	07556TC	07556TF	07556TE	3/32	1/8	3/8	1-1/2
07557	07557TN	07557TC	07557TF	07557TE	7/64	1/8	3/8	1-1/2
07558	07558TN	07558TC	07558TF	07558TE	1/8	1/8	1/2	1-1/2
07560	07560TN	07560TC	07560TF	07560TE	9/64	3/16	1/2	2
07561	07561TN	07561TC	07561TF	07561TE	5/32	3/16	9/16	2
07564	07564TN	07564TC	07564TF	07564TE	11/64	3/16	5/8	2
07565	07565TN	07565TC	07565TF	07565TE	3/16	3/16	5/8	2
07569	07569TN	07569TC	07569TF	07569TE	13/64	1/4	5/8	2-1/2
07570	07570TN	07570TC	07570TF	07570TE	7/32	1/4	5/8	2-1/2
07572	07572TN	07572TC	07572TF	07572TE	15/64	1/4	3/4	2-1/2
07573	07573TN	07573TC	07573TF	07573TE	1/4	1/4	3/4	2-1/2
07576	07576TN	07576TC	07576TF	07576TE	9/32	5/16	3/4	2-1/2
07579	07579TN	07579TC	07579TF	07579TE	5/16	5/16	13/16	2-1/2
07584	07584TN	07584TC	07584TF	07584TE	3/8	3/8	1	2-1/2
07588	07588TN	07588TC	07588TF	07588TE	7/16	7/16	1	2-3/4
07593	07593TN	07593TC	07593TF	07593TE	1/2	1/2	1	3
07595	07595TN	07595TC	07595TF	07595TE	5/8	5/8	1-1/4	3-1/2
07598	07598TN	07598TC	07598TF	07598TE	3/4	3/4	1-1/2	4
07600	07600TN	07600TC	07600TF	07600TE	1	1	1-1/2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○	○	○		○				

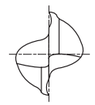
CARBIDE END MILLS

E5244 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE STUB LENGTH

▶ Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.





MG | 2 | 30° | PLAIN P.1165

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
30554	30554TN	30554TC	30554TF	30554TE	1/16	1/8	1/8	1-1/2
30556	30556TN	30556TC	30556TF	30556TE	3/32	1/8	3/16	1-1/2
30558	30558TN	30558TC	30558TF	30558TE	1/8	1/8	1/4	1-1/2
30561	30561TN	30561TC	30561TF	30561TE	5/32	3/16	5/16	2
30565	30565TN	30565TC	30565TF	30565TE	3/16	3/16	3/8	2
30570	30570TN	30570TC	30570TF	30570TE	7/32	1/4	7/16	2
30573	30573TN	30573TC	30573TF	30573TE	1/4	1/4	1/2	2
30579	30579TN	30579TC	30579TF	30579TE	5/16	5/16	1/2	2
30584	30584TN	30584TC	30584TF	30584TE	3/8	3/8	5/8	2
30588	30588TN	30588TC	30588TF	30588TE	7/16	7/16	5/8	2-1/2
30593	30593TN	30593TC	30593TF	30593TE	1/2	1/2	5/8	2-1/2
30595	30595TN	30595TC	30595TF	30595TE	5/8	5/8	3/4	3
30598	30598TN	30598TC	30598TF	30598TE	3/4	3/4	1	3

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○	○	○		○				

CARBIDE END MILLS

UGMGF57 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE STUB LENGTH

▶ Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.





MG | 4 | 30° | PLAIN P.1163

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
Y-COATED				
UGMGF57004	1/16	1/8	1/8	1-1/2
UGMGF57006	3/32	1/8	3/16	1-1/2
UGMGF57008	1/8	1/8	1/4	1-1/2
UGMGF57010	5/32	3/16	5/16	2
UGMGF57012	3/16	3/16	3/8	2
UGMGF57014	7/32	1/4	7/16	2
UGMGF57016	1/4	1/4	1/2	2
UGMGF57020	5/16	5/16	1/2	2
UGMGF57024	3/8	3/8	5/8	2
UGMGF57028	7/16	7/16	5/8	2-1/2
UGMGF57032	1/2	1/2	5/8	2-1/2
UGMGF57040	5/8	5/8	3/4	3
UGMGF57048	3/4	3/4	1	3

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○	○	○		○				

CARBIDE END MILLS

E5245 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE STUB LENGTH

▶ Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



MG | 4 | 30° | PLAIN P.1166

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
31554	31554TN	31554TC	31554TF	31554TE	1/16	1/8	1/8	1-1/2
31556	31556TN	31556TC	31556TF	31556TE	3/32	1/8	3/16	1-1/2
31558	31558TN	31558TC	31558TF	31558TE	1/8	1/8	1/4	1-1/2
31561	31561TN	31561TC	31561TF	31561TE	5/32	3/16	5/16	2
31565	31565TN	31565TC	31565TF	31565TE	3/16	3/16	3/8	2
31570	31570TN	31570TC	31570TF	31570TE	7/32	1/4	7/16	2
31573	31573TN	31573TC	31573TF	31573TE	1/4	1/4	1/2	2
31579	31579TN	31579TC	31579TF	31579TE	5/16	5/16	1/2	2
31584	31584TN	31584TC	31584TF	31584TE	3/8	3/8	5/8	2
31588	31588TN	31588TC	31588TF	31588TE	7/16	7/16	5/8	2-1/2
31593	31593TN	31593TC	31593TF	31593TE	1/2	1/2	5/8	2-1/2
31595	31595TN	31595TC	31595TF	31595TE	5/8	5/8	3/4	3
31598	31598TN	31598TC	31598TF	31598TE	3/4	3/4	1	3

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005

◎ : Excellent ○ : Good

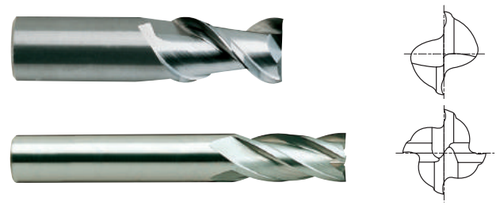
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○	○	○		○				

CARBIDE END MILLS

E5011 SERIES PLAIN SHANK
E5012 SERIES PLAIN SHANK

CARBIDE, 2&4 FLUTE LONG LENGTH

▶ Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



MG | 2&4 | 30° | PLAIN P.1165, 1166

E5011(2 FLUTE) Series Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
02558	02558TN	02558TC	02558TF	02558TE	1/8	1/8	3/4	2-1/4
02565	02565TN	02565TC	02565TF	02565TE	3/16	3/16	3/4	2-1/2
02573	02573TN	02573TC	02573TF	02573TE	1/4	1/4	1-1/8	3
02579	02579TN	02579TC	02579TF	02579TE	5/16	5/16	1-1/8	3
02584	02584TN	02584TC	02584TF	02584TE	3/8	3/8	1-1/8	3
02588	02588TN	02588TC	02588TF	02588TE	7/16	7/16	2	4
02593	02593TN	02593TC	02593TF	02593TE	1/2	1/2	2	4
02595	02595TN	02595TC	02595TF	02595TE	5/8	5/8	2-1/4	5
02598	02598TN	02598TC	02598TF	02598TE	3/4	3/4	2-1/4	5
02600	02600TN	02600TC	02600TF	02600TE	1	1	2-1/4	5

E5012(4 FLUTE) Series Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
08558	08558TN	08558TC	08558TF	08558TE	1/8	1/8	3/4	2-1/4
08565	08565TN	08565TC	08565TF	08565TE	3/16	3/16	3/4	2-1/2
08573	08573TN	08573TC	08573TF	08573TE	1/4	1/4	1-1/8	3
08579	08579TN	08579TC	08579TF	08579TE	5/16	5/16	1-1/8	3
08584	08584TN	08584TC	08584TF	08584TE	3/8	3/8	1-1/8	3
08588	08588TN	08588TC	08588TF	08588TE	7/16	7/16	2	4
08593	08593TN	08593TC	08593TF	08593TE	1/2	1/2	2	4
08595	08595TN	08595TC	08595TF	08595TE	5/8	5/8	2-1/4	5
08598	08598TN	08598TC	08598TF	08598TE	3/4	3/4	2-1/4	5
08600	08600TN	08600TC	08600TF	08600TE	1	1	2-1/4	5

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○	○	○		○				

CARBIDE END MILLS

UGMGF58 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG LENGTH

▶ Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



MG | 4 | 30° | PLAIN P.1163

Unit : Inch

EDP No. Y-COATED	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UGMGF58008	1/8	1/8	3/4	2-1/4
UGMGF58012	3/16	3/16	3/4	2-1/2
UGMGF58016	1/4	1/4	1-1/8	3
UGMGF58020	5/16	5/16	1-1/8	3
UGMGF58024	3/8	3/8	1-1/8	3
UGMGF58028	7/16	7/16	2	4
UGMGF58032	1/2	1/2	2	4
UGMGF58040	5/8	5/8	2-1/4	5
UGMGF58048	3/4	3/4	2-1/4	5
UGMGF58064	1	1	2-1/4	5

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○	○	○		○				

CARBIDE END MILLS

E5026 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE EXTRA LONG LENGTH

▶ Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



MG | 2 | 30° | PLAIN P.1165

Unit : Inch

EDP No. UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
54558	54558TN	54558TC	54558TF	54558TE	1/8	1/8	1	3
54565	54565TN	54565TC	54565TF	54565TE	3/16	3/16	1-1/8	3
54904	54904TN	54904TC	54904TF	54904TE	3/16	3/16	1	4
54573	54573TN	54573TC	54573TF	54573TE	1/4	1/4	1-1/2	4
54901	54901TN	54901TC	54901TF	54901TE	1/4	1/4	1-1/2	6
54579	54579TN	54579TC	54579TF	54579TE	5/16	5/16	1-5/8	4
54584	54584TN	54584TC	54584TF	54584TE	3/8	3/8	1-3/4	4
54902	54902TN	54902TC	54902TF	54902TE	3/8	3/8	1-1/2	6
54588	54588TN	54588TC	54588TF	54588TE	7/16	7/16	3	6
54903	54903TN	54903TC	54903TF	54903TE	1/2	1/2	1-1/2	6
54593	54593TN	54593TC	54593TF	54593TE	1/2	1/2	3	6
54595	54595TN	54595TC	54595TF	54595TE	5/8	5/8	3	6
54598	54598TN	54598TC	54598TF	54598TE	3/4	3/4	3	6
54600	54600TN	54600TC	54600TF	54600TE	1	1	3	6

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○	○	○		○				

CARBIDE END MILLS

UGMGF59 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE EXTRA LONG LENGTH

▶ Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



MG | 4 | 30° | PLAIN P.1163

Unit : Inch

EDP No. Y-COATED	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UGMGF59008	1/8	1/8	1	3
UGMGF59012	3/16	3/16	1-1/8	3
UGMGF59016	1/4	1/4	1-1/2	4
UGMGF59020	5/16	5/16	1-5/8	4
UGMGF59024	3/8	3/8	1-3/4	4
UGMGF59028	7/16	7/16	3	6
UGMGF59032	1/2	1/2	3	6
UGMGF59040	5/8	5/8	3	6
UGMGF59048	3/4	3/4	3	6
UGMGF59064	1	1	3	6
UGMGF59901	1/4	1/4	1-1/2	6
UGMGF59902	3/8	3/8	1-1/2	6
UGMGF59903	1/2	1/2	1-1/2	6
UGMGF59904	3/16	3/16	1	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○	○	○		○				

CARBIDE END MILLS

E5065 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE EXTRA LONG LENGTH

▶ Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



MG | 4 | 30° | PLAIN P.1166

Unit : Inch

EDP No. UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
55558	55558TN	55558TC	55558TF	55558TE	1/8	1/8	1	3
55565	55565TN	55565TC	55565TF	55565TE	3/16	3/16	1-1/8	3
55904	55904TN	55904TC	55904TF	55904TE	3/16	3/16	1	4
55573	55573TN	55573TC	55573TF	55573TE	1/4	1/4	1-1/2	4
55901	55901TN	55901TC	55901TF	55901TE	1/4	1/4	1-1/2	6
55579	55579TN	55579TC	55579TF	55579TE	5/16	5/16	1-5/8	4
55584	55584TN	55584TC	55584TF	55584TE	3/8	3/8	1-3/4	4
55902	55902TN	55902TC	55902TF	55902TE	3/8	3/8	1-1/2	6
55588	55588TN	55588TC	55588TF	55588TE	7/16	7/16	3	6
55903	55903TN	55903TC	55903TF	55903TE	1/2	1/2	1-1/2	6
55593	55593TN	55593TC	55593TF	55593TE	1/2	1/2	3	6
55595	55595TN	55595TC	55595TF	55595TE	5/8	5/8	3	6
55598	55598TN	55598TC	55598TF	55598TE	3/4	3/4	3	6
55600	55600TN	55600TC	55600TF	55600TE	1	1	3	6

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○	○	○		○				

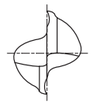
CARBIDE END MILLS

E5022 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE STUB LENGTH DOUBLE

- Same construction features as 2&4 flute single end mill in a more economical version.
- Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.





MG 2 30° PLAIN P.1165

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
32552	32552TN	32552TC	32552TF	32552TE	1/32	1/8	1/16	1-1/2
32553	32553TN	32553TC	32553TF	32553TE	3/64	1/8	3/32	1-1/2
32554	32554TN	32554TC	32554TF	32554TE	1/16	1/8	1/8	1-1/2
32555	32555TN	32555TC	32555TF	32555TE	5/64	1/8	1/8	1-1/2
32556	32556TN	32556TC	32556TF	32556TE	3/32	1/8	3/16	1-1/2
32557	32557TN	32557TC	32557TF	32557TE	7/64	1/8	3/16	1-1/2
32558	32558TN	32558TC	32558TF	32558TE	1/8	1/8	1/4	1-1/2
32560	32560TN	32560TC	32560TF	32560TE	9/64	3/16	5/16	2
32562	32562TN	32562TC	32562TF	32562TE	5/32	3/16	5/16	2
32564	32564TN	32564TC	32564TF	32564TE	11/64	3/16	5/16	2
32565	32565TN	32565TC	32565TF	32565TE	3/16	3/16	3/8	2
32569	32569TN	32569TC	32569TF	32569TE	13/64	1/4	1/2	2-1/2
32570	32570TN	32570TC	32570TF	32570TE	7/32	1/4	1/2	2-1/2
32572	32572TN	32572TC	32572TF	32572TE	15/64	1/4	1/2	2-1/2
32573	32573TN	32573TC	32573TF	32573TE	1/4	1/4	1/2	2-1/2
32579	32579TN	32579TC	32579TF	32579TE	5/16	5/16	1/2	2-1/2
32584	32584TN	32584TC	32584TF	32584TE	3/8	3/8	9/16	2-1/2
32588	32588TN	32588TC	32588TF	32588TE	7/16	7/16	9/16	2-3/4
32593	32593TN	32593TC	32593TF	32593TE	1/2	1/2	5/8	3

Mill Dia. Tolerance (inch)	
0~-.0012	＊＊0~-.0020

＊＊The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○	○	○		○				

CARBIDE END MILLS

E5023 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE STUB LENGTH DOUBLE

- Same construction features as 2&4 flute single end mill in a more economical version.
- Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.





MG 4 30° PLAIN P.1166

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
33554	33554TN	33554TC	33554TF	33554TE	1/16	1/8	1/8	1-1/2
33555	33555TN	33555TC	33555TF	33555TE	5/64	1/8	1/8	1-1/2
33556	33556TN	33556TC	33556TF	33556TE	3/32	1/8	3/16	1-1/2
33557	33557TN	33557TC	33557TF	33557TE	7/64	1/8	3/16	1-1/2
33558	33558TN	33558TC	33558TF	33558TE	1/8	1/8	1/4	1-1/2
33560	33560TN	33560TC	33560TF	33560TE	9/64	3/16	5/16	2
33561	33561TN	33561TC	33561TF	33561TE	5/32	3/16	5/16	2
33564	33564TN	33564TC	33564TF	33564TE	11/64	3/16	5/16	2
33565	33565TN	33565TC	33565TF	33565TE	3/16	3/16	3/8	2
33569	33569TN	33569TC	33569TF	33569TE	13/64	1/4	1/2	2-1/2
33570	33570TN	33570TC	33570TF	33570TE	7/32	1/4	1/2	2-1/2
33572	33572TN	33572TC	33572TF	33572TE	15/64	1/4	1/2	2-1/2
33573	33573TN	33573TC	33573TF	33573TE	1/4	1/4	1/2	2-1/2
33579	33579TN	33579TC	33579TF	33579TE	5/16	5/16	1/2	2-1/2
33584	33584TN	33584TC	33584TF	33584TE	3/8	3/8	9/16	2-1/2
33588	33588TN	33588TC	33588TF	33588TE	7/16	7/16	9/16	2-3/4
33593	33593TN	33593TC	33593TF	33593TE	1/2	1/2	5/8	3

Mill Dia. Tolerance (inch)	
0~-.0012	＊＊0~-.0020

＊＊The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○	○	○		○				

CARBIDE END MILLS

E5025 SERIES FLAT SHANK
E5024 SERIES FLAT SHANK

CARBIDE, 2&4 FLUTE REGULAR LENGTH DOUBLE

- Same construction features as single end mill in a more economical version.
- Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



MG | 2&4 | 30° | FLAT | P.1165, 1166

E5025(2 FLUTE) Series Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
11559	11559TN	11559TC	11559TF	11559TE	1/8	3/8	3/8	3-1/16
11563	11563TN	11563TC	11563TF	11563TE	5/32	3/8	7/16	3-1/8
11567	11567TN	11567TC	11567TF	11567TE	3/16	3/8	1/2	3-1/4
11571	11571TN	11571TC	11571TF	11571TE	7/32	3/8	9/16	3-3/8
11574	11574TN	11574TC	11574TF	11574TE	1/4	3/8	5/8	3-3/8
11577	11577TN	11577TC	11577TF	11577TE	9/32	3/8	11/16	3-3/8
11580	11580TN	11580TC	11580TF	11580TE	5/16	3/8	3/4	3-1/2
11582	11582TN	11582TC	11582TF	11582TE	11/32	3/8	3/4	3-1/2
11584	11584TN	11584TC	11584TF	11584TE	3/8	3/8	3/4	3-1/2
11589	11589TN	11589TC	11589TF	11589TE	7/16	1/2	7/8	4
11593	11593TN	11593TC	11593TF	11593TE	1/2	1/2	1	4

E5024(4 FLUTE) Series Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
13559	13559TN	13559TC	13559TF	13559TE	1/8	3/8	3/8	3-1/16
13563	13563TN	13563TC	13563TF	13563TE	5/32	3/8	7/16	3-1/8
13567	13567TN	13567TC	13567TF	13567TE	3/16	3/8	1/2	3-1/4
13571	13571TN	13571TC	13571TF	13571TE	7/32	3/8	9/16	3-3/8
13574	13574TN	13574TC	13574TF	13574TE	1/4	3/8	5/8	3-3/8
13577	13577TN	13577TC	13577TF	13577TE	9/32	3/8	11/16	3-3/8
13580	13580TN	13580TC	13580TF	13580TE	5/16	3/8	3/4	3-1/2
13582	13582TN	13582TC	13582TF	13582TE	11/32	3/8	3/4	3-1/2
13584	13584TN	13584TC	13584TF	13584TE	3/8	3/8	3/4	3-1/2
13589	13589TN	13589TC	13589TF	13589TE	7/16	1/2	7/8	4
13593	13593TN	13593TC	13593TF	13593TE	1/2	1/2	1	4

Mill Dia. Tolerance (inch)	
0~-.0012	* * 0~-.0020

* * The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○	○	○		○				

CARBIDE END MILLS

E5249 SERIES PLAIN SHANK
E5250 SERIES PLAIN SHANK

CARBIDE, 2&4 FLUTE REGULAR LENGTH BALL NOSE

- Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



MG | 2&4 | 30° | R ±.0008 | PLAIN | P.1167, 1168

E5249(2 FLUTE) Series Unit : Inch

EDP No.					Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	R (±.0008)				
41558	41558TN	41558TC	41558TF	41558TE	R1/16	1/8	1/8	1/2	1-1/2
41561	41561TN	41561TC	41561TF	41561TE	R5/64	5/32	3/16	9/16	2
41565	41565TN	41565TC	41565TF	41565TE	R3/32	3/16	3/16	5/8	2
41570	41570TN	41570TC	41570TF	41570TE	R7/64	7/32	1/4	5/8	2-1/2
41573	41573TN	41573TC	41573TF	41573TE	R1/8	1/4	1/4	3/4	2-1/2
41579	41579TN	41579TC	41579TF	41579TE	R5/32	5/16	5/16	13/16	2-1/2
41584	41584TN	41584TC	41584TF	41584TE	R3/16	3/8	3/8	1	2-1/2
41588	41588TN	41588TC	41588TF	41588TE	R7/32	7/16	7/16	1	2-3/4
41593	41593TN	41593TC	41593TF	41593TE	R1/4	1/2	1/2	1	3
41595	41595TN	41595TC	41595TF	41595TE	R5/16	5/8	5/8	1-1/4	3-1/2
41598	41598TN	41598TC	41598TF	41598TE	R3/8	3/4	3/4	1-1/2	4
41600	41600TN	41600TC	41600TF	41600TE	R1/2	1	1	1-1/2	4

E5250(4 FLUTE) Series Unit : Inch

EDP No.					Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	R (±.0008)				
43558	43558TN	43558TC	43558TF	43558TE	R1/16	1/8	1/8	1/2	1-1/2
43561	43561TN	43561TC	43561TF	43561TE	R5/64	5/32	3/16	9/16	2
43565	43565TN	43565TC	43565TF	43565TE	R3/32	3/16	3/16	5/8	2
43570	43570TN	43570TC	43570TF	43570TE	R7/64	7/32	1/4	5/8	2-1/2
43573	43573TN	43573TC	43573TF	43573TE	R1/8	1/4	1/4	3/4	2-1/2
43579	43579TN	43579TC	43579TF	43579TE	R5/32	5/16	5/16	13/16	2-1/2
43584	43584TN	43584TC	43584TF	43584TE	R3/16	3/8	3/8	1	2-1/2
43588	43588TN	43588TC	43588TF	43588TE	R7/32	7/16	7/16	1	2-3/4
43593	43593TN	43593TC	43593TF	43593TE	R1/4	1/2	1/2	1	3
43595	43595TN	43595TC	43595TF	43595TE	R5/16	5/8	5/8	1-1/4	3-1/2
43598	43598TN	43598TC	43598TF	43598TE	R3/8	3/4	3/4	1-1/2	4
43600	43600TN	43600TC	43600TF	43600TE	R1/2	1	1	1-1/2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○				○	○		○				

CARBIDE END MILLS

UGMF91 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE REGULAR LENGTH

- These are designed for slotting, drilling, pocketing and general operation.
- Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



MG | 4 | 30° | PLAIN | R ±.0008 | P.1164

Unit : Inch

EDP No. Y-COATED	Radiusof BallNose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UGMF91008	1/16	**1/8**	1/8	1/2	1-1/2
UGMF91010	5/64	**5/32**	3/16	9/16	2
UGMF91012	3/32	**3/16**	3/16	5/8	2
UGMF91016	1/8	**1/4**	1/4	3/4	2-1/2
UGMF91020	5/32	**5/16**	5/16	13/16	2-1/2
UGMF91024	3/16	**3/8**	3/8	1	2-1/2
UGMF91028	7/32	**7/16**	7/16	1	2-3/4
UGMF91032	1/4	**1/2**	1/2	1	3
UGMF91040	5/16	**5/8**	5/8	1-1/4	3-1/2
UGMF91048	3/8	**3/4**	3/4	1-1/2	4
UGMF91064	1/2	**1**	1	1-1/2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○				○	○			○				

CARBIDE END MILLS

E5014 SERIES PLAIN SHANK
E5060 SERIES PLAIN SHANK

CARBIDE, 2&4 FLUTE LONG LENGTH BALL NOSE

- Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



MG | 2&4 | 30° | R ±.0008 | PLAIN | P.167, 1168

E5014(2 FLUTE) Series

Unit : Inch

EDP No. UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	Radius of Ball Nose R (±.0008)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
50558	**50558TN**	**50558TC**	**50558TF**	**50558TE**	R1/16	**1/8**	1/8	3/4	2-1/4
50565	**50565TN**	**50565TC**	**50565TF**	**50565TE**	R3/32	**3/16**	3/16	3/4	2-1/2
50573	**50573TN**	**50573TC**	**50573TF**	**50573TE**	R1/8	**1/4**	1/4	1-1/8	3
50579	**50579TN**	**50579TC**	**50579TF**	**50579TE**	R5/32	**5/16**	5/16	1-1/8	3
50584	**50584TN**	**50584TC**	**50584TF**	**50584TE**	R3/16	**3/8**	3/8	1-1/8	3
50588	**50588TN**	**50588TC**	**50588TF**	**50588TE**	R7/32	**7/16**	7/16	2	4
50593	**50593TN**	**50593TC**	**50593TF**	**50593TE**	R1/4	**1/2**	1/2	2	4
50595	**50595TN**	**50595TC**	**50595TF**	**50595TE**	R5/16	**5/8**	5/8	2-1/4	5
50598	**50598TN**	**50598TC**	**50598TF**	**50598TE**	R3/8	**3/4**	3/4	2-1/4	5
50600	**50600TN**	**50600TC**	**50600TF**	**50600TE**	R1/2	**1**	1	2-1/4	5

E5060(4 FLUTE) Series

Unit : Inch

EDP No. UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	Radius of Ball Nose R (±.0008)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
51558	**51558TN**	**51558TC**	**51558TF**	**51558TE**	R1/16	**1/8**	1/8	3/4	2-1/4
51565	**51565TN**	**51565TC**	**51565TF**	**51565TE**	R3/32	**3/16**	3/16	3/4	2-1/2
51573	**51573TN**	**51573TC**	**51573TF**	**51573TE**	R1/8	**1/4**	1/4	1-1/8	3
51579	**51579TN**	**51579TC**	**51579TF**	**51579TE**	R5/32	**5/16**	5/16	1-1/8	3
51584	**51584TN**	**51584TC**	**51584TF**	**51584TE**	R3/16	**3/8**	3/8	1-1/8	3
51588	**51588TN**	**51588TC**	**51588TF**	**51588TE**	R7/32	**7/16**	7/16	2	4
51593	**51593TN**	**51593TC**	**51593TF**	**51593TE**	R1/4	**1/2**	1/2	2	4
51595	**51595TN**	**51595TC**	**51595TF**	**51595TE**	R5/16	**5/8**	5/8	2-1/4	5
51598	**51598TN**	**51598TC**	**51598TF**	**51598TE**	R3/8	**3/4**	3/4	2-1/4	5
51600	**51600TN**	**51600TC**	**51600TF**	**51600TE**	R1/2	**1**	1	2-1/4	5

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○				○	○		○				

CARBIDE END MILLS

E5018 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE EXTRA LONG LENGTH BALL NOSE

▶ Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



MG | 2 | 30° | R ±.0008 | PLAIN | P.1167

Unit : Inch

EDP No.					Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	R (±.0008)				
52558	**52558TN**	**52558TC**	**52558TF**	**52558TE**	R1/16	**1/8**	1/8	1	3
52565	**52565TN**	**52565TC**	**52565TF**	**52565TE**	R3/32	**3/16**	3/16	1-1/8	3
52904	**52904TN**	**52904TC**	**52904TF**	**52904TE**	R3/32	**3/16**	3/16	1	4
52573	**52573TN**	**52573TC**	**52573TF**	**52573TE**	R1/8	**1/4**	1/4	1-1/2	4
52901	**52901TN**	**52901TC**	**52901TF**	**52901TE**	R1/8	**1/4**	1/4	1-1/2	6
52579	**52579TN**	**52579TC**	**52579TF**	**52579TE**	R5/32	**5/16**	5/16	1-5/8	4
52584	**52584TN**	**52584TC**	**52584TF**	**52584TE**	R3/16	**3/8**	3/8	1-3/4	4
52902	**52902TN**	**52902TC**	**52902TF**	**52902TE**	R3/16	**3/8**	3/8	1-1/2	6
52588	**52588TN**	**52588TC**	**52588TF**	**52588TE**	R7/32	**7/16**	7/16	3	6
52903	**52903TN**	**52903TC**	**52903TF**	**52903TE**	R1/4	**1/2**	1/2	1-1/2	6
52593	**52593TN**	**52593TC**	**52593TF**	**52593TE**	R1/4	**1/2**	1/2	3	6
52595	**52595TN**	**52595TC**	**52595TF**	**52595TE**	R5/16	**5/8**	5/8	3	6
52598	**52598TN**	**52598TC**	**52598TF**	**52598TE**	R3/8	**3/4**	3/4	3	6
52600	**52600TN**	**52600TC**	**52600TF**	**52600TE**	R1/2	**1**	1	3	6

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○				○	○		○				

CARBIDE END MILLS

E5062 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE EXTRA LONG LENGTH BALL NOSE

▶ Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



MG | 4 | 30° | R ±.0008 | PLAIN | P.1168

Unit : Inch

EDP No.					Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	R (±.0008)				
53558	**53558TN**	**53558TC**	**53558TF**	**53558TE**	R1/16	**1/8**	1/8	1	3
53565	**53565TN**	**53565TC**	**53565TF**	**53565TE**	R3/32	**3/16**	3/16	1-1/8	3
53573	**53573TN**	**53573TC**	**53573TF**	**53573TE**	R1/8	**1/4**	1/4	1-1/2	4
53901	**53901TN**	**53901TC**	**53901TF**	**53901TE**	R1/8	**1/4**	1/4	1-1/2	6
53579	**53579TN**	**53579TC**	**53579TF**	**53579TE**	R5/32	**5/16**	5/16	1-5/8	4
53584	**53584TN**	**53584TC**	**53584TF**	**53584TE**	R3/16	**3/8**	3/8	1-3/4	4
53902	**53902TN**	**53902TC**	**53902TF**	**53902TE**	R3/16	**3/8**	3/8	1-1/2	6
53588	**53588TN**	**53588TC**	**53588TF**	**53588TE**	R7/32	**7/16**	7/16	3	6
53903	**53903TN**	**53903TC**	**53903TF**	**53903TE**	R1/4	**1/2**	1/2	1-1/2	6
53593	**53593TN**	**53593TC**	**53593TF**	**53593TE**	R1/4	**1/2**	1/2	3	6
53595	**53595TN**	**53595TC**	**53595TF**	**53595TE**	R5/16	**5/8**	5/8	3	6
53904	**53904TN**	**53904TC**	**53904TF**	**53904TE**	R5/16	**5/8**	5/8	1-1/2	6
53598	**53598TN**	**53598TC**	**53598TF**	**53598TE**	R3/8	**3/4**	3/4	3	6
53905	**53905TN**	**53905TC**	**53905TF**	**53905TE**	R3/8	**3/4**	3/4	1-1/2	6
53600	**53600TN**	**53600TC**	**53600TF**	**53600TE**	R1/2	**1**	1	3	6
53906	**53906TN**	**53906TC**	**53906TF**	**53906TE**	R1/2	**1**	1	1-1/2	6

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005

◎ : Excellent ○ : Good

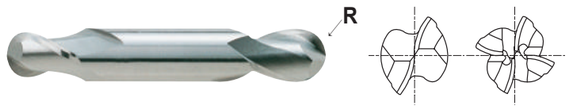
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○				○	○		○				

CARBIDE END MILLS

E5251 SERIES PLAIN SHANK
E5252 SERIES PLAIN SHANK

CARBIDE, 2&4 FLUTE STUB LENGTH DOUBLE BALL NOSE

- Same construction features as single end mill in a more economical version.
- Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



MG | 2&4 | 30° | R ±.0008 | PLAIN P.1167, 1168

E5251 Series ■ 2 FLUTE

Unit : Inch

EDP No.					Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	R (±.0008)				
47570	**47570TN**	**47570TC**	**47570TF**	**47570TE**	R7/64	**7/32**	1/4	1/2	2-1/2
47573	**47573TN**	**47573TC**	**47573TF**	**47573TE**	R1/8	**1/4**	1/4	1/2	2-1/2
47579	**47579TN**	**47579TC**	**47579TF**	**47579TE**	R5/32	**5/16**	5/16	1/2	2-1/2
47584	**47584TN**	**47584TC**	**47584TF**	**47584TE**	R3/16	**3/8**	3/8	9/16	2-1/2
47588	**47588TN**	**47588TC**	**47588TF**	**47588TE**	R7/32	**7/16**	7/16	9/16	2-3/4
47593	**47593TN**	**47593TC**	**47593TF**	**47593TE**	R1/4	**1/2**	1/2	5/8	3

E5252 Series ■ 4 FLUTE

Unit : Inch

EDP No.					Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	R (±.0008)				
48570	**48570TN**	**48570TC**	**48570TF**	**48570TE**	R7/64	**7/32**	1/4	1/2	2-1/2
48573	**48573TN**	**48573TC**	**48573TF**	**48573TE**	R1/8	**1/4**	1/4	1/2	2-1/2
48579	**48579TN**	**48579TC**	**48579TF**	**48579TE**	R5/32	**5/16**	5/16	1/2	2-1/2
48584	**48584TN**	**48584TC**	**48584TF**	**48584TE**	R3/16	**3/8**	3/8	9/16	2-1/2
48588	**48588TN**	**48588TC**	**48588TF**	**48588TE**	R7/32	**7/16**	7/16	9/16	2-3/4
48593	**48593TN**	**48593TC**	**48593TF**	**48593TE**	R1/4	**1/2**	1/2	5/8	3

Mill Dia. Tolerance (inch)	
0~-.0012	* * 0~-.0020

* * The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○				○	○		○				

CARBIDE END MILLS

E5216 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS

- Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



MG | 4 | 30° | R ±.001 | PLAIN P.1166

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	YG:TYLON F	R				
07558-015R	**07558TF-015R**	R.015	**1/8**	1/8	1/2	1-1/2
07558-030R	**07558TF-030R**	R.030	**1/8**	1/8	1/2	1-1/2
07565-015R	**07565TF-015R**	R.015	**3/16**	3/16	5/8	2
07565-030R	**07565TF-030R**	R.030	**3/16**	3/16	5/8	2
07573-015R	**07573TF-015R**	R.015	**1/4**	1/4	3/4	2-1/2
07573-030R	**07573TF-030R**	R.030	**1/4**	1/4	3/4	2-1/2
07573-045R	**07573TF-045R**	R.045	**1/4**	1/4	3/4	2-1/2
07579-015R	**07579TF-015R**	R.015	**5/16**	5/16	13/16	2-1/2
07579-030R	**07579TF-030R**	R.030	**5/16**	5/16	13/16	2-1/2
07579-045R	**07579TF-045R**	R.045	**5/16**	5/16	13/16	2-1/2
07584-015R	**07584TF-015R**	R.015	**3/8**	3/8	1	2-1/2
07584-030R	**07584TF-030R**	R.030	**3/8**	3/8	1	2-1/2
07584-045R	**07584TF-045R**	R.045	**3/8**	3/8	1	2-1/2
07584-060R	**07584TF-060R**	R.060	**3/8**	3/8	1	2-1/2
07588-015R	**07588TF-015R**	R.015	**7/16**	7/16	1	2-3/4
07588-030R	**07588TF-030R**	R.030	**7/16**	7/16	1	2-3/4
07588-045R	**07588TF-045R**	R.045	**7/16**	7/16	1	2-3/4
07588-060R	**07588TF-060R**	R.060	**7/16**	7/16	1	2-3/4
07588-090R	**07588TF-090R**	R.090	**7/16**	7/16	1	2-3/4
07593-015R	**07593TF-015R**	R.015	**1/2**	1/2	1	3
07593-030R	**07593TF-030R**	R.030	**1/2**	1/2	1	3
07593-045R	**07593TF-045R**	R.045	**1/2**	1/2	1	3
07593-060R	**07593TF-060R**	R.060	**1/2**	1/2	1	3
07593-090R	**07593TF-090R**	R.090	**1/2**	1/2	1	3
07593-125R	**07593TF-125R**	R.125	**1/2**	1/2	1	3
07595-015R	**07595TF-015R**	R.015	**5/8**	5/8	1-1/4	3-1/2
07595-030R	**07595TF-030R**	R.030	**5/8**	5/8	1-1/4	3-1/2
07595-045R	**07595TF-045R**	R.045	**5/8**	5/8	1-1/4	3-1/2

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			○	○	○		○				

CARBIDE END MILLS

E5216 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS

▶ Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



MG | 4 | 30° | R ±.001 | PLAIN P.1166

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	YG:TYLON F	R				
07595-060R	**07595TF-060R**	R.060	**5/8**	5/8	1-1/4	3-1/2
07595-090R	**07595TF-090R**	R.090	**5/8**	5/8	1-1/4	3-1/2
07595-125R	**07595TF-125R**	R.125	**5/8**	5/8	1-1/4	3-1/2
07598-015R	**07598TF-015R**	R.015	**3/4**	3/4	1-1/2	4
07598-030R	**07598TF-030R**	R.030	**3/4**	3/4	1-1/2	4
07598-045R	**07598TF-045R**	R.045	**3/4**	3/4	1-1/2	4
07598-060R	**07598TF-060R**	R.060	**3/4**	3/4	1-1/2	4
07598-090R	**07598TF-090R**	R.090	**3/4**	3/4	1-1/2	4
07598-125R	**07598TF-125R**	R.125	**3/4**	3/4	1-1/2	4
07600-015R	**07600TF-015R**	R.015	**1**	1	1-1/2	4
07600-030R	**07600TF-030R**	R.030	**1**	1	1-1/2	4
07600-045R	**07600TF-045R**	R.045	**1**	1	1-1/2	4
07600-060R	**07600TF-060R**	R.060	**1**	1	1-1/2	4
07600-090R	**07600TF-090R**	R.090	**1**	1	1-1/2	4
07600-125R	**07600TF-125R**	R.125	**1**	1	1-1/2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			○	○	○		○				

CARBIDE END MILLS

E5069 SERIES PLAIN SHANK

CARBIDE, 5 FLUTE 45° HELIX REGULAR LENGTH CORNER RADIUS

Designed to machine stainless steels, Inconols and other alloys.
5 Flute and 45° medium helix allow harmonic balance and smooth cutting.



MG | 5 | 45° | R ±.001 | PLAIN P.1162

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R				
86573TF-030R	R.030	**1/4**	1/4	3/4	2-1/2
86584TF-030R	R.030	**3/8**	3/8	1	2-1/2
86584TF-060R	R.060	**3/8**	3/8	1	2-1/2
86593TF-030R	R.030	**1/2**	1/2	1-1/4	3
86593TF-060R	R.060	**1/2**	1/2	1-1/4	3
86593TF-090R	R.090	**1/2**	1/2	1-1/4	3
86595TF-030R	R.030	**5/8**	5/8	1-5/8	3-1/2
86595TF-060R	R.060	**5/8**	5/8	1-5/8	3-1/2
86595TF-090R	R.090	**5/8**	5/8	1-5/8	3-1/2
86595TF-125R	R.125	**5/8**	5/8	1-5/8	3-1/2
86598TF-030R	R.030	**3/4**	3/4	1-5/8	4
86598TF-060R	R.060	**3/4**	3/4	1-5/8	4
86598TF-090R	R.090	**3/4**	3/4	1-5/8	4
86598TF-125R	R.125	**3/4**	3/4	1-5/8	4
86598TF-156R	R.156	**3/4**	3/4	1-5/8	4
86598TF-187R	R.187	**3/4**	3/4	1-5/8	4
86600TF-030R	R.030	**1**	1	2	4
86600TF-060R	R.060	**1**	1	2	4
86600TF-090R	R.090	**1**	1	2	4
86600TF-125R	R.125	**1**	1	2	4
86600TF-156R	R.156	**1**	1	2	4
86600TF-187R	R.187	**1**	1	2	4

Any non stocked radius available in 1 week for uncoated tools

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	○	○					○	○

CARBIDE END MILLS

E5243 SERIES — PLAIN SHANK FLAT SHANK

CARBIDE, 3 FLUTE 45° HELIX REGULAR LENGTH

- Designed to machine stainless steel, inconel, titanium and other hard to machine materials.
- It's 3 flute design gives high stability and allows good chip removal in plunging & slotting operations.
- The normal rake angle and 45° medium helix allows an extremely wide range of application.
- YG:TYLON super TiAlN coating are recommended for maximum performance.





MG | 3 | 45° | PLAIN | FLAT | P.1162

Ø1/8~Ø5/16 Ø3/8~Ø1

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
34558	**34558TN**	**34558TC**	**34558TF**	**34558TE**	**1/8**	1/8	3/8	1-1/2
34565	**34565TN**	**34565TC**	**34565TF**	**34565TE**	**3/16**	3/16	9/16	2
34573	**34573TN**	**34573TC**	**34573TF**	**34573TE**	**1/4**	1/4	3/4	2-1/2
34579	**34579TN**	**34579TC**	**34579TF**	**34579TE**	**5/16**	5/16	13/16	2-1/2
34584	**34584TN**	**34584TC**	**34584TF**	**34584TE**	**3/8**	3/8	7/8	2-1/2
34593	**34593TN**	**34593TC**	**34593TF**	**34593TE**	**1/2**	1/2	1	3
34594	**34594TN**	**34594TC**	**34594TF**	**34594TE**	**9/16**	9/16	1-1/4	3-1/2
34595	**34595TN**	**34595TC**	**34595TF**	**34595TE**	**5/8**	5/8	1-1/4	3-1/2
34598	**34598TN**	**34598TC**	**34598TF**	**34598TE**	**3/4**	3/4	1-1/2	4
34600	**34600TN**	**34600TC**	**34600TF**	**34600TE**	**1**	1	1-1/2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	○	○					○	○

CARBIDE END MILLS

E5059 SERIES — PLAIN SHANK

CARBIDE, 3 FLUTE 50° HELIX STUB & REGULAR & LONG LENGTH

- Designed to machine stainless steel, inconel, titanium and other hard to machine materials.
- It's 3 flute design gives high stability and allows good chip removal in plunging & slotting operations.
- The high rake angle and 50° helix allows an extremely wide range of application.
- YG:TYLON super TiAlN coating are recommended for maximum performance.



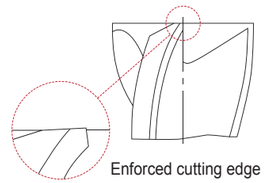


MG | 3 | 50° | PLAIN | P.1162

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
83573	**83573TN**	**83573TC**	**83573TF**	**83573TE**	**1/4**	1/4	1/2	2
83901	**83901TN**	**83901TC**	**83901TF**	**83901TE**	**1/4**	1/4	3/4	2-1/2
83902	**83902TN**	**83902TC**	**83902TF**	**83902TE**	**1/4**	1/4	1-1/4	3
83584	**83584TN**	**83584TC**	**83584TF**	**83584TE**	**3/8**	3/8	1/2	2
83903	**83903TN**	**83903TC**	**83903TF**	**83903TE**	**3/8**	3/8	1	2-1/2
83904	**83904TN**	**83904TC**	**83904TF**	**83904TE**	**3/8**	3/8	1-1/2	3-1/2
83593	**83593TN**	**83593TC**	**83593TF**	**83593TE**	**1/2**	1/2	5/8	2-1/2
83905	**83905TN**	**83905TC**	**83905TF**	**83905TE**	**1/2**	1/2	1	3
83906	**83906TN**	**83906TC**	**83906TF**	**83906TE**	**1/2**	1/2	2	4
83595	**83595TN**	**83595TC**	**83595TF**	**83595TE**	**5/8**	5/8	7/8	3
83907	**83907TN**	**83907TC**	**83907TF**	**83907TE**	**5/8**	5/8	2-1/2	6
83598	**83598TN**	**83598TC**	**83598TF**	**83598TE**	**3/4**	3/4	1	3-1/2
83908	**83908TN**	**83908TC**	**83908TF**	**83908TE**	**3/4**	3/4	3	6

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	○	○					○	○

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

CARBIDE END MILLS

E5246 SERIES PLAIN SHANK FLAT SHANK

CARBIDE, 3 FLUTE 60° HELIX REGULAR LENGTH

- Excellent shearing and chip ejection due to 60° Helix.
- 20% ~ 30% increase in chip load recommended over 30° helix tools.





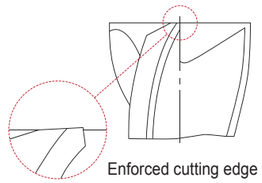
MG | 3 | 60° | PLAIN | FLAT | P.1162

Ø1/8~Ø5/16 Ø3/8~Ø1

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
20558	**20558TN**	**20558TC**	**20558TF**	**20558TE**	**1/8**	1/8	3/8	1-1/2
20565	**20565TN**	**20565TC**	**20565TF**	**20565TE**	**3/16**	3/16	9/16	2
20573	**20573TN**	**20573TC**	**20573TF**	**20573TE**	**1/4**	1/4	3/4	2-1/2
20579	**20579TN**	**20579TC**	**20579TF**	**20579TE**	**5/16**	5/16	13/16	2-1/2
20584	**20584TN**	**20584TC**	**20584TF**	**20584TE**	**3/8**	3/8	7/8	2-1/2
20593	**20593TN**	**20593TC**	**20593TF**	**20593TE**	**1/2**	1/2	1	3
20594	**20594TN**	**20594TC**	**20594TF**	**20594TE**	**9/16**	9/16	1-1/4	3-1/2
20595	**20595TN**	**20595TC**	**20595TF**	**20595TE**	**5/8**	5/8	1-1/4	3-1/2
20598	**20598TN**	**20598TC**	**20598TF**	**20598TE**	**3/4**	3/4	1-1/2	4
20600	**20600TN**	**20600TC**	**20600TF**	**20600TE**	**1**	1	1-1/2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	○	○					○	○

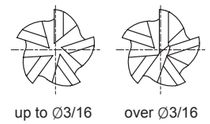
CARBIDE END MILLS

E5066 SERIES PLAIN SHANK

CARBIDE, 5 FLUTE 45° HELIX STUB LENGTH

- Designed to machine stainless steels, inconels and other alloys.
- The new design of stub length allows cutting at maximum speeds and feeds with minimum deflection
- 5 Flute and 45° medium helix allow harmonic balance and smooth cutting.





up to Ø3/16 over Ø3/16

MG | 5 | 45° | PLAIN | P.1162

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
85558	**85558TN**	**85558TC**	**85558TF**	**85558TE**	**1/8**	1/8	1/4	1-1/2
85561	**85561TN**	**85561TC**	**85561TF**	**85561TE**	**5/32**	3/16	5/16	2
85565	**85565TN**	**85565TC**	**85565TF**	**85565TE**	**3/16**	3/16	5/16	2
85570	**85570TN**	**85570TC**	**85570TF**	**85570TE**	**7/32**	1/4	3/8	2
85573	**85573TN**	**85573TC**	**85573TF**	**85573TE**	**1/4**	1/4	3/8	2
85579	**85579TN**	**85579TC**	**85579TF**	**85579TE**	**5/16**	5/16	7/16	2
85584	**85584TN**	**85584TC**	**85584TF**	**85584TE**	**3/8**	3/8	1/2	2
85588	**85588TN**	**85588TC**	**85588TF**	**85588TE**	**7/16**	7/16	9/16	2-1/2
85593	**85593TN**	**85593TC**	**85593TF**	**85593TE**	**1/2**	1/2	5/8	2-1/2
85595	**85595TN**	**85595TC**	**85595TF**	**85595TE**	**5/8**	5/8	3/4	3
85598	**85598TN**	**85598TC**	**85598TF**	**85598TE**	**3/4**	3/4	1	3
85600	**85600TN**	**85600TC**	**85600TF**	**85600TE**	**1**	1	1-1/4	3

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	○	○					○	○

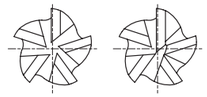
CARBIDE END MILLS

E5067 SERIES PLAIN SHANK

CARBIDE, 5 FLUTE 45° HELIX REGULAR LENGTH

- Designed to machine stainless steels, inconels and other alloys.
- The new design of stub length allows cutting at maximum speeds and feeds with minimum deflection
- 5 Flute and 45° medium helix allow harmonic balance and smooth cutting.





up to Ø3/16 over Ø3/16

MG 5 45° PLAIN P.1162

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
86558	86558TN	86558TC	86558TF	86558TE	1/8	1/8	1/2	1-1/2
86561	86561TN	86561TC	86561TF	86561TE	5/32	3/16	9/16	2
86565	86565TN	86565TC	86565TF	86565TE	3/16	3/16	9/16	2
86570	86570TN	86570TC	86570TF	86570TE	7/32	1/4	3/4	2-1/2
86573	86573TN	86573TC	86573TF	86573TE	1/4	1/4	3/4	2-1/2
86579	86579TN	86579TC	86579TF	86579TE	5/16	5/16	13/16	2-1/2
86584	86584TN	86584TC	86584TF	86584TE	3/8	3/8	1	2-1/2
86588	86588TN	86588TC	86588TF	86588TE	7/16	7/16	1	2-3/4
86593	86593TN	86593TC	86593TF	86593TE	1/2	1/2	1-1/4	3
86595	86595TN	86595TC	86595TF	86595TE	5/8	5/8	1-5/8	3-1/2
86598	86598TN	86598TC	86598TF	86598TE	3/4	3/4	1-5/8	4
86599	86599TN	86599TC	86599TF	86599TE	7/8	7/8	2	4
86600	86600TN	86600TC	86600TF	86600TE	1	1	2	4

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	○	○					○	○

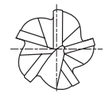
CARBIDE END MILLS

E5068 SERIES PLAIN SHANK

CARBIDE, 5 FLUTE 45° HELIX MEDIUM & LONG LENGTH

- Designed to machine stainless steel, inconels and other alloys.
- The new design of stub length allows cutting at maximum speeds and feeds with minimum deflection
- 5 Flute and 45° medium helix allow harmonic balance and smooth cutting.





MG 5 45° PLAIN P.1162

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
58573	58573TN	58573TC	58573TF	58573TE	1/4	1/4	1-1/4	4
58579	58579TN	58579TC	58579TF	58579TE	5/16	5/16	1-1/4	4
58584	58584TN	58584TC	58584TF	58584TE	3/8	3/8	1-1/2	4
58588	58588TN	58588TC	58588TF	58588TE	7/16	7/16	2	4
58593	58593TN	58593TC	58593TF	58593TE	1/2	1/2	2	4
58595	58595TN	58595TC	58595TF	58595TE	5/8	5/8	2-1/2	5
58598	58598TN	58598TC	58598TF	58598TE	3/4	3/4	3-1/4	6
58901	58901TN	58901TC	58901TF	58901TE	3/4	3/4	2-1/4	5
58600	58600TN	58600TC	58600TF	58600TE	1	1	3-1/4	6
58902	58902TN	58902TC	58902TF	58902TE	1	1	2-5/8	6

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	○	○					○	○

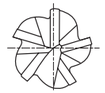
CARBIDE END MILLS

E5073 SERIES PLAIN SHANK

CARBIDE, 5 FLUTE 45° HELIX EXTRA LONG LENGTH

- Designed to machine stainless steel, inconels and other alloys.
- The new design of stub length allows cutting at maximum speeds and feeds with minimum deflection
- 5 Flute and 45° medium helix allow harmonic balance and smooth cutting.





MG 5 45° PLAIN P.1162

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
59579	59579TN	59579TC	59579TF	59579TE	5/16	5/16	2-1/8	4
59584	59584TN	59584TC	59584TF	59584TE	3/8	3/8	2-1/2	6
59593	59593TN	59593TC	59593TF	59593TE	1/2	1/2	3-1/8	6
59595	59595TN	59595TC	59595TF	59595TE	5/8	5/8	4	6
59598	59598TN	59598TC	59598TF	59598TE	3/4	3/4	4	6
59600	59600TN	59600TC	59600TF	59600TE	1	1	4-1/8	7

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	○	○					○	○

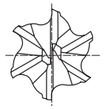
CARBIDE END MILLS

E5058 SERIES PLAIN SHANK

CARBIDE, 6 FLUTE 40° HELIX REGULAR LENGTH

- For finishing in most materials.
- 20～40% increase in inches per minute over 4 flute tools.
- YG:TYLON SUPER TiAlN coating recommended for maximum performance.





MG 6 40° PLAIN P.1162

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
84565	84565TN	84565TC	84565TF	84565TE	3/16	3/16	5/8	2
84573	84573TN	84573TC	84573TF	84573TE	1/4	1/4	3/4	2-1/2
84579	84579TN	84579TC	84579TF	84579TE	5/16	5/16	7/8	2-1/2
84584	84584TN	84584TC	84584TF	84584TE	3/8	3/8	7/8	2-1/2
84588	84588TN	84588TC	84588TF	84588TE	7/16	7/16	1	2-1/2
84593	84593TN	84593TC	84593TF	84593TE	1/2	1/2	1	3
84595	84595TN	84595TC	84595TF	84595TE	5/8	5/8	1-1/4	3-1/2
84598	84598TN	84598TC	84598TF	84598TE	3/4	3/4	1-1/2	4

MATERIAL HARDNESS		
Recommended Coating	Under 45 Rc F	Over 45 Rc E

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	○	○					○	○

CARBIDE END MILLS

E5056 SERIES FLAT SHANK
E5057 SERIES FLAT SHANK

CARBIDE, 5 FLUTE 45° HELIX STUB & REGULAR LENGTH FINE PITCH ROUGHING CORNER RADIUS

- ▶5 flute design gives minimum harmonic vibration.
- ▶Stub tools for minimum deflection and maximum rigidity.
- ▶Ideal for profile milling.
- ▶Not recommended for slotting.



MG | FINE | 5 | 45° | FLAT P.1162

E5056 Series ■ STUB LENGTH

Unit : Inch

EDP No.					Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	R				
81584	**81584TN**	**81584TC**	**81584TF**	**81584TE**	.040	**3/8**	3/8	1/2	2
81593	**81593TN**	**81593TC**	**81593TF**	**81593TE**	.040	**1/2**	1/2	5/8	2-1/2
81595	**81595TN**	**81595TC**	**81595TF**	**81595TE**	.060	**5/8**	5/8	3/4	3
81598	**81598TN**	**81598TC**	**81598TF**	**81598TE**	.060	**3/4**	3/4	1	3
81600	**81600TN**	**81600TC**	**81600TF**	**81600TE**	.060	**1**	1	1-1/4	3

E5057 Series ■ REGULAR LENGTH

Unit : Inch

EDP No.					Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	R				
82584	**82584TN**	**82584TC**	**82584TF**	**82584TE**	.040	**3/8**	3/8	1	2-1/2
82593	**82593TN**	**82593TC**	**82593TF**	**82593TE**	.040	**1/2**	1/2	1-1/4	3
82595	**82595TN**	**82595TC**	**82595TF**	**82595TE**	.060	**5/8**	5/8	1-5/8	3-1/2
82598	**82598TN**	**82598TC**	**82598TF**	**82598TE**	.060	**3/4**	3/4	1-5/8	4
82600	**82600TN**	**82600TC**	**82600TF**	**82600TE**	.060	**1**	1	2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.003	0~-.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎							○	

CARBIDE END MILLS

E5077 SERIES PLAIN SHANK

CARBIDE, 3 FLUTE TAPER

- ▶Designed for milling die cavity.
- ▶Many different center line angles are available on your job requirement.



MG | 3 | 30° | PLAIN P.1162

Unit : Inch

EDP No.					Cutting Small Diameter	Shank Diameter	Length of Cut	Overall Length	Center Ling Angle
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E					
87552	**87552TN**	**87552TC**	**87552TF**	**87552TE**	**1/8**	1/4	1-1/2	3	1°
87553	**87553TN**	**87553TC**	**87553TF**	**87553TE**	**1/8**	1/4	1-1/2	3	1.5°
87554	**87554TN**	**87554TC**	**87554TF**	**87554TE**	**1/8**	1/4	1-1/4	3	2°
87556	**87556TN**	**87556TC**	**87556TF**	**87556TE**	**1/8**	1/4	1	3	3°
87560	**87560TN**	**87560TC**	**87560TF**	**87560TE**	**1/8**	1/4	3/4	3	5°
87564	**87564TN**	**87564TC**	**87564TF**	**87564TE**	**1/8**	1/4	1/2	3	7°
87570	**87570TN**	**87570TC**	**87570TF**	**87570TE**	**3/32**	1/4	1/2	3	10°
87572	**87572TN**	**87572TC**	**87572TF**	**87572TE**	**3/16**	3/8	1-3/4	3-1/2	1°
87573	**87573TN**	**87573TC**	**87573TF**	**87573TE**	**3/16**	3/8	1-3/4	3-1/2	1.5°
87574	**87574TN**	**87574TC**	**87574TF**	**87574TE**	**3/16**	3/8	1-3/4	3-1/2	2°
87576	**87576TN**	**87576TC**	**87576TF**	**87576TE**	**5/32**	3/8	1-3/4	3-1/2	3°
87580	**87580TN**	**87580TC**	**87580TF**	**87580TE**	**1/8**	3/8	1-1/2	3-1/2	5°
87584	**87584TN**	**87584TC**	**87584TF**	**87584TE**	**1/8**	3/8	1	3-1/2	7°
87590	**87590TN**	**87590TC**	**87590TF**	**87590TE**	**1/8**	3/8	3/4	3-1/2	10°
87592	**87592TN**	**87592TC**	**87592TF**	**87592TE**	**1/4**	1/2	2	4	1°
87594	**87594TN**	**87594TC**	**87594TF**	**87594TE**	**1/4**	1/2	2	4	2°
87596	**87596TN**	**87596TC**	**87596TF**	**87596TE**	**1/4**	1/2	2	4	3°
87600	**87600TN**	**87600TC**	**87600TF**	**87600TE**	**1/4**	1/2	1-1/4	4	5°
87902	**87902TN**	**87902TC**	**87902TF**	**87902TE**	**3/16**	1/2	1-1/4	4	7°
87903	**87903TN**	**87903TC**	**87903TF**	**87903TE**	**1/8**	1/2	1	4	10°

Cutting Small Dia. Tolerance(mm)		Shank Dia. Tolerance	Center Line Angle Tolerance
Ø1/16 ~ Ø1/4	0~-.0020	0~-.0005	±5′
Ø17/64 ~ Ø1	0~-.0030		

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			○	○	○		○				

CARBIDE END MILLS

E5078 SERIES PLAIN SHANK

CARBIDE, 3 FLUTE TAPER BALL NOSE

▶Designed for milling die cavity.
▶Many different center line angles are available on your job requirement.



MG | 3 | 30° | R ±.0008 | PLAIN P.1162

Unit : Inch

EDP No.					TIP Radius	Cutting Small Diameter	Shank Diameter	Length of Cut	Overall Length	Center Ling Angle
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	R (±.0008)					
88552	**88552TN**	**88552TC**	**88552TF**	**88552TE**	.062	**1/8**	1/4	1-1/2	3	1°
88553	**88553TN**	**88553TC**	**88553TF**	**88553TE**	.062	**1/8**	1/4	1-1/2	3	1.5°
88554	**88554TN**	**88554TC**	**88554TF**	**88554TE**	.062	**1/8**	1/4	1-1/4	3	2°
88556	**88556TN**	**88556TC**	**88556TF**	**88556TE**	.062	**1/8**	1/4	1	3	3°
88560	**88560TN**	**88560TC**	**88560TF**	**88560TE**	.062	**1/8**	1/4	3/4	3	5°
88564	**88564TN**	**88564TC**	**88564TF**	**88564TE**	.062	**1/8**	1/4	1/2	3	7°
88570	**88570TN**	**88570TC**	**88570TF**	**88570TE**	.047	**3/32**	1/4	1/2	3	10°
88572	**88572TN**	**88572TC**	**88572TF**	**88572TE**	.093	**3/16**	3/8	1-3/4	3-1/2	1°
88573	**88573TN**	**88573TC**	**88573TF**	**88573TE**	.093	**3/16**	3/8	1-3/4	3-1/2	1.5°
88574	**88574TN**	**88574TC**	**88574TF**	**88574TE**	.093	**3/16**	3/8	1-3/4	3-1/2	2°
88576	**88576TN**	**88576TC**	**88576TF**	**88576TE**	.078	**5/32**	3/8	1-3/4	3-1/2	3°
88580	**88580TN**	**88580TC**	**88580TF**	**88580TE**	.062	**1/8**	3/8	1-1/2	3-1/2	5°
88584	**88584TN**	**88584TC**	**88584TF**	**88584TE**	.062	**1/8**	3/8	1	3-1/2	7°
88590	**88590TN**	**88590TC**	**88590TF**	**88590TE**	.062	**1/8**	3/8	3/4	3-1/2	10°
88592	**88592TN**	**88592TC**	**88592TF**	**88592TE**	.125	**1/4**	1/2	2	4	1°
88594	**88594TN**	**88594TC**	**88594TF**	**88594TE**	.125	**1/4**	1/2	2	4	2°
88596	**88596TN**	**88596TC**	**88596TF**	**88596TE**	.125	**1/4**	1/2	2	4	3°
88600	**88600TN**	**88600TC**	**88600TF**	**88600TE**	.125	**1/4**	1/2	1-1/4	4	5°
88902	**88902TN**	**88902TC**	**88902TF**	**88902TE**	.093	**3/16**	1/2	1-1/4	4	7°
88903	**88903TN**	**88903TC**	**88903TF**	**88903TE**	.062	**1/8**	1/2	1	4	10°

Cutting Small Dia. Tolerance(mm)		Shank Dia. Tolerance	Center Line Angle Tolerance
Ø1/16 ~ Ø1/4	0~-.0020	0~-.0005	±5′
Ø17/64 ~ Ø1	0~-.0030		

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			○	○	○		○				

CARBIDE END MILLS

EH527 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG LENGTH - TiAlN 'F' Coated



MG | DIN 6528 | N | 2 | ≈30° | DIN 6535HA P.1169

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	Metric	Inch			
	h10		h6		
EH527035	**3.5**	**.1378**	3.5	7	50
EH527040	**4.0**	**.1575**	4	8	50
EH527045	**4.5**	**.1772**	4.5	8	50
EH527050	**5.0**	**.1969**	5	10	50
EH527055	**5.5**	**.2165**	5.5	10	57
EH527060	**6.0**	**.2362**	6	10	57
EH527065	**6.5**	**.2559**	6.5	13	60
EH527070	**7.0**	**.2756**	7	13	60
EH527075	**7.5**	**.2953**	7.5	16	63
EH527080	**8.0**	**.3150**	8	16	63
EH527085	**8.5**	**.3346**	8.5	16	67
EH527090	**9.0**	**.3543**	9	16	67
EH527095	**9.5**	**.3740**	9.5	19	72
EH527100	**10.0**	**.3937**	10	19	72
EH527110	**11.0**	**.4330**	11	22	83
EH527120	**12.0**	**.4724**	12	22	83
EH527130	**13.0**	**.5118**	13	22	83
EH527140	**14.0**	**.5512**	14	22	83
EH527150	**15.0**	**.5905**	15	26	92
EH527160	**16.0**	**.6299**	16	26	92
EH527180	**18.0**	**.7087**	18	26	92
EH527200	**20.0**	**.7874**	20	32	104

Tolerances according to DIN 7160 & 7161

Tolerance range in µm					
Nominal-Diameter in mm					
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
h10	0 / − 40	0 / − 48	0 / − 58	0 / − 70	0 / − 84
h6	0 / − 6	0 / − 8	0 / − 9	0 / − 11	0 / − 13

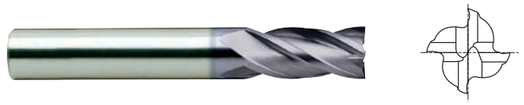
◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			○	○	○		○				

CARBIDE END MILLS

EH540 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG LENGTH - TiAlN 'F' Coated



MG | DIN 6528 | N | 4 | ≈30° | DIN 6535HA

P.1169

Unit : mm

EDP No.	Mill Diameter Metric h10	Mill Diameter Inch h10	Shank Diameter h6	Length of Cut	Overall Length
EH540035	3.5	.1378	3.5	10	50
EH540040	4.0	.1575	4	11	50
EH540045	4.5	.1772	4.5	11	50
EH540050	5.0	.1969	5	13	50
EH540055	5.5	.2165	5.5	13	57
EH540060	6.0	.2362	6	13	57
EH540065	6.5	.2559	6.5	16	60
EH540070	7.0	.2756	7	16	60
EH540075	7.5	.2953	7.5	19	63
EH540080	8.0	.3150	8	19	63
EH540085	8.5	.3346	8.5	19	67
EH540090	9.0	.3543	9	19	67
EH540095	9.5	.3740	9.5	22	72
EH540100	10.0	.3937	10	22	72
EH540110	11.0	.4330	11	26	83
EH540120	12.0	.4724	12	26	83
EH540130	13.0	.5118	13	26	83
EH540140	14.0	.5512	14	26	83
EH540150	15.0	.5905	15	32	92
EH540160	16.0	.6299	16	32	92
EH540180	18.0	.7087	18	32	92
EH540200	20.0	.7874	20	38	104

Tolerances according to DIN 7160 & 7161

Tolerance range in μm, Nominal-Diameter in mm	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
h10	0 / − 40	0 / − 48	0 / − 58	0 / − 70	0 / − 84
h6	0 / − 6	0 / − 8	0 / − 9	0 / − 11	0 / − 13

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			○	○	○		○				

CARBIDE END MILLS

EH882 SERIES PLAIN SHANK

CARBIDE, 3 FLUTE 35° HELIX CORNER RADIUS - TiAlN 'F' Coated



MG | DIN 6527 | N | 3 | 35° | DIN 6535HA

Unit : mm

EDP No.	Corner Radius R	Mill Diameter Metric h10	Mill Diameter Inch h10	Shank Diameter h6	Length of Cut	Overall Length
EH882030	0.20~0.25	3.0	.1181	3	4	38
EH882040	0.20~0.25	4.0	.1575	6	5	54
EH882050	0.20~0.25	5.0	.1969	6	6	54
EH882060	0.40~0.50	6.0	.2362	6	7	54
EH882080	0.40~0.50	8.0	.3150	8	9	58
EH882100	0.40~0.50	10.0	.3937	10	11	66
EH882120	0.75~0.85	12.0	.4724	12	12	73
EH882160	0.75~0.85	16.0	.6299	16	16	82
EH882200	0.75~0.85	20.0	.7874	20	20	92

TiN & TiCN-COATING are available on your request.

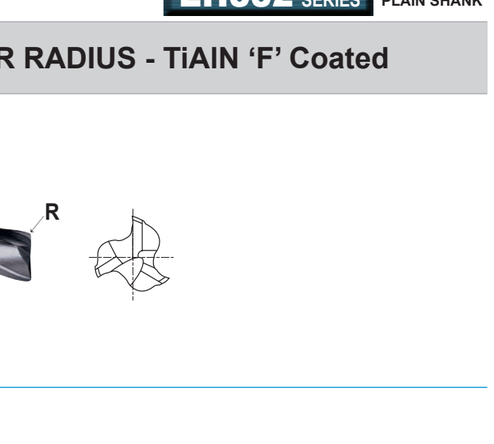
Tolerances according to DIN 7160 & 7161

Tolerance range in μm, Nominal-Diameter in mm	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
h10	0 / − 40	0 / − 48	0 / − 58	0 / − 70	0 / − 84
h6	0 / − 6	0 / − 8	0 / − 9	0 / − 11	0 / − 13

TiAlN FEED CHART

Unit : inch

Mill Diameter	Feed / Tooth	Mill Diameter	Feed / Tooth
3	.0035 ~ .0070	10	.0018 ~ .0040
5	.0050 ~ .0025	12	.0025 ~ .0050
6	.0012 ~ .0030	16	.0030 ~ .0060
8	.0018 ~ .0035	20	.0035 ~ .0070



◎ : Excellent ○ : Good

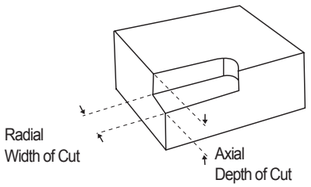
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○				○	◎		◎				

CARBIDE END MILLS — RECOMMENDED CUTTING CONDITIONS

SPEED & FEED RECOMMENDATIONS

Material	Speed	Chip Load per Tooth by End Mill Diameter			Recommended Coating
		Up to 1/4"	Up to 1/2"	Up to 1"	
Carbon + Alloy Steel <45Rc	100-700	.0002-.002	.001-.003	.003-.007	TF
Carbon + Alloy Steel >45Rc	50-400	.0002-.001	.0005-.0015	.001-.003	TE
Stainless Steels Non-Hardenable 200-300 Series	150-500	.0002-.001	.001-.002	.002-.006	TF
Stainless Steels Hardenable 400 Series Martensitic and PH Series	100-450	.0002-.0005	.0005-.001	.001-.005	TF
Cast+Ductile Iron	100-800	.0002-.0015	.002-.003	.003-.008	TF or TE
Nickel+Cobalt Based Alloys	20-200	.0003-.0008	.0008-.001	.001-.002	TE
Titanium	30-200	.0002-.0008	.0008-.002	.002-.004	TE
Aluminum	600-2000	.0002-.002	.002-.004	.004-.008	TiCN
Copper	300-1000	.0005-.002	.002-.003	.003-.006	CrN
Brass+ Bronze Alloys	600-1000	.0005-.002	.002-.003	.003-.006	TiCN
Graphite	600-1000	.0005-.005	.001-.008	.002-.010	D
Plastic	600-1200	.0006-.003	.003-.006	.006-.012	TF

TF = YG:TYLON F
TE = YG:TYLON E
D = DIAMOND
CrN = CROME NITRIDE



SPEED & FEED DETERMINANTS

1. MATERIAL HARDNESS
2. MACHINE RIGIDITY
3. TYPE OF COATING
4. TOOL GEOMETRY
5. FINISH REQUIREMENTS
6. DEPTH & WIDTH OF CUT

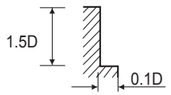
CARBIDE END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE - SIDE CUTTING

UGMF89, UGMGF57, UGMGF58, UGMGF59 SERIES

WORK MATERIAL	P												M			
	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				STAINLESS STEELS TITANIUM ALLOYS			
HARDNESS	~ HRc 20				HRc 20 ~ HRc 30				HRc 30 ~ HRc 40							
STRENGTH	500 ~ 800N/mm²				800N/mm² ~ 1000N/mm²				1000/mm² ~ 1300N/mm²							
DIAMETER	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz
1/16	11200	15.38	183	.0003	9640	13.40	158	.0003	8090	10.42	132	.0003	15560	12.90	255	.0002
5/64	10080	15.38	206	.0004	8680	13.40	178	.0004	7280	10.42	149	.0004	14000	12.90	287	.0002
3/32	9070	15.38	223	.0004	7810	13.40	192	.0004	6550	10.42	161	.0004	12600	12.90	309	.0003
7/64	7560	16.37	217	.0005	6550	14.39	188	.0005	5420	10.91	155	.0005	10650	12.90	305	.0003
1/8	6050	17.37	198	.0007	5290	15.37	173	.0007	4280	11.41	140	.0007	8690	12.90	285	.0004
9/64	5320	17.37	196	.0008	4600	15.37	169	.0008	3780	11.41	139	.0008	7620	12.90	281	.0004
5/32	4590	17.37	188	.0009	3910	15.37	160	.0010	3280	11.41	134	.0009	6550	12.90	268	.0005
11/64	4100	17.37	185	.0011	3530	15.37	159	.0011	2900	11.41	131	.0010	5920	12.90	267	.0005
3/16	3600	17.37	177	.0012	3150	15.37	155	.0012	2520	11.41	124	.0011	5290	12.90	260	.0006
13/64	3460	17.37	184	.0013	2990	15.37	159	.0013	2430	11.41	129	.0012	5040	12.90	268	.0006
7/32	3310	17.37	190	.0013	2840	15.37	162	.0014	2330	11.41	134	.0012	4790	12.90	275	.0007
15/64	3170	17.37	195	.0014	2680	15.37	164	.0014	2240	11.41	138	.0013	4540	12.90	279	.0007
1/4	3020	17.37	198	.0014	2520	15.37	165	.0015	2140	11.41	140	.0013	4280	12.90	280	.0008
9/32	2650	17.37	195	.0016	2210	15.37	162	.0017	1890	11.41	139	.0015	3780	12.90	279	.0009
5/16	2270	17.37	186	.0019	1890	15.37	155	.0020	1640	11.41	134	.0017	3280	12.90	269	.0010
3/8	1760	17.37	173	.0025	1510	15.37	149	.0025	1260	11.41	124	.0023	2520	12.90	248	.0013
7/16	1640	17.37	188	.0026	1390	15.37	159	.0028	1170	11.41	134	.0024	2330	12.90	267	.0014
1/2	1510	17.37	198	.0029	1260	15.37	165	.0031	1080	11.41	141	.0026	2140	12.90	280	.0015
9/16	1260	17.37	186	.0034	1130	15.37	167	.0034	930	11.41	137	.0031	1760	12.90	259	.0018
5/8	1130	19.34	185	.0043	1010	16.87	165	.0042	820	14.39	134	.0044	1640	14.39	269	.0022
3/4	980	19.34	193	.0049	830	16.87	164	.0051	690	14.39	136	.0052	1350	15.37	265	.0028
7/8	830	17.41	190	.0052	700	16.87	160	.0054	590	12.95	135	.0055	1130	13.83	259	.0031
1	750	15.67	197	.0052	630	16.87	165	.0054	530	11.65	139	.0055	1020	12.45	267	.0031

WORK MATERIAL	K				N							
	CAST IRON				ALUMINIUM ALLOYS				COPPER, BRASS NON-FERROUS METALS			
HARDNESS												
STRENGTH												
DIAMETER	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz
1/16	13220	28.77	216	.0005	31110	59.52	509	.0005	23330	46.63	382	.0005
5/64	11900	28.77	244	.0006	28000	59.52	573	.0005	21000	46.63	430	.0006
3/32	10710	28.77	263	.0007	25200	59.52	619	.0006	18900	46.63	464	.0006
7/64	8820	28.77	253	.0008	21420	59.52	614	.0007	15750	46.63	451	.0007
1/8	6930	28.77	227	.0010	17640	59.52	578	.0008	12600	46.63	413	.0009
9/64	6110	28.77	225	.0012	15120	59.52	557	.0010	11340	46.63	418	.0010
5/32	5290	28.77	217	.0014	12600	59.52	516	.0012	10080	46.63	413	.0012
11/64	4730	28.77	213	.0015	11530	59.52	519	.0013	8950	46.63	403	.0013
3/16	4160	28.77	204	.0017	10460	59.52	514	.0014	7810	46.63	384	.0015
13/64	3970	30.26	211	.0019	10020	60.77	533	.0015	7500	47.37	399	.0016
7/32	3780	31.75	217	.0021	9580	62.01	549	.0016	7180	48.12	412	.0017
15/64	3590	33.24	220	.0023	9140	63.25	561	.0017	6870	48.86	422	.0018
1/4	3400	34.72	223	.0026	8690	64.49	569	.0019	6550	49.60	429	.0019
9/32	2960	35.72	218	.0030	7620	64.49	561	.0021	5800	49.60	427	.0021
5/16	2520	36.71	206	.0036	6550	64.49	536	.0025	5040	49.60	413	.0025
3/8	2140	38.69	210	.0045	5290	64.49	520	.0030	3910	49.60	384	.0032
7/16	1890	39.68	217	.0052	4790	64.49	549	.0034	3590	49.60	412	.0035
1/2	1640	40.68	215	.0062	4280	64.49	561	.0038	3280	49.60	430	.0038
9/16	1510	42.66	223	.0071	3780	64.49	557	.0043	2770	49.60	408	.0045
5/8	1260	43.66	206	.0087	3280	64.49	537	.0049	2520	49.60	413	.0049
3/4	1100	38.69	216	.0088	2710	64.49	533	.0059	2100	49.60	413	.0059
7/8	950	34.82	218	.0092	2270	58.04	520	.0064	1770	44.64	406	.0063
1	850	31.34	223	.0092	2040	52.24	534	.0064	1590	40.18	417	.0063



RPM = rev./min.
Feed = inch/min.
SFM = ft/min
Fz = inch/tooth

CARBIDE END MILLS — RECOMMENDED CUTTING CONDITIONS

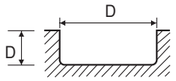
CARBIDE, 2 FLUTE - SLOTTING

UGMF90 SERIES

WORK MATERIAL	P												M			
	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				STAINLESS STEELS TITANIUM ALLOYS			
HARDNESS	~ HRc 20				HRc 20 ~ HRc 30				HRc 30 ~ HRc 40							
STRENGTH	500 ~ 800N/mm²				800N/mm² ~ 1000N/mm²				1000/mm² ~ 1300N/mm²							
DIAMETER	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz
1/8	6050	5.94	198	.0005	5290	5.21	173	.0005	4280	3.97	140	.0005	8690	4.22	285	.0002
3/16	3600	5.94	177	.0008	3150	5.21	155	.0008	2520	3.97	124	.0008	5290	4.22	260	.0004
1/4	3020	5.94	198	.0010	2520	5.21	165	.0010	2140	3.97	140	.0009	4280	4.22	280	.0005
3/8	1760	5.94	173	.0017	1510	5.21	148	.0017	1260	3.97	124	.0016	2520	4.22	248	.0008
1/2	1510	5.94	198	.0020	1260	5.21	165	.0021	1080	3.97	141	.0018	2140	4.22	280	.0010
5/8	1130	6.45	185	.0029	1010	5.46	165	.0027	820	4.97	134	.0030	1640	4.97	269	.0015
3/4	980	6.45	193	.0033	830	5.46	163	.0033	690	4.97	136	.0036	1350	4.97	265	.0018
1	750	5.22	197	.0035	630	4.42	165	.0035	530	4.02	139	.0038	1020	4.02	267	.0020

RPM = rev./min.
Feed = inch/min.
SFM = ft/min
Fz = inch/tooth

WORK MATERIAL	K				N							
	CAST IRON				ALUMINIUM ALLOYS				COPPER, BRASS NON-FERROUS METALS			
HARDNESS												
STRENGTH												
DIAMETER	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz
1/8	6930	9.91	227	.0007	17640	20.84	578	.0006	12600	15.37	413	.0006
3/16	4160	9.91	204	.0012	10460	20.84	514	.0010	7810	15.37	384	.0010
1/4	3400	11.41	223	.0017	8690	21.82	569	.0013	6550	16.87	429	.0013
3/8	2140	12.90	210	.0030	5290	21.82	520	.0021	3910	16.87	384	.0022
1/2	1640	13.40	215	.0041	4280	21.82	561	.0025	3280	16.87	430	.0026
5/8	1260	14.39	206	.0057	3280	21.82	537	.0033	2520	16.87	413	.0033
3/4	1100	15.37	216	.0070	2710	21.82	533	.0040	2100	16.87	413	.0040
1	850	12.45	223	.0073	2040	17.67	534	.0043	1590	13.67	417	.0043

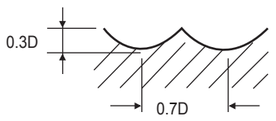


CARBIDE, 4 FLUTE BALL NOSE

UGMF91 SERIES

WORK MATERIAL	P								K				N			
	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CAST IRON				ALUMINIUM ALLOYS			
HARDNESS	~ HRc 30				HRc 30 ~ HRc 40											
STRENGTH	~ 1000N/mm²				1000N/mm² ~ 1300N/mm²											
DIAMETER	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz
1/8	5670	9.91	186	.0004	4790	4.46	157	.0002	8060	15.37	264	.0005	23440	27.28	768	.0003
3/16	3400	10.42	167	.0008	2770	4.46	136	.0004	4790	22.32	235	.0012	13860	32.25	681	.0006
1/4	2770	9.91	181	.0009	2380	4.46	156	.0005	3910	24.31	256	.0016	11840	32.25	776	.0007
3/8	1640	8.94	161	.0014	1390	4.46	137	.0008	2380	30.77	234	.0032	7060	36.71	694	.0013
1/2	1390	8.43	182	.0015	1200	4.46	157	.0009	2020	30.77	265	.0038	5920	42.65	776	.0018
5/8	1070	8.43	175	.0020	880	4.46	144	.0013	1510	31.74	247	.0052	4410	36.71	722	.0021
3/4	980	8.43	193	.0022	800	4.46	157	.0014	1320	31.74	259	.0060	4030	36.71	792	.0023
1	770	6.83	202	.0022	630	3.61	165	.0014	1020	25.71	267	.0063	3160	29.73	828	.0024

RPM = rev./min.
Feed = inch/min.
SFM = ft/min
Fz = inch/tooth

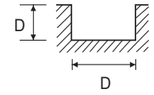


CARBIDE END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE - SLOTTING

E5020, E5244, E5011, E5026, E5022, E5025 SERIES

MATERIAL	P						M		K		N			
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS TITANIUM ALLOYS		CAST IRON		ALUMINUM ALLOYS		COPPER. BRASS NON-FERROUS METALS	
HARDNESS	~ HRc 20		HRc 20 ~ HRc 30		HRc 30 ~ HRc 40									
STRENGTH	500 ~ 800N/mm²		800 ~ 10 00N/mm²		1000 ~ 1300N/mm²									
DIAMETER	RPM	FEED	RPM	FEED	FEED	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	5500	3.2	4800	2.8	4000	2.2	8000	2.6	6500	5.9	16000	12.6	12000	9.5
1/8	3700	3.5	3200	3.2	2600	2.4	5300	2.6	4200	5.9	11000	12.6	8000	9.5
5/32	2800	3.5	2400	3.2	2000	2.4	4000	2.6	3200	5.9	8000	12.6	6000	9.5
3/16	2200	3.5	1900	3.2	1600	2.4	3200	2.6	2500	5.9	6400	12.6	4800	9.5
1/4	1800	3.5	1600	3.2	1300	2.4	2600	2.6	2100	7.1	5300	13.4	4000	10.2
5/16	1400	3.5	1200	3.2	1000	2.4	2000	2.6	1600	7.5	4000	13.4	3000	10.2
3/8	1100	3.5	950	3.2	800	2.4	1600	2.6	1300	7.9	3200	13.4	2400	10.2
1/2	900	3.5	800	3.2	660	2.4	1300	2.6	1000	8.3	2600	13.4	2000	10.2
9/16	800	3.5	700	3.2	570	2.4	1100	2.6	900	8.7	2300	13.4	1700	10.2
5/8	700	3.9	600	3.4	500	3.0	1000	3.0	800	8.9	2000	13.4	1500	10.2
13/16	550	3.9	480	3.4	400	3.0	800	3.2	640	9.5	1600	13.4	1200	10.2



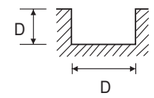
※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min. FEED = inch/min.

CARBIDE, 2 FLUTE TiAlN “F” COATED - SLOTTING

EH020, EH244, EH011, EH026, EH022, EH025 SERIES

MATERIAL	P						M		K		N			
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS TITANIUM ALLOYS		CAST IRON		ALUMINUM ALLOYS		COPPER. BRASS NON-FERROUS METALS	
HARDNESS	~ HRc 20		HRc 20 ~ HRc 30		HRc 30 ~ HRc 40									
STRENGTH	500 ~ 800N/mm²		800 ~ 1000N/mm²		1000 ~ 1300N/mm²									
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	8640	4.7	7440	4.3	6240	3.3	12000	4.0	10200	9.4	24000	19.9	18000	14.6
1/8	5760	5.7	5040	5.0	4080	3.8	8280	4.0	6600	9.4	16800	19.9	12000	14.6
5/32	4370	5.7	3720	5.0	3120	3.8	6240	4.0	5040	9.4	12000	19.9	9600	14.6
3/16	3430	5.7	3000	5.0	2400	3.8	5040	4.0	3960	9.4	9960	19.9	7440	14.6
1/4	2880	5.7	2400	5.0	2040	3.8	4080	4.0	3240	10.9	8280	20.8	6240	16.1
5/16	2160	5.7	1800	5.0	1560	3.8	3120	4.0	2400	11.8	6240	20.8	4800	16.1
3/8	1680	5.7	1440	5.0	1200	3.8	2400	4.0	2040	12.3	5040	20.8	3720	16.1
1/2	1440	5.7	1200	5.0	1030	3.8	2040	4.0	1560	12.8	4080	20.8	3120	16.1
9/16	1200	5.7	1080	5.0	890	3.8	1680	4.0	1440	13.2	3600	20.8	2640	16.1
5/8	1080	6.1	960	5.2	780	4.7	1560	4.8	1200	13.7	3120	20.8	2400	16.1
13/16	880	6.1	740	5.2	620	4.7	1200	4.8	1000	14.6	2400	20.8	1870	16.1



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

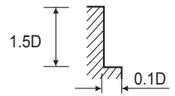
RPM = rev./min. FEED = inch/min.

CARBIDE END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE - SIDE CUTTING

E5021, E5245, E5012, E5065, E5023, E5024, E5216 SERIES

MATERIAL	P						M		K		N			
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS TITANIUM ALLOYS		CAST IRON		ALUMINUM ALLOYS		COPPER. BRASS NON-FERROUS METALS	
HARDNESS	~ HRc 20		HRc 20 ~ HRc 30		HRc 30 ~ HRc 40									
STRENGTH	500 ~ 800N/mm²		800 ~ 1000N/mm²		1000 ~ 1300N/mm²									
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	5500	9.5	4800	8.3	4000	6.3	8000	7.9	6500	17.7	16000	37.8	12000	25.4
1/8	3700	10.6	3200	9.5	2600	7.1	5300	7.9	4200	17.7	11000	37.8	8000	25.4
5/32	2800	10.6	2400	9.5	2000	7.1	4000	7.9	3200	17.7	8000	37.8	6000	25.4
3/16	2200	10.6	1900	9.5	1600	7.1	3200	7.9	2500	17.7	6400	37.8	4800	25.4
1/4	1800	10.6	1600	9.5	1300	7.1	2600	7.9	2100	21.3	5300	40.2	4000	30.7
5/16	1400	10.6	1200	9.5	1000	7.1	2000	7.9	1600	22.4	4000	40.2	3000	30.7
3/8	1100	10.6	950	9.5	800	7.1	1600	7.9	1300	23.6	3200	40.2	2400	30.7
1/2	900	10.6	800	9.5	660	7.1	1300	7.9	1000	24.8	2600	40.2	2000	30.7
9/16	800	10.6	700	9.5	570	7.1	1100	7.9	900	26.0	2300	40.2	1700	30.7
5/8	700	11.8	600	10.2	500	8.7	1000	8.9	800	26.8	2000	40.2	1500	30.7
13/16	550	11.8	480	10.2	400	8.7	800	9.5	640	28.4	1600	40.2	1200	30.7



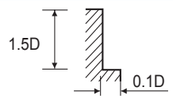
※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min. FEED = inch/min.

CARBIDE, 4 FLUTE TiAlN "F" COATED - SIDE CUTTING

EH021, EH245, EH012, EH065, EH023, EH024, EH216 SERIES

MATERIAL	P						M		K		N			
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS TITANIUM ALLOYS		CAST IRON		ALUMINUM ALLOYS		COPPER. BRASS NON-FERROUS METALS	
HARDNESS	~ HRc 20		HRc 20 ~ HRc 30		HRc 30 ~ HRc 40									
STRENGTH	500 ~ 800N/mm²		800 ~ 1000N/mm²		1000 ~ 1300N/mm²									
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	8640	14.7	7440	12.8	6240	9.9	12000	12.3	10200	27.4	24000	56.7	18000	44.4
1/8	5760	16.5	5040	14.6	4080	10.9	8280	12.3	6600	27.4	16800	56.7	12000	44.4
5/32	4370	16.5	3720	14.6	3120	10.9	6240	12.3	5040	27.4	12000	56.7	9600	44.4
3/16	3430	16.5	3000	14.6	2400	10.9	5040	12.3	3960	27.4	9960	56.7	7440	44.4
1/4	2880	16.5	2400	14.6	2040	10.9	4080	12.3	3240	33.1	8280	61.4	6240	47.2
5/16	2160	16.5	1800	14.6	1560	10.9	3120	12.3	2400	35.0	6240	61.4	4800	47.2
3/8	1680	16.5	1440	14.6	1200	10.9	2400	12.3	2040	36.9	5040	61.4	3720	47.2
1/2	1440	16.5	1200	14.6	1030	10.9	2040	12.3	1560	38.8	4080	61.4	3120	47.2
9/16	1200	16.5	1080	14.6	890	10.9	1680	12.3	1440	40.6	3600	61.4	2640	47.2
5/8	1080	18.4	960	16.1	780	13.7	1560	13.7	1200	41.6	3120	61.4	2400	47.2
13/16	880	18.4	740	16.1	620	13.7	1200	14.6	1000	36.9	2400	61.4	1870	47.2



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

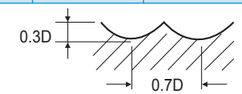
RPM = rev./min. FEED = inch/min.

CARBIDE END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE BALL NOSE

E5249, E5014, E5018, E5251 SERIES

MATERIAL	P				K		N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CAST IRON		ALUMINUM ALLOYS	
HARDNESS	~ HRc30		HRc30 ~ HRc 40					
STRENGTH	~ 1000N/mm²		1000 ~ 1300N/mm²					
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	5200	3.5	4400	1.8	7300	5.9	21500	11.0
1/8	3500	3.9	2900	1.8	4900	6.3	14300	11.0
5/32	2600	3.9	2100	1.8	3600	7.9	10900	11.0
3/16	2100	4.1	1700	1.8	2900	9.1	8800	13.0
1/4	1700	3.9	1430	1.8	2400	9.9	7260	13.0
5/16	1270	3.7	1100	1.8	1800	12.6	5500	15.0
3/8	1000	3.7	870	1.8	1430	12.6	4300	15.0
1/2	870	3.4	730	1.8	1200	12.6	3600	17.3
9/16	750	3.4	620	1.8	1000	12.8	3000	17.3
5/8	650	3.4	540	1.8	920	12.8	2700	15.0
11/16	580	3.4	480	1.8	810	12.8	2400	15.0
13/16	500	3.4	430	1.8	730	11.4	2100	15.0



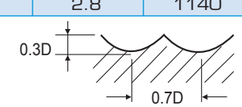
※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min. FEED = inch/min.

CARBIDE, 2 FLUTE BALL NOSE TiAlN "F" COATED

EH249, EH014, EF018, EF251 SERIES

MATERIAL	P				K		N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CAST IRON		ALUMINUM ALLOYS	
HARDNESS	~ HRc30		HRc30 ~ HRc40					
STRENGTH	~ 1000N/mm²		1000 ~ 1300N/mm²					
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	8110	5.7	6840	2.8	11400	9.4	33600	17.0
1/8	5400	6.1	4560	2.8	7680	9.9	22320	17.0
5/32	4080	6.1	3240	2.8	5640	12.3	16800	17.0
3/16	3240	6.4	2640	2.8	4560	14.2	13200	20.3
1/4	2640	6.1	2270	2.8	3720	15.6	11280	20.3
5/16	1920	5.7	1680	2.8	2760	19.9	8640	23.2
3/8	1560	5.7	1320	2.8	1680	19.9	6720	23.2
1/2	1320	5.2	1140	2.8	1920	19.9	5640	26.9
9/16	1180	5.2	960	2.8	1560	19.9	4680	26.9
5/8	1020	5.2	840	2.8	1440	19.9	4200	23.2
11/16	900	5.2	740	2.8	1200	19.9	3720	23.2
13/16	780	5.2	670	2.8	1140	18.0	3240	23.2



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

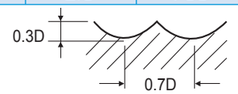
RPM = rev./min. FEED = inch/min.

CARBIDE END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE BALL NOSE

E5250, E5060, E5062, E5252 SERIES

MATERIAL	P				K		N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CAST IRON		IRON RPM FEED ALUMINUM ALLOYS	
HARDNESS	~ HRc30		HRc30 ~ HRc40					
STRENGTH	~ 1000N/mm²		1000 ~ 1300N/mm²					
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	5200	5.5	4400	2.8	7300	9.1	21500	16.5
1/8	3500	5.9	2900	2.8	4900	9.5	14300	16.5
5/32	2600	5.9	2100	2.8	3600	11.8	10900	16.5
3/16	2100	6.3	1700	2.8	2900	13.8	8800	19.7
1/4	1700	5.9	1430	2.8	2400	15.0	7260	19.7
5/16	1270	5.5	1100	2.8	1800	18.9	5500	22.4
3/8	1000	5.5	870	2.8	1430	18.9	4300	22.4
1/2	870	5.1	730	2.8	1200	18.9	3600	26.0
9/16	750	5.1	620	2.8	1000	19.3	3000	26.0
5/8	650	5.1	540	2.8	920	19.3	2700	22.4
11/16	580	5.1	480	2.8	810	19.3	2400	22.4
13/16	500	5.1	430	2.8	730	17.3	2100	22.4



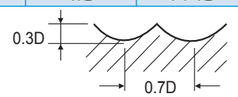
※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min. FEED = inch/min.

CARBIDE, 4 FLUTE BALL NOSE TiAlN "F" COATED

EH250, EH060, EH062, EH252 SERIES

MATERIAL	P				K		N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CAST IRON		ALUMINUM ALLOYS	
HARDNESS	~ HRc30		HRc30 ~ HRc40					
STRENGTH	~ 1000N/mm²		1000 ~ 1300N/mm²					
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	8110	8.5	6840	4.3	11400	14.2	33600	26.0
1/8	5400	9.4	4560	4.3	7680	14.6	22320	26.0
5/32	4080	9.4	3240	4.3	5640	18.4	16800	26.0
3/16	3240	9.9	2640	4.3	4560	21.3	13200	30.7
1/4	2640	9.4	2270	4.3	3720	23.2	11280	30.7
5/16	1920	8.5	1680	4.3	2760	29.3	8640	35.0
3/8	1560	8.5	1320	4.3	2270	29.3	6720	35.0
1/2	1320	8.0	1140	4.3	1920	29.3	5640	40.6
9/16	1180	8.0	960	4.3	1560	30.2	4680	40.6
5/8	1020	8.0	840	4.3	1440	30.2	4200	35.0
11/16	900	8.0	740	4.3	1200	30.2	3720	35.0
13/16	780	8.0	670	4.3	1140	26.9	3240	35.0



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

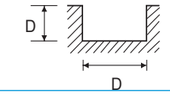
RPM = rev./min. FEED = inch/min.

CARBIDE END MILLS — RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE TiAlN-COATED - SLOTTING

EH527 SERIES

MATERIAL	P						M		K		N			
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS TITANIUM ALLOYS		CAST IRON		ALUMINUM ALLOYS		COPPER. BRASS NON-FERROUS METALS	
HARDNESS	~ HRc 20		HRc 20 ~ HRc 30		HRc 30 ~ HRc 40									
STRENGTH	500 ~ 800N/mm²		800 ~ 1000N/mm²		1000 ~ 1300N/mm²									
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0	7700	4.3	6720	3.9	5600	3.0	11200	3.5	9100	8.3	22400	17.7	16800	13.2
3.0	5180	4.9	4480	4.3	3640	3.4	7420	3.5	5880	8.3	15400	17.7	11200	13.2
4.0	3920	4.9	3360	4.3	2800	3.4	5600	3.5	4480	8.3	11200	17.7	8400	13.2
5.0	3080	4.9	2660	4.3	2240	3.4	4480	3.5	3500	8.3	8960	17.7	6720	13.2
6.0	2520	4.9	2240	4.3	1820	3.4	3640	3.5	2940	9.8	7420	18.7	5600	14.4
8.0	1960	4.9	1680	4.3	1400	3.4	2800	3.5	2240	10.4	5600	18.7	4200	14.4
10.0	1540	4.9	1330	4.3	1120	3.4	2240	3.5	1820	11.0	4480	18.7	3360	14.4
12.0	1260	4.9	1120	4.3	924	3.4	1820	3.5	1400	11.6	3640	18.7	2800	14.4
14.0	1120	4.9	980	4.3	798	3.4	1540	3.5	1260	12.2	3220	18.7	2380	14.4
16.0	980	5.5	840	4.7	700	4.1	1400	4.1	1120	12.4	2800	18.7	2100	14.4
20.0	770	5.5	672	4.7	560	4.1	1120	4.3	900	13.2	2240	18.7	1680	14.4



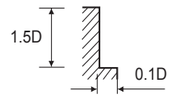
※The FEED, in long & extra long types, should be reduced by around 50%

RPM = rev./min. FEED = inch/min.

CARBIDE, 4 FLUTE TiAlN-COATED - SIDE CUTTING

EH540 SERIES

MATERIAL	P						M		K		N			
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS TITANIUM ALLOYS		CAST IRON		ALUMINUM ALLOYS		COPPER. BRASS NON-FERROUS METALS	
HARDNESS	~ HRc 20		HRc 20 ~ HRc 30		HRc 30 ~ HRc 40									
STRENGTH	500 ~ 800N/mm²		800 ~ 1000N/mm²		1000 ~ 1300N/mm²									
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0	7700	13.2	6720	11.6	5600	8.9	11200	11.0	9100	24.8	22400	53.0	16800	39.8
3.0	5180	15.0	4480	13.2	3640	9.8	7420	11.0	5880	24.8	15400	53.0	11200	39.8
4.0	3920	15.0	3360	13.2	2800	9.8	5600	11.0	4480	24.8	11200	53.0	8400	39.8
5.0	3080	15.0	2660	13.2	2240	9.8	4480	11.0	3500	24.8	8960	53.0	6720	39.8
6.0	2520	15.0	2240	13.2	1820	9.8	3640	11.0	2940	29.7	7420	56.3	5600	42.9
8.0	1960	15.0	1680	13.2	1400	9.8	2800	11.0	2240	31.5	5600	56.3	4200	42.9
10.0	1540	15.0	1330	13.2	1120	9.8	2240	11.0	1820	33.1	4480	56.3	3360	42.9
12.0	1260	15.0	1120	13.2	920	9.8	1820	11.0	1400	34.7	3640	56.3	2800	42.9
14.0	1120	15.0	980	13.2	800	9.8	1540	11.0	1260	36.4	3220	56.3	2380	42.9
16.0	980	16.5	840	14.4	700	12.2	1400	12.4	1120	37.4	2800	56.3	2100	42.9
20.0	770	16.5	670	14.4	560	12.2	1120	13.2	900	39.8	2240	56.3	1680	42.9



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

RPM = rev./min. FEED = inch/min.

CARBIDE END MILLS

RECOMMENDED CUTTING CONDITIONS

PROPERTIES AND APPLICATIONS OF COATINGS

	Titanium Nitride	Titanium Carbonitride	Super TiAlN "F" Coatings	Super TiAlN "E" Coatings
Hardness	82 Rc	92 Rc	92 Rc	95 Rc
Coefficient of Friction Against Dry Steel (.8)	.4	.4	.4	.4
Coating Thickness 3 Microns = .0001	1- 4	1- 4	1- 5	1- 3
Maximum Working Temperature	1100 F	750 F	1470 F	1470 F
Coating Color	Gold	Blue - Gray	Violet - Gray	Violet - Gray
Key Characteristics	Good General Purpose	Good Wear Resistance Good Toughness Moderate Heat Resistance	Enhanced Toughness High Heat Resistance	High Hardness Enhanced Toughness High Heat Resistance
Primary Applications	Machining of Iron Based Materials	General Machining of Various Materials	Steel, Cast Iron, Stainless, Nickel Based Alloys, High Temp and Titanium Alloys, High Speed Machining Wet, Dry, or Semi Dry Condition	Hardened Workpieces, Steel, Cast Iron, Stainless, Nickel Based Alloys, High Temp and Titanium Alloys, Machining Wet, Dry, or Semi Dry Condition

YG:TYLON SUPER TiAlN COATED TOOLS CAN BE RUN 20% - 50% FASTER THAN TiN or TiCN ON MOST MATERIALS

HSS

Being the best through innovation



ONLY ONE COATED PM60 END MILLS

- Perfect solution to protect carbide chipping problems under vibrations

SELECTION GUIDE

ONLY ONE COATED PM60 END MILLS

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
GYG64		PM60, 2 FLUTE (Center Cut)	D1/8	D1	1174
GYG67		PM60, 4 FLUTE BALL NOSE	R1/16	R1/2	1175
GYG65		PM60, 4 FLUTE (Center Cut)	D1/8	D1	1176
GYG66		PM60, 4 FLUTE MULTIPLE HELIX (Center Cut)	D1/8	D1	1177
GYG69		PM60, MULTI FLUTE MULTIPLE HELIX CORNER RADIUS ROUGHING - FINE (Center Cut)	D1/4	D1	1178
GYG68		PM60, MULTI FLUTE ROUGHING- FINE (Center Cut)	D1/4	D1-1/4	1179
GYG70		PM60, MULTI FLUTE ROUGHING - COARSE (Center Cut)	D1/4	D1-1/4	1180
		RECOMMENDED CUTTING CONDITIONS			1181

◎ : Excellent ○ : Good

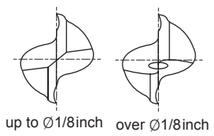
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○	○			◎	◎	○						
◎	◎	○	○			◎	◎	○						
◎	◎	○	○			◎	◎	○						
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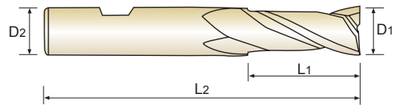
ONLY ONE END MILLS

GYG64 SERIES FLAT SHANK

PM60, 2 FLUTE (Center Cut)







PM 60 | 2 | 30° | FLAT P. 1181

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
Y-COATED	D_1	D_2	L_1	L_2
GYG64008	**1/8**	3/8	3/8	2-5/16
GYG64012	**3/16**	3/8	7/16	2-5/16
GYG64016	**1/4**	3/8	1/2	2-5/16
GYG64020	**5/16**	3/8	9/16	2-5/16
GYG64024	**3/8**	3/8	9/16	2-5/16
GYG64032	**1/2**	1/2	1	3
GYG64040	**5/8**	5/8	1-5/16	3-7/16
GYG64048	**3/4**	3/4	1-5/16	3-7/16
GYG64064	**1**	1	1-5/8	4-1/8

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

◎ : Excellent ○ : Good

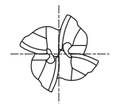
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○	○			◎	◎	○						

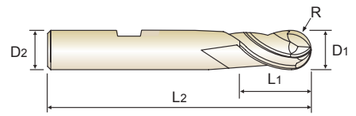
ONLY ONE END MILLS

GYG67 SERIES FLAT SHANK

PM60, 4 FLUTE BALL NOSE







PM 60 | 4 | 30° | R ±.001 | FLAT P.1182

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
Y-COATED	R	D_1	D_2	L_1	L_2
GYG67008	R1/16	**1/8**	3/8	3/8	2-5/16
GYG67012	R3/32	**3/16**	3/8	1/2	2-3/8
GYG67016	R1/8	**1/4**	3/8	5/8	2-7/16
GYG67020	R5/32	**5/16**	3/8	3/4	2-1/2
GYG67024	R3/16	**3/8**	3/8	3/4	2-1/2
GYG67032	R1/4	**1/2**	1/2	1-1/4	3-1/4
GYG67040	R5/16	**5/8**	5/8	1-5/8	3-3/4
GYG67048	R3/8	**3/4**	3/4	1-5/8	3-7/8
GYG67064	R1/2	**1**	1	2	4-1/2

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

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○	○			◎	◎	○						

ONLY ONE END MILLS

GYG65 SERIES FLAT SHANK

PM60, 4 FLUTE (Center Cut)



PM60 | 4 | 30° | FLAT P.1183

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
Y-COATED	D_1	D_2	L_1	L_2
GYG65008	**1/8**	3/8	3/8	2-5/16
GYG65012	**3/16**	3/8	1/2	2-3/8
GYG65016	**1/4**	3/8	5/8	2-7/16
GYG65020	**5/16**	3/8	3/4	2-1/2
GYG65024	**3/8**	3/8	3/4	2-1/2
GYG65032	**1/2**	1/2	1-1/4	3-1/4
GYG65040	**5/8**	5/8	1-5/8	3-3/4
GYG65048	**3/4**	3/4	1-5/8	3-7/8
GYG65056	**7/8**	7/8	1-7/8	4-1/8
GYG65064	**1**	1	2	4-1/2

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

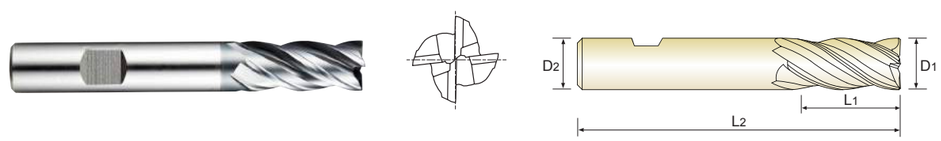
◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○	○			◎	◎	○						

ONLY ONE END MILLS

GYG66 SERIES FLAT SHANK

PM60, 4 FLUTE MULTIPLE HELIX (Center Cut)



PM60 | 4 | 35°/37° | FLAT P.1184

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
Y-COATED	D_1	D_2	L_1	L_2
GYG66008	**1/8**	3/8	3/8	2-5/16
GYG66012	**3/16**	3/8	1/2	2-3/8
GYG66016	**1/4**	3/8	5/8	2-7/16
GYG66020	**5/16**	3/8	3/4	2-1/2
GYG66024	**3/8**	3/8	3/4	2-1/2
GYG66032	**1/2**	1/2	1-1/4	3-1/4
GYG66040	**5/8**	5/8	1-5/8	3-3/4
GYG66048	**3/4**	3/4	1-5/8	3-7/8
GYG66064	**1**	1	2	4-1/2

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

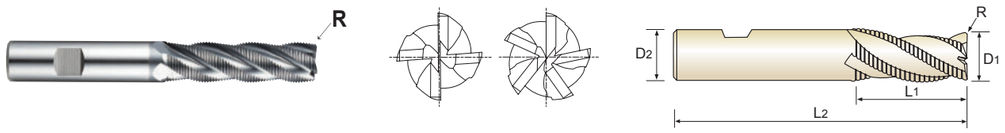
◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○	○			◎	◎	○						

ONLY ONE END MILLS

GYG69 SERIES FLAT SHANK

PM60, MULTI FLUTE MULTIPLE HELIX CORNER RADIUS ROUGHING - FINE (Center Cut)



PM 60 | 4-5 (5 Flute, 44°/44.5°/45°) | 44°/45° | FINE | FLAT | P.1186

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
Y-COATED	R	D1	D2	L1	L2	
GYG69016	R.020	**1/4**	3/8	5/8	2-7/16	4
GYG69020	R.020	**5/16**	3/8	3/4	2-1/2	4
GYG69024	R.020	**3/8**	3/8	3/4	2-1/2	4
GYG69032	R.020	**1/2**	1/2	1-1/4	3-1/4	4
GYG69040	R.040	**5/8**	5/8	1-1/4	3-3/8	5
GYG69048	R.040	**3/4**	3/4	1-5/8	3-7/8	5
GYG69064	R.040	**1**	1	2	4-1/2	5

Mill Dia. Tolerance(inch)
0 ~ +.0030

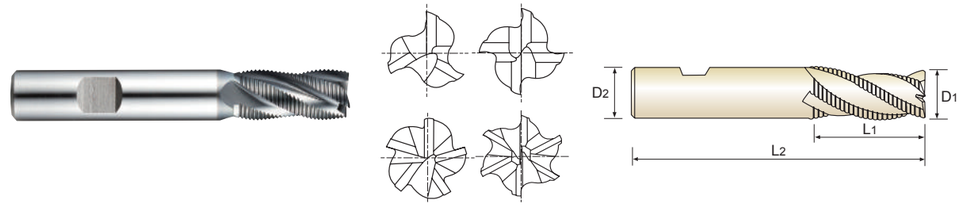
◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○	○			◎	◎	○						

ONLY ONE END MILLS

GYG68 SERIES FLAT SHANK

PM60, MULTI FLUTE ROUGHING- FINE (Center Cut)



PM 60 | 3-6 | 30° | FINE | FLAT | P.1185

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
Y-COATED	D1	D2	L1	L2	
GYG68016	**1/4**	3/8	5/8	2-7/16	3
GYG68020	**5/16**	3/8	3/4	2-1/2	3
GYG68901	**5/16**	3/8	1-3/8	3_3/16	3
GYG68024	**3/8**	3/8	3/4	2-1/2	4
GYG68902	**3/8**	3/8	1-1/2	3-1/4	4
GYG68032	**1/2**	1/2	1-1/4	3-1/4	4
GYG68903	**1/2**	1/2	2	4	4
GYG68040	**5/8**	5/8	1-5/8	3-3/4	4
GYG68904	**5/8**	5/8	2-1/2	4-5/8	4
GYG68048	**3/4**	3/4	1-5/8	3-7/8	4
GYG68905	**3/4**	3/4	2-1/2	4-3/4	4
GYG68906	**3/4**	3/4	3	5-1/4	4
GYG68064	**1**	1	2	4-1/2	5
GYG68907	**1**	1	4	6-1/2	5
GYG68116	**1-1/4**	1-1/4	2	4-1/2	6

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

◎ : Excellent ○ : Good

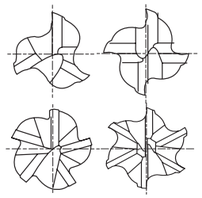
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Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○	○			◎	◎	○						

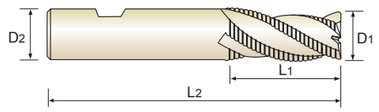
ONLY ONE END MILLS

GYG70 SERIES FLAT SHANK

PM60, MULTI FLUTE ROUGHING- COARSE (Center Cut)







PM 60 | 3-6 | 30° | COARSE | FLAT

P.1185

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
Y-COATED	D_1	D_2	L_1	L_2	
GYG70016	1/4	3/8	5/8	2-7/16	3
GYG70020	5/16	3/8	3/4	2-1/2	3
GYG70024	3/8	3/8	3/4	2-1/2	4
GYG70032	1/2	1/2	1-1/4	3-1/4	4
GYG70040	5/8	5/8	1-5/8	3-3/4	4
GYG70048	3/4	3/4	1-5/8	3-7/8	4
GYG70064	1	1	2	4-1/2	5
GYG70116	1-1/4	1-1/4	2	4-1/2	6

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○	○			◎	◎	○						

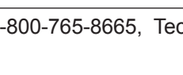
ONLY ONE END MILLS

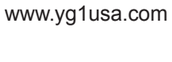
RECOMMENDED CUTTING CONDITIONS

PM60, 2 FLUTE (Center Cut)

GYG64 SERIES

MATERIAL	P												M	
	STRUCTURAL STEELS CARBON STEELS		STRUCTURAL STEELS CARBON STEELS CAST IRONS		CARBON STEELS ALLOY STEELS TOOL STEELS		PREHARDENED STEELS ALLOY STEELS TOOL STEELS		ALLOY STEELS TOOL STEELS		ALLOY STEELS TOOL STEELS		STAINLESS STEELS	
HARDNESS			~ HRc20		HRc20 ~ HRc30		HRc30 ~ HRc35		HRc35 ~ HRc40		HRc40 ~ HRc45			
STRENGTH	~ 500N/mm²		500 ~ 800N/mm²		800 ~ 1000N/mm²		1000 ~ 1100N/mm²		1100 ~ 1300N/mm²		1300 ~ 1400N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	5710	7.20	4610	5.81	3810	5.10	2610	3.49	2010	2.68	1400	1.99	2210	3.13
3/16	4950	12.85	4080	9.95	3280	9.03	2140	4.88	1670	3.68	1200	2.75	1870	4.13
1/4	3960	11.85	3310	9.38	2610	8.62	1650	4.82	1300	3.69	900	2.56	1450	4.12
5/16	3130	13.05	2650	11.46	2170	9.55	1400	5.64	1080	4.01	760	2.82	1200	4.45
3/8	2640	14.76	2270	13.24	1840	11.43	1140	6.17	870	4.86	630	3.60	970	5.42
1/2	2030	12.15	1650	10.81	1300	9.34	850	5.30	650	3.64	450	2.52	730	4.06
5/8	1620	12.66	1380	9.26	1080	8.53	680	4.83	540	3.84	380	2.64	580	4.17
3/4	1200	10.99	990	8.23	890	7.46	550	4.52	450	3.52	320	2.50	500	3.99
1	890	7.22	750	6.63	580	5.40	430	3.52	300	2.37	200	1.50	330	2.51







RPM = rev./min.
FEED = inch/min.

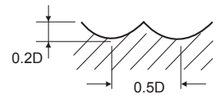
ONLY ONE END MILLS

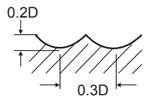
RECOMMENDED CUTTING CONDITIONS

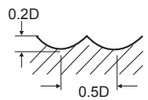
PM60, 4 FLUTE BALL NOSE

GYG67 SERIES

MATERIAL	P										M	
	STRUCTURAL STEELS CARBON STEELS		STRUCTURAL STEELS CARBON STEELS CAST IRONS		CARBON STEELS ALLOY STEELS TOOL STEELS		PREHARDENED STEELS ALLOY STEELS TOOL STEELS		ALLOY STEELS TOOL STEELS		STAINLESS STEELS	
HARDNESS			~ HRc20		HRc20 ~ HRc30		HRc30 ~ HRc40		HRc40 ~ HRc45			
STRENGTH	~ 500N/mm²		500 ~ 800N/mm²		800 ~ 1000N/mm²		1000 ~ 1300N/mm²		1300 ~ 1400N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	8320	23.59	6620	15.63	4410	8.34	2310	3.63	1600	2.53	2510	3.95
3/16	6270	29.13	4950	19.65	3260	10.71	1690	4.99	1190	3.51	1880	5.97
1/4	5010	32.37	3960	21.83	2610	11.91	1350	5.54	950	3.90	1500	6.63
5/16	4050	37.64	3130	24.63	2170	14.32	1080	5.97	760	4.20	1200	7.01
3/8	3480	44.88	2640	29.52	1770	17.29	870	7.53	600	5.40	940	7.96
1/2	2610	35.72	2030	23.34	1350	13.43	650	5.54	450	3.84	730	6.52
5/8	2070	34.48	1560	22.91	1080	12.96	540	5.80	380	4.08	600	6.63
3/4	1700	31.41	1250	20.72	870	11.22	450	5.40	320	3.75	500	6.00
1	1130	21.67	880	14.51	550	8.16	300	3.55	200	2.24	330	3.90







RPM =rev./min.
FEED = inch/min.

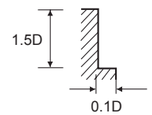
ONLY ONE END MILLS

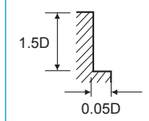
RECOMMENDED CUTTING CONDITIONS

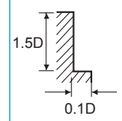
PM60, 4 FLUTE (Center Cut)

GYG65 SERIES

MATERIAL	P												M	
	STRUCTURAL STEELS CARBON STEELS		STRUCTURAL STEELS CARBON STEELS CAST IRONS		CARBON STEELS ALLOY STEELS TOOL STEELS		PREHARDENED STEELS ALLOY STEELS TOOL STEELS		ALLOY STEELS TOOL STEELS		ALLOY STEELS TOOL STEELS		STAINLESS STEELS	
HARDNESS			~ HRc20		HRc20 ~ HRc30		HRc30 ~ HRc35		HRc35 ~ HRc40		HRc40 ~ HRc45			
STRENGTH	~ 500N/mm²		500 ~ 800N/mm²		800 ~ 1000N/mm²		1000 ~ 1100N/mm²		1100 ~ 1300N/mm²		1300 ~ 1400N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	7520	17.76	6820	16.11	5010	11.05	3110	8.32	2710	5.54	1900	3.90	3010	6.16
3/16	5550	25.34	5010	20.53	3680	16.21	2540	11.20	2140	7.75	1470	5.56	2340	8.47
1/4	4410	24.32	4060	19.82	2960	14.91	2060	10.36	1650	8.08	1150	5.63	1800	8.81
5/16	3730	27.02	3130	22.66	2410	17.43	1680	11.41	1400	8.84	960	6.06	1520	9.36
3/8	2910	31.14	2640	26.19	2010	18.63	1270	13.40	1140	10.02	800	7.20	1240	10.91
1/2	2260	25.22	2030	21.42	1580	16.41	1000	10.74	800	8.08	580	5.90	900	8.95
5/8	1950	24.20	1680	20.43	1200	16.11	820	10.49	660	7.92	460	5.52	740	8.76
3/4	1570	21.77	1320	18.29	990	13.66	670	8.63	550	6.95	380	4.90	600	7.58
7/8	1250	19.04	1130	14.97	820	11.96	560	7.48	470	6.03	330	4.20	530	6.68
1	1180	17.25	990	14.03	750	10.66	490	6.93	430	5.84	300	4.17	460	6.43







RPM = rev./min.
FEED = inch/min.

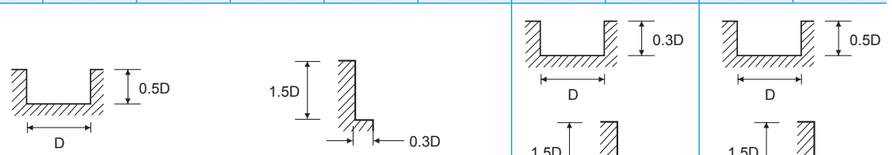
ONLY ONE END MILLS

RECOMMENDED CUTTING CONDITIONS

PM60, 4 FLUTE MULTIPLE HELIX (Center Cut)

GYG66 SERIES

MATERIAL	P								M	
	STRUCTURAL STEELS CARBON STEELS CAST IRONS		CARBON STEELS ALLOY STEELS TOOL STEELS		PREHARDENED STEELS ALLOY STEELS TOOL STEELS		ALLOY STEELS TOOL STEELS		STAINLESS STEELS	
HARDNESS	~ HRc20		HRc20 ~ HRc30		HRc30 ~ HRc35		HRc35 ~ HRc45			
STRENGTH	~ 800N/mm²		800 ~ 1000N/mm²		1000 ~ 1300N/mm²		1100 ~ 1400N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	7020	5.53	6420	5.05	4410	3.47	2710	1.71	4810	3.79
3/16	4680	8.84	4210	7.29	2940	5.09	1800	2.84	3210	6.57
1/4	3510	8.84	3210	8.08	2210	5.56	1350	2.98	2410	6.82
5/16	2810	12.38	2570	11.32	1760	7.78	1080	4.09	1930	8.79
3/8	2570	15.81	2340	14.37	1640	9.80	1000	5.05	1600	12.13
1/2	1930	14.29	1750	12.99	1230	9.09	730	4.58	1200	10.61
5/8	1540	12.89	1400	11.72	980	8.05	600	4.17	960	9.55
3/4	1290	13.17	1170	11.97	820	8.51	500	4.42	800	9.73
1	970	9.57	880	8.70	610	6.29	360	3.09	600	7.39



RPM = rev./min.
FEED = inch/min.

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

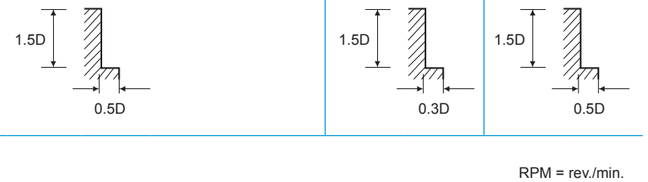
ONLY ONE END MILLS

RECOMMENDED CUTTING CONDITIONS

PM60, MULTI FLUTE MULTIPLE HELIX CORNER RADIUS ROUGHING - FINE (Center Cut)

GYG69 SERIES

MATERIAL	P										M	
	STRUCTURAL STEELS CARBON STEELS		STRUCTURAL STEELS CARBON STEELS CAST IRONS		CARBON STEELS ALLOY STEELS TOOL STEELS		PREHARDENED STEELS ALLOY STEELS TOOL STEELS		ALLOY STEELS TOOL STEELS		STAINLESS STEELS	
HARDNESS			~ HRc20		HRc20 ~ HRc30		HRc30 ~ HRc40		HRc40 ~ HRc45			
STRENGTH	~ 500N/mm²		500 ~ 800N/mm²		800 ~ 1000N/mm²		1000 ~ 1300N/mm²		1300 ~ 1400N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	3810	12.00	3010	9.95	2160	6.11	1750	5.53	1250	3.95	1960	5.85
5/16	3490	16.48	2770	13.07	2050	9.02	1520	7.20	1080	4.95	1720	8.15
3/8	2870	24.89	2270	18.97	1570	11.38	1340	9.47	940	6.48	1440	10.18
1/2	2180	22.32	1630	17.70	1230	12.19	1000	9.63	700	6.63	1080	10.86
5/8	1740	23.70	1380	18.79	960	13.07	800	10.42	560	7.18	860	11.71
3/4	1450	25.18	1140	19.46	800	13.58	670	10.66	470	7.37	740	12.16
1	1130	23.31	850	17.78	590	12.41	510	10.12	350	6.91	550	11.29



RPM = rev./min.
FEED = inch/min.

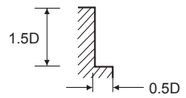
ONLY ONE END MILLS

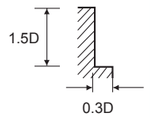
RECOMMENDED CUTTING CONDITIONS

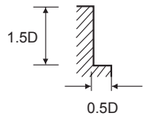
PM60, MULTI FLUTE ROUGHING (Center Cut)

GYG68, GYG70 SERIES

MATERIAL	P										M	
	STRUCTURAL STEELS CARBON STEELS		STRUCTURAL STEELS CARBON STEELS CAST IRONS		CARBON STEELS ALLOY STEELS TOOL STEELS		PREHARDENED STEELS ALLOY STEELS TOOL STEELS		ALLOY STEELS TOOL STEELS		STAINLESS STEELS	
HARDNESS			~ HRc20		HRc20 ~ HRc30		HRc30 ~ HRc40		HRc40 ~ HRc45			
STRENGTH	~ 500N/mm²		500 ~ 800N/mm²		800 ~ 1000N/mm²		1000 ~ 1300N/mm²		1300 ~ 1400N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	3160	10.07	2510	7.99	1800	5.12	1450	4.64	1050	3.48	1650	4.88
5/16	2890	13.98	2290	10.80	1680	7.56	1280	6.06	880	4.17	1440	6.65
3/8	2410	20.84	1900	15.90	1340	9.89	1140	7.87	800	5.68	1200	8.53
1/2	1800	18.47	1350	14.71	1030	10.36	850	8.05	580	5.45	900	9.09
5/8	1440	19.78	1140	15.66	800	10.99	660	8.44	460	5.96	720	9.66
3/4	1200	21.03	950	16.35	670	11.26	550	8.77	380	6.11	600	10.04
1	940	19.43	710	14.91	490	10.20	430	8.39	300	5.92	460	9.31
1 1/4	670	17.77	500	13.38	350	9.45	300	7.67	210	5.32	330	8.52







RPM =rev./min.
FEED = inch/min.

HSS

Being the best through innovation



SINE-POWER END MILLS

- High Performane HSS Rongher for Titanium and Titanium Alloys

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
E2F64		HSS Co8, 4&6 FLUTE	D3/4	D2	1190
		RECOMMENDED CUTTING CONDITIONS			1191

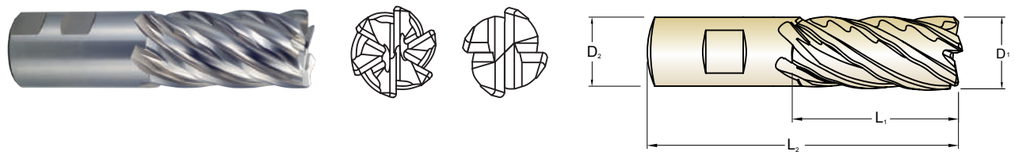
◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
													◎	

SINE-POWER END MILLS

E2F64 SERIES FLAT SHANK

HSSCo8, 4&6 FLUTE



HSS Co8 | 4&6 | 35° | C x 45° | FLAT P.1191

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Chamfer	No. of Flute
	D1	D2	L1	L2		
E2F64048	3/4	3/4	1 5/8	3 7/8	.030	4
E2F64901	3/4	3/4	2 1/4	4 1/2	.030	4
E2F64902	3/4	3/4	3	5 1/4	.030	4
E2F64064	1	1	2	4 1/2	.030	4
E2F64903	1	1	2	4 1/2	.030	6
E2F64904	1	1	3	5 1/2	.030	4
E2F64905	1	1	3	5 1/2	.030	6
E2F64906	1	1	4	6 1/2	.030	4
E2F64907	1	1	4	6 1/2	.030	6
E2F64116	1 1/4	1 1/4	2	4 1/2	.040	4
E2F64908	1 1/4	1 1/4	2	4 1/2	.040	6
E2F64909	1 1/4	1 1/4	3	5 1/2	.040	4
E2F64910	1 1/4	1 1/4	3	5 1/2	.040	6
E2F64911	1 1/4	1 1/4	4	6 1/2	.040	4
E2F64912	1 1/4	1 1/4	4	6 1/2	.040	6
E2F64132	1 1/2	1 1/4	2	4 1/2	.040	6
E2F64913	1 1/2	1 1/4	3	5 1/2	.040	6
E2F64914	1 1/2	1 1/4	4	6 1/2	.040	6
E2F64915	1 1/2	1 1/4	6	8 1/2	.040	6
E2F64200	2	2	2	5 3/4	.040	6
E2F64916	2	2	3	6 3/4	.040	6
E2F64917	2	2	4	7 3/4	.040	6
E2F64918	2	2	6	9 3/4	.040	6
E2F64919	2	2	8	11 3/4	.040	6

Cutting Dia. Tolerance(inch)	Shank Dia. Tolerance(inch)
0~ + .0030	- .0001~ - .0005

※ Radius, coatings and HSS-PM available on request

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
													◎	

SINE-POWER END MILLS

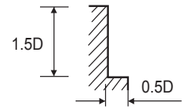
RECOMMENDED CUTTING CONDITIONS

HSSCo8, 4&6 FLUTE

E2F64 SERIES

SIDE CUTTING

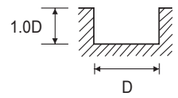
MATERIAL	S			
	TITANIUM ALLOYS		TITANIUM ALLOYS - DIFFICULT	
DIAMETER	RPM	Feed	RPM	Feed
3/4	382	4	306	3
1	287	4	229	3
1-1/4	229	4	183	3
1-1/2	191	4	153	3
2	143	4	115	3



RPM = rev./min.
FEED = inch/min.

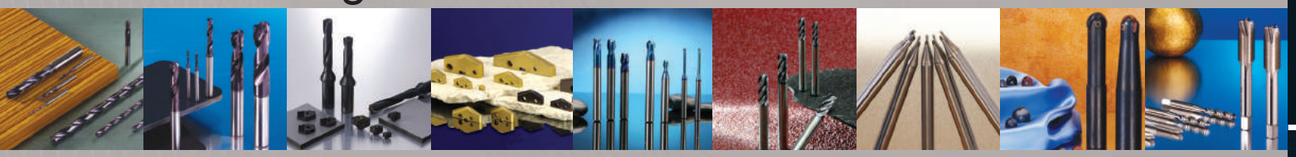
SLOTTING

MATERIAL	S			
	TITANIUM ALLOYS		TITANIUM ALLOYS - DIFFICULT	
DIAMETER	RPM	Feed	RPM	Feed
3/4	331	3	204	2
1	248	4	153	2
1-1/4	199	4	122	2
1-1/2	166	4	102	2
2	124	4	76	3



RPM = rev./min.
FEED = inch/min.

Global Cutting Tool Leader **YG-1**



HSS

Being the best through innovation



TANK-POWER END MILLS

- **Next Generation of Powdered Metal End Mills**
  Higher Edge Strength & Feed Rates

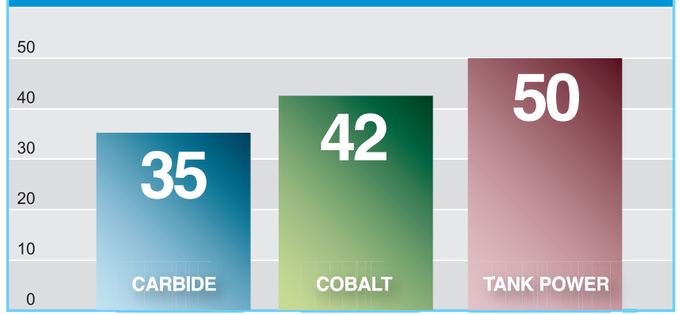
HSS TANK-POWER END MILLS

◎ : Excellent ○ : Good

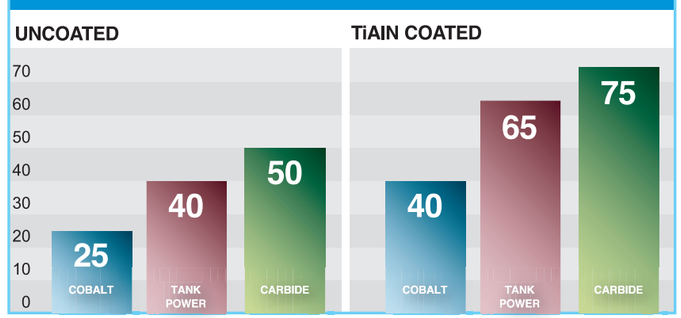
ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE	P: Carbon Steels ~HRc20	P: Alloy Steels HRc20~30	P: Prehardened Steels HRc30~40	P: Hardened Steels HRc40~45	P: Hardened Steels HRc45~55	H: High Hardened Steels HRc55~70	M: Stainless Steels	K: Cast Iron	N: Copper	N: Graphite	N: Aluminum	N: Acrylic	N: CFRP	S: Titanium	S: High Temperature Alloy
INCH																				
E9983		PREMIUM HSS-PM, 2 FLUTE REGULAR LENGTH ◆	D1/8	D1	**1196**	◎	◎	◎				◎	◎	○						
E9984		PREMIUM HSS-PM, 2 FLUTE REGULAR LENGTH DOUBLE ◆	D1/8	D1	**1197**	◎	◎	◎				◎	◎	○						
E9985		PREMIUM HSS-PM, 4 FLUTE REGULAR LENGTH ◆	D1/8	D1	**1198**	◎	◎	◎				◎	◎	○						
E9986		PREMIUM HSS-PM, 4 FLUTE REGULAR LENGTH DOUBLE ◆	D1/8	D1	**1199**	◎	◎	◎				◎	◎	○						
E9988		PREMIUM HSS-PM, 3&4 FLUTE 60° HELIX REGULAR LENGTH ◆	D1/4	D1	**1200**	◎	◎	◎				◎	◎	○						
E9992		PREMIUM HSS-PM, 2 FLUTE REGULAR LENGTH BALL NOSE ◆	R1/16	R1/2	**1201**	◎	◎	◎				◎	◎	○						
E9990		PREMIUM HSS-PM, MULTI FLUTE REGULAR LENGTH FINE PITCH ROUGHING ◆	D1/4	D1-1/4	**1202**	◎	◎	◎				◎	◎	○						
E9991		PREMIUM HSS-PM, MULTI FLUTE REGULAR LENGTH COARSE PITCH ROUGHING ◆	D1/4	D1-1/4	**1203**	◎	◎	◎				◎	◎	○						
E9A86		PREMIUM HSS-PM, MULTI FLUTE LONG LENGTH FINE PITCH ROUGHING ◆	D5/16	D1-1/4	**1204**	◎	◎	◎				◎	◎	○						
E9A87		PREMIUM HSS-PM, MULTI FLUTE LONG LENGTH COARSE PITCH ROUGHING ◆	D5/16	D1-1/4	**1205**	◎	◎	◎				◎	◎	○						
E9921		PREMIUM HSS-PM, MULTI FLUTE FINE PITCH ROUGHING EXTENDED NECK CENTER CUTTING ◆	D1/2	D1-1/4	**1206**	◎	◎	◎				◎	◎	○						
		RECOMMENDED CUTTING CONDITIONS			**1207**															

◆ U.S.A Stock

TOUGHNESS VALUE AND EDGE STRENGTH



APPROXIMATE WEAR VALUES



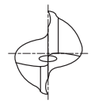
TANK-POWER END MILLS

E9983 SERIES FLAT SHANK

PREMIUM HSS-PM, 2 FLUTE REGULAR LENGTH

▶ Faster feed & speed than normal HSS can be applied to hardened steels up to Rc 45. Accordingly, YPM made by powder metallurgy makes much higher productivity possible.





YPM | 2 | 30° | FLAT

P.1207

◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TANK-POWER COATED				
E9983008	**E9983008TF**	**1/8**	3/8	3/8	2-5/16
E9983012	**E9983012TF**	**3/16**	3/8	7/16	2-5/16
E9983016	**E9983016TF**	**1/4**	3/8	1/2	2-5/16
E9983020	**E9983020TF**	**5/16**	3/8	9/16	2-5/16
E9983024	**E9983024TF**	**3/8**	3/8	9/16	2-5/16
E9983032	**E9983032TF**	**1/2**	1/2	1	3
E9983040	**E9983040TF**	**5/8**	5/8	1-5/16	3-7/16
E9983048	**E9983048TF**	**3/4**	3/4	1-5/16	3-7/16
E9983056	**E9983056TF**	**7/8**	7/8	1-1/2	3-3/4
E9983064	**E9983064TF**	**1**	1	1-5/8	4-1/8

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				◎	◎	○						

TANK-POWER END MILLS

E9984 SERIES FLAT SHANK

PREMIUM HSS-PM, 2 FLUTE REGULAR LENGTH DOUBLE

▶ Series E9984, E9984 two flute, end mills are the double end version of E9983, E9983 single-end tools.
Faster feed & speed than normal HSS can be applied to hardened steels up to Rc 45. Accordingly, YPM made by powder metallurgy makes much higher productivity possible.





YPM | 2 | 30° | FLAT

P.1207

◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TANK-POWER COATED				
E9984008	**E9984008TF**	**1/8**	3/8	3/8	3-1/16
E9984012	**E9984012TF**	**3/16**	3/8	7/16	3-1/8
E9984016	**E9984016TF**	**1/4**	3/8	1/2	3-1/8
E9984020	**E9984020TF**	**5/16**	3/8	9/16	3-1/8
E9984024	**E9984024TF**	**3/8**	3/8	9/16	3-1/8
E9984032	**E9984032TF**	**1/2**	1/2	13/16	3-3/4
E9984040	**E9984040TF**	**5/8**	5/8	1-1/8	4-1/2
E9984048	**E9984048TF**	**3/4**	3/4	1-5/16	5
E9984056	**E9984056TF**	**7/8**	7/8	1-9/16	5-1/2
E9984064	**E9984064TF**	**1**	1	1-5/8	5-7/8

Mill Dia. Tolerance (inch)	
0~-.0010	** 0~-.0020

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				◎	◎	○						

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

TANK-POWER END MILLS

E9985 SERIES FLAT SHANK

PREMIUM HSS-PM, 4 FLUTE REGULAR LENGTH

▶ Faster feed & speed than normal HSS can be applied to hardened steels up to Rc 45. Accordingly, YPM made by powder metallurgy makes much higher productivity possible.





YPM | 4 | 30° | FLAT

P.1207

◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TANK-POWER COATED				
E9985008	**E9985008TF**	**1/8**	3/8	3/8	2-5/16
E9985012	**E9985012TF**	**3/16**	3/8	1/2	2-3/8
E9985016	**E9985016TF**	**1/4**	3/8	5/8	2-7/16
E9985020	**E9985020TF**	**5/16**	3/8	3/4	2-1/2
E9985024	**E9985024TF**	**3/8**	3/8	3/4	2-1/2
E9985032	**E9985032TF**	**1/2**	1/2	1-1/4	3-1/4
E9985040	**E9985040TF**	**5/8**	5/8	1-5/8	3-3/4
E9985048	**E9985048TF**	**3/4**	3/4	1-5/8	3-7/8
E9985056	**E9985056TF**	**7/8**	7/8	1-7/8	4-1/8
E9985064	**E9985064TF**	**1**	1	2	4-1/2

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				◎	◎	○						

TANK-POWER END MILLS

E9986 SERIES FLAT SHANK

PREMIUM HSS-PM, 4 FLUTE REGULAR LENGTH DOUBLE

▶ Series E9986,EP986 four flute end mills are the double end version of E9985,EP985 single-end tools.
Faster feed & speed than normal HSS can be applied to hardened steels up to Rc 45. Accordingly, YPM made by powder metallurgy makes much higher productivity possible.





YPM | 4 | 30° | FLAT

P.1207

◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TANK-POWER COATED				
E9986008	**E9986008TF**	**1/8**	3/8	3/8	3-1/16
E9986012	**E9986012TF**	**3/16**	3/8	1/2	3-1/4
E9986016	**E9986016TF**	**1/4**	3/8	5/8	3-3/8
E9986020	**E9986020TF**	**5/16**	3/8	3/4	3-1/2
E9986024	**E9986024TF**	**3/8**	3/8	3/4	3-1/2
E9986032	**E9986032TF**	**1/2**	1/2	1	4-1/8
E9986040	**E9986040TF**	**5/8**	5/8	1-3/8	5
E9986048	**E9986048TF**	**3/4**	3/4	1-5/8	5-5/8
E9986056	**E9986056TF**	**7/8**	7/8	1-7/8	6-1/8
E9986064	**E9986064TF**	**1**	1	1-7/8	6-3/8

Mill Dia. Tolerance (inch)	
0~-.0010	** 0~-.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				◎	◎	○						

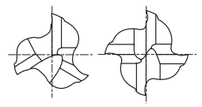
TANK-POWER END MILLS

E9988 SERIES FLAT SHANK

PREMIUM HSS-PM, 3&4 FLUTE 60° HELIX REGULAR LENGTH

▶ Faster feed & speed than normal HSS can be applied to hardened steels up to Rc 45. Accordingly, YPM made by powder metallurgy makes much higher productivity possible.





YPM | 3&4 | 60° | FLAT

P.1208

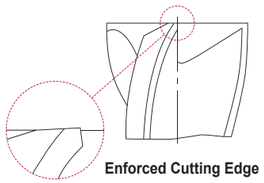
◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
UNCOATED	TANK-POWER COATED					
E9988016	**E9988016TF**	**1/4**	3/8	5/8	2-7/16	3
E9988020	**E9988020TF**	**5/16**	3/8	3/4	2-1/2	3
E9988024	**E9988024TF**	**3/8**	3/8	3/4	2-1/2	3
E9988028	**E9988028TF**	**7/16**	3/8	1	2-11/16	3
E9988032	**E9988032TF**	**1/2**	1/2	1-1/4	3-1/4	3
E9988040	**E9988040TF**	**5/8**	5/8	1-5/8	3-3/4	3
E9988048	**E9988048TF**	**3/4**	3/4	1-5/8	3-7/8	3
E9988901	**E9988901TF**	**7/8**	3/4	1-7/8	4-1/8	4
E9988056	**E9988056TF**	**7/8**	7/8	1-7/8	4-1/8	4
E9988064	**E9988064TF**	**1**	1	2	4-1/2	4

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.



Enforced Cutting Edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				◎	◎	○						

TANK-POWER END MILLS

E9992 SERIES FLAT SHANK

PREMIUM HSS-PM, 2 FLUTE REGULAR LENGTH BALL NOSE

▶ The two flute ball end mills are designed for milling of radius bottom slots, fillets and special contours. The end teeth are cut to center allowing these end mills to drill into material at the beginning of a slotting cut. The two flute design provides good chip removal ability in slotting.



YPM | 2 | 30° | R ±.001 | FLAT

P.1209

◆ U.S.A Stock

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TANK-POWER COATED	R (±.001)				
E9992008	**E9992008TF**	R1/16	**1/8**	3/8	3/8	2-5/16
E9992012	**E9992012TF**	R3/32	**3/16**	3/8	1/2	2-3/8
E9992016	**E9992016TF**	R1/8	**1/4**	3/8	5/8	2-7/16
E9992020	**E9992020TF**	R5/32	**5/16**	3/8	3/4	2-1/2
E9992024	**E9992024TF**	R3/16	**3/8**	3/8	3/4	2-1/2
E9992032	**E9992032TF**	R1/4	**1/2**	1/2	1	3
E9992040	**E9992040TF**	R5/16	**5/8**	5/8	1-3/8	3-1/2
E9992048	**E9992048TF**	R3/8	**3/4**	3/4	1-5/8	3-7/8
E9992056	**E9992056TF**	R7/16	**7/8**	7/8	2	4-1/4
E9992064	**E9992064TF**	R1/2	**1**	1	2-1/4	4-3/4

Mill Dia. Tolerance (inch)
0~-.0015

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				◎	◎	○						

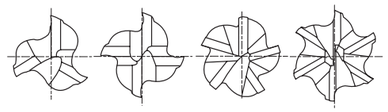
TANK-POWER END MILLS

E9990 SERIES FLAT SHANK

PREMIUM HSS-PM, MULTI FLUTE REGULAR LENGTH FINE PITCH ROUGHING

▶ This TANK-POWER rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths. In many cases, the milled surfaces are of acceptable quality.





YPM | FINE | 3-6 | 30° | FLAT

P.1208

◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
UNCOATED	TANK-POWER COATED					
E9990016	E9990016TF	1/4	3/8	5/8	2-7/16	3
E9990907	E9990907TF	1/4	3/8	1-1/8	2-15/16	3
E9990020	E9990020TF	5/16	3/8	3/4	2-1/2	3
E9990024	E9990024TF	3/8	3/8	3/4	2-1/2	4
E9990028	E9990028TF	7/16	3/8	1	2-11/16	4
E9990032	E9990032TF	1/2	1/2	1-1/4	3-1/4	4
E9990908	E9990908TF	1/2	1/2	1-5/8	3-5/8	4
E9990036	E9990036TF	9/16	1/2	1-3/8	3-3/8	4
E9990040	E9990040TF	5/8	5/8	1-5/8	3-3/4	4
E9990048	E9990048TF	3/4	3/4	1-5/8	3-7/8	4
E9990948	E9990948TF	3/4	5/8	1-5/8	3-7/8	4
E9990909	E9990909TF	3/4	3/4	2-1/2	4-3/4	4
E9990056	E9990056TF	7/8	7/8	1-7/8	4-1/8	5
E9990901	E9990901TF	7/8	3/4	1-7/8	4-1/8	5
E9990064	E9990064TF	1	1	2	4-1/2	5
E9990905	E9990905TF	1	1	3	5-1/2	5
E9990108	E9990108TF	1-1/8	1	2	4-1/2	6
E9990116	E9990116TF	1-1/4	1-1/4	2	4-1/2	6
E9990906	E9990906TF	1-1/4	1-1/4	3	5-1/2	6

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				◎	◎	○						

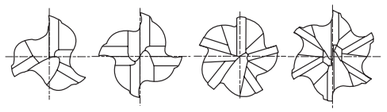
TANK-POWER END MILLS

E9991 SERIES FLAT SHANK

PREMIUM HSS-PM, MULTI FLUTE REGULAR LENGTH COARSE PITCH ROUGHING

▶ This TANK-POWER rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths.





YPM | COARSE | 3-6 | 30° | FLAT

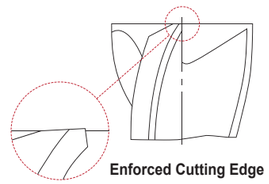
P.1208

◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
UNCOATED	TANK-POWER COATED					
E9991016	E9991016TF	1/4	3/8	5/8	2-7/16	3
E9991902	E9991902TF	1/4	3/8	1-1/8	2-15/16	3
E9991020	E9991020TF	5/16	3/8	3/4	2-1/2	3
E9991024	E9991024TF	3/8	3/8	3/4	2-1/2	4
E9991028	E9991028TF	7/16	3/8	1	2-11/16	4
E9991032	E9991032TF	1/2	1/2	1-1/4	3-1/4	4
E9991903	E9991903TF	1/2	1/2	1-5/8	3-5/8	4
E9991036	E9991036TF	9/16	1/2	1-3/8	3-3/8	4
E9991040	E9991040TF	5/8	5/8	1-5/8	3-3/4	4
E9991048	E9991048TF	3/4	3/4	1-5/8	3-7/8	4
E9991948	E9991948TF	3/4	5/8	1-5/8	3-7/8	4
E9991904	E9991904TF	3/4	3/4	2-1/2	4-3/4	4
E9991056	E9991056TF	7/8	7/8	1-7/8	4-1/8	5
E9991901	E9991901TF	7/8	3/4	1-7/8	4-1/8	5
E9991064	E9991064TF	1	1	2	4-1/2	5
E9991905	E9991905TF	1	1	3	5-1/2	5
E9991108	E9991108TF	1-1/8	1	2	4-1/2	6
E9991116	E9991116TF	1-1/4	1-1/4	2	4-1/2	6
E9991906	E9991906TF	1-1/4	1-1/4	3	5-1/2	6

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060



Enforced Cutting Edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				◎	◎	○						

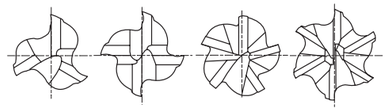
TANK-POWER END MILLS

E9A86 SERIES FLAT SHANK

PREMIUM HSS-PM, MULTI FLUTE LONG LENGTH FINE PITCH ROUGHING

▶ This TANK-POWER rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths.





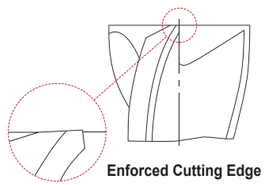
YPM FINE 3-6 30° FLAT P.1208

◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
UNCOATED	TANK-POWER COATED					
E9A86020	E9A86020TF	5/16	3/8	1-3/8	3-3/16	3
E9A86024	E9A86024TF	3/8	3/8	1-1/2	3-1/4	4
E9A86924	E9A86924TF	3/8	3/8	1-1/2	4	4
E9A86032	E9A86032TF	1/2	1/2	2	4	4
E9A86040	E9A86040TF	5/8	5/8	2-1/2	4-5/8	4
E9A86048	E9A86048TF	3/4	5/8	3	5-1/8	4
E9990902	E9990902TF	3/4	3/4	3	5-1/4	4
E9A86056	E9A86056TF	7/8	3/4	3-1/2	5-3/4	5
E9A86956	E9A86956TF	7/8	7/8	3-1/2	5-3/4	5
E9990903	E9990903TF	1	1	4	6-1/2	5
E9A86116	E9A86116TF	1-1/4	3/4	4	6-1/4	6
E9990904	E9990904TF	1-1/4	1-1/4	4	6-1/2	6

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060



Enforced Cutting Edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				◎	◎	○						

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

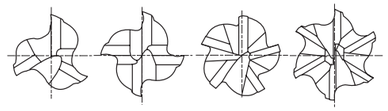
TANK-POWER END MILLS

E9A87 SERIES FLAT SHANK

PREMIUM HSS-PM, MULTI FLUTE LONG LENGTH COARSE PITCH ROUGHING

▶ This TANK-POWER rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths.





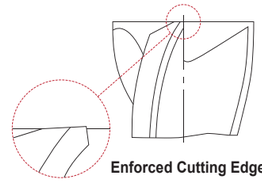
YPM COARSE 3-6 30° FLAT P.1208

◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
UNCOATED	TANK-POWER COATED					
E9A87020	E9A87020TF	5/16	3/8	1-3/8	3-3/16	3
E9A87024	E9A87024TF	3/8	3/8	1-1/2	3-1/4	4
E9A87924	E9A87924TF	3/8	3/8	1-1/2	4	4
E9A87032	E9A87032TF	1/2	1/2	2	4	4
E9A87040	E9A87040TF	5/8	5/8	2-1/2	4-5/8	4
E9A87048	E9A87048TF	3/4	5/8	3	5-1/8	4
E9A87948	E9A87948TF	3/4	3/4	3	5-1/4	4
E9A87056	E9A87056TF	7/8	3/4	3-1/2	5-3/4	5
E9A87956	E9A87956TF	7/8	7/8	3-1/2	5-3/4	5
E9A87064	E9A87064TF	1	1	4	6-1/2	5
E9A87116	E9A87116TF	1-1/4	3/4	4	6-1/4	6
E9A87917	E9A87917TF	1-1/4	1-1/4	4	6-1/2	6

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060



Enforced Cutting Edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				◎	◎	○						

TANK-POWER END MILLS

E9921 SERIES FLAT SHANK

PREMIUM HSS-PM, MULTI FLUTE FINE PITCH ROUGHING EXTENDED NECK CENTER CUTTING

▶ This TANK-POWER rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths.



YPM | FINE | 5&6 | 35° | FLAT

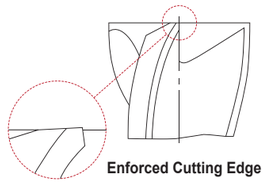
P.1208

◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Reach Extended Neck	Overall Length	No. of Flute
UNCOATED	TiAlN COATED						
EP20322	EP20322F	1/2	1/2	1-1/4	3	5	5
EP20402	EP20402F	5/8	5/8	1-5/8	4	6-1/8	5
EP20482	EP20482F	3/4	3/4	1-5/8	4	6-1/4	5
EP20484	EP20484F	3/4	3/4	1-5/8	6	8-1/4	5
EP20642	EP20642F	1	1	2	4	6-1/2	6
EP20643	EP20643F	1	1	2	6	8-1/2	6
EP21161	EP21161F	1-1/4	1 1/4	2	4	6-1/2	6
EP21162	EP21162F	1-1/4	1 1/4	2	6	8-1/2	6

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060



Enforced Cutting Edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				◎	◎	○						

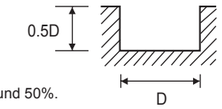
TANK-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS

PREMIUM HSS-PM, 2 FLUTE FINISH - SLOTTING

E9983, E9984 SERIES

MATERIAL	P									
	STRUCTURAL STEELS CARBON STEELS		STRUCTURAL STEELS CARBON STEELS CAST IRONS		CARBON STEELS ALLOY STEELS TOOL STEELS		PREHARDENED STEELS ALLOY STEELS TOOL STEELS		ALLOY STEELS TOOL STEELS AUSTENITIC STAINLESS STEELS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc35		HRc35~HRc40	
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1100N/mm²		1100~1300N/mm²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	4600	5.9	3800	5.0	3150	4.2	2150	2.8	1650	2.2
3/16	3800	8.5	3150	6.7	2600	6.1	1650	3.5	1350	2.6
1/4	3150	9.1	2650	7.5	2100	6.6	1350	3.8	1050	3.0
5/16	2500	9.4	2100	8.2	1700	6.9	1100	3.9	855	3.0
3/8	2100	10.1	1800	8.9	1450	7.6	910	4.2	715	3.4
1/2	1650	9.3	1350	8.1	1050	7.0	665	3.9	525	2.9
5/8	1300	9.1	1100	7.3	855	6.1	535	3.6	425	2.8
3/4	995	7.9	820	6.2	710	5.3	450	3.2	360	2.5
7/8	795	6.2	675	5.1	560	4.3	375	2.7	300	2.0
1	710	5.2	590	4.7	465	3.9	335	2.5	235	1.7



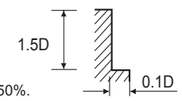
※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min. FEED = inch/min.

PREMIUM HSS-PM, 4 FLUTE FINISH - SIDE CUTTING

E9985, E9986 SERIES

MATERIAL	P									
	STRUCTURAL STEELS CARBON STEELS		STRUCTURAL STEELS CARBON STEELS CAST IRONS		CARBON STEELS ALLOY STEELS TOOL STEELS		PREHARDENED STEELS ALLOY STEELS TOOL STEELS		ALLOY STEELS TOOL STEELS AUSTENITIC STAINLESS STEELS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc35		HRc35~HRc40	
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1100N/mm²		1100~1300N/mm²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	6300	17.7	6000	14.4	4250	10.4	2700	7.2	2320	5.1
3/16	4600	19.7	4100	16.1	3040	12.6	2070	8.5	1780	6.2
1/4	3800	22.1	3300	18.1	2500	13.0	1700	9.7	1400	7.1
5/16	3100	22.4	2600	18.9	2000	14.2	1400	9.4	1150	7.2
3/8	2500	24.8	2200	20.5	1680	15.0	1180	10.2	960	7.7
1/2	1900	22.1	1720	18.5	1270	14.4	860	9.3	690	2.7
5/8	1600	20.1	1410	16.9	1000	13.3	690	8.9	620	6.7
3/4	1400	17.7	1150	15.2	830	11.5	580	7.3	470	5.7
7/8	1030	15.8	930	12.4	675	9.8	470	6.3	390	5.1
1	1000	14.6	830	11.8	620	8.8	420	5.6	360	4.9



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

RPM = rev./min. FEED = inch/min.

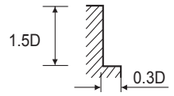
TANK-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS

PREMIUM HSS-PM, 3&4 FLUTE 60° HELIX - SIDE CUTTING

E9988 SERIES

MATERIAL	P					
	STRUCTURAL STEELS CARBON STEELS CAST IRONS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALLOY STEELS, TOOL STEELS AUSTENITIC STAINLESS STEELS	
HARDNESS	~HRc20		HRc20 ~ HRc30		HRc30 ~ HRc40	
STRENGTH	500 ~ 800N/mm²		800 ~ 1000N/mm²		1000 ~ 1300N/mm²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
1/4	3850	7.9	2500	5.3	1900	3.5
5/16	3050	7.9	2100	6.3	1700	3.5
3/8	2700	8.5	1700	6.3	1450	3.8
1/2	1850	9.7	1200	6.3	960	4.1
5/8	1300	11.0	845	8.5	690	5.4
3/4	895	14.6	580	11.9	475	7.9
7/8	720	16.6	475	14.0	380	8.8
1	630	19.0	415	16.0	335	10.0



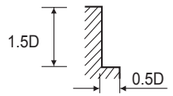
※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

PREMIUM HSS-PM, MULTI FLUTE ROUGHING - SIDE CUTTING

E9990, E9991, E9A86, E9A87, E9921 SERIES

MATERIAL	P								M	
	STRUCTURAL STEELS CARBON STEELS		STRUCTURAL STEELS CARBON STEELS CAST IRONS		CARBON STEELS ALLOY STEELS TOOL STEELS		PREHARDENED STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS	
HARDNESS	~HRc20		HRc20 ~ HRc30		HRc30 ~ HRc35		HRc35 ~ HRc40			
STRENGTH	~800N/mm²		800 ~ 1000N/mm²		1000 ~ 1100N/mm²		1100 ~ 1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	2650	7.8	2050	6.3	1450	4.4	1200	3.4	1900	5.6
3/8	1900	13.1	1500	10.1	1050	6.4	885	5.2	1270	8.6
1/2	1450	14.2	1100	11.4	805	7.9	665	6.1	950	9.3
5/8	1150	14.2	905	11.4	630	7.9	525	6.1	760	9.7
3/4	960	14.4	780	11.4	540	7.9	445	6.1	630	9.5
7/8	845	14.5	615	11.4	445	7.8	375	6.1	540	9.3
1	740	14.0	560	10.6	395	7.4	315	6.0	470	9.0



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

RPM = rev./min.
FEED = inch/min.

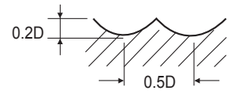
TANK-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS

PREMIUM HSS-PM, 2 FLUTE BALL NOSE - PROFILING

E9992 SERIES

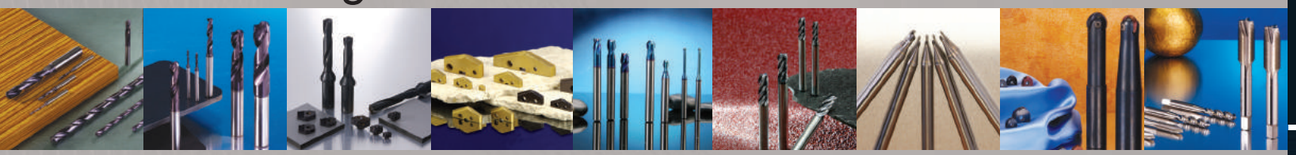
MATERIAL	P							
	STRUCTURAL STEELS CARBON STEELS		STRUCTURAL STEELS CARBON STEELS CAST IRONS		CARBON STEELS ALLOY STEELS TOOL STEELS		PREHARDENED STEELS ALLOY STEELS TOOL STEELS	
HARDNESS			~HRc20		HRc20 ~ HRc30		HRc30 ~ HRc40	
STRENGTH	~500N/mm²		500 ~ 800N/mm²		800 ~ 1000N/mm²		1000 ~ 1300N/mm²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	6800	12.3	5300	8.2	3550	4.5	1850	2.1
3/16	5100	15.3	4000	10.3	2650	5.7	1350	2.7
1/4	4050	16.8	3150	11.2	2100	6.2	1100	3.0
5/16	3250	18.1	2550	12.2	1700	6.9	860	3.0
3/8	2750	19.9	2100	13.4	1450	7.6	700	3.4
1/2	2100	17.8	1600	12.0	1100	6.8	530	2.9
5/8	1600	16.6	1250	11.1	860	6.1	425	2.8
3/4	1350	14.7	1050	9.8	700	5.4	360	2.5
7/8	1100	12.6	865	8.4	560	4.6	300	2.1
1	890	10.5	690	7.0	445	3.9	235	1.7



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

RPM = rev./min.
FEED = inch/min.

Global Cutting Tool Leader **YG-1**



HSS

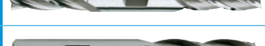
Being the best through innovation



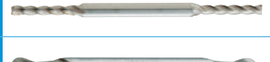
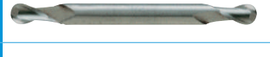
COBALT & HSS END MILLS

- General Purpose, Non-coated, Many Coatings Available

◎ : Excellent ○ : Good

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE	P: Carbon Steels ~HRc20	P: Alloy Steels HRc20~30	P: Prehardened Steels HRc30~40	P: Hardened Steels HRc40~45	P: Hardened Steels HRc45~55	H: High Hardened Steels HRc55~70	M: Stainless Steels	K: Cast Iron	N: Copper	N: Graphite	N: Aluminum	N: Acrylic	N: CFRP	S: Titanium	S: High Temperature Alloy
INCH																				
E2030 E1030		HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH	D1/8	D2	1219	◎	◎	○						○		○				
E2080 E1080		HSSCo8 & HSS, 2 FLUTE LONG LENGTH	D1/4	D2	1221	◎	◎	○						○		○				
E2033 E1033		HSSCo8 & HSS, 2 FLUTE EXTENDED LENGTH	D1/8	D1-1/4	1222	◎	◎	○						○		○				
E2050 E1050		HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH DOUBLE	D1/8	D1	1223	◎	◎	○						○		○				
E2110 E1110		HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH BALL NOSE	R1/16	R1	1225	◎	◎	○						○		○				
E2111 E1111		HSSCo8 & HSS, 2 FLUTE EXTENDED LENGTH BALL NOSE	R1/16	R1/2	1226	◎	◎	○						○		○				
E2112 E1112		HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH BALL NOSE DOUBLE	R1/16	R1/2	1227	◎	◎	○						○		○				
E2031 E1031		HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH	D1/8	D1	1228	◎	◎	○						○		○				
E2032 E1032		HSSCo8 & HSS, 6 FLUTE REGULAR LENGTH	D5/8	D2	1230	◎	◎	○						○						
E2034 E1034		HSSCo8 & HSS, 4 FLUTE LONG LENGTH	D1/4	D1	1231	◎	◎	○						○		○				
E2035 E1035		HSSCo8 & HSS, 6 FLUTE LONG LENGTH	D1-1/8	D2	1231	◎	◎	○						○						
E2036 E1036		HSSCo8 & HSS, 4 FLUTE EXTRA LONG LENGTH	D1/4	D1	1232	◎	◎	○						○		○				
E2037 E1037		HSSCo8 & HSS, 6 FLUTE EXTRA LONG LENGTH	D1-1/4	D2	1232	◎	◎	○						○						
E2051 E1051		HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH DOUBLE	D1/8	D1	1233	◎	◎	○						○		○				
E2031 E1031		HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH 3/4 SHANK	D3/4	D1	1235	◎	◎	○						○		○				
E2032 E1032		HSSCo8 & HSS, 6&8 FLUTE REGULAR LENGTH 3/4 SHANK	D1-1/8	D2	1235	◎	◎	○						○						
E2020		HSSCo8, 4 FLUTE REGULAR LENGTH BALL NOSE	R1/16	R1	1236	◎	◎	○						○		○				
E2021		HSSCo8, 4 FLUTE LONG LENGTH BALL NOSE	R1/8	R1/2	1237	◎	◎	○						○		○				
E2069		HSSCo8, 4 FLUTE REGULAR LENGTH BALL NOSE DOUBLE	R1/16	R1/2	1238	◎	◎	○						○		○				
E2039 E1039		HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH CENTER CUTTING	D1/8	D1-1/2	1239	◎	◎	○						○		○				
E2042 E1042		HSSCo8 & HSS, 6 FLUTE REGULAR LENGTH CENTER CUTTING	D1/2	D2	1241	◎	◎	○						○						

◎ : Excellent ○ : Good

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE	P: Carbon Steels ~HRc20	P: Alloy Steels HRc20~30	P: Prehardened Steels HRc30~40	P: Hardened Steels HRc40~45	P: Hardened Steels HRc45~55	H: High Hardened Steels HRc55~70	M: Stainless Steels	K: Cast Iron	N: Copper	N: Graphite	N: Aluminum	N: Acrylic	N: CFRP	S: Titanium	S: High Temperature Alloy
INCH																				
E2039 E2042		HSSCo8, MULTI FLUTE MEDIUM LENGTH CENTER CUTTING	D1	D2	1242	◎	◎	○						○		○				
E2040 E1040		HSSCo8 & HSS, 4 FLUTE LONG LENGTH CENTER CUTTING	D1/4	D1-1/2	1243	◎	◎	○						○		○				
E2162 E1162		HSSCo8 & HSS, 6 FLUTE LONG LENGTH CENTER CUTTING	D1/2	D2	1243	◎	◎	○						○						
E2041 E1041		HSSCo8 & HSS, 4 FLUTE EXTRA LONG LENGTH CENTER CUTTING	D1/4	D1-1/4	1244	◎	◎	○						○		○				
E2175 E1175		HSSCo8 & HSS, 6 FLUTE EXTRA LONG LENGTH CENTER CUTTING	D1/2	D2	1244	◎	◎	○						○						
E2053 E1053		HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH DOUBLE CENTER CUTTING	D1/8	D1	1245	◎	◎	○						○		○				
E2100 E1100		HSSCo8 & HSS, 6 FLUTE REGULAR with COMBINATION 2″ SHANK CENTER CUTTING	D2	D2	1247	◎	◎	○						○						
E2001 E1001		HSSCo8 & HSS, 2 FLUTE MINIATURE STUB LENGTH DOUBLE	D1/32	D3/16	1248	◎	◎	○						○		○				
E2003 E1003		HSSCo8 & HSS, 2 FLUTE MINIATURE REGULAR LENGTH DOUBLE	D1/32	D3/16	1249	◎	◎	○						○		○				
E2005 E1005		HSSCo8 & HSS, 2 FLUTE MINIATURE LONG LENGTH DOUBLE	D1/16	D3/16	1250	◎	◎	○						○		○				
E2002 E1002		HSSCo8 & HSS, 4 FLUTE MINIATURE STUB LENGTH DOUBLE	D1/16	D3/16	1251	◎	◎	○						○		○				
E2004 E1004		HSSCo8 & HSS, 4 FLUTE MINIATURE REGULAR LENGTH DOUBLE	D1/16	D3/16	1252	◎	◎	○						○		○				
E2006 E1006		HSSCo8 & HSS, 4 FLUTE MINIATURE LONG LENGTH DOUBLE	D1/16	D3/16	1253	◎	◎	○						○		○				
E2008 E1008		HSSCo8 & HSS, 2 FLUTE MINIATURE STUB LENGTH BALL NOSE DOUBLE	R1/32	R3/32	1254	◎	◎	○						○		○				
E2013 E1013		HSSCo8 & HSS, 2 FLUTE MINIATURE REGULAR LENGTH BALL NOSE DOUBLE	R1/64	R3/32	1255	◎	◎	○						○		○				
E2015 E1015		HSSCo8 & HSS, 2 FLUTE MINIATURE LONG LENGTH BALL NOSE DOUBLE	R1/32	R3/32	1256	◎	◎	○						○		○				
E1070		HSS, 2 FLUTE 42° HELIX REGULAR & MEDIUM LENGTH for ALUMINUM	D1/4	D2	1257	○										◎				
E1071		HSS, 2 FLUTE 42° HELIX LONG LENGTH for ALUMINUM	D1/4	D2	1258	○										◎				
E1072		HSS, 2 FLUTE 42° HELIX EXTRA LONG LENGTH for ALUMINUM	D1/4	D1-1/2	1258	○										◎				
E2086		HSSCo8, MULTI FLUTE STUB LENGTH FINE PITCH ROUGHING CENTER CUTTING	D1/4	D1	1259	◎	◎	○						○		○				
E2085		HSSCo8, MULTI FLUTE REGULAR LENGTH FINE PITCH ROUGHING CENTER CUTTING	D1/4	D1	1260	◎	◎	○						○		○				

STANDARD COBALT & HSS END MILLS

◎ : Excellent ○ : Good

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE	P: Carbon Steels ~HRc20	P: Alloy Steels HRc20~30	P: Prehardened Steels HRc30~40	P: Hardened Steels HRc40~45	P: Hardened Steels HRc45~55	H: High Hardened Steels HRc55~70	M: Stainless Steels	K: Cast Iron	N: Copper	N: Graphite	N: Aluminum	N: Acrylic	N: CFRP	S: Titanium	S: High Temperature Alloy
INCH																				
E2079		HSSCo8, MULTI FLUTE REGULAR LENGTH FINE PITCH ROUGHING	D1/4	D2	**1261**	◎	◎	○						○		○				
E2077		HSSCo8, MULTI FLUTE LONG LENGTH FINE PITCH ROUGHING	D1/2	D2	**1262**	◎	◎	○						○		○				
E2086		HSSCo8, 3 FLUTE STUB LENGTH FINE PITCH ROUGHING CENTER CUTTING	D1/4	D1	**1263**	◎	◎	○						○		○				
E2170		HSSCo8, MULTI FLUTE REGULAR LENGTH COARSE PITCH ROUGHING	D1/4	D2	**1264**	◎	◎	○						○		○				
E2171		HSSCo8, MULTI FLUTE MEDIUM LENGTH COARSE PITCH ROUGHING	D1	D2	**1265**	◎	◎	○						○		○				
E2172		HSSCo8, MULTI FLUTE LONG LENGTH COARSE PITCH ROUGHING	D1/2	D2	**1266**	◎	◎	○						○		○				
E2241		HSSCo8,3 FLUTE STUB LENGTH COARSE PITCH ROUGHING CENTER CUTTING	D1/4	D1	**1267**	◎	◎	○						○		○				
E2195		HSSCo8, MULTI FLUTE REGULAR LENGTH COARSE PITCH ROUGHING CENTER CUTTING	D1/2	D1-1/2	**1268**	◎	◎	○						○		○				
E2197		HSSCo8, MULTI FLUTE LONG LENGTH COARSE PITCH ROUGHING CENTER CUTTING	D1/2	D1-1/2	**1268**	◎	◎	○						○		○				
E2193 E2125		HSSCo8, MULTI FLUTE REGULAR & LONG LENGTH COARSE PITCH ROUGHING BALL NOSE	R1/8	R3/4	**1269**	◎	◎	○						○		○				
E2248		HSSCo8, MULTI FLUTE REGULAR LENGTH ROUGHING & FINISHING	D1/4	D2	**1270**	◎	◎	○						○		○				
E2191		HSSCo8, 3 FLUTE 37° HELIX REGULAR LENGTH ROUGHING for ALUMINUM	D1/4	D1-1/2	**1271**	◎	◎	○						○		◎				
E2226 E2192		HSSCo8, 3 FLUTE 37° HELIX MEDIUM & LONG LENGTH ROUGHING for ALUMINUM	D1/2	D1-1/2	**1272**	◎	◎	○						○		◎				
E2163 E1163		HSSCo8 & HSS, 2 FLUTE 15° HELIX for KEYWAY CUTTING	D1/8	D1	**1273**	◎	◎	○						○		○				
E2120 E2121		HSSCo8, 3&4 FLUTE 60° HELIX REGULAR LENGTH	D1/4	D3/4	**1274**	◎	◎	○						○						
E2160		HSSCo8, 3 FLUTE SHORT LENGTH THROW AWAY	D7/8 D1/16	D2 D1/4	**1275**	◎	◎	○						○		○				
E2161		HSSCo8, 3 FLUTE LONG LENGTH THROW AWAY	D1/16	D1/4	**1275**	◎	◎	○						○		○				
E2237 E1237		HSSCo8 & HSS, 4 FLUTE CORNER ROUNDING	D1/4	D5/8	**1276**	◎	◎	○						○		○				
METRIC																				
E2482 E1482		HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH - METRIC	D2.0 (.0787)	D45.0 (1.772)	**1277**	◎	◎	○						○		○				
E2483 E1483		HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH - METRIC	D2.0 (.0787)	D45.0 (1.772)	**1278**	◎	◎	○						○		○				
		END MILL SET SERIES / RECOMMENDED CUTTING CONDITIONS			**1281**															

COBALT & HSS END MILLS

SUPER CUTTING END MILLS

DESCRIPTION				YG-1	**ANSI	REMARK
TYPE	NO. OF FLUTE	LENGTH OF CUT	TYPE OF END			
SINGLE END	2	REGULAR LONG EX. LONG	ALL	+ .0010 .0000 * (+ .0015 .0000)	+ .0030 .0000	
	MULTIPLE	ALL	ALL	+ .0010 .0000 * (+ .0015 .0000)	+ .0030 .0000	
KEY WAY	2	ALL	CENTER CUTTING	+ .0000 - .0015	+ .0000 - .0015	
DOUBLE END	2	REGULAR	ALL	.0000 - .0010 * (.0000 - .0020)	.0000 - .0015	
	4	ALL	CENTER CUTTING	.0000 - .0010 * (.0000 - .0020)	.0000 - .0015	
	4	ALL	NON CENTER CUTTING	+ .0010 .0000 * (.0000 - .0020)	+ .0030 .0000 * (.0000 - .0025)	
3/16 SHANK DOUBLE END	2	STUB REGULAR	ALL	.0000 - .0010 * (.0000 - .0020)	.0000 - .0015	
		LONG	ALL	+ .0010 .0000 * (.0000 - .0020)	+ .0030 .0000 * (.0000 - .0025)	
	4	ALL	ALL	+ .0010 .0000 * (.0000 - .0020)	+ .0030 .0000 * (.0000 - .0025)	
ROUGHING	MULTIPLE	ALL	ALL	+ .0060 .0000	+ .025 - .005	
ROUGHING & FINISHING	MULTIPLE	REGULAR	ALL	+ .0025 + .0005		
HELICAL 60°	3.4	REGULAR	CENTER CUTTING	+ .0010 .0000 * (+ .0015 .0000)		
THROW AWAY 1/4 SHANK	3	ALL	CENTER CUTTING	- .0005 - .0013		

* The shank of End Mills is the same diameter as the cutting portion.

** ANSI B94-19-1977 published by the American Society of Mechanical Engineers.

COBALT & HSS END MILLS

E2030 SERIES — 8% COBALT (M42) FLAT SHANK

E1030 SERIES — HSS (M2) FLAT SHANK

HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH

▶ These end mills are furnished as regular with right-hand cutting and right-hand helical flutes. All shanks are flatted for holder set screw. These are designed for slotting, drilling, pocketing and general-purpose operation.



HSS Co8 | HSS | 2 | 30° | FLAT P.1281, 1287, 1291

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
01289	01039	1/8	3/8	3/8	2-5/16
01291	01041	5/32	3/8	7/16	2-5/16
01293	01043	3/16	3/8	7/16	2-5/16
01295	01045	7/32	3/8	1/2	2-5/16
01297	01047	1/4	3/8	1/2	2-5/16
01299	01049	9/32	3/8	9/16	2-5/16
01301	01051	5/16	3/8	9/16	2-5/16
01303	01053	11/32	3/8	9/16	2-5/16
01305	01055	3/8	3/8	9/16	2-5/16
01308	01058	13/32	3/8	13/16	2-1/2
01312	01062	7/16	3/8	13/16	2-1/2
01316	01066	15/32	3/8	13/16	2-1/2
01320	01070	1/2	3/8	13/16	2-1/2
01321	01071	1/2	1/2	1	3
01328	01078	9/16	1/2	1-1/8	3-1/8
01336	01086	5/8	1/2	1-1/8	3-1/8
01337	01087	5/8	5/8	1-5/16	3-7/16
01348	01098	11/16	5/8	1-5/16	3-7/16
01357	01107	3/4	1/2	1-5/16	3-5/16
01358	01108	3/4	5/8	1-5/16	3-7/16
01359	01109	3/4	3/4	1-5/16	3-7/16
01373	01123	13/16	5/8	1-1/2	3-5/8
01391	01141	7/8	3/4	1-1/2	3-3/4
01394	01144	7/8	7/8	1-1/2	3-3/4
01409	01159	15/16	7/8	1-1/2	3-3/4
01420	01170	1	5/8	1-1/2	3-5/8

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

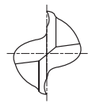
COBALT & HSS END MILLS

E2030 SERIES 8% COBALT (M42) FLAT SHANK
E1030 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH

▶ These end mills are furnished as regular with right-hand cutting and right-hand helical flutes. All shanks are flatted for holder set screw. These are designed for slotting, drilling, pocketing and general-purpose operation.





HSS Co8 | HSS | 2 | 30° | FLAT P.1281, 1287, 1291

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
01422	01172	1	3/4	1-1/2	3-3/4
01426	01176	1	1	1-5/8	4-1/8
01435	01185	1-1/8	1	1-5/8	4-1/8
01445	01195	1-1/4	1-1/4	1-5/8	4-1/8
01451	01201	1-3/8	1	1-5/8	4-1/8
01453	01203	1-3/8	1-1/4	1-5/8	4-1/8
01459	01209	1-1/2	1	1-5/8	4-1/8
01461	01211	1-1/2	1-1/4	1-5/8	4-1/8
01469	01219	1-3/4	1-1/4	1-5/8	4-1/8
01477	01227	2	1-1/4	1-5/8	4-1/8
* 01480	* 01230	2	2	2	5-3/4

* Combination Shank

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

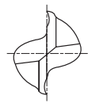
COBALT & HSS END MILLS

E2080 SERIES 8% COBALT (M42) FLAT SHANK
E1080 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 2 FLUTE LONG LENGTH

▶ Longer flute length than E2030 type and allows deeper cutting.





HSS Co8 | HSS | 2 | 30° | FLAT P.1281, 1287, 1291

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
02297	02047	1/4	3/8	1-1/4	3-1/8
02301	02051	5/16	3/8	1-3/8	3-1/8
02305	02055	3/8	3/8	1-1/2	3-1/4
02321	02071	1/2	1/2	2	4
02337	02087	5/8	5/8	2	4-1/8
02359	02109	3/4	3/4	2-1/4	4-1/2
02394	02144	7/8	7/8	2-1/2	4-3/4
02426	02176	1	1	3	5-1/2
02435	02185	1-1/8	1	3	5-1/2
02443	02193	1-1/4	1	3	5-1/2
02445	02195	1-1/4	1-1/4	3	5-1/2
02461	02211	1-1/2	1-1/4	3	5-1/2
02469	02219	1-3/4	1-1/4	3	5-1/2
02477	02227	2	1-1/4	3	5-1/2
* 02482	* 02232	2	2	3	6-3/4

* Combination Shank

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2033 SERIES 8% COBALT (M42) FLAT SHANK
E1033 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 2 FLUTE EXTENDED LENGTH

▶Provided with the longest flute length and suitable for high accuracy machining of deep step.





HSS Co8 | HSS | 2 | 30° | FLAT | P.1281, 1287, 1291

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length
03289	03039	1/8	3/8	3/8	-	2-3/8
03293	03043	3/16	3/8	1/2	1-1/8	2-11/16
03297	03047	1/4	3/8	5/8	1-1/2	3-1/16
03301	03051	5/16	3/8	3/4	1-3/4	3-5/16
03305	03055	3/8	3/8	3/4	1-3/4	3-5/16
03321	03071	1/2	1/2	1	2-7/32	4
03337	03087	5/8	5/8	1-3/8	2-23/32	4-5/8
03359	03109	3/4	3/4	1-5/8	3-11/32	5-3/8
03394	03144	7/8	7/8	2	4	6
03426	03176	1	1	2-1/2	4-31/32	7-1/4
03445	03195	1-1/4	1-1/4	3	4-31/32	7-1/4

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

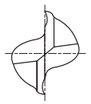
COBALT & HSS END MILLS

E2050 SERIES 8% COBALT (M42) FLAT SHANK
E1050 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH DOUBLE

▶ Series E2050 two flute end mills are the double-end version of E2030 single-end tools. Same excellent tool geometry for slotting, keying and general purpose milling, plus the added economy offered by the double-end design.





HSS Co8 | HSS | 2 | 30° | FLAT | P.1281, 1287, 1291

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
11289	11039	1/8	3/8	3/8	3-1/16
11290	11040	9/64	3/8	7/16	3-1/8
11291	11041	5/32	3/8	7/16	3-1/8
11292	11042	11/64	3/8	7/16	3-1/8
11293	11043	3/16	3/8	7/16	3-1/8
11294	11044	13/64	3/8	1/2	3-1/8
11295	11045	7/32	3/8	1/2	3-1/8
11296	11046	15/64	3/8	1/2	3-1/8
11297	11047	1/4	3/8	1/2	3-1/8
11298	11048	17/64	3/8	9/16	3-1/8
11299	11049	9/32	3/8	9/16	3-1/8
11300	11050	19/64	3/8	9/16	3-1/8
11301	11051	5/16	3/8	9/16	3-1/8
11302	11052	21/64	3/8	9/16	3-1/8
11303	11053	11/32	3/8	9/16	3-1/8
11304	11054	23/64	3/8	9/16	3-1/8
11305	11055	3/8	3/8	9/16	3-1/8
11307	11057	25/64	1/2	13/16	3-3/4
11309	11059	13/32	1/2	13/16	3-3/4
11311	11061	27/64	1/2	13/16	3-3/4
11313	11063	7/16	1/2	13/16	3-3/4
11315	11065	29/64	1/2	13/16	3-3/4
11317	11067	15/32	1/2	13/16	3-3/4
11319	11069	31/64	1/2	13/16	3-3/4
11321	11071	1/2	1/2	13/16	3-3/4
11326	11076	17/32	5/8	1-1/8	4-1/2

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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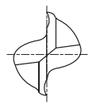
COBALT & HSS END MILLS

E2050 SERIES 8% COBALT (M42) FLAT SHANK
E1050 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH DOUBLE

▶ Series E2050 two flute end mills are the double-end version of E2030 single-end tools. Same excellent tool geometry for slotting, keying and general purpose milling, plus the added economy offered by the double-end design.





HSS Co8 | HSS | 2 | 30° | FLAT P.1281, 1287, 1291

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
11330	11080	9/16	5/8	1-1/8	4-1/2
11334	11084	19/32	5/8	1-1/8	4-1/2
11337	11087	5/8	5/8	1-1/8	4-1/2
11344	11094	21/32	3/4	1-5/16	5
11350	11100	11/16	3/4	1-5/16	5
11354	11104	23/32	3/4	1-5/16	5
11359	11109	3/4	3/4	1-5/16	5
11368	11118	25/32	7/8	1-9/16	5-1/2
11377	11127	13/16	7/8	1-9/16	5-1/2
11384	11134	27/32	7/8	1-9/16	5-1/2
11394	11144	7/8	7/8	1-9/16	5-1/2
11402	11152	29/32	1	1-5/8	5-7/8
11410	11160	15/16	1	1-5/8	5-7/8
11417	11167	31/32	1	1-5/8	5-7/8
11426	11176	1	1	1-5/8	5-7/8

■ The TiN coated, TiCN coated or TiAIN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAIN F), CE(TiAIN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAIN F), HE(TiAIN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~—.0010	** 0~—.0020

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

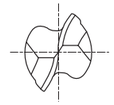
COBALT & HSS END MILLS

E2110 SERIES 8% COBALT (M42) FLAT SHANK
E1110 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH BALL NOSE

▶ The two flute ball end mills are designed for milling of radius bottom slots, fillets and special contours. The end teeth are cut to center allowing these end mills to drill into material at the beginning of a slotting cut. The two flute design provides good chip removal ability in slotting.





HSS Co8 | HSS | 2 | 30° | FLAT P.1284, 1289, 1293

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)	R				
41289	41039	R1/16	1/8	3/8	3/8	2-5/16
41293	41043	R3/32	3/16	3/8	1/2	2-3/8
41297	41047	R1/8	1/4	3/8	5/8	2-7/16
41301	41051	R5/32	5/16	3/8	3/4	2-1/2
41305	41055	R3/16	3/8	3/8	3/4	2-1/2
41313	41063	R7/32	7/16	1/2	1	3
41321	41071	R1/4	1/2	1/2	1	3
41328	41078	R9/32	9/16	1/2	1-1/8	3-1/8
41336	41086	R5/16	5/8	1/2	1-1/8	3-1/8
41337	41087	R5/16	5/8	5/8	1-3/8	3-1/2
41357	41107	R3/8	3/4	1/2	1-5/16	3-5/16
41359	41109	R3/8	3/4	3/4	1-5/8	3-7/8
41391	41141	R7/16	7/8	3/4	2	4-1/4
41394	41144	R7/16	7/8	7/8	2	4-1/4
41422	41172	R1/2	1	3/4	2-1/4	4-1/2
41426	41176	R1/2	1	1	2-1/4	4-3/4
41431	41181	R9/16	1-1/8	3/4	1-5/8	3-7/8
41435	41185	R9/16	1-1/8	1	2-1/4	4-3/4
41439	41189	R5/8	1-1/4	3/4	1-5/8	3-7/8
41445	41195	R5/8	1-1/4	1-1/4	2-1/2	5
41449	41199	R11/16	1-3/8	3/4	1-5/8	4-1/8
41453	41203	R11/16	1-3/8	1-1/4	2-1/2	5
41457	41207	R3/4	1-1/2	3/4	1-5/8	4-1/8
41461	41211	R3/4	1-1/2	1-1/4	2-1/2	5
41478	41227	R1	2	1-1/4	2-1/2	5

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

■ The TiN coated, TiCN coated or TiAIN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAIN F), CE(TiAIN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAIN F), HE(TiAIN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2111 SERIES 8% COBALT (M42) FLAT SHANK
E1111 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 2 FLUTE EXTENDED LENGTH BALL NOSE

▶Longer flute length than E2110 type and suitable for high efficient copying process and deep cutting of die mold corner radius.



HSS Co8 | HSS | 2 | 30° | FLAT P.1284, 1289, 1293

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length
8% COBALT (M42)	HSS (M2)	R					
42289	**42039**	R1/16	**1/8**	3/8	3/8	-	2-3/8
42293	**42043**	R3/32	**3/16**	3/8	1/2	1-1/8	2-11/16
42297	**42047**	R1/8	**1/4**	3/8	5/8	1-1/2	3-1/16
42301	**42051**	R5/32	**5/16**	3/8	3/4	1-3/4	3-5/16
42305	**42055**	R3/16	**3/8**	3/8	3/4	1-3/4	3-5/16
42313	**42063**	R7/32	**7/16**	1/2	1	1-7/8	3-11/16
42321	**42071**	R1/4	**1/2**	1/2	1	2-1/4	4
42337	**42087**	R5/16	**5/8**	5/8	1-3/8	2-3/4	4-5/8
42359	**42109**	R3/8	**3/4**	3/4	1-5/8	3-3/8	5-3/8
42426	**42176**	R1/2	**1**	1	2-1/2	5	7-1/4

■ The TiN coated, TiCN coated or TiAIN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAIN F), CE(TiAIN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAIN F), HE(TiAIN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2112 SERIES 8% COBALT (M42) FLAT SHANK
E1112 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH BALL NOSE DOUBLE

▶ Same construction features as E2110 end mill in a more economical version. Removes more material per grind. Machine ground notch assures positive anchorage in tool holder.



HSS Co8 | HSS | 2 | 30° | FLAT P.1284, 1289, 1293

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)	R				
45289	**45039**	R1/16	**1/8**	3/8	3/8	3-1/16
45293	**45043**	R3/32	**3/16**	3/8	7/16	3-1/8
45297	**45047**	R1/8	**1/4**	3/8	1/2	3-1/8
45301	**45051**	R5/32	**5/16**	3/8	9/16	3-1/8
45305	**45055**	R3/16	**3/8**	3/8	9/16	3-1/8
45313	**45063**	R7/32	**7/16**	1/2	13/16	3-3/4
45321	**45071**	R1/4	**1/2**	1/2	13/16	3-3/4
45337	**45087**	R5/16	**5/8**	5/8	1-1/8	4-1/2
45359	**45109**	R3/8	**3/4**	3/4	1-5/16	5
45426	**45176**	R1/2	**1**	1	1-5/8	5-7/8

■ The TiN coated, TiCN coated or TiAIN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAIN F), CE(TiAIN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAIN F), HE(TiAIN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~—.0010	** 0~—.0020

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2031 SERIES 8% COBALT (M42) FLAT SHANK
E1031 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH

▶ Possible for high-speed cutting, suitable for high efficiency machining. Easy to regrind.





HSS Co8 | HSS | 4 | 30° | FLAT

P.1283, 1288, 1292

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
04289	04039	1/8	3/8	3/8	2-5/16
04290	04040	9/64	3/8	7/16	2-3/8
04291	04041	5/32	3/8	7/16	2-3/8
04292	04042	11/64	3/8	1/2	2-3/8
04293	04043	3/16	3/8	1/2	2-3/8
04294	04044	13/64	3/8	9/16	2-7/16
04295	04045	7/32	3/8	9/16	2-7/16
04296	04046	15/64	3/8	5/8	2-7/16
04297	04047	1/4	3/8	5/8	2-7/16
04298	04048	17/64	3/8	11/16	2-1/2
04299	04049	9/32	3/8	11/16	2-1/2
04300	04050	19/64	3/8	3/4	2-1/2
04301	04051	5/16	3/8	3/4	2-1/2
04302	04052	21/64	3/8	3/4	2-1/2
04303	04053	11/32	3/8	3/4	2-1/2
04304	04054	23/64	3/8	3/4	2-1/2
04305	04055	3/8	3/8	3/4	2-1/2
04306	04056	25/64	3/8	1	2-11/16
04308	04058	13/32	3/8	1	2-11/16
04310	04060	27/64	3/8	1	2-11/16
04312	04062	7/16	3/8	1	2-11/16
04315	04065	29/64	1/2	1-1/4	3-1/4
04317	04067	15/32	1/2	1-1/4	3-1/4
04319	04069	31/64	1/2	1-1/4	3-1/4
04320	04070	1/2	3/8	1	2-11/16
04321	04071	1/2	1/2	1-1/4	3-1/4
04324	04074	17/32	1/2	1-3/8	3-3/8

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

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

COBALT & HSS END MILLS

E2031 SERIES 8% COBALT (M42) FLAT SHANK
E1031 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH

▶ Possible for high-speed cutting, suitable for high efficiency machining. Easy to regrind.





HSS Co8 | HSS | 4 | 30° | FLAT

P.1283, 1288, 1292

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
04328	04078	9/16	1/2	1-3/8	3-3/8
04332	04082	19/32	1/2	1-3/8	3-3/8
04336	04086	5/8	1/2	1-3/8	3-3/8
04337	04087	5/8	5/8	1-5/8	3-3/4
04340	04090	21/32	1/2	1-5/8	3-5/8
04348	04098	11/16	5/8	1-5/8	3-3/4
04352	04102	23/32	1/2	1-5/8	3-5/8
04357	04107	3/4	1/2	1-5/8	3-5/8
04358	04108	3/4	5/8	1-5/8	3-3/4
04359	04109	3/4	3/4	1-5/8	3-7/8
04364	04114	25/32	5/8	1-7/8	4
04375	04125	13/16	3/4	1-7/8	4-1/8
04380	04130	27/32	5/8	1-7/8	4
04391	04141	7/8	3/4	1-7/8	4-1/8
04394	04144	7/8	7/8	1-7/8	4-1/8
04399	04149	29/32	3/4	1-7/8	4-1/8
04407	04157	15/16	3/4	1-7/8	4-1/8
04414	04164	31/32	3/4	1-7/8	4-1/8
04420	04170	1	5/8	1-7/8	4
04422	04172	1	3/4	1-7/8	4-1/8
04426	04176	1	1	2	4-1/2

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2032 SERIES 8% COBALT (M42) FLAT SHANK
E1032 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 6 FLUTE REGULAR LENGTH

▶ Possible for high-speed cutting, suitable for high efficiency machining. Easy to regrind.



HSS Co8 | HSS | 6 | 30° | FLAT | P.1283, 1288, 1292

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
04338	04088	5/8	5/8	1-5/8	3-3/4
04360	04110	3/4	3/4	1-5/8	3-7/8
04376	04126	13/16	3/4	1-7/8	4-1/8
04390	04140	7/8	5/8	1-7/8	4
04395	04145	7/8	7/8	1-7/8	4-1/8
04405	04155	15/16	5/8	1-7/8	4
04421	04171	1	5/8	1-7/8	4
04427	04177	1	1	2	4-1/2
04432	04182	1-1/8	3/4	2	4-1/4
04436	04186	1-1/8	1	2	4-1/2
04440	04190	1-1/4	3/4	2	4-1/4
04444	04194	1-1/4	1	2	4-1/2
04446	04196	1-1/4	1-1/4	2	4-1/2
04452	04202	1-3/8	1	2	4-1/2
04460	04210	1-1/2	1	2	4-1/2
04462	04212	1-1/2	1-1/4	2	4-1/2
04470	04220	1-3/4	1-1/4	2	4-1/2
04478	04228	2	1-1/4	2	4-1/2
04481	04231	2	2	2	5-3/4

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○						

COBALT & HSS END MILLS

E2034 / E2035 SERIES 8% COBALT (M42) FLAT SHANK
E1034 / E1035 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 4&6 FLUTE LONG LENGTH

▶ Longer flute length than E2031 type and allows deeper cutting. Easy to regrind.



HSS Co8 | HSS | 4&6 | 30° | FLAT | P.1283, 1288, 1292

E2034(8% COBALT) , E1034(HSS) Series ■ 4 FLUTE

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
05297	05047	1/4	3/8	1-1/4	3-1/16
05301	05051	5/16	3/8	1-3/8	3-1/8
05305	05055	3/8	3/8	1-1/2	3-1/4
05313	05063	7/16	1/2	1-3/4	3-3/4
05321	05071	1/2	1/2	2	4
05337	05087	5/8	5/8	2-1/2	4-5/8
05359	05109	3/4	3/4	3	5-1/4
05394	05144	7/8	7/8	3-1/2	5-3/4
05426	05176	1	1	4	6-1/2

E2035(8% COBALT) , E1035(HSS) Series ■ 6 FLUTE

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
05436	05186	1-1/8	1	4	6-1/2
05444	05194	1-1/4	1	4	6-1/2
05446	05196	1-1/4	1-1/4	4	6-1/2
05460	05210	1-1/2	1	4	6-1/2
05462	05212	1-1/2	1-1/4	4	6-1/2
05470	05220	1-3/4	1-1/4	4	6-1/2
05478	05228	2	1-1/4	4	6-1/2
* 05485	* 05235	2	2	4	7-3/4

* Combination Shank

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

Series	P					H	M	K	N						S	
	Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
	~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
E1034 E2034	◎	◎	○						○		○				
E1035 E2035	◎	◎	○						○						

COBALT & HSS END MILLS

E2036 / E2037 SERIES 8% COBALT (M42) FLAT SHANK
E1036 / E1037 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 4&6 FLUTE EXTRA LONG LENGTH

▶Provided with the longest flute length and suitable for high accuracy machining of deep step. Easy to regrind.



HSS Co8 | HSS | 4&6 | 30° | FLAT P.1283, 1288, 1292

E2036(8% COBALT) , E1036(HSS) Series ■ 4 FLUTE — Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
06297	06047	1/4	3/8	1-3/4	3-9/16
06301	06051	5/16	3/8	2	3-3/4
06305	06055	3/8	3/8	2-1/2	4-1/4
06321	06071	1/2	1/2	3	5
06337	06087	5/8	5/8	4	6-1/8
06359	06109	3/4	3/4	4	6-1/4
06394	06144	7/8	7/8	5	7-1/4
06426	06176	1	1	6	8-1/2

E2037(8% COBALT) , E1037(HSS) Series ■ 6 FLUTE — Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
06446	06196	1-1/4	1-1/4	6	8-1/2
06462	06212	1-1/2	1-1/4	8	10-1/2
* 06491	* 06241	2	2	8	11-3/4

* Combination Shank

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

Series	P					H	M	K	N					S	
	Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
	~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
E1036 E2036	◎	◎	○						○		○				
E1037 E2037	◎	◎	○						○						

COBALT & HSS END MILLS

E2051 SERIES 8% COBALT (M42) FLAT SHANK
E1051 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH DOUBLE

▶ Series E2051 four flute end mills are the double-end version of E2031 four flute tools and are used for the same type of finishing operation. Two tools on one shank saves on sharpening set-up as well as on initial tool costs. Easy to regrind.



HSS Co8 | HSS | 4 | 30° | FLAT P.1283, 1288, 1292

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
12289	12039	1/8	3/8	3/8	3-1/16
12290	12040	9/64	3/8	7/16	3-1/8
12291	12041	5/32	3/8	7/16	3-1/8
12292	12042	11/64	3/8	1/2	3-1/4
12293	12043	3/16	3/8	1/2	3-1/4
12294	12044	13/64	3/8	9/16	3-1/4
12295	12045	7/32	3/8	9/16	3-1/4
12296	12046	15/64	3/8	5/8	3-3/8
12297	12047	1/4	3/8	5/8	3-3/8
12298	12048	17/64	3/8	11/16	3-3/8
12299	12049	9/32	3/8	11/16	3-3/8
12300	12050	19/64	3/8	3/4	3-1/2
12301	12051	5/16	3/8	3/4	3-1/2
12302	12052	21/64	3/8	3/4	3-1/2
12303	12053	11/32	3/8	3/4	3-1/2
12304	12054	23/64	3/8	3/4	3-1/2
12305	12055	3/8	3/8	3/4	3-1/2
12307	12057	25/64	1/2	1	4-1/8
12309	12059	13/32	1/2	1	4-1/8
12311	12061	27/64	1/2	1	4-1/8
12313	12063	7/16	1/2	1	4-1/8
12315	12065	29/64	1/2	1	4-1/8
12317	12067	15/32	1/2	1	4-1/8
12319	12069	31/64	1/2	1	4-1/8

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○						

COBALT & HSS END MILLS

E2051 SERIES 8% COBALT (M42) FLAT SHANK
E1051 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH DOUBLE

▶ Series E2051 four flute end mills are the double-end version of E2031 four flute tools and are used for the same type of finishing operation. Two tools on one shank saves on sharpening set-up as well as on initial tool costs. Easy to regrind.





HSS Co8 | HSS | 4 | 30° | FLAT P.1283, 1288, 1292

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
12321	12071	1/2	1/2	1	4-1/8
12330	12080	9/16	5/8	1-3/8	5
12337	12087	5/8	5/8	1-3/8	5
12350	12100	11/16	3/4	1-5/8	5-5/8
12359	12109	3/4	3/4	1-5/8	5-5/8
12377	12127	13/16	7/8	1-7/8	6-1/8
12394	12144	7/8	7/8	1-7/8	6-1/8
12410	12160	15/16	1	1-7/8	6-3/8
12426	12176	1	1	1-7/8	6-3/8

■ The TiN coated, TiCN coated or TiAIN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAIN F), CE(TiAIN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAIN F), HE(TiAIN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~—.0010	** 0~—.0020

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

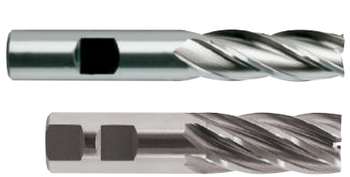
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

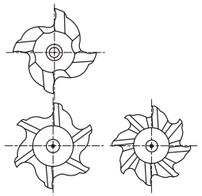
COBALT & HSS END MILLS

E2031 / E2032 SERIES 8% COBALT (M42) FLAT SHANK
E1031 / E1032 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 4, 6&8 FLUTE REGULAR LENGTH 3/4″ SHANK

▶ E2031(3/4″ shank, multi flute, general purpose end mills) are recommended for finishing operations for Bridgeport machines and other similar operations. Easy to regrind.





HSS Co8 | HSS | 4-8 | 30° | FLAT P.1283, 1288, 1292

E2031(8% COBALT) , E1031(HSS) Series ■ 4 FLUTE

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
04359	04109	3/4	3/4	1-5/8	3-7/8
04375	04125	13/16	3/4	1-7/8	4-1/8
04391	04141	7/8	3/4	1-7/8	4-1/8
04407	04157	15/16	3/4	1-7/8	4-1/8
04422	04172	1	3/4	1-7/8	4-1/8

E2032(8% COBALT) , E1032(HSS) Series ■ 6&8 FLUTE

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
04432	04182	1-1/8	3/4	2	4-1/4	6
04440	04190	1-1/4	3/4	2	4-1/4	6
04458	04208	1-1/2	3/4	2	4-1/4	6
04468	04218	1-3/4	3/4	2	4-1/2	6
04476	04226	2	3/4	2	4-1/2	8

■ The TiN coated, TiCN coated or TiAIN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAIN F), CE(TiAIN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAIN F), HE(TiAIN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

Series	P					H	M	K	N						S	
	Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
	~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
E1031 E2031	◎	◎	○						○		○				
E1032 E2032	◎	◎	○						○						

COBALT & HSS END MILLS

E2020 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, 4 FLUTE REGULAR LENGTH BALL NOSE

▶ The four flute ball end mills are designed for milling of radius bottom slots fillets and special contours. The end teeth are cut to center allowing these end mills to drill into material at the beginning of a slotting cut.



HSS Co8 | 4 | 30° | FLAT P.1284, 1289, 1293

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	R				
43289	R1/16	**1/8**	3/8	3/8	2-5/16
43293	R3/32	**3/16**	3/8	1/2	2-3/8
43297	R1/8	**1/4**	3/8	5/8	2-7/16
43301	R5/32	**5/16**	3/8	3/4	2-1/2
43305	R3/16	**3/8**	3/8	3/4	2-1/2
43312	R7/32	**7/16**	3/8	1	2-11/16
43321	R1/4	**1/2**	1/2	1-1/4	3-1/4
43337	R5/16	**5/8**	5/8	1-5/8	3-3/4
43350	R11/32	**11/16**	5/8	1-5/8	3-3/4
43359	R3/8	**3/4**	3/4	1-5/8	3-7/8
43394	R7/16	**7/8**	7/8	1-7/8	4-1/8
43426	R1/2	**1**	1	2	4-1/2
43435	R9/16	**1-1/8**	1	2	4-1/2
43445	R5/8	**1-1/4**	1-1/4	2	4-1/2
43461	R3/4	**1-1/2**	1-1/4	2	4-1/2
43477	R1	**2**	1-1/4	2	4-1/2

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2021 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, 4 FLUTE LONG LENGTH BALL NOSE

▶ Longer flute length than E2020 type and suitable for high efficient copying process and deep cutting of die mold corner radius.



HSS Co8 | 4 | 30° | FLAT P.1284, 1289, 1293

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	R				
44297	R1/8	**1/4**	3/8	1-1/4	3-1/16
44301	R5/32	**5/16**	3/8	1-3/8	3-1/8
44305	R3/16	**3/8**	3/8	1-1/2	3-1/4
44321	R1/4	**1/2**	1/2	2	4
44337	R5/16	**5/8**	5/8	2-1/2	4-5/8
44359	R3/8	**3/4**	3/4	3	5-1/4
44394	R7/16	**7/8**	7/8	3-1/2	5-3/4
44426	R1/2	**1**	1	4	6-1/2

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2069 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, 4 FLUTE REGULAR LENGTH BALL NOSE DOUBLE

▶ Same construction features as E2020 end mill in a more economical version. Removes more material per grind. Machine ground notch assures positive anchorage in tool holder.



HSS Co8 | 4 | 30° | FLAT

P.1284, 1289, 1293

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	R				
46289	R1/16	**1/8**	3/8	3/8	3-1/16
46293	R3/32	**3/16**	3/8	1/2	3-1/4
46297	R1/8	**1/4**	3/8	5/8	3-3/8
46301	R5/32	**5/16**	3/8	3/4	3-1/2
46305	R3/16	**3/8**	3/8	3/4	3-1/2
46313	R7/32	**7/16**	1/2	1	4-1/8
46321	R1/4	**1/2**	1/2	1	4-1/8
46337	R5/16	**5/8**	5/8	1-3/8	5
46359	R3/8	**3/4**	3/4	1-5/8	5-5/8
46426	R1/2	**1**	1	1-7/8	6-3/8

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~—.0010	** 0~—.0020

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2039 SERIES 8% COBALT (M42) FLAT SHANK
E1039 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH CENTER CUTTING

▶ Center cutting allows these end mills to drill into the part for the beginning of a slot. These center cutting end mills are recommended for pocketing, tracer milling, cam milling, die sinking and slotting.



HSS Co8 | HSS | 4 | 30° | FLAT

P.1283, 1288, 1292

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
07289	**07039**	**1/8**	3/8	3/8	2-5/16
07291	**07041**	**5/32**	3/8	7/16	2-3/8
07293	**07043**	**3/16**	3/8	1/2	2-3/8
07295	**07045**	**7/32**	3/8	9/16	2-7/16
07297	**07047**	**1/4**	3/8	5/8	2-7/16
07299	**07049**	**9/32**	3/8	11/16	2-1/2
07301	**07051**	**5/16**	3/8	3/4	2-1/2
07303	**07053**	**11/32**	3/8	3/4	2-1/2
07305	**07055**	**3/8**	3/8	3/4	2-1/2
07308	**07058**	**13/32**	3/8	1	2-11/16
07312	**07062**	**7/16**	3/8	1	2-11/16
07316	**07066**	**15/32**	3/8	1	2-11/16
07320	**07070**	**1/2**	3/8	1	2-11/16
07321	**07071**	**1/2**	1/2	1-1/4	3-1/4

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

▶ NEXT PAGE

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

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

COBALT & HSS END MILLS

E2039 SERIES 8% COBALT (M42) FLAT SHANK
E1039 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH CENTER CUTTING

▶ Center cutting allows these end mills to drill into the part for the beginning of a slot. These center cutting end mills are recommended for pocketing, tracer milling, cam milling, die sinking and slotting.





HSS Co8 | HSS | 4 | 30° | FLAT  P.1283, 1288, 1292

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
07336	07086	5/8	1/2	1-3/8	3-3/8
07337	07087	5/8	5/8	1-5/8	3-3/4
07348	07098	11/16	5/8	1-5/8	3-3/4
07357	07107	3/4	1/2	1-5/8	3-5/8
07358	07108	3/4	5/8	1-5/8	3-3/4
07359	07109	3/4	3/4	1-5/8	3-7/8
07391	07141	7/8	3/4	1-7/8	4-1/8
07394	07144	7/8	7/8	1-7/8	4-1/8
07420	07170	1	5/8	1-7/8	4
07422	07172	1	3/4	1-7/8	4-1/8
07426	07176	1	1	2	4-1/2
07435	07185	1-1/8	1	2	4-1/2
07445	07195	1-1/4	1-1/4	2	4-1/2
07461	07211	1-1/2	1-1/4	2	4-1/2

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

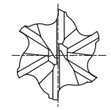
COBALT & HSS END MILLS

E2042 SERIES 8% COBALT (M42) FLAT SHANK
E1042 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 6 FLUTE REGULAR LENGTH CENTER CUTTING

▶ Center cutting allows these end mills to drill into the part for the beginning of a slot. These center cutting end mills are recommended for pocketing, tracer milling, cam milling, die sinking and slotting.





HSS Co8 | HSS | 6 | 30° | FLAT  P.1283, 1288, 1292

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
07322	07072	1/2	1/2	1-1/4	3-1/4
07338	07088	5/8	5/8	1-5/8	3-3/4
07349	07099	11/16	5/8	1-5/8	3-3/4
07360	07110	3/4	3/4	1-5/8	3-7/8
07395	07145	7/8	7/8	1-7/8	4-1/8
07427	07177	1	1	2	4-1/2
07436	07186	1-1/8	1	2	4-1/2
07446	07196	1-1/4	1-1/4	2	4-1/2
07448		1-5/16	3/4	2	4-1/4
07462	07212	1-1/2	1-1/4	2	4-1/2
07478	07228	2	1-1/4	2	4-1/2
* 07481	* 07231	2	2	2	5-3/4

* Combination Shank

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○						

COBALT & HSS END MILLS

E2039 SERIES 8% COBALT (M42) FLAT SHANK
E2042 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, MULTI FLUTE MEDIUM LENGTH CENTER CUTTING

▶Center cutting allows these end mills to drill into the part for the beginning of a slot. These center cutting end mills are recommended for pocketing, tracer milling, cam milling, die sinking and slotting.



HSS Co8 | 4-8 | 30° | FLAT | P.1283, 1288, 1292

E2039(4 FLUTE), E2042(6&8 FLUTE) Series Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
07901	1	1	3	5-1/2	4
07902	1-1/4	1-1/4	3	5-1/2	4
07903	1-1/2	1-1/4	3	5-1/2	4
07094	1	1	3	5-1/2	6
07095	1-1/4	1-1/4	3	5-1/2	6
07096	1-1/2	1-1/4	3	5-1/2	6
07097	1-3/4	1-1/4	3	5-1/2	6
99098	2	1-1/4	3	5-1/2	8

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2040 / E2162 SERIES 8% COBALT (M42) FLAT SHANK
E1040 / E1162 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 4&6 FLUTE LONG LENGTH CENTER CUTTING

▶ Longer flute length than E2039 type, E2042 and allows deeper cutting.



HSS Co8 | HSS | 4&6 | 30° | FLAT | P.1283, 1288, 1292

E2040(8% COBALT) , E1040(HSS) Series ■ 4 FLUTE Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
08297	08047	1/4	3/8	1-1/4	3-1/16
08301	08051	5/16	3/8	1-3/8	3-1/8
08305	08055	3/8	3/8	1-1/2	3-1/4
08321	08071	1/2	1/2	2	4
08337	08087	5/8	5/8	2-1/2	4-5/8
08359	08109	3/4	3/4	3	5-1/4
08394	08144	7/8	7/8	3-1/2	5-3/4
08426	08176	1	1	4	6-1/2
08445	08195	1-1/4	1-1/4	4	6-1/2
08461	08211	1-1/2	1-1/4	4	6-1/2

E2162(8% COBALT) , E1162(HSS) Series ■ 6 FLUTE Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
08322	08072	1/2	1/2	2	4
08338	08088	5/8	5/8	2-1/2	4-5/8
08360	08110	3/4	3/4	3	5-1/4
08395	08145	7/8	7/8	3-1/2	5-3/4
08427	08177	1	1	4	6-1/2
08446	08196	1-1/4	1-1/4	4	6-1/2
08462	08212	1-1/2	1-1/4	4	6-1/2
08478	08228	2	1-1/4	4	6-1/2
* 08485	* 08235	2	2	4	7-3/4
* 08489	* 08239	2	2	6	9-3/4

* Combination Shank

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

COBALT & HSS END MILLS

E2041 / E2175 SERIES 8% COBALT (M42) FLAT SHANK
E1041 / E1175 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 4&6 FLUTE EXTRA LONG LENGTH CENTER CUTTING

▶ Provided with longest flute length and suitable for high accuracy machining of deep step.



HSS Co8 | HSS | 4&6 | 30° | FLAT

P.1283, 1288, 1292

E2041(8% COBALT) , E1041(HSS) Series ■ 4 FLUTE — Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
09297	09047	1/4	3/8	1-3/4	3-9/16
09301	09051	5/16	3/8	2	3-3/4
09305	09055	3/8	3/8	2-1/2	4-1/4
09321	09071	1/2	1/2	3	5
09337	09087	5/8	5/8	4	6-1/8
09359	09109	3/4	3/4	4	6-1/4
09394	09144	7/8	7/8	5	7-1/4
09426	09176	1	1	6	8-1/2
09445	09195	1-1/4	1-1/4	6	8-1/2

E2175(8% COBALT) , E1175(HSS) Series ■ 6 FLUTE — Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
09322	09072	1/2	1/2	3	5
09338	09088	5/8	5/8	4	6-1/8
09360	09110	3/4	3/4	4	6-1/4
09395	09145	7/8	7/8	5	7-1/4
09427	09177	1	1	6	8-1/2
09446	09196	1-1/4	1-1/4	6	8-1/2
09462	09212	1-1/2	1-1/4	8	10-1/2
* 09491	* 09241	2	2	8	11-3/4

* Combination Shank

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	**0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

Series	P					H	M	K	N					S	
	Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
	~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
E1041 E2041	◎	◎	○						○		○				
E1175 E2175	◎	◎	○						○						

COBALT & HSS END MILLS

E2053 SERIES 8% COBALT (M42) FLAT SHANK
E1053 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH DOUBLE CENTER CUTTING

▶ Series E2053 end mills are the double-end version of E2039 center cutting single-end tools. They are used for slotting, shallow pocketing, tracer milling or die sinking and similar operation.



HSS Co8 | HSS | 4 | 30° | FLAT

P.1283, 1288, 1292

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
13289	13039	1/8	3/8	3/8	3-1/16
13290	13040	9/64	3/8	7/16	3-1/8
13291	13041	5/32	3/8	7/16	3-1/8
13292	13042	11/64	3/8	1/2	3-1/4
13293	13043	3/16	3/8	1/2	3-1/4
13294	13044	13/64	3/8	9/16	3-1/4
13295	13045	7/32	3/8	9/16	3-1/4
13296	13046	15/64	3/8	5/8	3-3/8
13297	13047	1/4	3/8	5/8	3-3/8
13298	13048	17/64	3/8	11/16	3-3/8
13299	13049	9/32	3/8	11/16	3-3/8
13300	13050	19/64	3/8	3/4	3-1/2
13301	13051	5/16	3/8	3/4	3-1/2
13302	13052	21/64	3/8	3/4	3-1/2
13303	13053	11/32	3/8	3/4	3-1/2
13304	13054	23/64	3/8	3/4	3-1/2
13305	13055	3/8	3/8	3/4	3-1/2
13307	13057	25/64	1/2	1	4-1/8
13309	13059	13/32	1/2	1	4-1/8
13311	13061	27/64	1/2	1	4-1/8
13313	13063	7/16	1/2	1	4-1/8
13315	13065	29/64	1/2	1	4-1/8
13317	13067	15/32	1/2	1	4-1/8

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2053 SERIES 8% COBALT (M42) FLAT SHANK
E1053 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH DOUBLE CENTER CUTTING

▶ Series E2053 end mills are the double-end version of E2039 center cutting single-end tools. They are used for slotting, shallow pocketing, tracer milling or die sinking and similar operation.





HSS Co8 | HSS | 4 | 30° | FLAT P.1283, 1288, 1292

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
13319	13069	31/64	1/2	1	4-1/8
13321	13071	1/2	1/2	1	4-1/8
13330	13080	9/16	5/8	1-3/8	5
13337	13087	5/8	5/8	1-3/8	5
13350	13100	11/16	3/4	1-5/8	5-5/8
13359	13109	3/4	3/4	1-5/8	5-5/8
13377	13127	13/16	7/8	1-7/8	6-1/8
13394	13144	7/8	7/8	1-7/8	6-1/8
13426	13176	1	1	1-7/8	6-3/8

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~—.0010	** 0~—.0020

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

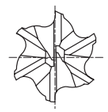
COBALT & HSS END MILLS

E2100 SERIES 8% COBALT (M42) FLAT SHANK
E1100 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 6 FLUTE REGULAR with COMBINATION 2˝ SHANK CENTER CUTTING

▶ These are to be used for heavy hogging cuts in die-sinking, tape & tracer controlled milling and similar work.
The Heavy-Duty end mills are made with toughened Combination shank, heavy web construction, accurate machine-ground end-teeth notching and a special surface treatment to reduce cutting-edge wear.





HSS Co8 | HSS | 6 | 30° | FLAT P.1283, 1288, 1292

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
10481	10231	2	2	2	5-3/4
10485	10235	2	2	4	7-3/4
10487	10237	2	2	5	8-3/4
10489	10239	2	2	6	9-3/4
10491	10241	2	2	8	11-3/4

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)
0~+.0030

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○						

COBALT & HSS END MILLS

E2001 SERIES 8% COBALT (M42) PLAIN SHANK
E1001 SERIES HSS (M2) PLAIN SHANK

HSSCo8 & HSS, 2 FLUTE MINIATURE STUB LENGTH DOUBLE

▶ Tools under Miniature end mills have 3/16″ shank diameter without flats. They are designed with positive rake angle geometry and a high helix angle to insure free cutting action. The flute design provides good strength behind the cutting edge. Suitable for finishing of precision components such as watch, camera, electronic apparatus molds, etc.



HSS Co8 | HSS | 2 | 39° ~Ø3/32 | 30° Ø7/64~ | PLAIN | P.1286

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
49252	49002	1/32	3/16	3/64	2
49254	49004	3/64	3/16	1/16	2
49256	49006	1/16	3/16	3/32	2
49258	49008	5/64	3/16	1/8	2
49260	49010	3/32	3/16	9/64	2
49262	49012	7/64	3/16	5/32	2
49264	49014	1/8	3/16	3/16	2
49266	49016	9/64	3/16	7/32	2
49268	49018	5/32	3/16	15/64	2
49270	49020	11/64	3/16	1/4	2
49272	49022	3/16	3/16	9/32	2

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~—.0010	** 0~—.0020

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2003 SERIES 8% COBALT (M42) PLAIN SHANK
E1003 SERIES HSS (M2) PLAIN SHANK

HSSCo8 & HSS, 2 FLUTE MINIATURE REGULAR LENGTH DOUBLE

▶ Suitable for finishing of precision components such as watch, camera electronic apparatus molds, etc.



HSS Co8 | HSS | 2 | 39° ~Ø3/32 | 30° Ø7/64~ | PLAIN | P.1286

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
50252	50002	1/32	3/16	3/32	2-1/4
50254	50004	3/64	3/16	9/64	2-1/4
50256	50006	1/16	3/16	3/16	2-1/4
50258	50008	5/64	3/16	15/64	2-1/4
50260	50010	3/32	3/16	9/32	2-1/4
50262	50012	7/64	3/16	21/64	2-1/4
50264	50014	1/8	3/16	3/8	2-1/4
50266	50016	9/64	3/16	13/32	2-1/4
50268	50018	5/32	3/16	7/16	2-1/4
50270	50020	11/64	3/16	1/2	2-1/4
50272	50022	3/16	3/16	1/2	2-1/4

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~—.0010	** 0~—.0020

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2005 SERIES 8% COBALT (M42) PLAIN SHANK
E1005 SERIES HSS (M2) PLAIN SHANK

HSSCo8 & HSS, 2 FLUTE MINIATURE LONG LENGTH DOUBLE

▶ Suitable for finishing of precision components such as watch, camera electronic apparatus molds, etc.



HSS Co8 | HSS | 2 | 39° ~Ø3/32 | 30° Ø7/64~ | PLAIN | P.1286

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
51256	51006	1/16	3/16	7/32	2-1/2
51258	51008	5/64	3/16	1/4	2-1/2
51260	51010	3/32	3/16	9/32	2-5/8
51262	51012	7/64	3/16	9/32	2-5/8
51264	51014	1/8	3/16	3/4	3-1/8
51266	51016	9/64	3/16	3/4	3-1/8
51268	51018	5/32	3/16	7/8	3-1/4
51270	51020	11/64	3/16	7/8	3-1/4
51272	51022	3/16	3/16	1	3-3/8

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~—.0010	** 0~—.0020

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2002 SERIES 8% COBALT (M42) PLAIN SHANK
E1002 SERIES HSS (M2) PLAIN SHANK

HSSCo8 & HSS, 4FLUTE MINIATURE STUB LENGTH DOUBLE

▶ Suitable for finishing of precision components such as watch, camera electronic apparatus molds, etc.



HSS Co8 | HSS | 4 | 39° ~Ø3/32 | 30° Ø7/64~ | PLAIN | P.1286

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
52256	52006	1/16	3/16	3/32	2
52258	52008	5/64	3/16	1/8	2
52260	52010	3/32	3/16	9/64	2
52262	52012	7/64	3/16	5/32	2
52264	52014	1/8	3/16	3/16	2
52266	52016	9/64	3/16	7/32	2
52268	52018	5/32	3/16	15/64	2
52270	52020	11/64	3/16	1/4	2
52272	52022	3/16	3/16	9/32	2

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~—.0020

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2004 SERIES 8% COBALT (M42) PLAIN SHANK
E1004 SERIES HSS (M2) PLAIN SHANK

HSSCo8 & HSS, 4FLUTE MINIATURE REGULAR LENGTH DOUBLE

▶ Suitable for finishing of precision components such as watch, camera electronic apparatus molds, etc.



HSS Co8 | HSS | 4 | 39° ~Ø3/32 | 30° Ø7/64~ | PLAIN | P.1286

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
53256	53006	1/16	3/16	3/16	2-1/4
53258	53008	5/64	3/16	15/64	2-1/4
53260	53010	3/32	3/16	9/32	2-1/4
53262	53012	7/64	3/16	21/64	2-1/4
53264	53014	1/8	3/16	3/8	2-1/4
53266	53016	9/64	3/16	13/32	2-1/4
53268	53018	5/32	3/16	7/16	2-1/4
53270	53020	11/64	3/16	1/2	2-1/4
53272	53022	3/16	3/16	1/2	2-1/4

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~—.0020

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2006 SERIES 8% COBALT (M42) PLAIN SHANK
E1006 SERIES HSS (M2) PLAIN SHANK

HSSCo8 & HSS, 4FLUTE MINIATURE LONG LENGTH DOUBLE

▶ Suitable for finishing of precision components such as watch, camera electronic apparatus molds, etc.



HSS Co8 | HSS | 4 | 39° ~Ø3/32 | 30° Ø7/64~ | PLAIN | P.1286

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
54256	54006	1/16	3/16	7/32	2-1/2
54258	54008	5/64	3/16	1/4	2-1/2
54260	54010	3/32	3/16	9/32	2-5/8
54262	54012	7/64	3/16	9/32	2-5/8
54264	54014	1/8	3/16	3/4	3-1/8
54266	54016	9/64	3/16	3/4	3-1/8
54268	54018	5/32	3/16	7/8	3-1/4
54270	54020	11/64	3/16	7/8	3-1/4
54272	54022	3/16	3/16	1	3-3/8

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~—.0020

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

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

COBALT & HSS END MILLS

E2008 SERIES 8% COBALT (M42) PLAIN SHANK
E1008 SERIES HSS (M2) PLAIN SHANK

HSSCo8 & HSS, 2 FLUTE MINIATURE STUB LENGTH BALL NOSE DOUBLE

▶ Helical flute in the nose radius.
Suitable for high efficient copying process and cutting of die mold corner radius.



HSS Co8 | HSS | 2 | 39° | 30° | PLAIN | P.1286

~Ø3/32 Ø7/64~

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)	R				
55256	**55006**	R1/32	**1/16**	3/16	3/32	2
55260	**55010**	R3/64	**3/32**	3/16	9/64	2
55264	**55014**	R1/16	**1/8**	3/16	3/16	2
55268	**55018**	R5/64	**5/32**	3/16	15/64	2
55272	**55022**	R3/32	**3/16**	3/16	9/32	2

■ The TiN coated, TiCN coated or TiAIN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAIN F), CE(TiAIN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAIN F), HE(TiAIN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~—.0010	** 0~—.0020

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2013 SERIES 8% COBALT (M42) PLAIN SHANK
E1013 SERIES HSS (M2) PLAIN SHANK

HSSCo8 & HSS, 2 FLUTE MINIATURE REGULAR LENGTH BALL NOSE DOUBLE

▶ Helical flute in the nose radius.
Suitable for high efficient copying process and cutting of die mold corner radius.



HSS Co8 | HSS | 2 | 39° | 30° | PLAIN | P.1286

~Ø3/32 Ø7/64~

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)	R				
56252	**56002**	R1/64	**1/32**	3/16	3/32	2-1/4
56254	**56004**	R3/128	**3/64**	3/16	9/64	2-1/4
56256	**56006**	R1/64	**1/16**	3/16	3/16	2-1/4
56258	**56008**	R5/128	**5/64**	3/16	15/64	2-1/4
56260	**56010**	R3/64	**3/32**	3/16	9/32	2-1/4
56262	**56012**	R7/128	**7/64**	3/16	21/64	2-1/4
56264	**56014**	R1/16	**1/8**	3/16	3/8	2-1/4
56266	**56016**	R9/128	**9/64**	3/16	13/32	2-1/4
56268	**56018**	R5/64	**5/32**	3/16	7/16	2-1/4
56270	**56020**	R11/128	**11/64**	3/16	1/2	2-1/4
56272	**56022**	R3/32	**3/16**	3/16	1/2	2-1/4

■ The TiN coated, TiCN coated or TiAIN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAIN F), CE(TiAIN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAIN F), HE(TiAIN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~—.0010	** 0~—.0020

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2015 SERIES 8% COBALT (M42) PLAIN SHANK
E1015 SERIES HSS (M2) PLAIN SHANK

HSSCo8 & HSS, 2 FLUTE MINIATURE LONG LENGTH BALL NOSE DOUBLE

▶ Helical flute in the nose radius.
Suitable for high efficient copying process and cutting of die mold corner radius.



HSS Co8 | HSS | 2 | 39° ~Ø3/32 | 30° Ø7/64~ | PLAIN | P.1286

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)	R				
57256	**57006**	R1/32	**1/16**	3/16	7/32	2-1/2
57260	**57010**	R3/64	**3/32**	3/16	9/32	2-5/8
57264	**57014**	R1/16	**1/8**	3/16	3/4	3-1/8
57268	**57018**	R5/64	**5/32**	3/16	7/8	3-1/4
57272	**57022**	R3/32	**3/16**	3/16	1	3-3/8

■ The TiN coated, TiCN coated or TiAIN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAIN F), CE(TiAIN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAIN F), HE(TiAIN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~—.0020

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E1070 SERIES HSS (M2) FLAT SHANK

HSS, 2 FLUTE 42° HELIX REGULAR & MEDIUM LENGTH for ALUMINUM

▶ The two flute end mills for aluminum have High Helix flute design making them well suited for milling aluminum and other non-ferrous materials. Special rake angles and low micro inch finishes on the primary clearance angles and flute faces insure free cutting action, fine finishes and longer tool life for both non-ferrous materials as well as harder alloys. These tools are made from regular HSS(M2), which is good for aluminum cutting.



HSS | 2 | 42° | FLAT | P.1281

■ REGULAR LENGTH

Unit : Inch

EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
17047	**1/4**	3/8	5/8	2-7/16
17051	**5/16**	3/8	3/4	2-1/2
17055	**3/8**	3/8	3/4	2-1/2
17062	**7/16**	3/8	1	2-11/16
17071	**1/2**	1/2	1-1/4	3-1/4
17087	**5/8**	5/8	1-5/8	3-3/4
17109	**3/4**	3/4	1-5/8	3-7/8
17141	**7/8**	3/4	1-7/8	4-1/8
17144	**7/8**	7/8	1-7/8	4-1/8
17172	**1**	3/4	1-7/8	4-1/8
17176	**1**	1	2	4-1/2
17195	**1-1/4**	1-1/4	2	4-1/2
17211	**1-1/2**	1-1/4	2	4-1/2
17219	**1-3/4**	1-1/4	2	4-1/2
17227	**2**	1-1/4	2	4-1/2

■ MEDIUM LENGTH

Unit : Inch

EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
99089	**1**	1	3	5-1/2
99090	**1-1/4**	1-1/4	3	5-1/2
99091	**1-1/2**	1-1/4	3	5-1/2
99092	**1-3/4**	1-1/4	3	5-1/2
99093	**2**	1-1/4	3	5-1/2

■ The TiN coated, TiCN coated or TiAIN coated is available on your request.
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAIN F), HE(TiAIN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○										◎				

COBALT & HSS END MILLS

E1071 SERIES HSS (M2) FLAT SHANK
E1072 SERIES HSS (M2) FLAT SHANK

HSS, 2 FLUTE 42° HELIX LONG & EXTRA LONG LENGTH for ALUMINUM

▶ Sharp cutting most suitable flute shape for cutting aluminum alloy, etc.
These tools are made from regular HSS(M2), which is good for aluminum cutting.



HSS | 2 | 42° | FLAT | P.1281

■ LONG LENGTH

Unit : Inch

EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
18047	1/4	3/8	1-1/4	3-1/16
18051	5/16	3/8	1-3/8	3-1/8
18055	3/8	3/8	1-1/2	3-1/4
18063	7/16	1/2	1-3/4	3-3/4
18071	1/2	1/2	2	4
18087	5/8	5/8	2-1/2	4-5/8
18109	3/4	3/4	3	5-1/4
18176	1	1	4	6-1/2
18195	1-1/4	1-1/4	4	6-1/2
18211	1-1/2	1-1/4	4	6-1/2
18227	2	1-1/4	4	6-1/2

■ EXTRA LONG LENGTH

Unit : Inch

EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
19047	1/4	3/8	1-3/4	3-9/16
19051	5/16	3/8	2	3-3/4
19055	3/8	3/8	2-1/2	4-1/4
19071	1/2	1/2	3	5
19087	5/8	5/8	4	6-1/8
19109	3/4	3/4	4	6-1/4
19176	1	1	6	8-1/2
19195	1-1/4	1-1/4	6	8-1/2
19211	1-1/2	1-1/4	8	10-1/2

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○										◎				

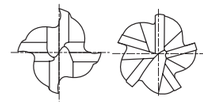
COBALT & HSS END MILLS

E2086 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, MULTI FLUTE STUB LENGTH FINE PITCH ROUGHING CENTER CUTTING

▶ This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths. In many cases, the milled surfaces are of acceptable quality.





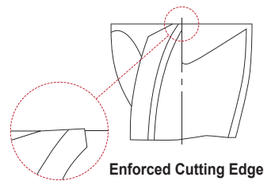
HSS Co8 | FINE | 4&5 | 30° | FLAT | P.1285, 1290, 1294

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
75297	1/4	3/8	1/4	2-1/16	4
75305	3/8	3/8	3/8	2-5/32	4
75313	7/16	1/2	1/2	2-1/2	4
75321	1/2	1/2	1/2	2-1/2	4
75337	5/8	5/8	5/8	2-3/4	4
75359	3/4	3/4	3/4	2-7/8	4
75391	7/8	3/4	7/8	3-1/8	5
75426	1	1	1	3-1/2	5

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060



Enforced Cutting Edge

◎ : Excellent ○ : Good

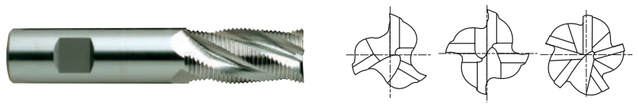
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2085 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, MULTI FLUTE REGULAR LENGTH FINE PITCH ROUGHING CENTER CUTTING

▶ This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths. In many cases, the milled surfaces are of acceptable quality.



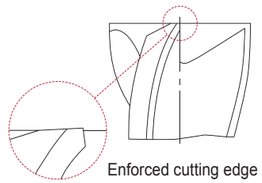
HSS Co8 | FINE | 3-5 | 30° | FLAT P.1285, 1290, 1294

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
76297	**1/4**	3/8	5/8	2-7/16	3
76301	**5/16**	3/8	3/4	2-1/2	3
76305	**3/8**	3/8	3/4	2-1/2	4
76312	**7/16**	3/8	1	2-11/16	4
76321	**1/2**	1/2	1-1/4	3-1/4	4
76328	**9/16**	1/2	1-3/8	3-3/8	4
76337	**5/8**	5/8	1-5/8	3-3/4	4
76359	**3/4**	3/4	1-5/8	3-7/8	4
76391	**7/8**	3/4	1-7/8	4-1/8	5
76394	**7/8**	7/8	1-7/8	4-1/8	5
76422	**1**	3/4	2	4-1/4	5
76426	**1**	1	2	4-1/2	5

■ The TiN coated, TiCN coated or TiAIN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAIN F), CE(TiAIN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060



Enforced cutting edge

◎ : Excellent ○ : Good

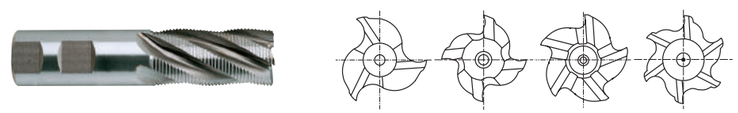
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2079 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, MULTI FLUTE REGULAR LENGTH FINE PITCH ROUGHING

▶ This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths. In many cases, the milled surfaces are of acceptable quality.



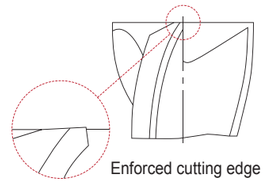
HSS Co8 | FINE | 3-6 | 30° | FLAT P.1285, 1290, 1294

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
70297	**1/4**	3/8	5/8	2-7/16	3
70301	**5/16**	3/8	3/4	2-1/2	3
70305	**3/8**	3/8	3/4	2-1/2	4
70312	**7/16**	3/8	1	2-11/16	4
70321	**1/2**	1/2	1-1/4	3-1/4	4
70328	**9/16**	1/2	1-3/8	3-3/8	4
70337	**5/8**	5/8	1-5/8	3-3/4	4
70358	**3/4**	5/8	1-5/8	3-3/4	4
70359	**3/4**	3/4	1-5/8	3-7/8	4
70391	**7/8**	3/4	1-7/8	4-1/8	5
70394	**7/8**	7/8	1-7/8	4-1/8	5
70422	**1**	3/4	2	4-1/4	5
70426	**1**	1	2	4-1/2	5
70431	**1-1/8**	3/4	2	4-1/4	6
70435	**1-1/8**	1	2	4-1/2	6
70439	**1-1/4**	3/4	2	4-1/4	6
70445	**1-1/4**	1-1/4	2	4-1/2	6
70449	**1-3/8**	3/4	2	4-1/4	6
70457	**1-1/2**	3/4	2	4-1/4	6
70461	**1-1/2**	1-1/4	2	4-1/2	6
70469	**1-3/4**	1-1/4	2	4-1/2	6
70475	**2**	3/4	2	4-1/4	6
70477	**2**	1-1/4	2	4-1/2	6

■ The TiN coated, TiCN coated or TiAIN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAIN F), CE(TiAIN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2077 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, MULTI FLUTE LONG LENGTH FINE PITCH ROUGHING

▶This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths. In many cases, the milled surfaces are of acceptable quality.



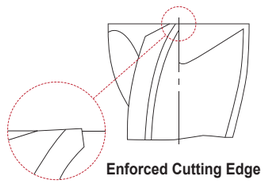
HSS Co8 | FINE | 4-6 | 30° | FLAT P.1285, 1290, 1294

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
71321	1/2	1/2	2	4	4
71337	5/8	5/8	2-1/2	4-5/8	4
71358	3/4	5/8	3	5-1/4	4
71359	3/4	3/4	3	5-1/4	4
71394	7/8	7/8	3-1/2	5-3/4	5
71426	1	1	4	6-1/2	5
71445	1-1/4	1-1/4	4	6-1/2	6
71457	1-1/2	3/4	4	6-1/4	6
71461	1-1/2	1-1/4	4	6-1/2	6
71469	1-3/4	1-1/4	4	6-1/2	6
71477	2	1-1/4	4	6-1/2	6

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060



Enforced Cutting Edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2086 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, 3 FLUTE STUB LENGTH FINE PITCH ROUGHING CENTER CUTTING

▶This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths. In many cases, the milled surfaces are of acceptable quality.





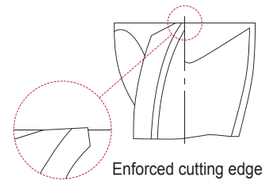
HSS Co8 | FINE | 3 | 30° | FLAT P.1285, 1290, 1294

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
72297	1/4	3/8	1/4	2-1/16
72305	3/8	3/8	3/8	2-5/32
72321	1/2	1/2	1/2	2-1/2
72337	5/8	5/8	5/8	2-3/4
72359	3/4	3/4	3/4	2-7/8
72391	7/8	3/4	7/8	3-1/8
72422	1	3/4	1	3-1/4
72426	1	1	1	3-1/2

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

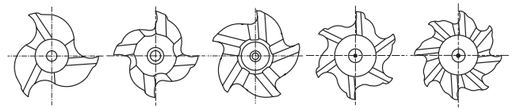
COBALT & HSS END MILLS

E2170 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, MULTI FLUTE REGULAR LENGTH COARSE PITCH ROUGHING

▶ This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is recommended for cutting steel grades and many non-ferrous materials.
The end tooth of this tool has a center hole design for many accurate resharpenings between centers.





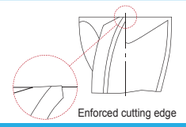
HSS Co8 | COARSE | 3-8 | 30° | FLAT P.1285, 1290, 1294

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
60297	1/4	3/8	5/8	2-7/16	3
60301	5/16	3/8	3/4	2-1/2	3
60305	3/8	3/8	3/4	2-1/2	4
60312	7/16	3/8	1	2-11/16	4
60321	1/2	1/2	1-1/4	3-1/4	4
60328	9/16	1/2	1-3/8	3-3/8	4
60337	5/8	5/8	1-5/8	3-3/4	4
60348	11/16	5/8	1-5/8	3-3/4	4
60358	3/4	5/8	1-5/8	3-3/4	4
60359	3/4	3/4	1-5/8	3-3/4	4
60375	13/16	3/4	1-7/8	4-1/8	4
60391	7/8	3/4	1-7/8	4-1/8	5
60394	7/8	7/8	1-7/8	4-1/8	5
60409	15/16	7/8	1-7/8	4-1/8	5
60422	1	3/4	2	4-1/4	5
60426	1	1	2	4-1/2	5
60431	1-1/8	3/4	2	4-1/4	6
60435	1-1/8	1	2	4-1/2	6
60439	1-1/4	3/4	2	4-1/4	6
60445	1-1/4	1-1/4	2	4-1/2	6
60449	1-3/8	3/4	2	4-1/4	6
60457	1-1/2	3/4	2	4-1/4	6
60461	1-1/2	1-1/4	2	4-1/2	6
60467	1-3/4	3/4	2	4-1/4	6
60469	1-3/4	1-1/4	2	4-1/2	6
60475	2	3/4	2	4-1/4	6
60477	2	1-1/4	2	4-1/2	6
* 60480	2	2	2	5-3/4	8
* 60482	2	2	3	6-3/4	8
* 60484	2	2	4	7-3/4	8

* Combination Shank

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060


Enforced cutting edge

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

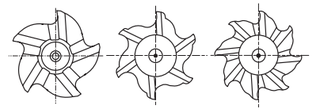
COBALT & HSS END MILLS

E2171 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, MULTI FLUTE MEDIUM LENGTH COARSE PITCH ROUGHING

▶ This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is recommended for cutting steel grades and many non-ferrous materials. The end tooth of this tool has a center hole design for many accurate resharpenings between centers.





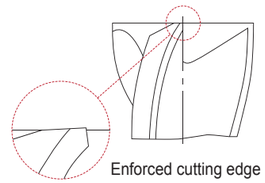
HSS Co8 | COARSE | 5-8 | 30° | FLAT P.1285, 1290, 1294

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
61426	1	1	3	5-1/2	5
61445	1-1/4	1-1/4	3	5-1/2	6
61461	1-1/2	1-1/4	3	5-1/2	6
61488	2	2	6	9-3/4	8

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060


Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2172 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, MULTI FLUTE LONG LENGTH COARSE PITCH ROUGHING

▶ This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is recommended for cutting steel grades and many non-ferrous materials. The end tooth of this tool has a center hole design for many accurate resharpenings between centers.



HSS Co8 | COARSE | 4-8 | 30° | FLAT

P.1285, 1290, 1294

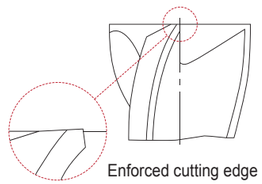
Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
62321	1/2	1/2	2	4	4
62337	5/8	5/8	2-1/2	4-5/8	4
62358	3/4	5/8	3	5-1/8	4
62359	3/4	3/4	3	5-1/4	4
62391	7/8	3/4	3-1/2	5-3/4	5
62422	1	3/4	4	6-1/4	5
62426	1	1	4	6-1/2	5
62439	1-1/4	3/4	4	6-1/4	6
62445	1-1/4	1-1/4	4	6-1/2	6
62457	1-1/2	3/4	4	6-1/4	6
62461	1-1/2	1-1/4	4	6-1/2	6
62469	1-3/4	1-1/4	4	6-1/2	6
62477	2	1-1/4	4	6-1/2	6
* 62490	2	2	8	11-3/4	8

* Combination Shank

■ The TiN coated, TiCN coated or TiAIN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAIN F), CE(TiAIN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2241 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, 3FLUTE STUB LENGTH COARSE PITCH ROUGHING CENTER CUTTING

▶ This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is recommended for cutting steel grades and many non-ferrous materials. The end tooth of this tool has a center hole design for many accurate resharpenings between centers.



HSS Co8 | COARSE | 3 | 30° | FLAT

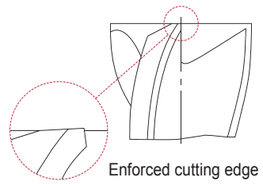
P.1285, 1290, 1294

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
63297	1/4	3/8	1/4	2-1/16
63305	3/8	3/8	3/8	2-5/32
63321	1/2	1/2	1/2	2-1/2
63337	5/8	5/8	5/8	2-3/4
63359	3/4	3/4	3/4	2-7/8
63426	1	1	1	3-1/2

■ The TiN coated, TiCN coated or TiAIN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAIN F), CE(TiAIN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

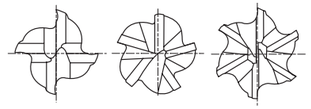
COBALT & HSS END MILLS

E2195 SERIES 8% COBALT (M42) FLAT SHANK
E2197 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, MULTI FLUTE REGULAR & LONG LENGTH COARSE PITCH ROUGHING CENTER CUTTING

▶ This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is recommended for cutting steel grades and many non-ferrous materials.





HSS Co8 | COARSE | 4-6 | 30° | FLAT

P.1285, 1290, 1294

E2195 Series ■ REGULAR LENGTH — Unit : Inch

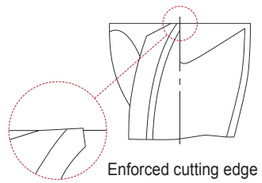
EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
64321	**1/2**	1/2	1-1/4	3-1/4	4
64337	**5/8**	5/8	1-5/8	3-3/4	4
64359	**3/4**	3/4	1-5/8	3-7/8	4
64426	**1**	1	2	4-1/2	5
64445	**1-1/4**	1-1/4	2	4-1/2	6
64461	**1-1/2**	1-1/4	2	4-1/2	6

E2197 Series ■ LONG LENGTH — Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
65321	**1/2**	1/2	2	4	4
65337	**5/8**	5/8	2-1/2	4-5/8	4
65359	**3/4**	3/4	3	5-1/4	4
65426	**1**	1	4	6-1/2	5
65445	**1-1/4**	1-1/4	4	6-1/2	6
65461	**1-1/2**	1-1/4	4	6-1/2	6

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

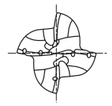
COBALT & HSS END MILLS

E2193 SERIES 8% COBALT (M42) FLAT SHANK
E2125 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, MULTI FLUTE REGULAR & LONG LENGTH COARSE PITCH ROUGHING BALL NOSE

▶ This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is recommended for cutting steel grades and many non-ferrous materials.





HSS Co8 | COARSE | 3-6 | 30° | FLAT

P.1285, 1290, 1294

E2193 Series ■ REGULAR LENGTH — Unit : Inch

EDP No. 8% COBALT (M42)	Radius of Ball Nose R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
68297	R1/8	**1/4**	3/8	5/8	2-7/16	3
68301	R5/32	**5/16**	3/8	3/4	2-1/2	3
68305	R3/16	**3/8**	3/8	3/4	2-1/2	4
68321	R1/4	**1/2**	1/2	1-1/4	3-1/4	4
68337	R5/16	**5/8**	5/8	1-5/8	3-3/4	4
68359	R3/8	**3/4**	3/4	1-3/4	4	4
68422	R1/2	**1**	3/4	2	4-1/2	5
68426	R1/2	**1**	1	2	4-1/2	5
68439	R5/8	**1-1/4**	3/4	2	4-1/2	6
68445	R5/8	**1-1/4**	1-1/4	2	4-1/2	6
68457	R3/4	**1-1/2**	3/4	2	4-1/2	6
68461	R3/4	**1-1/2**	1-1/4	2	4-1/2	6

E2125 Series ■ LONG LENGTH — Unit : Inch

EDP No. 8% COBALT (M42)	Radius of Ball Nose R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
69321	R1/4	**1/2**	1/2	2-1/2	4-1/2	4
69337	R5/16	**5/8**	5/8	2-1/2	4-5/8	4
69359	R3/8	**3/4**	3/4	3	5-1/4	4
69426	R1/2	**1**	1	4	6-1/2	5
69445	R5/8	**1-1/4**	1-1/4	4	6-1/2	6
69461	R3/4	**1-1/2**	1-1/4	4	6-1/2	6

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

◎ : Excellent ○ : Good

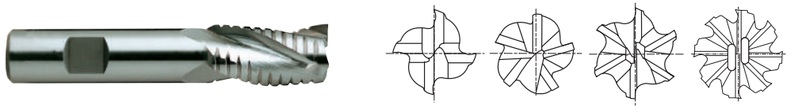
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2248 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, MULTI FLUTE REGULAR LENGTH ROUGHING & FINISHING

▶ This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths. In many cases, the milled surfaces are of acceptable quality.



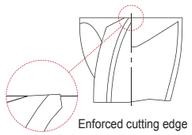
HSS Co8 | NF | 4-8 | 30° | FLAT P.1285, 1290, 1294

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
73297	1/4	3/8	5/8	2-7/16	4
73301	5/16	3/8	3/4	2-1/2	4
73305	3/8	3/8	3/4	2-1/2	4
73312	7/16	3/8	1	2-11/16	4
73321	1/2	1/2	1-1/4	3-1/4	4
73328	9/16	1/2	1-3/8	3-3/8	4
73337	5/8	5/8	1-5/8	3-3/4	4
73348	11/16	5/8	1-5/8	3-3/4	4
73358	3/4	5/8	1-5/8	3-3/4	4
73359	3/4	3/4	1-5/8	3-3/4	4
73391	7/8	3/4	1-7/8	4-1/8	5
73394	7/8	7/8	1-7/8	4-1/8	5
73422	1	3/4	2	4-1/4	5
73426	1	1	2	4-1/2	5
73431	1-1/8	3/4	2	4-1/4	6
73435	1-1/8	1	2	4-1/2	6
73439	1-1/4	3/4	2	4-1/4	6
73445	1-1/4	1-1/4	2	4-1/2	6
73457	1-1/2	3/4	2	4-1/4	6
73461	1-1/2	1-1/4	2	4-1/2	6
73467	1-3/4	3/4	2	4-1/4	6
73469	1-3/4	1-1/4	2	4-1/2	6
73475	2	3/4	2	4-1/4	6
73477	2	1-1/4	2	4-1/2	6
* 73480	2	2	2	5-3/4	8
* 73482	2	2	3	6-3/4	8
* 73484	2	2	4	7-3/4	8

* Combination Shank

Mill Dia. Tolerance (inch)
+ .0025 + .0005



■ The TiN coated, TiCN coated or TiAIN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAIN F), CE(TiAIN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2191 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, 3 FLUTE 37° HELIX REGULAR LENGTH ROUGHING for ALUMINUM

▶ This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths. In many cases, the milled surfaces are of acceptable quality.



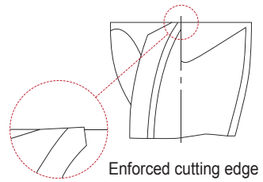
HSS Co8 | ALU | 3 | 37° | FLAT P.1285, 1290, 1294

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
66297	1/4	3/8	5/8	2-7/16
66301	5/16	3/8	3/4	2-1/2
66305	3/8	3/8	3/4	2-1/2
66321	1/2	1/2	1-1/4	3-1/4
66337	5/8	5/8	1-5/8	3-3/4
66359	3/4	3/4	1-5/8	3-7/8
66391	7/8	3/4	1-7/8	4-1/8
66426	1	1	2	4-1/2
66445	1-1/4	1-1/4	2	4-1/2
66461	1-1/2	1-1/4	2	4-1/2

■ The TiN coated, TiCN coated or TiAIN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAIN F), CE(TiAIN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060



◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		◎				

COBALT & HSS END MILLS

E2226 SERIES 8% COBALT (M42) FLAT SHANK
E2192 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, 3 FLUTE 37° HELIX MEDIUM & LONG LENGTH ROUGHING for ALUMINUM

▶ This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is recommended for cutting aluminum, aluminum alloy and many non-ferrous materials.





HSS Co8 | ALU | 3 | 37° | FLAT P.1285, 1290, 1294

E2226 Series ■ MEDIUM LENGTH — Unit : Inch

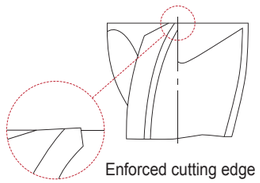
EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
66901	1	1	3	5-1/2
66902	1-1/4	1-1/4	3	5-1/2

E2192 Series ■ LONG LENGTH — Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
67321	1/2	1/2	2	4
67337	5/8	5/8	2-1/2	4-5/8
67359	3/4	3/4	3	5-1/4
67426	1	1	4	6-1/2
67445	1-1/4	1-1/4	4	6-1/2
67461	1-1/2	1-1/4	4	6-1/2

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060


Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

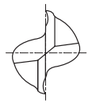
COBALT & HSS END MILLS

E2163 SERIES 8% COBALT (M42) FLAT SHANK
E1163 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 2 FLUTE 15° HELIX for KEYWAY CUTTING

▶ E2163(E1163) are keyway cutting end mills that have the same design as the general purpose of two flute single end mill, but are held to a mill diameter tolerance of +.0000 -.0015. These close tolerance end mills are recommended for cutting keyway which must be held close to nominal size.





HSS Co8 | HSS | 2 | 15° | FLAT P.1281, 1287, 1291

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
14289	14039	1/8	3/8	3/8	2-5/16
14293	14043	3/16	3/8	7/16	2-5/16
14297	14047	1/4	3/8	1/2	2-5/16
14301	14051	5/16	3/8	9/16	2-5/16
14305	14055	3/8	3/8	9/16	2-5/16
14312	14062	7/16	3/8	13/16	2-1/2
14321	14071	1/2	1/2	1	3
14337	14087	5/8	5/8	1-5/16	3-7/16
14359	14109	3/4	3/4	1-5/16	3-9/16
14394	14144	7/8	7/8	1-1/2	3-3/4
14426	14176	1	1	1-5/8	4-1/8

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)
0~-.0015

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

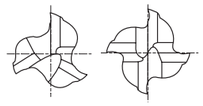
COBALT & HSS END MILLS

E2120 SERIES 8% COBALT (M42) FLAT SHANK
E2121 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, 3&4 FLUTE 60° HELIX REGULAR LENGTH

▶ Provided with high helix angle(60°).
Smooth cutting and small cutting resistance.
Suitable for machining of difficult-to-cut materials.





HSS Co8 | 3&4 | 60° | FLAT | P.1283

E2120 Series ■ 3 FLUTE — Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
20297	1/4	3/8	5/8	2-7/16
20301	5/16	3/8	3/4	2-1/2
20305	3/8	3/8	3/4	2-1/2
20312	7/16	3/8	1	2-11/16
20321	1/2	1/2	1-1/4	3-1/4
20337	5/8	5/8	1-5/8	3-3/4
20359	3/4	3/4	1-5/8	3-7/8

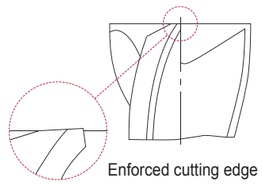
E2121 Series ■ 4 FLUTE — Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
20394	7/8	7/8	1-7/8	4-1/8
20426	1	1	2	4-1/2
20445	1-1/4	1-1/4	2	4-1/2
20461	1-1/2	1-1/4	2	4-1/2
20477	2	1-1/4	2	4-1/2

■ The TiN coated, TiCN coated or TiAIN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAIN F), CE(TiAIN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.



◎ : Excellent ○ : Good

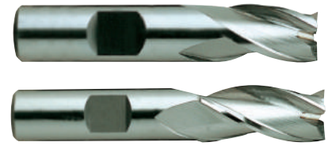
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○						

COBALT & HSS END MILLS

E2160 SERIES 8% COBALT (M42) FLAT SHANK
E2161 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, 3 FLUTE SHORT & LONG LENGTH THROW AWAY

▶ Well balanced web design to minimize deflection & chattering. High accuracy for O.D. is guaranteed under the strict tolerance control. Much higher(50%) table speed than 2 Flute is allowed.





HSS Co8 | 3 | 30° | FLAT | P.1282

E2160 Series ■ SHORT LENGTH — Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
22257	1/16	1/4	3/32	31/32
22261	3/32	1/4	5/32	1-1/64
22265	1/8	1/4	3/16	1-3/32
22269	5/32	1/4	1/4	1-9/32
22273	3/16	1/4	9/32	1-11/32
22277	7/32	1/4	5/16	1-13/32
22281	1/4	1/4	3/8	1-13/32

E2161 Series ■ LONG LENGTH — Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
23257	1/16	1/4	5/32	1-3/32
23261	3/32	1/4	1/4	1-1/4
23265	1/8	1/4	5/16	1-11/32
23269	5/32	1/4	3/8	1-17/32
23273	3/16	1/4	7/16	1-21/32
23277	7/32	1/4	1/2	1-3/4
23281	1/4	1/4	5/8	1-3/4

■ The TiN coated, TiCN coated or TiAIN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAIN F), CE(TiAIN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)
— .0005
— .0013

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2237 SERIES 8% COBALT (M42) FLAT SHANK
E1237 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 4 FLUTE CORNER ROUNDING

▶This general corner rounding end mills are designed for machining fillets on work piece.



HSS Co8 | HSS | 4 | FLAT

Unit : Inch

EDP No.		Radius	Pilot Diameter	Outside Diameter	Shank Diameter	Overall Length
8% COBALT (M42)	HSS (M2)					
29251	**29001**	1/16	**1/4**	7/16	3/8	2-1/2
29252	**29002**	3/32	**1/4**	1/2	3/8	2-1/2
29253	**29003**	1/8	**1/4**	5/8	1/2	3
29254	**29004**	5/32	**5/16**	3/4	1/2	3
29255	**29005**	3/16	**3/8**	7/8	1/2	3
29256	**29006**	3/16	**3/8**	7/8	3/4	3-1/8
29257	**29007**	7/32	**5/16**	7/8	1/2	3-1/4
29258	**29008**	1/4	**3/8**	1	1/2	3
29259	**29009**	9/32	**3/8**	1	5/8	3
29260	**29010**	1/4	**3/8**	1	3/4	3-1/4
29261	**29011**	5/16	**3/8**	1-1/8	1/2	3-1/4
29262	**29012**	5/16	**3/8**	1-1/8	5/8	3-1/2
29263	**29013**	5/16	**3/8**	1-1/8	3/4	3-1/2
29264	**29014**	5/16	**3/8**	1-1/8	7/8	3-1/2
29265	**29015**	3/8	**3/8**	1-1/4	1/2	3-1/2
29266	**29016**	3/8	**3/8**	1-1/4	3/4	3-3/4
29267	**29017**	3/8	**3/8**	1-1/4	7/8	3-3/4
29268	**29018**	7/16	**3/8**	1-3/8	3/4	3-3/4
29269	**29019**	7/16	**3/8**	1-3/8	1	4
29270	**29020**	1/2	**3/8**	1-1/2	3/4	3-7/8
29271	**29021**	1/2	**3/8**	1-1/2	1	4-1/8
29272	**29022**	5/8	**5/16**	1-5/8	3/4	4
29273	**29023**	5/8	**5/16**	1-5/8	1	4
29274	**29024**	5/8	**9/16**	1-15/16	3/4	4
29275	**29025**	5/8	**9/16**	1-15/16	1	4-1/4
29276	**29026**	3/4	**5/16**	1-7/8	3/4	4
29277	**29027**	3/4	**5/16**	1-7/8	1	4
29278	**29028**	3/4	**5/8**	2-1/4	3/4	4-1/8
29279	**29029**	3/4	**5/8**	2-1/4	1	4-5/16
29280	**29030**	7/8	**5/8**	2-1/2	3/4	4-1/2
29281	**29031**	1	**5/8**	2-5/8	3/4	4-1/2
29282	**29032**	1	**5/8**	2-3/4	1	4-3/4

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2482 SERIES 8% COBALT (M42) FLAT SHANK
E1482 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH

▶Two flute end mills with metric cutting diameter are especially recommended for slotting operation, pocketing keyway cutting and other general purpose work including plunge cutting.



HSS Co8 | HSS | 2 | 30° | FLAT

Unit : Inch

EDP No.		Mill Diameter		Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)	Metric	Inch			
15252	**15002**	**2.0**	**.0787**	3/8	5/16	2-5/16
15253	**15003**	**2.5**	**.0984**	3/8	5/16	2-5/16
15254	**15004**	**3.0**	**.1181**	3/8	5/16	2-5/16
15255	**15005**	**3.5**	**.1378**	3/8	7/16	2-5/16
15256	**15006**	**4.0**	**.1575**	3/8	7/16	2-5/16
15257	**15007**	**4.5**	**.1772**	3/8	1/2	2-5/16
15258	**15008**	**5.0**	**.1969**	3/8	1/2	2-5/16
15259	**15009**	**5.5**	**.2165**	3/8	1/2	2-5/16
15260	**15010**	**6.0**	**.2362**	3/8	1/2	2-5/16
15261	**15011**	**7.0**	**.2756**	3/8	9/16	2-5/16
15262	**15012**	**8.0**	**.3150**	3/8	9/16	2-5/16
15263	**15013**	**9.0**	**.3543**	3/8	9/16	2-5/16
15264	**15014**	**10.0**	**.3937**	3/8	13/16	2-1/2
15265	**15015**	**11.0**	**.4330**	3/8	13/16	2-1/2
15266	**15016**	**12.0**	**.4724**	3/8	13/16	2-1/2
15267	**15017**	**12.5**	**.4921**	1/2	1-1/8	3-1/8
15268	**15018**	**13.0**	**.5118**	1/2	1-1/8	3-1/8
15270	**15020**	**14.0**	**.5512**	1/2	1-1/8	3-1/8
15276	**15026**	**16.0**	**.6299**	5/8	1-5/16	3-7/16
15280	**15030**	**18.0**	**.7087**	5/8	1-5/16	3-7/16
15282	**15032**	**20.0**	**.7874**	5/8	1-1/2	3-3/4
15284	**15034**	**22.0**	**.8661**	3/4	1-1/2	3-3/4
15288	**15038**	**24.0**	**.9449**	3/4	2	4-1/2
15290	**15040**	**25.0**	**.9843**	1	2	4-1/2
15296	**15046**	**32.0**	**1.2598**	1	2	4-1/2
15298	**15048**	**36.0**	**1.4173**	1	2	4-1/2
15300	**15050**	**40.0**	**1.5748**	1-1/4	2	4-1/2
15302	**15052**	**45.0**	**1.7717**	1-1/4	2	4-1/2

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2483 SERIES 8% COBALT (M42) FLAT SHANK
E1483 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH

▶ E2483 have an extensive range of standard regular length in metric diameter.
End mills with center cutting are recommended for a wide range of cutting jobs, including slotting, shallow pocketing and tracer milling.





HSS Co8 | HSS | 4 | 30° | FLAT

Unit : Inch

EDP No.		Mill Diameter		Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)	Metric	Inch			
16252	16002	2.0	.0787	3/8	3/8	2-5/16
16253	16003	2.5	.0984	3/8	3/8	2-5/16
16254	16004	3.0	.1181	3/8	3/8	2-5/16
16255	16005	3.5	.1378	3/8	1/2	2-3/8
16256	16006	4.0	.1575	3/8	1/2	2-3/8
16257	16007	4.5	.1772	3/8	9/16	2-1/2
16258	16008	5.0	.1969	3/8	9/16	2-1/2
16259	16009	5.5	.2165	3/8	5/8	2-1/2
16260	16010	6.0	.2362	3/8	5/8	2-1/2
16261	16011	7.0	.2756	3/8	11/16	2-1/2
16262	16012	8.0	.3150	3/8	3/4	2-1/2
16263	16013	9.0	.3543	3/8	3/4	2-1/2
16264	16014	10.0	.3937	3/8	1	2-11/16
16265	16015	11.0	.4330	3/8	1	2-11/16
16266	16016	12.0	.4724	3/8	1	2-11/16
16267	16017	12.5	.4921	1/2	1-1/4	3-1/4
16268	16018	13.0	.5118	1/2	1-1/4	3-1/4
16270	16020	14.0	.5512	1/2	1-3/8	3-3/8
16276	16026	16.0	.6299	5/8	1-5/8	3-3/4
16280	16030	18.0	.7087	5/8	1-5/8	3-3/4
16282	16032	20.0	.7874	5/8	1-7/8	4-1/8
16284	16034	22.0	.8661	3/4	1-7/8	4-1/8
16288	16038	24.0	.9449	3/4	2	4-1/2
16290	16040	25.0	.9843	1	2	4-1/2
16296	16046	32.0	1.2598	1	2	4-1/2
16298	16048	36.0	1.4173	1	2	4-1/2
16300	16050	40.0	1.5748	1-1/4	2	4-1/2
16302	16052	45.0	1.7717	1-1/4	2	4-1/2

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

END MILL SET SERIES

▶ Various range of sizes in these end mill sets gives you plenty of opportunities to reduce manufacturing costs and improve productivity.

SET OF MINIATURE, (3/16″ SHANK) DOUBLE

EDP No.	ITEM No.	EDP No.	ITEM No.	Type	Length	Mill Diameter	No.of Flute
8% COBALT (M42)		HSS (M2)					
96002	CMR211	96001	MR211	Sq. END (11PCS.)	REGULAR	1/32, 3/64, 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 11/64, 3/16	2
96004	CMR409	96003	MR409	Sq. END (9PCS.)	REGULAR	1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 11/64, 3/16	4
96006	CMS211	96005	MS211	Sq. END (11PCS.)	STUB	1/32, 3/64, 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 11/64, 3/16	2
96008	CMS409	96007	MS409	Sq. END (9PCS.)	STUB	1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 11/64, 3/16	4

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

* WITH TRANSPARENT PLASTIC CASE

SET OF 3/8″ SHANK, (WELDON) SINGLE

EDP No.	ITEM No.	EDP No.	ITEM No.	Type	Length	Mill Diameter	No.of Flute
8% COBALT (M42)		HSS (M2)					
96010	CWR205	96009	WR205	Sq. END (5PCS.)	REGULAR	1/8, 3/16, 1/4, 5/16, 3/8	2
96012	CWR405	96011	WR405	Sq. END (5PCS.)	REGULAR	1/8, 3/16, 1/4, 5/16, 3/8	4
96014	CWRC05	96013	WRC05	CENTER CUT (5PCS.)	REGULAR	1/8, 3/16, 1/4, 5/16, 3/8	04

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

* WITH TRANSPARENT PLASTIC CASE

COBALT & HSS END MILLS

END MILL SET SERIES

▶ Various range of sizes in these end mill sets gives you a plenty of opportunities to reduce manufacturing costs and improve productivity.

SET OF 3/8″SHANK, (WELDON) DOUBLE

EDP No.	ITEM No.	EDP No.	ITEM No.	Type	Length	Mill Diameter	No.of Flute
8% COBALT (M42)		HSS (M2)					
96016	CDR209	96015	DR209	Sq. END (9PCS.)	REGULAR	1/8, 5/32, 3/16, 7/32, 1/4, 9/32, 5/16, 11/32, 3/8	2
96018	CDR409	96017	DR409	Sq. END (9PCS.)	REGULAR	1/8, 5/32, 3/16, 7/32, 1/4, 9/32, 5/16, 11/32, 3/8	4
96020	CDRC09	96019	DRC09	CENTER CUT (9PCS.)	REGULAR	1/8, 5/32, 3/16, 7/32, 1/4, 9/32, 5/16, 11/32, 3/8	4

■ The TiN coated, TiCN coated or TiAIN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAIN F), CE(TiAIN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAIN F), HE(TiAIN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

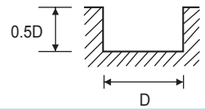
※ WITH TRANSPARENT PLASTIC CASE

COBALT & HSS END MILLS

RECOMMENDED CUTTING CONDITIONS

HSSCo8 & HSS, 2 FLUTE FINISH - SLOTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	3500	2.2	3200	1.8	2500	1.6	1600	0.8	11000	9.8
1/4	1800	3.5	1600	3.1	1200	2.4	800	1.6	5600	12.2
3/8	1100	4.0	900	3.5	800	3.1	450	1.8	3100	15.8
1/2	900	4.3	800	4.0	630	3.1	400	2.0	2500	15.0
5/8	700	4.3	560	3.5	450	2.8	280	1.8	2000	13.8
3/4	630	4.0	500	3.5	400	2.8	250	1.8	1800	13.8
7/8	500	4.0	450	3.5	350	2.8	220	1.8	1400	11.8
1	450	3.5	400	3.1	310	2.4	180	1.4	1200	11.0
1-1/8	400	3.1	350	2.8	280	2.2	160	1.2	1100	10.5
1-3/8	310	2.4	250	2.0	200	1.6	120	1.0	900	8.7
1-1/2	310	2.4	250	2.0	200	1.6	120	1.0	900	8.7
1-3/4	280	2.4	220	2.0	180	1.6	110	1.0	800	7.8
2	250	2.0	190	1.8	110	1.0	80	0.8	630	6.3

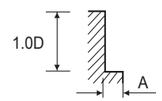


※ The Feed, in long & extra long types, should be reduced by around 50%.

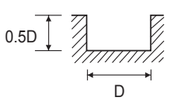
RPM = rev./min.
FEED = inch/min.

HSS, 2 FLUTE, 42° HELIX FINISH for ALUMINUM

MATERIAL	K		N	
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALUMINUM NONFERROUS METALS	
DIAMETER	RPM	FEED	RPM	FEED
1/8	8000	29.0	8000	22.5
3/16	7400	32.5	7400	25.0
1/4	6800	37.0	6800	28.5
5/16	5200	55.0	5200	43.5
7/16	5000	47.0	5000	47.0
1/2	4500	61.0	4500	47.0
9/16	3500	63.0	3500	49.0
5/8	3500	63.0	3500	49.0
3/4	2300	67.0	2300	51.0
13/16	2000	67.0	2000	51.0



A : Ø1/8 ~Ø5/16 = 0.25×D
Ø7/16 ~ Ø13/16 = 0.5×D



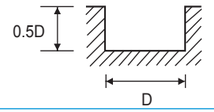
RPM = rev./min.
FEED = inch/min.

COBALT & HSS END MILLS

RECOMMENDED CUTTING CONDITIONS

HSSCo8, 3 FLUTE FINISH - SLOTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	5600	2.4	4500	1.8	4000	1.8	2200	0.8	12000	9.4
1/8	3500	3.1	3200	2.6	2500	2.4	1600	1.2	11000	15.0
1/4	1800	5.3	1600	4.7	1200	3.5	800	2.4	5600	18.5
3/8	1100	6.0	900	5.3	800	4.7	450	2.6	3100	23.6
1/2	900	6.5	800	6.0	630	4.7	400	3.0	2500	22.4
9/16	800	6.5	700	5.3	560	4.7	350	3.0	2200	20.9
5/8	700	6.5	560	5.3	450	4.1	280	2.6	2000	20.9
7/8	500	6.0	450	5.3	350	4.1	220	2.6	1400	17.7
1	450	5.3	400	4.7	310	3.5	180	2.0	1200	16.5
1-1/8	400	4.7	350	4.1	280	3.1	160	1.8	1100	15.8

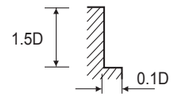


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min. FEED = inch/min.

HSSCo8, 3 FLUTE FINISH - SIDE CUTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	5600	2.4	4500	1.6	4000	1.4	2200	0.6	12000	7.1
1/8	3500	3.1	3200	2.4	2500	1.8	1600	0.8	11000	11.0
5/32	2800	4.1	2200	3.0	1800	2.0	1100	1.2	8000	13.0
3/16	2200	5.3	1800	3.7	1600	2.6	900	1.4	6300	13.8
1/4	1800	5.3	1600	4.3	1200	2.6	800	1.8	5600	13.8
5/16	1400	6.0	1100	4.7	900	3.1	560	2.0	4000	17.3
3/8	1100	6.0	900	4.7	800	3.8	450	2.0	3100	17.7
1/2	900	6.5	800	5.3	630	3.8	400	2.2	2500	16.9
9/16	800	6.5	700	4.7	560	3.8	350	2.2	2200	15.8
5/8	700	6.5	560	4.7	450	3.1	280	2.0	2000	15.8
11/16	630	6.0	500	4.7	400	3.1	250	2.0	1800	15.8
13/16	560	6.0	450	4.7	400	3.1	220	2.0	1600	14.2
7/8	500	6.0	450	4.7	350	3.1	220	2.0	1400	13.4
1	450	5.3	400	4.3	310	2.6	180	1.4	1200	12.6
1-1/8	400	4.7	350	3.7	280	2.4	160	1.2	1100	11.8
1-3/16	350	4.1	310	3.1	250	2.2	160	1.2	1100	11.8



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

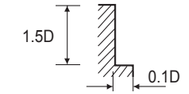
RPM = rev./min. FEED = inch/min.

COBALT & HSS END MILLS

RECOMMENDED CUTTING CONDITIONS

HSSCo8 & HSS, MULTI FLUTE FINISH - SIDE CUTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	3500	4.3	3200	3.1	2500	2.4	1600	1.2	11000	15.0
1/4	1800	7.1	1600	5.7	1200	3.5	800	2.4	5600	18.5
3/8	1100	7.9	900	6.3	800	4.7	450	2.6	3100	23.6
1/2	900	8.7	800	7.1	630	4.7	400	3.0	2500	22.4
5/8	700	8.7	560	6.3	450	4.1	280	2.6	2000	20.9
3/4	630	7.9	500	6.3	400	4.1	250	2.6	1800	20.9
13/16	500	7.9	450	6.3	350	4.1	220	2.6	1400	17.7
15/16	500	7.9	450	6.3	350	4.1	220	2.6	1400	17.7
1	450	7.1	400	5.7	310	3.5	180	2.0	1200	16.5
1-1/2	310	4.7	250	3.5	200	2.4	120	1.4	900	13.0
1-3/4	280	4.7	220	3.5	150	2.4	110	1.4	800	11.8
2	280	4.7	190	3.5	110	1.8	80	1.0	630	11.8

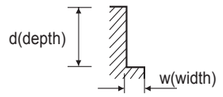


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

HSSCo8, MULTI FLUTE 60° HELIX FINISH - SIDE CUTTING

MATERIAL		P				M		K	
		MILD STEELS		ALLOY STEELS		TOOL STEELS STAINLESS STEELS		CAST IRON	
HARDNESS		~HRc13		HRc13~HRc32		HRc25~HRc35		~HRc20	
DIAMETER	w×d	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	0.02 × 0.35	1840	3.6	1250	2.2	980	1.8	2050	4.8
1/4	0.08 × 0.35	1600	3.6	650	2.2	510	1.6	1100	4.5
5/8	0.02 × 1	750	2.9	460	2.0	390	1.4	840	4.1
5/8	0.18 × 1	650	2.9	400	2.0	340	1.4	730	4.1
3/4	0.02 × 1.2	520	2.5	370	1.8	300	1.4	630	4.1
3/4	0.26 × 1.2	450	2.5	320	1.8	260	1.4	550	4.1
1	0.02 × 1.6	460	2.9	290	1.8	240	1.4	510	4.3
1	0.30 × 1.6	400	2.9	250	1.8	210	1.4	440	4.3
1-1/2	0.02 × 1.6	280	2.5	170	1.4	150	1.3	320	3.6
1-1/2	0.80 × 1.6	240	2.5	150	1.4	130	1.3	280	3.6
2	0.02 × 2	220	2.2	140	1.3	115	1.1	260	2.9
2	1.60 × 2	190	2.2	120	1.3	100	1.1	225	2.9



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

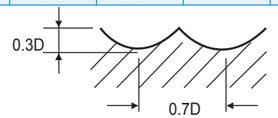
RPM = rev./min.
FEED = inch/min.

COBALT & HSS END MILLS

RECOMMENDED CUTTING CONDITIONS

HSSCo8 & HSS, 2 FLUTE BALL NOSE

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm^2		500~800N/mm^2		800~1000N/mm^2		1000~1300N/mm^2			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	4500	3.7	3400	2.8	2000	1.2	1400	0.8	11000	9.1
R5/64 × 5/32	3200	4.5	2400	3.1	1400	1.4	1000	1.0	8000	10.2
R1/8 × 1/4	2200	5.3	1700	3.5	1000	1.8	700	1.0	5600	11.0
R5/32 × 5/16	1600	6.3	1200	4.1	700	2.0	500	1.2	4000	13.8
R3/16 × 3/8	1300	7.1	1000	4.7	560	2.4	400	1.4	3200	14.2
R1/4 × 1/2	1000	6.7	800	4.1	450	2.2	320	1.4	2500	13.4
R5/16 × 5/8	800	6.0	600	4.0	350	2.2	250	1.4	2000	11.8
R3/32 × 3/16	600	5.5	500	3.4	300	2.0	200	1.4	1600	11.0
R1/2 × 1	500	5.1	400	2.8	220	1.6	160	1.2	1300	9.8

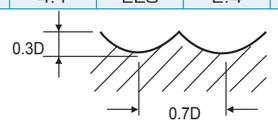


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

HSSCo8 & HSS, MULTI FLUTE BALL NOSE

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm^2		500~800N/mm^2		800~1000N/mm^2		1000~1300N/mm^2			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1/8 × 1/4	2200	7.9	1700	5.3	1000	2.8	700	1.6	5600	16.5
R5/32 × 5/16	1600	9.4	1200	6.3	700	3.0	500	1.8	4000	20.9
R3/16 × 3/8	1300	10.6	1000	7.1	560	3.5	400	2.0	3200	21.3
R1/4 × 1/2	1000	10.2	800	6.3	450	3.1	320	2.0	2500	20.1
R5/16 × 5/8	800	9.1	600	6.0	350	3.1	250	2.0	2000	17.7
R3/32 × 3/16	600	8.3	500	5.1	300	3.0	200	2.0	1600	16.5
R1/2 × 1	500	7.9	400	4.1	220	2.4	160	1.8	1300	15.0



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

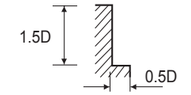
RPM = rev./min.
FEED = inch/min.

COBALT & HSS END MILLS

RECOMMENDED CUTTING CONDITIONS

HSSCo8, MULTI FLUTE ROUGHING - SIDE CUTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm^2		500~800N/mm^2		800~1000N/mm^2		1000~1300N/mm^2			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	1800	3.1	1600	2.4	1200	2.2	800	1.2	4500	7.9
5/16	1400	4.1	1100	3.0	900	2.6	560	1.4	3100	9.1
3/8	1100	6.0	900	4.7	800	4.3	450	2.4	2500	13.8
1/2	900	7.1	800	5.5	630	4.3	400	2.8	2000	15.8
5/8	700	7.1	560	5.5	450	4.3	280	2.8	1600	17.7
11/16	630	7.1	500	5.5	400	4.3	250	2.8	1400	18.5
7/8	500	8.7	450	6.7	350	5.5	220	3.4	1100	18.5
1	450	8.7	400	6.7	310	5.5	180	3.4	1000	17.7
1-1/8	400	8.1	350	6.3	280	5.1	160	3.4	900	20.1
1-1/4	350	8.1	280	6.3	220	5.1	140	3.4	800	19.7
1-3/8	310	8.1	250	6.3	200	5.1	120	3.4	700	18.5
1-3/4	280	7.9	220	6.0	180	4.7	110	3.1	630	17.7
2	220	7.9	180	6.7	160	5.5	90	3.1	500	14.6

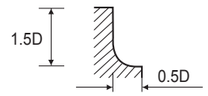


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

HSSCo8, MULTI FLUTE BALL NOSE ROUGHING - SIDE CUTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm^2		500~800N/mm^2		800~1000N/mm^2		1000~1300N/mm^2			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R5/32 × 5/16	1400	4.1	1100	3.0	900	2.6	560	1.4	3100	9.1
R3/16 × 3/8	1100	6.0	900	4.7	800	4.3	450	2.4	2500	9.8
R1/4 × 1/2	900	7.1	800	5.5	630	4.3	400	2.8	2000	15.8
R5/16 × 5/8	700	7.1	560	5.5	450	4.3	280	2.8	1600	17.7
R7/16 × 7/8	560	7.1	450	5.5	400	4.3	220	2.8	1200	19.7
R1/2 × 1	450	8.7	400	6.7	310	5.5	180	3.4	1000	17.7
R5/8 × 1-1/4	350	8.1	280	6.3	220	5.1	140	3.4	800	19.7
R7/8 × 1-3/4	280	7.9	220	6.0	180	4.7	110	3.1	630	17.7



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

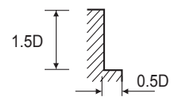
RPM = rev./min.
FEED = inch/min.

COBALT & HSS END MILLS

RECOMMENDED CUTTING CONDITIONS

HSSCo8 & HSS, MULTI FLUTE ROUGHING & FINISHING - SIDE CUTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	1800	2.5	1300	2.0	1200	1.8	800	1.0	4500	6.3
5/16	1400	3.4	1100	2.4	900	2.2	560	1.2	3100	7.3
3/8	1100	4.7	900	3.7	800	3.5	450	2.0	2500	11.0
1/2	900	5.7	800	4.3	630	3.5	400	2.2	2000	12.6
5/8	700	5.7	560	4.3	450	3.5	280	2.2	1600	14.2
11/16	630	5.7	500	4.3	400	3.5	250	2.2	1400	15.0
7/8	500	6.9	450	5.3	350	4.3	220	2.8	1100	15.0
1	450	6.9	400	5.3	310	4.3	180	2.8	1000	14.2
1-1/4	350	6.7	280	5.1	220	4.1	140	2.8	800	15.8
1-3/8	310	6.7	250	5.1	200	4.1	120	2.8	700	15.0
2	240	5.4	190	4.0	150	3.4	110	2.6	500	11.2



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

RPM = rev./min.
FEED = inch/min.

HSSCo8 & HSS, MINIATURE

MATERIAL	P								N	
	HIGH TENSILE STEELS MEDIUM STRENGTH STAINLESS STEELS MEDIUM STRENGTH TITANIUM SLOOYS		MEDIUM TENSILE STEELS UNALLOYED TITANIUM TOOL STEELS HEAT RESISTANT FERRITIC LOW ALLOYS		VILD STEEL FORGING HARD BRASS & BRONZE COPPER		ALUMINUM ALUMINUM ALLOYS PLASTIC WOODS		ALUMINUM ALUMINUM ALLOYS	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	6600~8800	0.3	11000 up	0.5	11000 up	0.8	11000 up	1.2	11000 up	1.5
1/32	3300~4400	0.5	5500~5600	0.6	7700~9900	1.6	11000 up	1.6	11000 up	2.5
3/64	2200~2935	0.6	3665~4400	0.6	5135~6600	2.5	7335~8800	2.0	11000 up	2.6
1/16	1650~2260	0.6	2750~3300	1.0	3350~4950	3.3	5500~6600	2.6	11000 up	4.2
5/64	1320~1760	0.6	2200~2640	1.0	3850~3960	3.3	4400~5820	2.6	8500 up	4.2
3/32	1100~1285	0.6	1835~2200	1.0	2565~3300	3.3	3665~4400	2.6	7330up	4.2
7/64	345~1255	0.6	1570~1885	1.0	2200~2830	3.3	3140~3770	2.6	5625 up	4.3
1/8	825~1100	0.6	1375~1650	1.0	1925~2475	3.3	2750~3300	2.8	5500 up	4.5
9/64	735~980	0.6	1220~1465	1.0	1710~2200	3.4	2445~3770	2.8	4890~9780	4.5
5/32	560~880	0.8	1100~1320	1.1	1540~1980	3.6	2205~2640	2.9	4400~8800	4.5
11/64	600~800	0.9	1000~1200	1.2	1400~1800	3.7	2000~2400	3.0	4000~3000	4.6
3/16	550~735	1.0	915~1100	1.4	1285~1650	3.3	1535~2200	3.3	3685~7335	4.7

NOTES :
(1) The cutting conditions in this table are given for reference, which should be varied depending on the machine, tooling, depth of cut. cutting fluid and other conditons.
(2) Use a holder of strong gripping force and machine of high stiffness

RPM = rev./min.
FEED = inch/min.

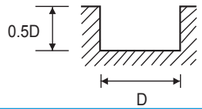
CARBIDE
HSS
CBN END MILLS
i-Xmill END MILLS
i-SMART MODULAR TYPE END MILLS
X5070 END MILLS
4G MILL END MILLS
X-POWER END MILLS
JET-POWER END MILLS
TitaNox -POWER END MILLS
V7 PLUS A END MILLS
V7 MILL INOX
ALU-POWER HPC END MILLS
ALU-POWER END MILLS
D-POWER GRAPHITE END MILLS
D-POWER CFRP END MILLS
ROUTERS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

COBALT & HSS END MILLS

RECOMMENDED CUTTING CONDITIONS

HSSCo8 & HSS, 2 FLUTE FINISH TiN-COATED - SLOTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	4200	2.6	3840	2.2	3000	1.9	1920	1.0	13200	11.8
1/4	2160	4.2	1920	3.7	1440	2.9	960	1.9	6720	14.6
3/8	1320	4.8	1080	4.2	960	3.7	540	2.2	3720	19.0
1/2	1090	5.2	960	4.8	756	3.7	480	2.4	3000	18.0
5/8	840	5.2	672	4.2	540	3.7	336	2.2	2400	16.6
3/4	756	4.8	600	4.2	480	3.4	300	2.2	2160	16.6
7/8	600	4.8	540	4.2	420	3.4	264	2.2	1680	14.2
1	540	4.2	480	3.7	372	2.9	260	2.2	1440	13.2
1-1/8	480	3.7	420	3.4	336	2.6	432	1.7	1320	12.6
1-3/8	372	2.9	300	2.4	240	1.9	144	1.2	1080	10.4
1-1/2	372	2.9	300	2.4	240	1.9	144	1.2	1080	10.4
1-3/4	336	2.9	264	2.4	216	1.9	132	1.2	960	9.5
2	300	2.4	228	2.2	132	1.2	96	1.0	756	7.6

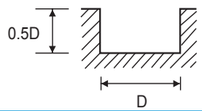


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

HSSCo8 & HSS, 3 FLUTE FINISH TiN-COATED - SLOTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	6720	2.8	5400	2.2	4800	2.2	2640	1.0	14400	11.3
1/5	4200	3.7	3840	3.1	3000	2.9	1920	1.4	13200	18.0
1/4	2160	6.4	1920	5.6	1440	4.2	960	2.9	6720	21.7
3/8	1320	7.2	1080	6.4	960	5.6	540	3.1	3720	28.3
1/2	1080	7.8	960	7.2	756	5.6	480	3.6	3000	26.9
5/8	840	7.8	672	6.4	540	4.9	336	3.1	2400	25.1
11/16	756	7.2	600	6.4	480	4.9	300	3.1	2160	25.1
7/8	600	7.2	540	6.4	420	4.9	264	3.1	1680	21.2
1	540	6.4	480	5.6	372	4.2	216	2.4	1440	19.8
1-1/8	430	5.6	420	4.9	336	3.7	192	2.2	1320	19.0
1-3/16	420	4.9	372	4.2	300	3.6	192	2.2	1320	19.0



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

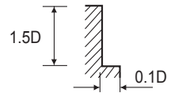
RPM = rev./min.
FEED = inch/min.

COBALT & HSS END MILLS

RECOMMENDED CUTTING CONDITIONS

HSSCo8 & HSS, 3 FLUTE FINISH TiN-COATED - SIDE CUTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	6720	2.9	5400	1.9	4800	1.7	2640	0.7	14400	8.5
1/8	4200	3.7	3840	2.9	3000	2.2	1920	1.0	13200	13.2
1/4	2160	6.4	1920	5.2	1440	3.1	960	2.2	6720	16.6
3/8	1320	7.2	1080	5.6	960	4.2	540	2.4	3720	21.2
1/2	1080	7.8	960	6.4	756	4.2	480	2.6	3000	20.3
9/16	960	7.8	840	5.6	672	4.2	420	2.6	2640	19.0
5/8	840	7.8	672	5.6	540	3.7	336	2.4	2400	19.0
11/16	756	7.2	600	5.6	480	3.7	300	2.4	2160	19.0
7/8	600	7.2	540	5.6	420	3.7	264	2.4	1680	16.1
1	540	6.4	480	5.2	372	3.1	216	1.7	1440	15.1
1-1/8	430	5.6	420	4.4	336	2.9	192	1.4	1320	14.2

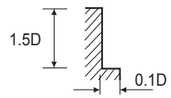


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

HSSCo8 & HSS, MULTI FLUTE FINISH TiN-COATED - SIDE CUTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	4200	5.2	3840	3.7	3000	2.9	1920	1.4	13200	18.0
1/4	2640	8.5	1920	6.8	1440	4.2	960	2.9	6720	22.2
3/8	1320	9.5	1080	7.6	960	5.6	540	3.1	3700	28.3
1/2	1080	10.4	960	8.5	756	5.6	480	3.6	3000	26.9
5/8	840	10.4	672	7.6	540	4.9	336	3.1	2400	25.1
3/4	756	9.5	600	7.6	480	4.9	300	3.1	2160	25.1
7/8	600	9.5	540	7.6	420	4.9	264	3.1	1680	21.2
15/16	600	9.5	540	7.6	420	4.9	264	3.1	1680	21.2
1	540	8.5	480	6.8	372	4.2	216	2.4	1440	19.8
1-1/2	372	5.6	300	4.2	240	2.9	144	1.7	1080	15.6
1-3/4	336	5.6	264	4.2	216	2.9	132	1.7	960	14.2
2	336	5.6	264	4.2	168	2.2	96	1.2	960	14.2



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

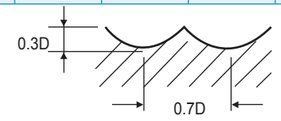
RPM = rev./min.
FEED = inch/min.

COBALT & HSS END MILLS

RECOMMENDED CUTTING CONDITIONS

HSSCo8 & HSS, 2 FLUTE BALL NOSE TiN-COATED

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	5400	4.4	4080	3.4	2400	1.4	1680	1.0	13200	10.9
R5/64 × 5/32	3840	5.4	2880	3.7	1680	1.7	1200	1.2	9600	12.2
R1/8 × 1/4	2640	6.4	2040	4.2	1200	2.2	840	1.2	6720	13.2
R5/32 × 5/16	1920	7.6	1440	4.9	840	2.4	600	1.4	4800	16.6
R3/16 × 3/8	1560	8.5	1200	5.6	672	2.9	480	1.7	3840	17.0
R1/4 × 1/2	1200	8.0	960	4.9	540	2.6	384	1.7	3330	16.1
R5/16 × 5/8	960	7.2	720	4.8	420	2.6	300	1.7	2400	14.2
R3/32 × 3/16	720	6.6	600	4.1	360	2.4	240	1.7	1923	13.2
R1/2 × 1	600	6.1	480	3.4	264	1.9	192	1.4	1560	11.8

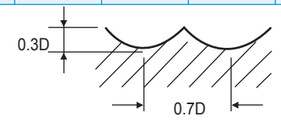


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

HSSCo8 & HSS, MULTI FLUTE BALL NOSE TiN-COATED

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1/8 × 1/4	2640	9.5	2040	6.4	1200	3.4	840	1.9	6720	19.8
R5/32 × 5/16	1920	11.3	1440	7.6	840	3.6	600	2.2	4800	25.1
R3/16 × 3/8	1560	12.7	1200	8.5	672	4.2	480	2.4	3840	25.6
R1/4 × 1/2	1200	12.2	960	7.6	540	3.7	384	2.4	3000	24.1
R5/16 × 5/8	960	10.9	720	7.2	420	3.7	300	2.4	2400	21.2
R3/32 × 3/16	720	10.0	600	6.1	380	3.6	240	2.4	1920	19.8
R1/2 × 1	600	9.5	480	4.8	264	2.9	192	2.2	1560	18.0



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

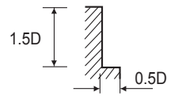
RPM = rev./min.
FEED = inch/min.

COBALT & HSS END MILLS

RECOMMENDED CUTTING CONDITIONS

HSSCo8, MULTI FLUTE ROUGHING TiN-COATED - SIDE CUTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	2160	3.7	1920	2.9	1440	2.6	960	1.4	5400	9.5
5/16	1680	4.9	1320	3.6	1080	3.1	672	1.7	3720	10.9
3/8	1320	7.2	1080	5.6	960	5.2	540	2.9	3000	16.6
1/2	1080	8.5	960	6.6	756	5.2	480	3.4	2400	19.0
5/8	840	8.5	672	6.6	540	5.2	336	3.4	1920	22.2
11/16	756	8.5	600	6.6	480	5.2	300	3.4	1680	22.2
7/8	600	10.4	540	8.0	420	6.6	264	4.1	1320	21.2
1	540	10.4	480	8.0	372	6.6	216	4.1	1200	21.2
1-1/8	480	9.7	420	7.6	336	6.1	192	4.1	1680	24.1
1-1/4	420	9.7	336	7.6	264	6.1	168	4.1	960	23.6
1-3/8	372	9.7	300	7.6	240	6.1	144	4.1	840	22.2
1-3/4	336	9.5	264	7.2	216	5.6	132	3.7	756	21.2
2	264	9.5	216	8.0	192	6.6	108	3.7	600	17.5

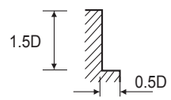


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

HSSCo8, MULTI FLUTE ROUGHING & FINISHING TiN-COATED - SIDE CUTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	2160	3.0	1920	2.4	1440	2.2	960	1.2	5400	7.6
5/16	1680	4.0	1320	2.9	1080	2.4	672	1.4	3720	8.8
3/8	1320	5.6	1080	4.4	960	4.2	540	2.4	3000	13.2
1/2	1080	6.8	960	5.2	756	4.2	480	2.6	2400	15.1
5/8	840	6.8	672	5.2	540	4.2	336	2.6	1920	17.6
11/16	756	6.8	600	5.2	480	4.2	300	2.6	1680	18.0
7/8	600	8.3	540	6.4	420	5.2	264	3.4	1320	18.0
1	540	8.3	480	6.4	372	5.2	216	3.4	1200	17.6
1-1/4	420	8.0	336	6.1	264	4.9	168	3.4	960	19.0
1-3/8	372	8.0	300	6.1	240	4.9	144	3.4	840	18.0
2	288	6.4	228	4.8	192	4.1	132	3.1	600	13.4



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

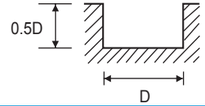
RPM = rev./min.
FEED = inch/min.

COBALT & HSS END MILLS

RECOMMENDED CUTTING CONDITIONS

HSSCo8 & HSS, 2 FLUTE FINISH TiCN-COATED - SLOTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	4550	2.9	3840	2.3	3250	2.1	2048	1.0	14300	12.7
1/4	2340	4.6	2080	4.0	1560	3.1	1040	3.2	7280	15.9
3/8	1430	5.2	1170	4.6	1040	4.0	585	3.2	4030	20.5
1/2	1170	5.6	1040	5.2	819	4.0	520	2.8	3250	19.5
5/8	910	5.6	728	4.6	585	3.6	364	2.3	2600	17.9
3/4	819	5.2	650	4.6	520	3.6	325	2.3	2340	17.9
7/8	650	5.2	585	4.6	455	3.6	286	2.3	1820	15.3
1	585	4.6	520	4.0	403	3.1	234	1.8	1560	14.3
1-1/8	520	4.0	455	3.6	364	2.9	208	1.6	1430	13.7
1-3/8	403	3.1	325	2.6	260	2.1	156	1.3	1170	11.3
1-1/2	403	3.1	325	2.6	260	2.1	156	1.3	1170	11.3
1-3/4	364	3.1	286	2.6	234	2.1	143	1.3	1040	10.3
2	325	2.6	228	2.3	143	1.3	104	1.0	819	8.2

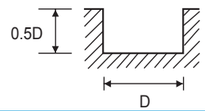


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

HSSCo8, 3 FLUTE FINISH TiCN-COATED - SLOTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	7280	3.1	5850	2.3	5200	2.3	2860	1.0	15600	12.2
1/8	4550	4.0	2340	3.4	3250	3.1	2080	1.6	14300	19.5
1/4	2340	6.9	2080	6.1	1560	4.6	1040	3.1	7280	23.5
3/8	1430	7.8	1170	6.9	1040	6.1	585	3.4	4030	30.7
1/2	1170	8.5	1040	7.8	819	6.1	520	3.8	3250	29.1
9/16	1040	8.5	910	6.9	728	6.1	455	3.8	2860	27.2
5/8	910	8.5	728	6.9	585	5.3	364	3.4	2600	27.2
7/8	650	7.8	585	6.9	455	5.3	286	3.4	1820	23.0
1	585	6.9	520	6.1	403	4.6	234	2.6	1560	21.5
1-1/8	520	6.9	455	5.3	364	4.3	208	2.3	1430	20.5



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

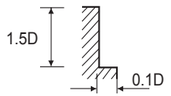
RPM = rev./min.
FEED = inch/min.

COBALT & HSS END MILLS

RECOMMENDED CUTTING CONDITIONS

HSSCo8 & HSS, 3 FLUTE FINISH TiCN-COATED - SIDE CUTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	7280	3.1	5850	2.1	5200	1.8	2860	0.8	15600	9.2
1/8	4550	4.0	4160	3.1	3250	2.3	2080	1.0	14300	14.3
1/4	2240	6.9	2080	5.6	1560	3.4	1040	2.3	7280	17.9
5/16	1820	7.8	1430	5.1	1170	4.0	728	2.6	5200	22.5
1/2	1170	8.5	1040	6.9	819	4.6	520	2.9	3250	22.0
9/16	1040	8.5	910	6.1	728	4.6	455	2.9	2860	20.5
5/8	910	8.5	728	6.1	585	4.6	364	2.6	2600	20.5
11/16	819	7.8	650	6.1	520	4.0	325	2.6	2340	20.5
7/8	650	7.8	585	6.1	455	4.0	286	2.6	1820	17.4
1	585	6.9	520	5.6	403	3.4	234	1.8	1560	16.4
1-1/8	520	6.1	455	4.8	362	3.1	208	1.6	1430	15.3

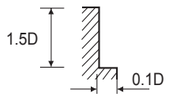


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

HSSCo8 & HSS, MULTI FLUTE FINISH TiCN-COATED - SIDE CUTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	4550	5.6	4160	4.0	3250	3.1	22080	1.6	14300	19.5
1/4	2340	9.2	2090	8.4	1560	4.6	1040	3.1	7280	24.1
3/8	1430	10.3	1170	8.2	1040	6.1	585	3.4	4030	30.7
1/2	1170	11.3	1040	9.2	818	6.1	520	3.9	3250	29.1
5/8	910	11.3	728	8.2	585	5.3	364	3.4	2600	27.2
3/4	819	10.3	650	8.2	520	5.3	325	3.4	2340	27.2
7/8	650	10.3	585	8.2	455	5.3	286	3.4	1820	23.0
15/16	650	10.3	585	8.2	455	5.3	234	3.4	1820	23.0
1	585	9.2	520	8.4	403	4.6	208	2.6	1560	21.9
1-1/2	403	6.1	325	4.6	260	3.1	156	1.8	1170	16.9
1-3/4	364	6.1	286	4.6	234	3.1	143	1.8	1040	15.3
2	364	6.1	286	4.6	182	2.3	104	1.3	1040	15.3



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

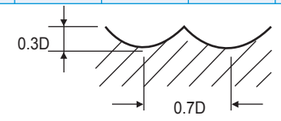
RPM = rev./min.
FEED = inch/min.

COBALT & HSS END MILLS

RECOMMENDED CUTTING CONDITIONS

HSSCo8 & HSS, 2 FLUTE BALL NOSE TiCN-COATED

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	5850	4.8	4420	3.6	2600	1.6	1820	1.0	14300	11.8
R5/64 × 5/32	4160	5.9	3120	4.0	1820	1.8	1300	1.3	10400	13.3
R1/8 × 1/4	2860	6.9	2210	4.6	1300	2.3	910	1.3	7280	12.3
R5/32 × 5/16	2080	8.2	1560	5.3	910	2.6	650	1.6	5200	17.9
R3/16 × 3/8	1690	9.2	1300	6.1	728	3.1	520	1.8	4160	18.5
R1/4 × 1/2	1300	8.7	1040	5.3	585	2.9	416	1.8	3250	17.4
R5/16 × 5/8	1043	7.8	780	5.2	455	2.9	325	1.8	2600	15.3
R3/32 × 3/16	780	7.2	650	4.4	390	2.6	263	1.8	2080	14.8
R1/2 × 1	650	6.6	520	3.6	286	2.1	208	1.6	1690	12.7

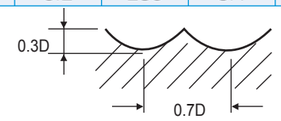


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

HSSCo8 & HSS, MULTI FLUTE BALL NOSE TiCN-COATED

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1/8 × 1/4	2860	10.3	2210	6.9	1300	3.6	910	2.1	7280	21.5
R5/32 × 5/16	2080	12.2	1560	8.2	910	3.9	650	2.3	5200	27.2
R3/16 × 3/8	1690	13.8	1300	9.2	728	4.6	520	2.6	4160	27.7
R1/4 × 1/2	1300	13.3	1040	8.2	585	4.0	416	2.6	3250	26.1
R5/16 × 5/8	1040	11.8	780	7.8	455	4.0	325	2.6	2600	23.0
R3/32 × 3/16	780	10.8	650	6.6	390	3.9	260	2.6	2080	21.5
R1/2 × 1	650	10.3	520	5.2	286	3.1	208	2.3	1690	19.5



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

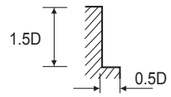
RPM = rev./min.
FEED = inch/min.

COBALT & HSS END MILLS

RECOMMENDED CUTTING CONDITIONS

HSSCo8, MULTI FLUTE ROUGHING TiCN-COATED - SIDE CUTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	2340	4.0	2080	3.1	1560	2.9	1040	1.6	5850	10.3
5/16	1820	5.3	1430	3.9	1170	3.4	728	1.8	4030	11.5
3/8	1430	7.8	1170	6.1	1040	5.6	585	3.1	3250	17.9
1/2	1170	9.2	1040	7.2	819	5.6	520	3.6	2600	20.5
5/8	910	9.2	728	7.2	585	5.6	364	3.6	2080	24.1
11/16	819	9.2	650	7.2	520	5.6	325	3.6	1820	24.1
7/8	650	11.3	585	8.7	455	7.2	286	4.4	1430	23.0
1	585	11.3	520	8.7	403	7.2	234	4.4	1300	23.0
1-1/8	520	10.5	455	8.2	364	6.6	208	4.4	1170	26.1
1-1/4	455	10.5	364	8.2	286	6.6	182	4.4	1040	25.6
1-3/8	403	10.5	325	8.2	260	6.6	156	4.4	910	24.1
1-3/4	364	10.3	286	7.8	234	6.1	143	4.0	819	23.0
2	286	10.3	234	8.7	208	7.2	117	4.0	650	19.0

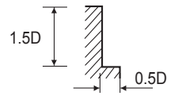


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

HSSCo8, MULTI FLUTE ROUGHING & FINISHING TiCN-COATED - SIDE CUTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	2340	3.3	2080	2.6	1560	2.3	1040	1.3	5850	8.2
5/16	1820	4.4	1430	3.1	1170	2.6	728	1.6	4030	9.5
3/8	1430	6.1	1170	4.8	1040	4.6	585	2.6	3250	14.3
1/2	1170	7.4	1040	5.6	819	4.6	520	2.9	2600	16.4
5/8	910	7.4	728	5.6	585	4.6	364	2.9	2080	18.5
11/16	819	7.4	650	5.6	520	4.6	325	2.9	1820	19.5
7/8	650	9.0	585	6.9	455	5.6	286	3.6	1430	19.5
1	585	9.0	520	6.9	403	5.6	234	3.6	1300	18.5
1-1/4	455	8.7	384	6.6	286	5.3	182	3.6	1040	20.5
1-3/4	403	8.7	325	6.6	260	5.3	156	3.6	910	19.5
2	312	7.0	247	5.2	238	4.4	143	3.9	650	14.6



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

RPM = rev./min.
FEED = inch/min.

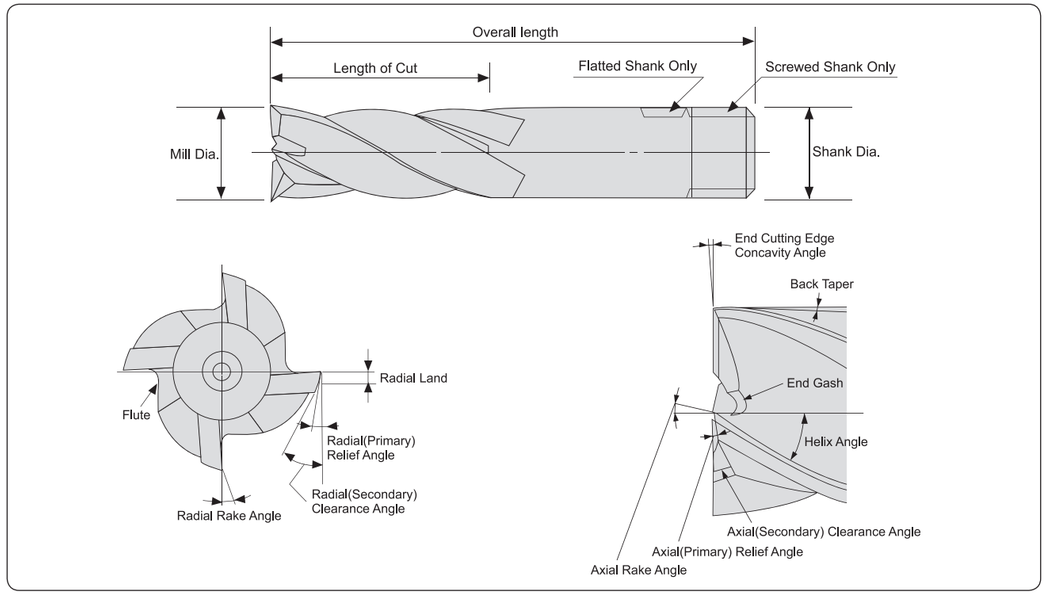
END MILLS

Being the best through innovation

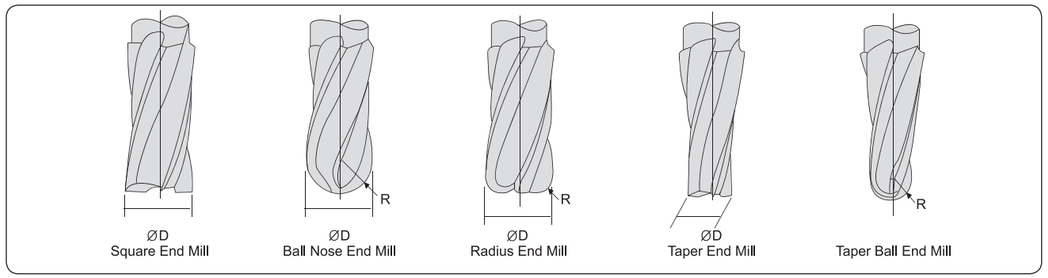


TECHNICAL DATA

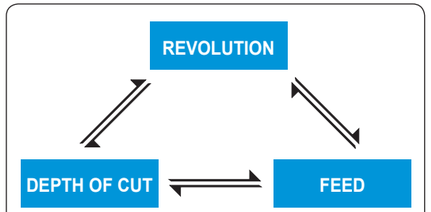
1 Names of End Mill Parts



2 Type of End Mill



Speed, feed and depth of cut are the most important factors to consider for best results in milling. Improper feeds and speeds often cause low production, poor work quality and unnecessary damage to the cutter.
This section covers the basic principles of speed and feed selection for milling cutters and end mills. It will serve as a guide in setting-up new milling jobs.



INTERRELATIONSHIP OF THREE FACTORS

3 Speeds

In milling, Speed is measured in peripheral feet per minute.(revolution per minute × cutter circumference in feet) This is frequently referred to as “peripheral speed” “cutting speed” or “surface speed”.

Revolutions per Minute $N = \frac{1000V}{\pi \times D}$

V : Cutting Speed(m/min)
D : Diameter of Tool(mm)
N : Revolution per minute(rev/min)
π : 3.1416

They will have to be tempered to suit the conditons ON THE JOB. For example:

Use Lower Speed Ranges for	Use Higher Speed Ranges for
Hard materials	Softer materials
Tough materials	Better finishes
Abrasive materials	Smaller diameter cutters
Heavy cuts	Light cuts
Minimum tool wear	Frail work pieces or set-ups
Maximum cutter life	Hand feed operations
	Maximum production rates
	Non-metallics

4 Feeds

Feed is usually measured in millimeters per minute. It is the product of feed per tooth times revolution per minute times the number of teeth in the cutter. Due to variations in cutter sizes, numbers of teeth and revolutions per minute, all feed rates should be calculated from feed per tooth. Feed per tooth is the basis of all feed rates per minute, whether the cutters are large or small, fine or coarse tooth, and are run at high or low peripheral speed. Because feed per tooth affects chip thickness. It is a very important factor in cutter life.
Highest possible feed per tooth will usually give longer cutter life between grinds and greater production per grind. Excessive feeds may over load the cutter teeth and cause breakage or chipping of the cutting edges. The following factors should be kept in mind when using the recommended starting feed per tooth.

Feed in milimeters per Minute

F.M = F.R.×R.P.M

F.R. : Feed per Revolutions in milimeters
R.P.M .: Revolutions per Minutes

The following factors should be kept in mind when using the recommended stating feed per tooth.

Use Higher Feeds For	Use Lower Feeds For
Heavy, roughing cuts	Light, and finishing cuts
Rigid set-ups	Frail set-ups
Easy-to-machine work materials	Hard to machine work materials
Rugged cutters	Frail and small cutters
Slab milling cuts	Deep slots
Low tensile strength materials	High tensile strength materials
Coarse tooth cutters	Fine tooth cutters
Abrasive materials	

SPEED AND FEED CALCULATIONS FOR MILLING CUTTERS AND OTHER ROTATING TOOLS

TO FIND	HAVING		FORMULA
Surface(or Periphery) Speed in meter Per Minute=S.P.M.	Diameter of Tool in milimeters Revolutions per Minute	=D =R.P.M.	$V=\frac{D\times3.1416\times R.P.M.}{1000}$
Revolutions Per Minute=R.P.M.	Surface Speed in meter per Minute Diameter of Tool in milimeters	=S.P.M =D	$R.P.M.=\frac{V\times1000}{D\times3.1416}$
Feed per Revolution in milimeters-F.R.	Feed in milimeters per Minute Revolution per Minute	=F.M. =R.P.M.	$F.R.=\frac{F.M.}{R.P.M.}$
Feed in milimeters Per Minute-F.M.	Feed per Revolution in milimeters Revolution per Minute	=F.R. =R.P.M.	F.M.= F.R.×R.P.M.
Number of Cutting Teeth per Minute=T.M.	Number of Teeth in Tool Revolution per Minute	=T =R.P.M.	T.M=T×R.P.M.
Feed per tooth=F.T.	Number of Teeth in Tool Feed per Revolution in milimeters	=T =R.P.M.	$F.T.=\frac{F.R.}{T}$
Feed per Tooth=F.T.	Number of Teeth in Tool Feed in milimeters per Minute Speed in Revolution per Minute	=T =F.M. =R.P.M.	$F.T.=\frac{F.M.}{T\times R.P.M.}$

5 Case of Resharpening

When the product finish become worse, the cutting edge must get dulled, chips become smaller and the cutting sound gets louder. In such cases, an end mill must be resharpened. The following are the damages of end mills when the resharpening is required.

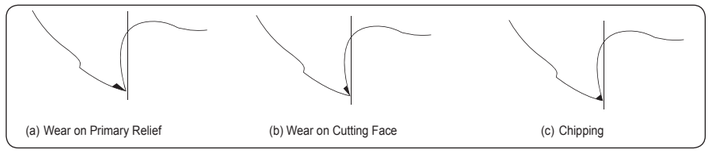


Fig. 1. Damages of Cutting Edge

6 Sharpen at Predetermined Wear Land

Cutters should be sharpened as soon as the wear land(Fig. 2.) reaches a predetermined width. This width should permit sharpening without excessive loss of tool life. It may vary from a few hundreths to some tenth of a millimeter, depending on the type of cutter and the finish required on the product. This method is used on production runs where uneven amounts of stock is removed or where the material varies in machinability. It is also used on small quantity product lots.

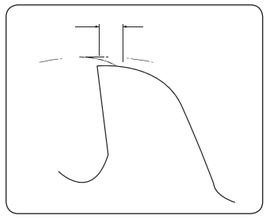


Fig. 2. Wear Land

Resharpening Peripheral Cutting Edge

1 RESHARPENING PERIPHERAL CUTTING EDGE

The geometry of relief angle in an end mill consists of three methods as shown in Fig.3 concave, flat, and eccentric. Recently, most end mills have the eccentric relief(eccentric sharpening). In this method, since the relief is formed an eccentric are surface in cylindrical grinding method, the roughness of the finished surface of the relief improves and the strength of cutting edge increase at the same time.(Fig.4) As a result, the tool life is improved.

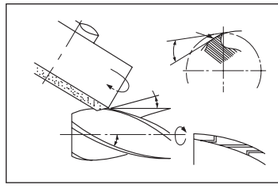
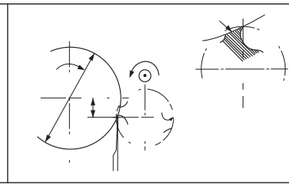
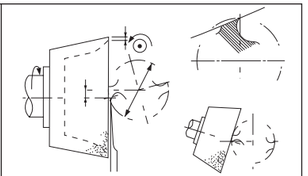
Eccentric	Concave	Flat
		

Fig. 3. Three Types of Primary Relief

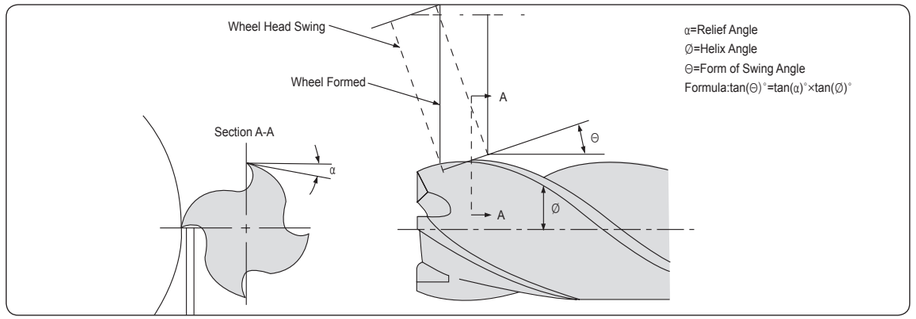


Fig. 4. Toothing of Eccentric Relief Angle

2 ANGLE OF WHEEL INCLINATION

Eccentric relief is produced with a plain wheel positioned with its axis parallel or at a slight angle with the cutter axis. The degree of relief is varied by changing the angle of wheel inclination.

Table 1. RECOMMENDED RELIEF ON END MILLS

Mill Diameter (inches)	Eccentric relief indicator drop for relief Angles shown		Checking Distance	Wheel Angles(Deg.)Θ			Radial Relief Angles(α1)	Clearance Angles(α2)
				15° Helix	30° Helix	60° Helix		
-	Min	Max.	-	*Angle	*Angle	*Angle	*Angle	*Angle
1/8	.0040	.0052	.015	4°42′	10°02′	27°58′	17°03′	25°
1/4	.0035	.0050	.020	3°15′	6°59′	20°12′	12°00′	25°
1/2	.0040	.0053	.025	2°51′	6°07′	17°51′	10°32′	25°
1	.0038	.0055	1/32	2°16′	4°54′	14°27′	8°27′	25°
1-1/2	.0033	.0050	1/32	2°02′	4°22′	12°57′	7°33′	25°
2	.0033	.0050	1/32	2°02′	4°22′	12°57′	7°33′	25°

The actual at the radial relief angle is normally kept within the range shown but may be varied to suit the cutter material, the work material and the operating conditions.
* Angle is calculated from the basic mean at the radical angle.

8 Resharpening End Teeth

The three necessary operations and one option feature, along with setup suggestions are shown in Fig.5 A to D in each drawing, the shaded area indicates the surface being ground.

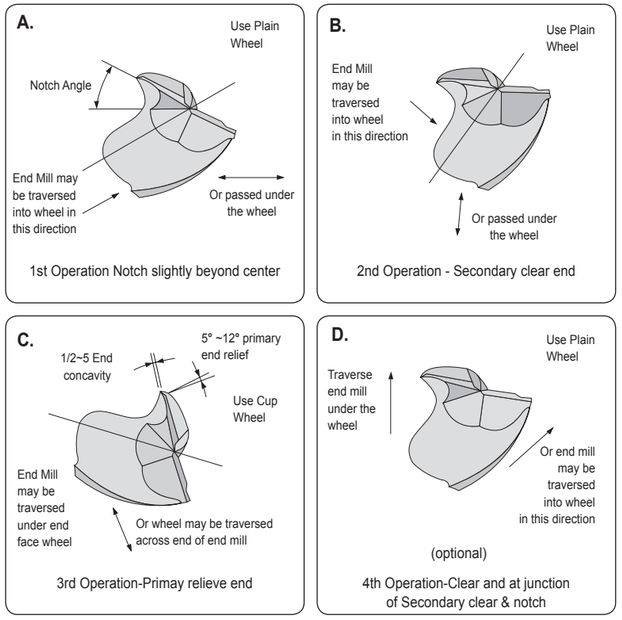


Fig 5. PROCEDURE FOR SHARPENING END OF 2 FLUTE SQUARE END MILLS

9 Inspection

The inspection is calculated by using the formula shown in Table1.
Procedure To Check
Radial Relief Angles
With Indicators.

1. Mount the cutter to rotate freely with no end movement.
2. Adjust the sharp pointed indicator to bear at the very tip of the cutting edge, pointing in a radial line, shown in Figure6
3. Roll the cutter the tabuleted amount gives under “checking distance” using the second indicator as control.
4. Consult chart for amount of drop for the particular diameter and relief angle.

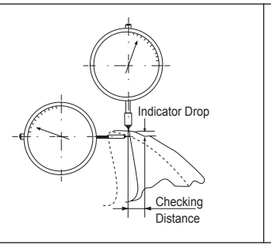
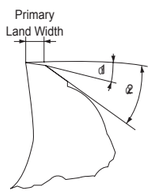
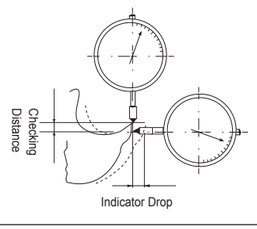
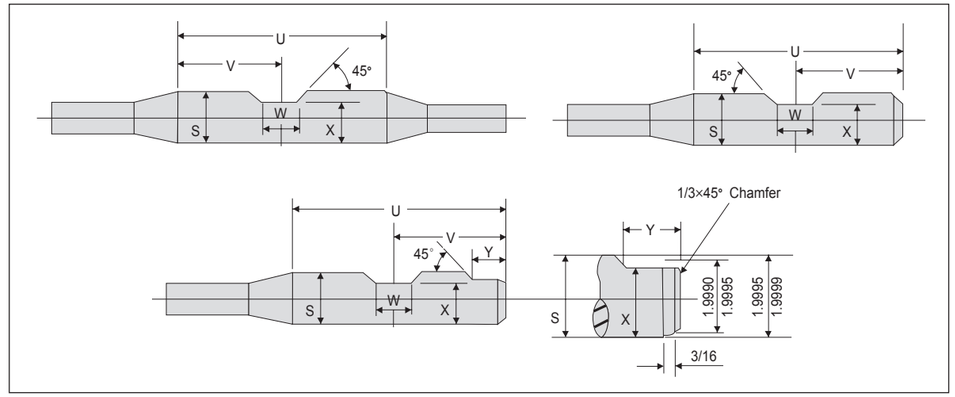
Radial Relief	Peripheral Cutting Edge	Cutting Angle
		

Fig. 6. Indicator Set-Up for Checking

10 Standard Weldon Shanks



11 Dimensions

All dimensions are given in inches.

Diameter of Shank S	Length of Shank U	V	W		X	Y
			Min.	Max.		
3/8	1-9/16	25/32	0.280	0.282	0.325	-
1/2	1-25/32	57/64	0.330	0.332	0.440	-
5/8	1-29/32	61/64	0.400	0.402	0.560	-
3/4	2-1/32	1-1/64	0.455	0.457	0.675	-
7/8	2-1/32	1-1/64	0.455	0.457	0.810	1/2
1	2-9/32	1-9/64	0.515	0.517	0.925	1/2
1-1/4	2-9/32	1-9/64	0.515	0.517	1.156	1/2
1-1/2	2-11/16	1-3/16	0.515	0.517	1.406	9/16
2	3-1/4	1-27/32	0.700	0.702	1.900	27/32
2-1/2	3-1/2	1-15/16	0.700	0.702	2.400	27/32

12 Tolerances

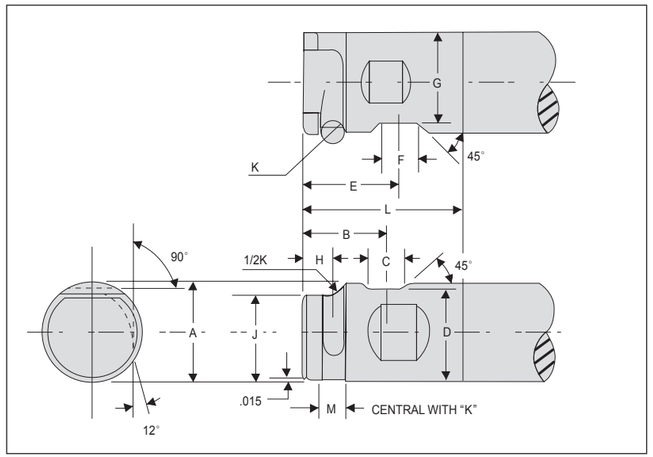
Element	Range	Direction	Tolerance
Diameter of Shank, S	All Sizes	minus	.0001 to .0005
Length of Shank, U	All Sizes	plus or minus	1/32
Dimension, V	All Sizes	plus or minus	1/64
Dimension, X	All Sizes	minus	1/64
Dimension, Y	7/8 to 2-1/2 inc.	plus or minus	1/32

Extracted from Milling Cutters and End Mills. MCTI 1989.

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

13 Combination Shanks for End Mills

Right hand End Mill shank shown. For left hand End Mills flat "F" and pin groove "K" should be located 180° from that shown, maintaining 12° relationship of flat "F" and groove "K"



14 Dimensions

All dimensions are given in inches.

Diameter of Shank A	Length of Shank L	B	C	D	E	F	G	H	J	K	M
1-1/2	2-11/16	1-3/16	0.515	1.406	1-1/2	0.515	1.371	9/16	1.302	0.377	7/16
2	3-1/4	1-23/32	0.700	1.900	1-3/4	0.700	1.809	5/8	1.772	0.440	1/2
2-1/2	3-1/2	1-15/16	0.700	2.400	2	0.700	2.312	3/4	2.245	0.503	9/16

15 Tolerances

Element	Direction	Tolerance
Diameter of Shank, A	minus	.0001 to .0005
Length of Shank, L	plus or minus	1/32
Dimension, B	plus or minus	1/64
Dimension, C	plus	.002
Dimension, D	minus	1/64
Dimension, E	plus or minus	1/64
Dimension, F	plus or minus	.005
Dimension, G	minus	1/64
Dimension, H	plus	1/64
Dimension, J	plus or minus	.002
Dimension, K	plus	.003

Extracted from Milling Cutters and End Mills. MCTI 1989.

16 Troubleshooting in Endmilling

Trouble	Occurrences of trouble	Countermeasures
Breaking of tool	• At time of engaging with work material • When ending cut	1. Decrease feed rate. 2. Decrease projection amount 3. Shorten cutting edge length to required minimum limit
	• During normal cutting	1. Decrease feed rate 2. Control wear → replace tool early 3. Replace chuck or collet 4. Decrease projection amount 5. Carry out honing 6. If 4 flute, reduce to 2 flute(clogging of chipping) 7. If dry cutting change to wet cutting utilize cutting fluid. In case of wet cutting flow oil supplied from the front, change to from rear angle of side top. Use ample with rate.
	• When changing direction of feed	1. Utilize circular interpolation(in case of NC machine) or temporarily stop feed(Dowelling) 2. Reduce feed rate before and after change of directions 3. Replace chuck or collect
Fracture of cutting edge	• Fracture of corners	1. Carry out chamfering or nose with hand lapper. 2. Down cut → Up cut
	• Fracture at boundary of depth of cut	1. Down cut → Up cut 2. Reduce cutting speed
	• Chipping at center part or overall	1. Carry out honing. Or enlarge. 2. Change number of rotation(in case machine vibrates) 3. Increase cutting speed 4. In ease of squeaking noise during cutting, increase feed. 5. It dry cutting use cutting fluid or blow air. 6. Replace chuck or collet 7. Reduce cutting speed
	• Large fracturing of cutting edge	1. Decrease feed rate 2. If 4 flute reduce to 2 flute 3. Carry out honing. Or enlarge 4. Replace chuck or collet 5. Reduce cutting speed 6. If dry cutting, change to wet cutting. In case oil supply in wet cutting is from the front, change to rear at an angle or from side top. Use ample supply.
Rapid tool wear		1. Reduce cutting speed 2. Up cut → Down cut 3. Increase feed 4. Utilize wet cutting or air 5. If reground tool, improve surface roughness of flank.

CARBIDE
HSS
CBN END MILLS
i-Xmill END MILLS
i-SMART MODULAR TYPE END MILLS
X5070 END MILLS
4G MILL END MILLS
X-POWER END MILLS
JET-POWER END MILLS
TitaNox -POWER END MILLS
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TANK-POWER END MILLS
STANDARD COBALT & HSS END MILLS
TECHNICAL DATA

TECHNICAL DATA

SUPER CUTTING END MILLS

Trouble	Occurrences of trouble	Countermeasures
Inferior finished surface	• Surface is good but rough	1. Decrease feed 2. In case using 2 flute, increase to 4 flute
	• Small chip welding	1. Increase cutting speed 2. Utilize wet cutting air blow(ample supply) 3. Carry out fine honing 4. Up cut → Down cut 5. Increase feed or enlarge finish allowance
	• With transverse streaks	1. Carry out fine honing 2. Use water insoluble cutting fluid 3. Down cut → Up cut
	• Signs of excessive cutting	1. Reduce finishing depth of cut 2. Increase cutting speed 3. Reduce feed
Poor machining accuracy	• Finish dimensions are on minus side	1. Up cut → Down cut 2. Reduce finishing depth of cut 3. Replace chuck or collet 4. Reduce projection amount 5. Increase cutting speed
	• Poor perpendicularity	1. Reduce finishing depth of cut 2. Replace chuck or collet 3. Reduce projection amount 4. Increase cutting speed 5. 2Flute → 4 Flute 6. Reduce feed 7. Check wear rate → Replace tool
Chattering		1. Increase feed rate(in case over 0.05 mm/Zahn, try reducing) 2. Change cutting speed 3. Replace chuck or collet 4. Reduce projection amount 5. Use 2 flute cutter for rough cutting and 4 flute for finishing 6. Down cut → Up cut