

MILLING TOOLS

CBN END MILLS

i-Xmills, CARBIDE INSERT END MILLS

X5070 NANO SOLID CARBIDE END MILLS

4G MILL SOLID CARBIDE END MILLS

X-SPEED ROUGHER SOLID CARBIDE END MILLS

X-POWER SOLID CARBIDE END MILLS

JET-POWER SOLID CARBIDE & HSS-PM END MILLS

V7 Mill STEEL SOLID CARBIDE END MILLS

V7 Mill INOX SOLID CARBIDE END MILLS

ALU-POWER SOLID CARBIDE & HSS-PM END MILLS

D-POWER DIAMOND COATED SOLID CARBIDE END MILLS

STANDARD SOLID CARBIDE END MILLS

TANK-POWER HSS-PM END MILLS

COBALT & HSS END MILLS

TECHNICAL DATA

Contents

MILLING TOOLS

CBN END MILLS

CARBIDE INSERT END MILLS

SOLID CARBIDE END MILLS

HSS END MILLS

TECHNICAL DATA

Contents / MILLING TOOLS

CBN END MILLS

Machining High Hardened Steels up to HRc70, Mirror Finish

CBN
END MILL

i-Xmills, CARBIDE INSERT END MILLS

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

i-Xmill
END MILL

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-SPEED ROUGHER SOLID CARBIDE END MILLS

Carbide Roughing End Mills for High-Feed Machining with reduced vibrations

X-SPEED
ROUGHER
END MILLS

X-POWER SOLID CARBIDE END MILLS

Medium Steels to High Hardened Steels up to HRc70

X-POWER
END MILLS

JET-POWER SOLID CARBIDE & HSS-PM END MILLS

Exotic materials like Stainless Steels, Nickel alloys and Titanium

JET-POWER
END MILLS

V7 Mill STEEL SOLID CARBIDE END MILLS

Steels in Heavy and Silent Cutting Materials up to HRc40. Designed as Unequal Leads.

V7 Mill STEEL
END MILLS

V7 Mill INOX SOLID CARBIDE END MILLS

Stainless Steels in Heavy and Silent Cutting Materials up to HRc40.
Designed as Variable Leads, YG-1's Patent.

V7 Mill INOX
END MILLS

ALU-POWER SOLID CARBIDE & HSS-PM END MILLS

Aluminium Alloys and Silent Cutting, Mirror Surface

ALU-POWER
END MILLS

D-POWER DIAMOND COATED SOLID CARBIDE END MILLS

Diamond Coated Carbide End Mills for Graphite

D-POWER
END MILLS

STANDARD SOLID CARBIDE END MILLS

General Purpose, Non-coated, Any Coating Available

STANDARD
CARBIDE
END MILLS

TANK-POWER HSS-PM END MILLS

Next Generation of Powdered Metal End Mills. Higher Edge Strength & Feed Rates

TANK-POWER
END MILLS

COBALT & HSS END MILLS




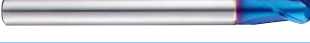
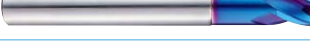
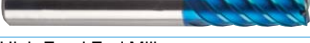


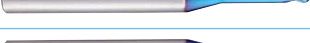


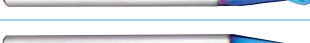












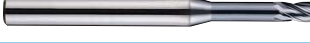



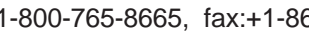
General Purpose, Non-coated, Any Coating Available

STANDARD
COBALT
& HSS
END MILLS

TECHNICAL DATA

TECHNICAL
DATA





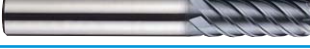



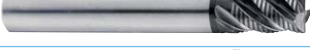
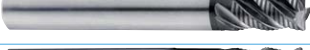




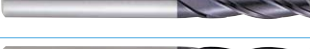



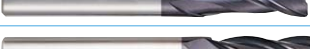









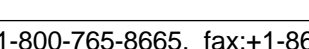
MILLING TOOLS APPLICATION TABLE

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE		PAGE
							MIN	MAX	
CBN	ESB94		2Flute	30°	Metric	Ball	R0.2	R1.5	378
	ESD02		2Flute	0°	Metric	Radius	D0.5	D2.0	379
X5070	G826	High Feed End Mill 	4Flute	0°	Inch	Radius	D1/8	D1/2	400
	G8A43		2Flute	30°	Inch	Ball	R1/64	R1/4	401
	G850		4Flute	30°	Inch	Radius	D1/16	D3/4	402
	G851		6&8Flute	45°	Inch	Radius	D1/4	D1	403
	G859	High Feed End Mill 	4Flute	0°	Metric	Radius	D2.0	D16.0	404
	G854	High Feed End Mill 	4Flute	0°	Metric	Radius	D2.0	D16.0	405
	G8A46		2Flute	30°	Metric	Ball for Rib	R0.05	R2.0	406
	G8A54		2Flute	30°	Metric	Ball for Rib	R0.25	R1.0	410
	G8A28		2Flute	30°	Metric	Ball	R0.05	R6.0	411
	G8A38		2Flute	30°	Metric	Stub Ball with Extended Neck	R0.5	R12.5	412
	G8A53		2Flute	30°	Metric	Miniature Ball	R0.2	R1.0	413
	G8A59		3Flute	30°	Metric	Ball	R1.5	R10.0	414
	G8A36		2Flute	30°	Metric	Stub Radius with Extended Neck	D0.3	D20.0	415
	G8A50		2Flute	30°	Metric	Miniature Radius	D0.3	D2.0	417
	G8A47		4Flute	30°	Metric	Radius	D3.0	D12.0	418
	G8A37		4Flute	30°	Metric	Stub Radius with Extended Neck	D1.0	D20.0	419
	G8A39		6Flute	45°	Metric	Radius	D6.0	D20.0	420
	4G Mill	GMF15		2Flute	30°	Inch	Ball	R.002	R3/8
GMF16			2Flute	30°	Inch	Ball with Neck	R.004	R1/4	
GMF17			4Flute	30°	Inch	Ball	R.1/16	R1/4	
GMF18			2Flute	30°	Inch	Radius	D3/64	D3/4	
GMF19			2Flute	30°	Inch	Radius with Neck	D.008	D3/4	
GMF20			4Flute	M-Helix	Inch	Radius	D3/64	D3/4	
GMF21			4Flute	M-Helix	Inch	Radius with Neck	D3/64	D3/4	
GMF22			2Flute	30°	Inch	with Neck	D.008	D1/2	
GMF23			2Flute	30°	Inch	Square	D.004	D3/4	
GMF24			2Flute	30°	Inch	Long Square	D3/64	D3/4	

⊙ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
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MILLING TOOLS APPLICATION TABLE

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE		PAGE
							MIN	MAX	
4G Mill	GMF25		4Flute	M-Helix	Inch	Square	D3/64	D3/4	
	GMF26		4Flute	M-Helix	Inch	Square	D3/64	D3/4	
	GMF27		4Flute	30°	Inch	Long Square	D3/64	D1	
	GMF28		4Flute	30°	Inch	with Neck	D3/64	D1/2	
	GMF29		6Flute	45°	Inch	Square	D1/4	D3/4	
X-SPEED ROUGHER	G907 G928		4&5Flute	Multiple	Inch	Stub Roughing Radius	D1/4	D1	
	G908 G929		4&5Flute	Multiple	Inch	Regular Roughing Radius	D1/4	D1	
	G909 G930		4&5Flute	Multiple	Inch	Extended Reach Roughing Radius	D1/4	D3/4	
	G9D75		4&5Flute	Multiple	Metric	Short Radius	D6.0	D20.0	
	G9D76		4&5Flute	Multiple	Metric	Long Radius	D6.0	D20.0	
	G9D77		4&5Flute	Multiple	Metric	Long Reach Radius	D6.0	D20.0	
X-POWER	EM154		2Flute	30°	Inch	Regular	D1/16	D1	
	EM206		2Flute	30°	Inch	Long	D1/8	D1	
	EM959		2Flute	30°	Inch	Miniature	D.016	D.062	
	EM153		4Flute	30°	Inch	Regular	D1/16	D1	
	EM207		4&5Flute	30°	Inch	Long	D1/8	D1	452
	EM636		4&5Flute	30°	Inch	Short Radius	D1/16	D1/2	453
	EM639		4&5Flute	30°	Inch	Short Radius	D1/16	D1/2	453
	EM637		4&5Flute	30°	Inch	Regular Radius	D1/16	D1/2	454
	EM649		4&5Flute	30°	Inch	Regular Radius	D1/16	D1/2	454
	EM211		4&5Flute	30°	Inch	Long Radius	D1/4	D1/2	455
	EM212		2Flute	30°	Inch	Long Radius	D1/4	D1/2	455
	EM102		2Flute	45°	Inch	Long	D3/8	D7/8	456
	EM103		2Flute	45°	Inch	Long Reach Radius	D3/8	D7/8	457
	EM965		4Flute	55°	Inch	Stub Radius	D1/4	D1/2	458
	EM208		4Flute	45°	Inch	Long	D1/4	D1	459
	EM218		2Flute	45°	Inch	Extra Long	D1/4	D1	459
	EM668		4Flute	45°	Inch	Long Radius	D1/4	D3/4	460
	EM209		2Flute	30°	Inch	Long Ball	R1/64	R1/2	461

⊙ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			-HRc20	HRc20~30								
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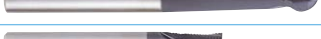

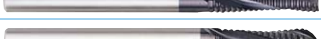













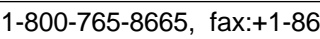
MILLING TOOLS APPLICATION TABLE

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE		PAGE
							MIN	MAX	
X-POWER	EM210		4Flute	30°	Inch	Long Ball	R1/16	R1/2	461
	EM961		2Flute	30°	Inch	Medium Ball	R1/16	R1/2	462
	EM962		2Flute	30°	Inch	Long Reach Ball	R3/64	R3/8	463
	EM960		2Flute	30°	Inch	Miniature Ball	R.012	R.031	464
	EM109		2Flute	15°	Inch	Stub Ball	R1/64	R1/4	465
	EM963		2Flute	30°	Inch	Ball with Taper Neck	R1/32	R1/4	466
	EM979		2Flute	30°	Inch	Ball with Pencil Neck	R3/32	R1/4	467
	EM084		2Flute	30°	Inch	Long Ball	R1/16	R5/16	469
	EM093		4Flute	30°	Inch	Long Ball	R1/16	R5/16	470
	EM096		2Flute	30°	Inch	Long Ball	R1/16	R5/16	471
	EM097		4Flute	30°	Inch	Long Ball	R1/16	R5/16	472
	EM666		3~5Flute	20°	Inch	Stub Roughing	D1/4	D1	473
	EM156		3~5Flute	20°	Inch	Long Roughing	D1/4	D1	473
	EM662		3~5Flute	20°	Inch	Long Roughing Ball	R1/8	R1/2	474
	EM966		2Flute	30°	Inch	Rib	D1/32	D1/8	475
	EM967		2Flute	30°	Inch	Ball for Rib	R1/64	R1/16	476
	EM810		2Flute	30°	Metric	Short	D1.0	D25.0	477
	EM816		2Flute	30°	Metric	Long	D2.0	D25.0	478
	EM811		4Flute	30°	Metric	Short	D2.0	D25.0	479
	EM817		4Flute	30°	Metric	Long	D2.0	D25.0	480
	EM895		3Flute	38°	Metric	Short	D1.0	D20.0	481
	EM810		2Flute	30°	Metric	Miniature	D0.4	D1.5	482
	EM818		2Flute	30°	Metric	Long Radius	D3.0	D20.0	483
	EM819		4Flute	30°	Metric	Long Radius	D3.0	D20.0	483
	EM905		4Flute	30°	Metric	Short Radius	D10.0	D22.0	484
	EM839		4Flute	45°	Metric	Stub Radius	D2.0	D16.0	485
	EM812		6&8Flute	45°	Metric	Long	D6.0	D25.0	486
	EM834		6&8Flute	30°	Metric	Extra Long	D6.0	D25.0	486
	EM835		6Flute	45°	Metric	Long Radius	D6.0	D20.0	487

⊙ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			-HRc20	HRc20-30								
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MILLING TOOLS APPLICATION TABLE

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE		PAGE
							MIN	MAX	
X-POWER	EM897		6Flute	45°	Metric	Stub Radius	D6.0	D12.0	488
	EM876		2Flute	30°	Metric	Long Ball	R0.5	R12.5	489
	EM813 EM823		2Flute	30°	Metric	Long Ball	R0.5	R12.5	490
	EM815 EM825		4Flute	30°	Metric	Long Ball	R0.5	R12.5	490
	EM899		2Flute	30°	Metric	Medium Ball	R1.5	R12.5	491
	EM838		2Flute	30°	Metric	Long Reach Ball	R1.0	R10.0	492
	EM865		2Flute	30°	Metric	Miniature Ball	R0.3	R0.75	493
	EM868		2Flute	15°	Metric	Stub Ball	R0.5	R12.5	494
	EM902		2Flute	30°	Metric	Ball with Taper Neck	R0.5	R6.0	495
	EM669		2Flute	30°	Metric	Long Ball	R1.5	R8.0	496
	EM673		4Flute	30°	Metric	Long Ball	R2.5	R8.0	497
	EM863		2Flute	30°	Metric	Long Ball	R1.5	R8.0	498
	EM864		4Flute	30°	Metric	Long Ball	R2.5	R8.0	499
	EM832		3~5Flute	20°	Metric	Short Roughing	D6.0	D25.0	500
	EM814		3~5Flute	20°	Metric	Long Roughing	D6.0	D25.0	501
	EM833		3&4Flute	20°	Metric	Long Roughing Ball	R3.0	R10.0	502
	EM837		2Flute	30°	Metric	Taper	D2.0	D8.0	503
	EM883		2Flute	30°	Metric	Rib	D0.8	D3.0	504
	EM886		2Flute	30°	Metric	Ball for Rib	R0.3	R2.0	505
JET-POWER	EH108		3&4Flute	50°	Inch	Regular	D1/8	D1	532
	EE882		6Flute	35°	Inch	Regular	D3/4	D1-1/2	533
	E5075 E5105		3Flute	35°	Inch	Stub Radius	D1/8	D1	534
	E5074 E5104		3Flute	35°	Inch	Regular Radius	D1/8	D1	535
	EH094		3~5Flute	30°	Inch	Stub Roughing	D1/4	D1	536
	EH095		3~5Flute	30°	Inch	Long Roughing	D1/4	D1	537
	EH969		3~6Flute	45°	Inch	Long Roughing	D3/16	D1	538
	EH970		4~6Flute	45°	Inch	Long Reach Roughing	D1/4	D3/4	539
	EH830		3&4Flute	50°	Metric	Long Square	D6.0	D25.0	540
	EE515		4&6Flute	30°	Metric	Short Square	D3.0	D25.0	541

⊙ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			-HRc20	HRc20-30								
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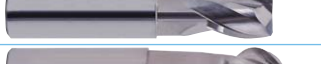
MILLING TOOLS APPLICATION TABLE

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE		PAGE
							MIN	MAX	
JET-POWER	EH852		3&5Flute	30°	Metric	Short Roughing	D6.0	D25.0	542
	EH831		3&5Flute	30°	Metric	Long Roughing	D6.0	D25.0	543
	EH917		4&6Flute	45°	Metric	Short Roughing	D6.0	D20.0	544
	EH919		3&6Flute	45°	Metric	Long Roughing	D4.0	D25.0	545
	EH92		4&6Flute	45°	Metric	Long Reach Roughing	D6.0	D20.0	546
V7 Mill STEEL	EMD56 EMD57		4Flute	Multiple	Inch	Stub Square	D1/8	D1	554
	EMD58 EMD59		4Flute	Multiple	Inch	Stub Radius	D1/8	D1	555
	EMD46 EMD47		4Flute	Multiple	Inch	Regular Square	D1/8	D1	556
	EMD48 EMD49		4Flute	Multiple	Inch	Regular Radius	D1/8	D1	557
	EMD42 EMD43		4Flute	Multiple	Metric	Short Square	D3.0	D20.0	558
	EMD44 EMD45		4Flute	Multiple	Metric	Short Radius	D3.0	D20.0	559
	EMD38 EMD39		4Flute	Multiple	Metric	Regular Square	D3.0	D25.0	560
	EMD40 EMD41		4Flute	Multiple	Metric	Regular Radius	D3.0	D25.0	561
	V7 Mill INOX	EMC75 EMD60		4Flute	Sinusoidal	Inch	Stub Square	D1/8	D1
EMC76 EMD61			4Flute	Sinusoidal	Inch	Stub Radius	D1/8	D1	567
EMB12 EMB37			4Flute	Sinusoidal	Inch	Regular Square	D1/8	D1	568
EMB13 EMB38			4Flute	Sinusoidal	Inch	Regular Radius	D1/8	D1	569
EMB20			4Flute	Sinusoidal	Inch	Extended Long Reach	D1/4	D1	570
EMB78 EMB79			4Flute	Sinusoidal	Inch	Regular Ball	R1/16	R1/2	571
EMB76 EMB77			5Flute	Sinusoidal	Inch	Regular Square	D1/4	D1	572
EMB41 EMB42			4Flute	Sinusoidal	Metric	Short Square	D3.0	D20.0	573
EMB43 EMB44			4Flute	Sinusoidal	Metric	Short Radius	D3.0	D20.0	574
EMB14 EMB39			4Flute	Sinusoidal	Metric	Regular Square	D3.0	D25.0	575
EMB15 EMB40			4Flute	Sinusoidal	Metric	Regular Radius	D3.0	D25.0	576
EMB74 EMB75			4Flute	Sinusoidal	Metric	Regular Ball	R1.5	R12.5	577
EMB72 EMB73			5Flute	Sinusoidal	Metric	Regular Square	D6.0	D25.0	578
ALU-POWER	E5253		2Flute	42°	Inch	Regular	D1/4	D1	586
	E5254		2Flute	42°	Inch	Regular	D1/16	D1	587
	E5976		2Flute	37°	Inch	with Extended Neck	D1/4	D1	588

⊙ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			-HRc20	HRc20~30								
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MILLING TOOLS APPLICATION TABLE

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE		PAGE
							MIN	MAX	
ALU-POWER	E5980		3Flute	45°	Inch	Stub Square	D1/8	D1	589
	E5981 E5983		3Flute	45°	Inch	Regular Square Regular Radius	D1/8 D1/2	D1 D1	590
	E5982 E5984		3Flute	45°	Inch	Long Square Long Radius	D1/4 D1/2	D1 D1	591
	E5E44		3Flute	30°	Inch	Roughing	D1/4	D1	592
	E5E98		3Flute	30°	Inch	Roughing with Neck	D1/4	D1	593
	E5E45		3Flute	37°	Inch	Roughing Ball	D1/4	D1	594
	E5977		3Flute	37°	Inch	with Extended Neck	D1/4	D1	594
	E5985		3Flute	37°	Inch	with Extended Neck	D1/4	D1	594
	E5973		3Flute	37°	Inch	Radius with Extended Neck	D1/2	D1	595
	E5974		2Flute	30°	Inch	Radius with Neck	D5/32	D3/4	596
	E5978		2Flute	50°	Inch	Stub Ball with Neck	R1/8	R3/8	597
	E5975		2Flute	37°	Inch	Long Reach Ball	R1/8	R1/2	598
	E5522 EG522		3Flute	40°	Inch	Long Ball with Neck	R3/64	R5/16	599
	EG930		2Flute	45°	Metric	Long Square	D3.0	D20.0	600
	EG909		2Flute	25°	Metric	Stub Radius	D2.0	D20.0	601
	EG910		2Flute	30°	Metric	Stub Radius with Extended Neck	D4.0	D20.0	602
	EG908		2Flute	50°	Metric	Stub Ball with Extended Neck	R3.0	R10.0	603
	EK191		3Flute	40°	Metric	Stub Ball with Extended Neck	R1.0	R8.0	604
	EK191		3Flute	42°	Inch	Regular Roughing	D1/2	D2	605
	EK226		3Flute	42°	Inch	Regular Radius Roughing	D3/4	D1-1/4	605
	EK226		3Flute	42°	Inch	Medium Roughing	D3/4	D2	606
	EK192		3Flute	42°	Inch	Medium Radius Roughing	D3/4	D1-1/4	606
	EK192		3Flute	42°	Inch	Long Roughing	D1/2	D2	607
	EK196		3Flute	42°	Inch	Long Radius Roughing	D3/4	D1-1/4	608
	EK193		3Flute	42°	Inch	Regular Ball Roughing	R1/4	R5/8	609
	EP922		3Flute	42°	Inch	Regular, Medium & Long Radius	D1/2	D1-1/2	610
	EP924		3Flute	42°	Metric	Short Roughing	D12.0	D32.0	612
	D-POWER	EI107		4(2)Flute	30°	Inch	Regular Square	D1/64	D1/2
EI099			2Flute	30°	Inch	Regular Ball	R.0391	R1/4	629

MILLING TOOLS APPLICATION TABLE

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE		PAGE
							MIN	MAX	
D-POWER	EI106		4Flute	30°	Inch	Regular Ball	R.0391	R1/4	629
	EI971		2Flute	30°	Inch	Long Ball	R.0391	R1/4	630
	EI972		2Flute	30°	Inch	Long Reach Ball	R.0391	R5/32	631
	EIB07		4Flute	30°	Inch	Regular Ball with Extended Neck	R.0156	R.0625	632
	EIB05		4Flute	30°	Inch	Regular Radius	D1/16	D1/2	633
	EIB06		4Flute	30°	Inch	Regular Radius with Extended Neck	D1/32	D3/8	634
	EI880		2Flute	30°	Metric	Short Ball	R1.0	R6.0	635
	EI881		3Flute	30°	Metric	Short Ball	R1.0	R6.0	635
	EI451		2Flute	30°	Metric	Long Ball	R1.0	R6.0	636
	EI450		2Flute	30°	Metric	Long Reach Ball	R1.0	R4.0	637
CARBIDE	E5020		2Flute	30°	Inch	Regular Square	D1/32	D1	646
	E5021		4Flute	30°	Inch	Regular Square	D1/16	D1	647
	E5244		2Flute	30°	Inch	Stub Square	D1/16	D3/4	648
	E5245		4Flute	30°	Inch	Stub Square	D1/16	D3/4	649
	E5011		2Flute	30°	Inch	Long Square	D1/8	D1	650
	E5012		4Flute	30°	Inch	Long Square	D1/8	D1	650
	E5026		2Flute	30°	Inch	Extra Long Square	D1/8	D1	651
	E5065		4Flute	30°	Inch	Extra Long Square	D1/8	D1	652
	E5022		2Flute	30°	Inch	Stub Double	D1/32	D1/2	653
	E5023		4Flute	30°	Inch	Stub Double	D1/16	D1/2	654
	E5025		2Flute	30°	Inch	Regular Double	D1/8	D1/2	655
	E5024		4Flute	30°	Inch	Regular Double	D1/8	D1/2	655
	E5249		2Flute	30°	Inch	Regular Ball	R1/16	R1/2	656
	E5250		4Flute	30°	Inch	Regular Ball	R1/16	R1/2	656
	E5014		2Flute	30°	Inch	Long Ball	R1/16	R1/2	657
	E5060		4Flute	30°	Inch	Long Ball	R1/16	R1/2	657
	E5018		2Flute	30°	Inch	Extra Long Ball	R1/16	R1/2	658
	E5062		4Flute	30°	Inch	Extra Long Ball	R1/16	R1/2	659
	E5251 E5252		2&4Flute	30°	Inch	Stub Ball Double	R7/64	R1/4	660

⊙ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
-HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
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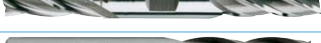
















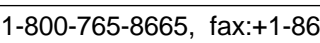
MILLING TOOLS APPLICATION TABLE

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE		PAGE
							MIN	MAX	
CARBIDE	E5216		4Flute	30°	Inch	Regular Radius	D1/8	D1	661
	E5069		5Flute	45°	Inch	Regular Radius	D1/4	D1	663
	E5243		3Flute	45°	Inch	Regular	D1/8	D1	664
	E5059		3Flute	50°	Inch	Stub	D1/4	D3/4	665
	E5246		3Flute	60°	Inch	Regular	D1/8	D1	666
	E5066		5Flute	45°	Inch	Stub	D1/8	D1	667
	E5067		5Flute	45°	Inch	Regular	D1/8	D1	668
	E5068		5Flute	45°	Inch	Long Square	D1/4	D1	669
	E5073		5Flute	45°	Inch	Extra Long Square	D5/16	D1	670
	E5058		6Flute	40°	Inch	Regular Square	D3/16	D3/4	671
	E5056 E5057		5Flute	45°	Inch	Stub & Regular Roughing	D3/8	D1	672
	E5077		3Flute	30°	Inch	Taper	D3/32	D1/4	673
	E5078		3Flute	30°	Inch	Taper Ball	R.047	R.125	674
	EH527		2Flute	30°	Metric	Long	D3.5	D20.0	675
	EH540		4Flute	30°	Metric	Long	D3.5	D20.0	676
	EH882		3Flute	35°	Metric	Radius	D3.0	D20.0	677
TANK-POWER	E9983		2Flute	30°	Inch	Regular Square	D1/8	D1	688
	E9984		2Flute	30°	Inch	Regular Double Square	D1/8	D1	689
	E9985		4Flute	30°	Inch	Regular Square	D1/8	D1	690
	E9986		4Flute	30°	Inch	Regular Double Square	D1/8	D1	691
	E9988		3&4Flute	60°	Inch	Regular Square	D1/4	D1	692
	E9992		2Flute	30°	Inch	Regular Ball	R1/16	R1/2	693
	E9990		3~6Flute	30°	Inch	Regular Roughing	D1/4	D1-1/4	694
	E9991		3~6Flute	30°	Inch	Regular Roughing	D1/4	D1-1/4	695
	E9A86		3~6Flute	30°	Inch	Long Roughing	D5/16	D1-1/4	696
	E9A87		3~6Flute	30°	Inch	Long Roughing	D5/16	D1-1/4	697
	E9921		5~6Flute	35°	Inch	Long Roughing with Neck	D1/2	D1-1/4	698
COBALT & HSS	E2030 E1030		2Flute	30°	Inch	Regular Square	D1/8	D2	711
	E2080 E1080		2Flute	30°	Inch	Long Square	D1/4	D2	713

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			-HRc20	HRc20~30								
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MILLING TOOLS APPLICATION TABLE

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE		PAGE
							MIN	MAX	
COBALT & HSS	E2033 E1033		2Flute	30°	Inch	Extended Square	D1/8	D1-1/4	714
	E2050 E1050		2Flute	30°	Inch	Regular Double Square	D1/8	D1	715
	E2110 E1110		2Flute	30°	Inch	Regular Ball	R1/16	R1	717
	E2111 E1111		2Flute	30°	Inch	Extended Ball	R1/16	R1/2	718
	E2112 E1112		2Flute	30°	Inch	Regular Ball Double	R1/16	R1/2	719
	E2031 E1031		4Flute	30°	Inch	Regular Square	D1/8	D1	720
	E2032 E1032		6Flute	30°	Inch	Regular Square	D5/8	D2	722
	E2034 E1034		4Flute	30°	Inch	Long Square	D1/4	D1	723
	E2035 E1035		6Flute	30°	Inch	Long Square	D1-1/8	D2	723
	E2036 E1036		4Flute	30°	Inch	Extra Long Square	D1/4	D1	724
	E2037 E1037		6Flute	30°	Inch	Extra Long Square	D1-1/4	D2	724
	E2051 E1051		4Flute	30°	Inch	Regular Double Square	D1/8	D1	725
	E2031 E1031		4Flute	30°	Inch	Regular Square	D3/4	D1	727
	E2032 E1032		6&8Flute	30°	Inch	Regular Square	D1-1/8	D2	727
	E2020		4Flute	30°	Inch	Regular Ball	R1/16	R1	728
	E2021		4Flute	30°	Inch	Long Ball	R1/8	R1/2	729
	E2069		4Flute	30°	Inch	Regular Ball Double	R1/16	R1/2	730
	E2039 E1039		4Flute	30°	Inch	Regular Square	D1/8	D1-1/2	731
	E2042 E1042		6Flute	30°	Inch	Regular Square	D1/2	D2	733
	E2039 E2042		4~8Flute	30°	Inch	Medium Square	D1	D2	734
	E2040 E1040		4Flute	30°	Inch	Long Square	D1/4	D1-1/2	735
	E2162 E1162		6Flute	30°	Inch	Long Square	D1/2	D2	735
	E2041 E1041		4Flute	30°	Inch	Extra Long Square	D1/4	D1-1/4	736
	E2175 E1175		6Flute	30°	Inch	Extra Long Square	D1/2	D2	736
	E2053 E1053		4Flute	30°	Inch	Regular Double Square	D1/8	D1	737
	E2100 E1100		6Flute	30°	Inch	Regular with Combination	D2	D2	739
	E2001 E1001		2Flute	30° & 39°	Inch	Miniature Stub Double	D1/32	D3/16	740
	E2003 E1003		2Flute	30° & 39°	Inch	Miniature Regular Double	D1/32	D3/16	741
	E2005 E1005		2Flute	30° & 39°	Inch	Miniature Long Double	D1/16	D3/16	742

⊙ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			-HRc20	HRc20~30	HRc30~40							
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MILLING TOOLS APPLICATION TABLE



	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE		PAGE
							MIN	MAX	
COBALT & HSS	E2002 E1002		4Flute	30° & 39°	Inch	Miniature Stub Double	D1/16	D3/16	743
	E2004 E1004		4Flute	30° & 39°	Inch	Miniature Regular Double	D1/16	D3/16	744
	E2006 E1006		4Flute	30° & 39°	Inch	Miniature Long Double	D1/16	D3/16	745
	E2008 E1008		2Flute	30° & 39°	Inch	Miniature Stub Ball Double	R1/32	R3/32	746
	E2013 E1013		2Flute	30° & 39°	Inch	Miniature Regular Ball Double	R1/64	R3/32	747
	E2015 E1015		2Flute	30° & 39°	Inch	Miniature Long Ball Double	R1/32	R3/32	748
	E1070		2Flute	42°	Inch	Regular & Medium Square	D1/4	D2	749
	E1071		2Flute	42°	Inch	Long Square	D1/4	D2	750
	E1072		2Flute	42°	Inch	Extra Long Square	D1/4	D1-1/2	750
	E2086		4~5Flute	30°	Inch	Stub Roughing	D1/4	D1	751
	E2085		3~5Flute	30°	Inch	Regular Roughing	D1/4	D1	752
	E2079		3~6Flute	30°	Inch	Regular Roughing	D1/4	D2	753
	E2077		4~6Flute	30°	Inch	Long Roughing	D1/2	D2	754
	E2086		3Flute	30°	Inch	Stub Roughing	D1/4	D1	755
	E2170		3~8Flute	30°	Inch	Regular Roughing	D1/4	D2	756
	E2171		5~8Flute	30°	Inch	Medium Roughing	D1	D2	757
	E2172		4~8Flute	30°	Inch	Long Roughing	D1/2	D2	758
	E2241		3Flute	30°	Inch	Stub Roughing	D1/4	D1	759
	E2195		4~6Flute	30°	Inch	Regular Roughing	D1/2	D1-1/2	760
	E2197		4~6Flute	30°	Inch	Long Roughing	D1/2	D1-1/2	760
	E2193 E2125		3~6Flute	30°	Inch	Regular & Long Roughing	R1/8	R3/4	761
	E2248		4~8Flute	30°	Inch	Regular	D1/4	D2	762
	E2191		3Flute	37°	Inch	Roughing&Finishing	D1/4	D1-1/2	763
	E2226 E2192		3Flute	37°	Inch	Regular Roughing	D1/2	D1-1/2	764
	E2163 E1163		2Flute	15°	Inch	Medium & Long Roughing	D1/8	D1	765
	E2120 E2121		3&4Flute	60°	Inch	Keyway	D1/4 D7/8	D3/4 D2	766
	E2160		3Flute	30°	Inch	Regular Square	D1/16	D1/4	767
	E2161		3Flute	30°	Inch	Short Square	D1/16	D1/4	767
	E2237 E1237		4Flute	0°	Inch	Long Square	D1/4	D5/8	768



SOLID

⊙ : Excellent ○ : Good

Carbon Steels -HRc20	Alloy Steels HRc20~30	Prehardened Steels HRc30~40	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			HRc40~45	HRc45~55	HRc55~70							
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MILLING TOOLS APPLICATION TABLE

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE		PAGE
							MIN	MAX	
COBALT & HSS	E2482 E1482		2Flute	30°	Metric	Regular Square	D2.0 (.0787)	D45.0 (1.772)	769
	E2483 E1483		4Flute	30°	Metric	Regular Square	D2.0 (.0787)	D45.0 (1.772)	770

	ITEM	MODEL	DESCRIPTION	SIZE		PAGE
				MIN	MAX	
i-Xmill	XB1A XB1N		i-Xmill Ball Insert for General Purpose	R5/32 (R4)	R5/8 (R16)	
	XB2C XB2N		i-Xmill Ball Insert for Hardened Steels			
	XB1D XBAN		i-Xmill Ball Insert for Graphite			
	XR1A XRAA		i-Xmill Corner Radius Insert for General Purpose	Ø5/16 (Ø8)	Ø1-1/4 (Ø32)	
	XR2A XRBA		i-Xmill Corner Radius Insert for Hardened Steels			
	XR1D XRAD		i-Xmill Corner Radius Insert for Graphite			

SOLID

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
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INSERT

◎ : Excellent ○ : Good

Carbon Steels		Alloy Steels		Tool Steels		Cast Iron	Hardened Steels	Stainless Steels	Aluminum	Graphite
~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc50~	~HRc28	~HRc8	
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Global Cutting Tool Leader **YG-1**







Being the best through innovation



CBN (Cubic Boron Nitride)

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

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
ESB94		CBN, 2 FLUTE BALL NOSE	R0.2	R1.5	378
ESD02		CBN, 2 FLUTE CORNER RADIUS	D0.5	D2.0	379
RECOMMENDED CUTTING CONDITIONS					380

◎ : Excellent
○ : Good

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



CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

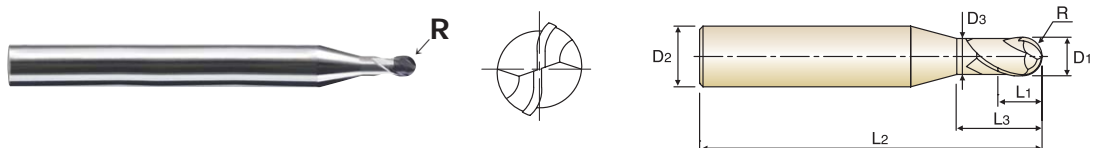
TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA

CBN, 2 FLUTE BALL NOSE

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



CBN
2
30°
R
 ± 0.005
PLAIN

P.380

Unit : mm

EDP No.	Radius of Ball Nose R (± 0.005)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric D1	Inch					
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

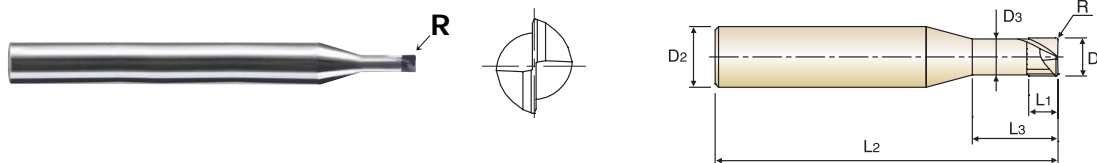
Radius Tolerance(mm)	Shank Dia. Tolerance
± 0.005	h5

◎ : Excellent ○ : Good

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

CBN, 2 FLUTE CORNER RADIUS

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



Unit : mm

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

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

◎ : Excellent ○ : Good

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

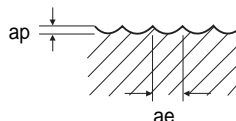


CBN, 2 FLUTE BALL NOSE

ESB94 SERIES

MATERIAL	HARDENED STEELS			HIGH HARDENED STEELS	
	HRc50 ~ HRc60			HRc60 ~ HRc70	
	HARDNESS	FEED		RPM	FEED
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

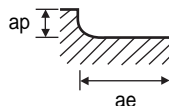


RPM = rev./min.
 FEED = inch/min.

CBN, 2 FLUTE CORNER RADIUS

ESD02 SERIES

MATERIAL	HARDENED STEELS				HIGH HARDENED STEELS			
	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

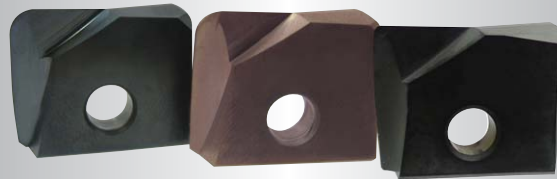
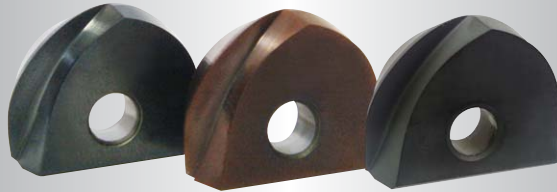


RPM = rev./min.
 FEED = inch/min.



CARBIDE INSERT & HOLDER

Being the best through innovation



i-Xmill

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

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	PAGE
------	-------	-------------	------

INCH

XB1A		i-Xmill BALL INSERT FOR GENERAL PURPOSE	384
XB2C		i-Xmill BALL INSERT FOR HARDENED STEEL	
XB1D		i-Xmill BALL INSERT FOR GRAPHITE	
ZBT / ZBS		i-Xmill BALL HOLDERS - STEEL	
ZBC		i-Xmill BALL HOLDERS - CARBIDE	
XR1A		i-Xmill CORNER RADIUS INSERTS FOR GENERAL PURPOSE	
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	

METRIC

XB1N		i-Xmill BALL INSERT FOR GENERAL PURPOSE	
XB2N		i-Xmill BALL INSERT FOR HARDENED STEEL	
XBAD		i-Xmill BALL INSERT FOR GRAPHITE	
ZBT / ZBS		i-Xmill BALL HOLDERS - STEEL	
ZBC		i-Xmill BALL HOLDERS - CARBIDE	
XRAA		i-Xmill CORNER RADIUS INSERTS FOR GENERAL PURPOSE	
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	
		ASSEMBLY RECOMMENDATIONS	
		RECOMMENDED CUTTING CONDITIONS	

i-Xmill END MILLS

◎ : Excellent, ○ : Good

Carbon Steels		Alloy Steels		Tool Steels		Cast Iron	Hardened Steels	Stainless Steels	Aluminum	Graphite
~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc50~	~HRc28	~HRc8	

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

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



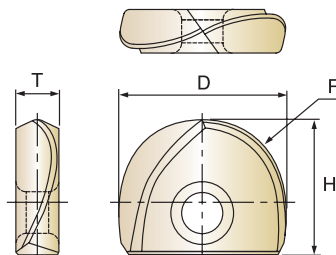
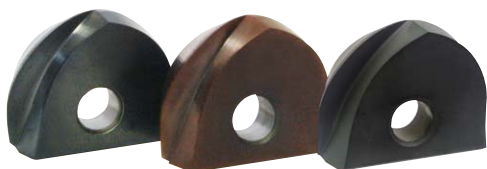
XB1A

XB2C

XB1D

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.396

Unit : Inch

EDP No.			Radius of Ball Nose R	Mill Diameter D	Height H	Thickness T
For General Material	For Hardened Material	For Graphite				
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

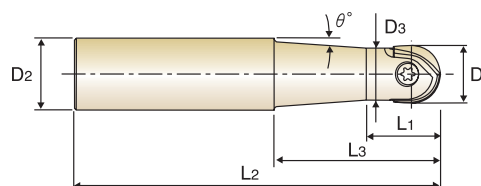
- The ball radius tolerance is ± 0.004 " and the set-up accuracy is ± 0.008 "

◎ : Excellent ○ : Good

	Carbon Steels		Alloy Steels		Tool Steels		Cast Iron	Hardened Steels	Stainless Steels	Aluminum	Graphite
	~HRC35	HRC35~	~HRC35	HRC35~	~HRC35	HRC35~	~HRC35	HRC50~	~HRC28	~HRC8	
XB1A	◎	○	◎	○	◎	○	○		○	○	
XB2C	○	◎	○	◎	○	◎	◎	◎			
XB1D	○		○		○					○	◎

i-Xmill BALL HOLDERS - STEEL

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

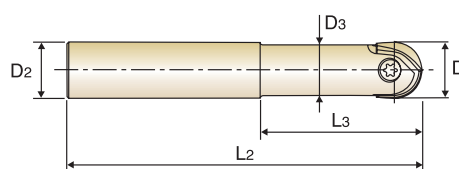


Taper neck Type

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Interference Angle	Length Type	Wrench No.	Screw No.
	D ₁	D ₂	L ₁	L ₃	L ₂	D ₃	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 40)



Straight neck Type

Unit : Inch

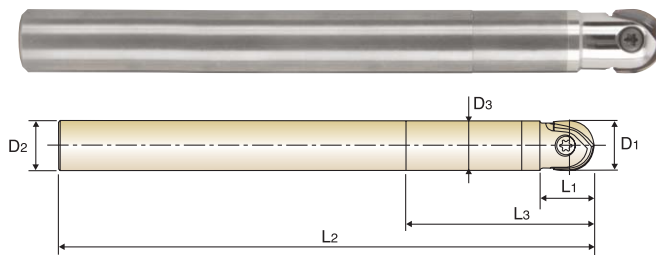
EDP No.	Mill Diameter	Shank Diameter	Length Below Shank	Overall Length	Neck Diameter	Length Type	Wrench No.	Screw No.
	D ₁	D ₂	L ₃	L ₂	D ₃			
ZBS1032	1/2	1/2	1-3/8	3-1/2	7/16	Short	TWF10	TX1210
ZBS2032			2-3/16	4-3/8		Regular		
ZBS1040	5/8	5/8	1-3/8	3-3/4	9/16	Short	TWF15	TX1615
ZBS2040			2-9/16	5		Regular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

● Need to use T Handle : TWH600 (See page 40)



i-Xmill BALL HOLDERS - CARBIDE

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



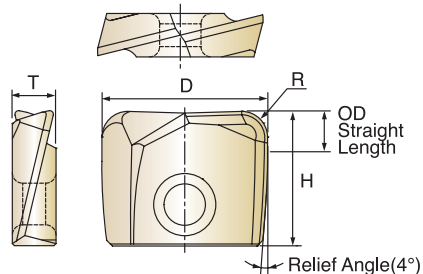
Unit : Inch

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

● Need to use T Handle : TWH600 (See page 40)

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.396

Unit : Inch

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

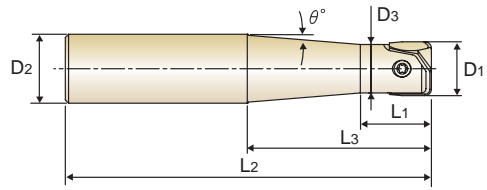
- The other corner radius values are available on request.
- The corner radius tolerance is $\pm .0006$ " and the set-up accuracy is $\pm .0008$ "

◎ : Excellent ○ : Good

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

i-Xmill CORNER RADIUS HOLDERS - STEEL

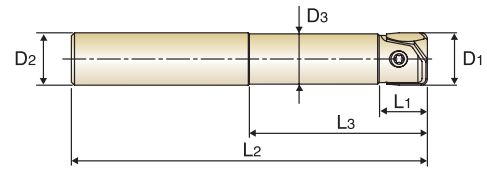
- ▶ Premium alloy steel with excellent strength.
- ▶ Precise shank, Tolerance (h6).
- ▶ Nickel plated, to prevent corrosion and improve lubricity.



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				2	5-1/8	19/32	Regular		
ZRS2040	5/8	5/8	5/8	2-9/16	6-1/2		23/32	Intermediate	TWF15
ZRS1048	3/4	3/4	23/32	2-3/8	5-1/2	Regular			
ZRS2048				3-1/8	7-1/8	Intermediate	● TWB20	TX2020	
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 40)

CBN END MILL
i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

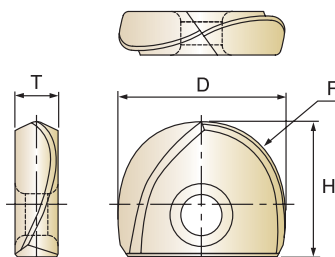
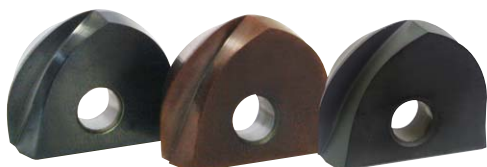
TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

i-Xmill 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.396

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

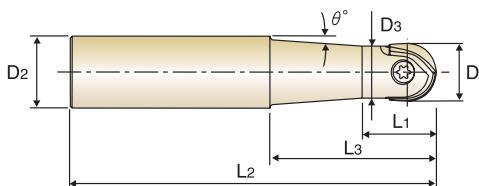
 • The ball radius tolerance is $\pm 0.01\text{mm}$ and the set-up accuracy is $\pm 0.02\text{mm}$

◎ : Excellent ○ : Good

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

i-Xmill BALL HOLDERS - STEEL

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

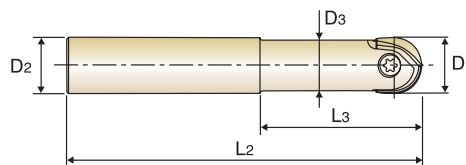


Taper neck Type

Unit : mm

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

● Need to use T Handle : TWH600 (See page 40)



Straight neck Type

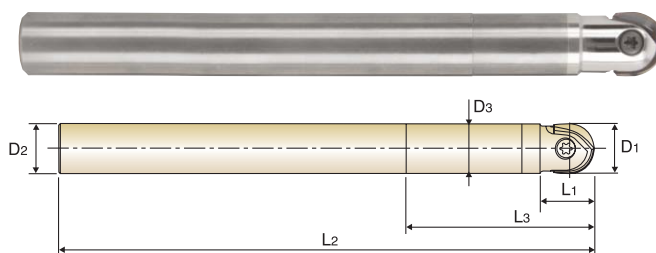
Unit : mm

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

● Need to use T Handle : TWH600 (See page 40)

i-Xmill BALL HOLDERS - CARBIDE

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



Unit : mm

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

● Need to use T Handle : TWH600 (See page 40)

 CBN
END MILL

 i-Xmill
END MILL

 X5070
END MILLS

 4G MILLS
END MILLS

 X-SPEED
ROUGHER
END MILLS

 X-POWER
END MILLS

 JET-POWER
END MILLS

 V7 Mill STEEL
END MILLS

 V7 Mill INOX
END MILLS

 ALU-POWER
END MILLS

 D-POWER
END MILLS

 STANDARD
CARBIDE
END MILLS

 TANK-POWER
END MILLS

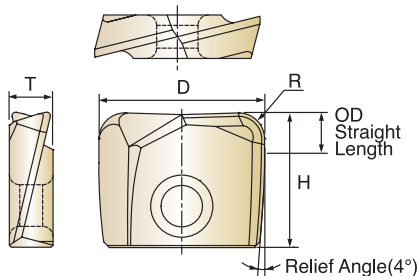
 STANDARD
COBALT
& HSS
END MILLS

 TECHNICAL
DATA



i-Xmill CORNER RADIUS INSERTS

- ▶ The optimum geometry of the tool to achieve the better reliability and less vibration and cutting load.
- ▶ Interchangeability with i-Xmill ball holder, but the precise cutting is possible with i-Xmill corner radius holder due to higher stability and strength of tool.
- ▶ The various and wide cutting range makes it possible to machine over the roughing and finishing.
- ▶ Special coating makes high hardness with high thermal stability against oxidation.
- ▶ Three Types of Inserts are available
 - For General Purpose (~HRC50)
 - For Hardened Material (HRC40~HRC65)
 - For Graphite



cutting conditions : p.396

Unit : mm

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

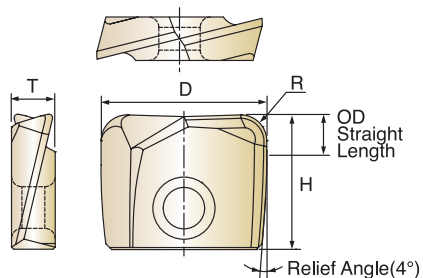
- The other corner radius values are available on request.
- The corner radius tolerance is $\pm 0.015\text{mm}$ and the set-up accuracy is $\pm 0.02\text{mm}$

◎ : Excellent ○ : Good

	Carbon Steels		Alloy Steels		Tool Steels		Cast Iron	Hardened Steels	Stainless Steels	Aluminum	Graphite
	~HRC35	HRC35~	~HRC35	HRC35~	~HRC35	HRC35~	~HRC35	HRC50~	~HRC28	~HRC8	
XRAA	◎	○	◎	○	◎	○	○	○	○	○	
XRBA	○	◎	○	◎	○	◎	◎	◎			
XRAD	○		○		○					○	◎

i-Xmill CORNER RADIUS INSERTS

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



Unit : mm

cutting conditions : p.396

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

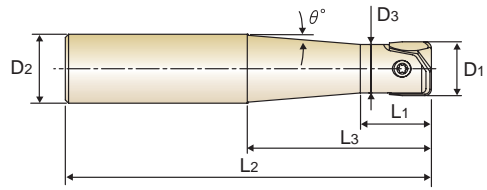
- The other corner radius values are available on request.
- The corner radius tolerance is $\pm 0.015\text{mm}$ and the set-up accuracy is $\pm 0.02\text{mm}$

◎ : Excellent ○ : Good

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

i-Xmill CORNER RADIUS HOLDERS - STEEL

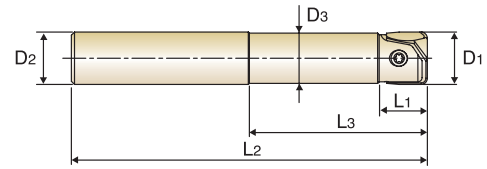
- ▶ Premium alloy steel with excellent strength.
- ▶ Precise shank, Tolerance (h6).
- ▶ Nickel plated, to prevent corrosion and improve lubricity.



Taper neck Type

Unit : mm

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

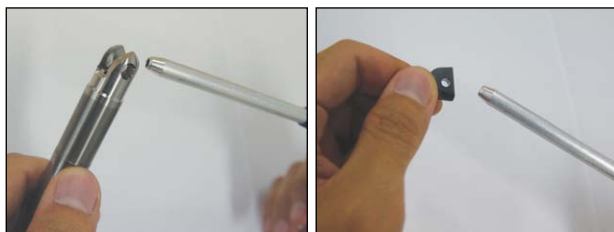


Straight neck Type

Unit : mm

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

● Need to use T Handle : TWH600 (See page 40)

ASSEMBLY OF *i-Xmill*


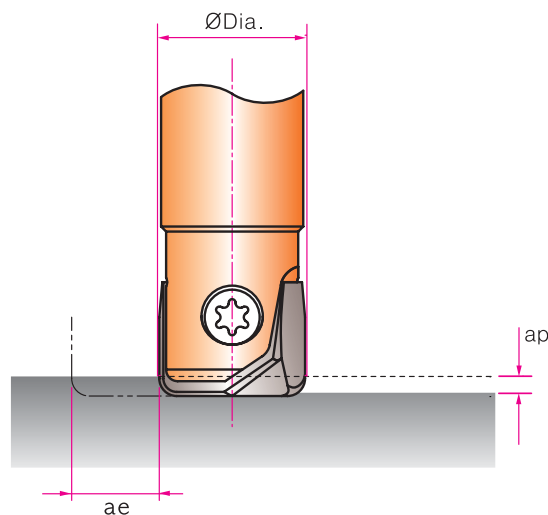
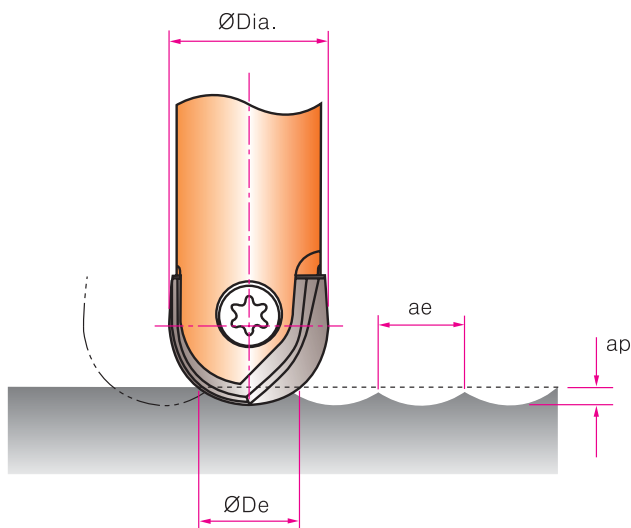
◀ Make sure to clean the insert and insert seat.



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

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

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


CUTTING CONDITION


RPM = revolution per minute (rev/min)

SFM = surface feet per minute (ft/min)

Dia. = diameter of insert (inch)

IPR = feed rate (inch/rev)

IPM = inch per minute penetration rate

De = effective tool diameter (inch)

ap = axial depth of cut (inch)

ae = radial depth of cut (inch)

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

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

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

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

 CBN
END MILL

i-Xmill
END MILL

 X5070
END MILLS

 4G MILLS
END MILLS

 X-SPEED
ROUGHER
END MILLS

 X-POWER
END MILLS

 JET-POWER
END MILLS

 V7 Mill STEEL
END MILLS

 V7 Mill INOX
END MILLS

 ALU-POWER
END MILLS

 D-POWER
END MILLS

 STANDARD
CARBIDE
END MILLS

 TANK-POWER
END MILLS

 STANDARD
COBALT
& HSS
END MILLS

 TECHNICAL
DATA

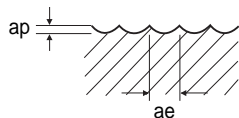


i-Xmill BALL INSERTS

XB1A, XB2C, XB1N, XB2N SERIES

WORK MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS			
HARDNESS	HB	~280				280~380			
	HRc	~30				30~40			
STRENGTH N/mm ²		~1000				1000~1250			
i-Xmill TYPE (SAB CODE)		XB1A, XB1N				XB1A, XB1N			
CUTTING CONDITION		RPM	Feed (IPM)	Vc(SFM)	fz	RPM	Feed (IPM)	Vc(SFM)	fz
Roughing~Finishing		[rev/min]	[inch/min]	[ft/min]	[inch/t]	[rev/min]	[inch/min]	[ft/min]	[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

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



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

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

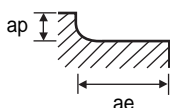
► Recommend to reduce the feed rate to 70 ~ 85% when you use long (long & intermediate Type Holder)

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

i-Xmill CORNER RADIUS INSERTS
XR1A, XR2A, XRAA, XRBA SERIES

WORK MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS			
HARDNESS	HB	~280				280~380			
	HRC	~30				30~40			
STRENGTH N/mm ²		~1000				1000~1250			
i-Xmill TYPE (SAB CODE)		XR1A, XRAA				XR1A, XRAA			
CUTTING CONDITION		RPM	Feed (IPM)	Vc(SFM)	fz	RPM	Feed (IPM)	Vc(SFM)	fz
Roughing~Finishing		[rev/min]	[inch/min]	[ft/min]	[inch/t]	[rev/min]	[inch/min]	[ft/min]	[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

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	Feed (IPM)	Vc(SFM)	fz	RPM	Feed (IPM)	Vc(SFM)	fz	RPM	Feed (IPM)	Vc(SFM)	fz
[rev/min]	[inch/min]	[ft/min]	[inch/t]	[rev/min]	[inch/min]	[ft/min]	[inch/t]	[rev/min]	[inch/min]	[ft/min]	[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)

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



Global Cutting Tool Leader YG-1





Being the best through innovation


















CARBIDE



X5070

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

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
INCH					
G826	 High Feed End Mill	CARBIDE, 4FLUTE STUB LENGTH CORNER RADIUS HIGH FEED ◆	D1/8	D1/2	400
G8A43		CARBIDE, 2 FLUTE STUB LENGTH BALL NOSE with EXTENDED NECK ◆	R1/64	R1/4	401
G850		CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS with EXTENDED NECK ◆	D1/16	D3/4	402
G851		CARBIDE, 6&8 FLUTE 45°HELIX CORNER RADIUS ◆	D1/4	D1	403
METRIC ◆ U.S.A Stock					
G859	 High Feed End Mill	CARBIDE, 4FLUTE STUB LENGTH CORNER RADIUS HIGH FEED ◇	D2.0	D16.0	404
G854	 High Feed End Mill	CARBIDE, 4FLUTE STUB LENGTH CORNER RADIUS HIGH FEED ◇	D2.0	D16.0	405
G8A46		CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING ◇	R0.05	R2.0	406
G8A54		CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING ◇	R0.25	R1.0	410
G8A28		CARBIDE, 2 FLUTE BALL NOSE ◇	R0.05	R6.0	411
G8A38		CARBIDE, 2 FLUTE STUB LENGTH BALL NOSE with EXTENDED NECK ◇	R0.5	R12.5	412
G8A53		CARBIDE, 2 FLUTE MINIATURE BALL NOSE ◇	R0.2	R1.0	413
G8A59		CARBIDE, 3 FLUTE BALL NOSE ◇	R1.5	R10.0	414
G8A36		CARBIDE, 2 FLUTE STUB LENGTH CORNER RADIUS with EXTENDED NECK ◇	D0.3	D20.0	415
G8A50		CARBIDE, 2 FLUTE MINIATURE CORNER RADIUS ◇	D0.3	D2.0	417
G8A47		CARBIDE, 4 FLUTE CORNER RADIUS with EXTENDED NECK ◇	D3.0	D12.0	418
G8A37		CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS with EXTENDED NECK ◇	D1.0	D20.0	419
G8A39		CARBIDE, 6 FLUTE 45°HELIX CORNER RADIUS with EXTENDED NECK ◇	D6.0	D20.0	420
RECOMMENDED CUTTING CONDITIONS					421

◆ Call for Availability

X5070 END MILLS

◎ : Excellent
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			HRc40~45	HRc45~55								
-HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							

		○	○	◎	◎							
		○	○	◎	◎							
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CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS HIGH FEED

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



High Feed End Mill

◆ U.S.A Stock

Unit : 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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

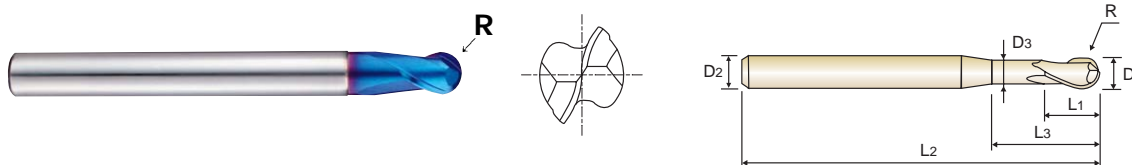
TECHNICAL DATA

◎ : Excellent ○ : Good

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

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

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



NG 2 BLUE 30° R ±.0002 R ±.0004 PLAIN P.422

◆ U.S.A Stock

R1/64-R1/8 R5/32-R1/4

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R	D1	D2	L1	L3	L2	D3
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 permance will not be negatively affected

Size	Radius Tolerance (Inch)	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to \varnothing 1/4	$\pm .0002$	0~- .0005	h6
over \varnothing 1/4	$\pm .0004$	0~- .0006	

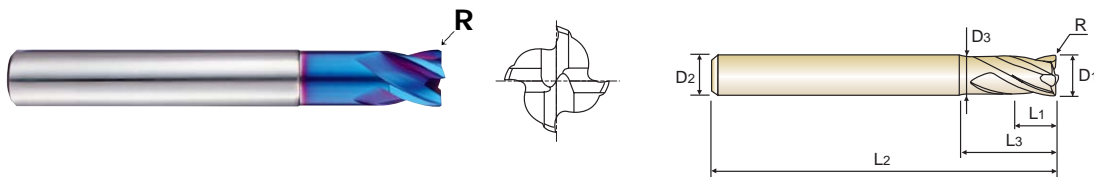
◎ : Excellent ○ : Good

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



CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS with EXTENDED NECK

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



◆ U.S.A Stock

Unit : Inch

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

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

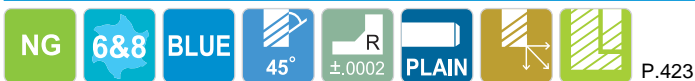
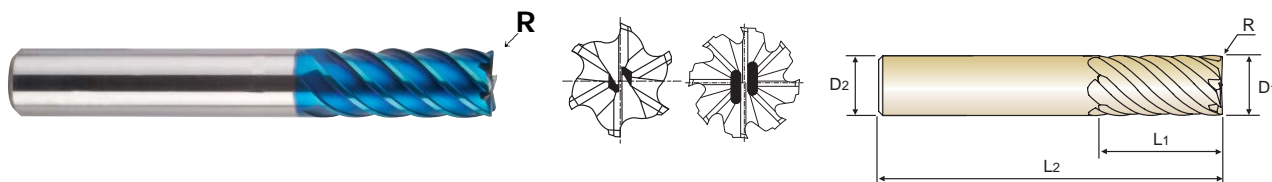
Size	Corner Radius Tolerance (Inch)	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to \varnothing 1/4	$\pm .0002$	0~--.0005	h6
over \varnothing 1/4	$\pm .0004$	0~--.0006	

◎ : Excellent ○ : Good

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

CARBIDE, 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.


◆ 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 permance will not be negatively affected

Size	Corner Radius Tolerance (Inch)	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to \varnothing 1/4	$\pm .0002$	0~- .0005	h6
over \varnothing 1/4	$\pm .0004$	0~- .0006	

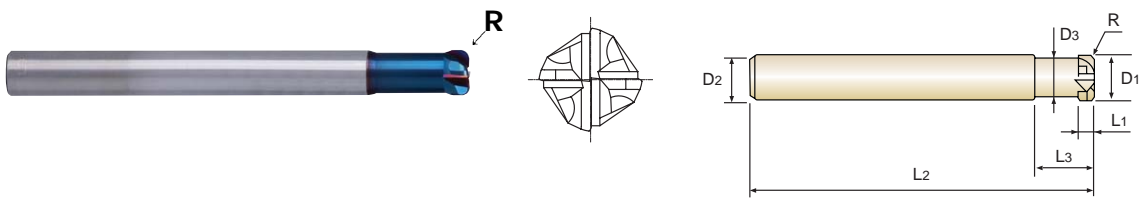
◎ : Excellent ○ : Good

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



CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS HIGH FEED

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



NG
4
BLUE
PLAIN
R ±0.005
P.424

High Feed End Mill
 ♦ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric D1	Inch					
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 pernmance will not be negatively affected

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

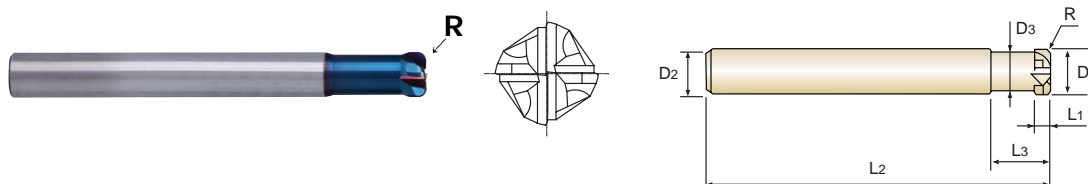
- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- 4G MILLS END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

◎ : Excellent ○ : Good

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

CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS HIGH FEED

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



High Feed End Mill

◇ Call for Availability

Unit : mm

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

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

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

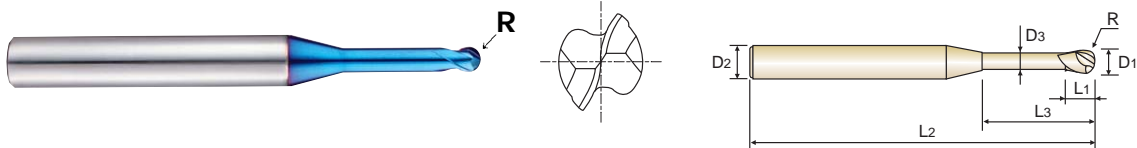
◎ : Excellent ○ : Good

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



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°
±0.005
PLAIN
P.425

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R (±0.005)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric D1	Inch					
G8A46805	RO.05	0.1	0.0039	4	0.1	0.3	45	0.085
G8A46806	RO.05	0.1	0.0039	4	0.1	0.5	45	0.085
G8A46002	RO.1	0.2	0.0079	4	0.2	0.5	45	0.17
G8A46977	RO.1	0.2	0.0079	4	0.2	1	45	0.17
G8A46958	RO.1	0.2	0.0079	4	0.2	1.5	45	0.17
G8A46003	RO.15	0.3	0.0118	4	0.3	1	45	0.27
G8A46959	RO.15	0.3	0.0118	4	0.3	2	45	0.27
G8A46986	RO.15	0.3	0.0118	4	0.3	3	45	0.27
G8A46004	RO.2	0.4	0.0157	4	0.4	1	45	0.37
G8A46960	RO.2	0.4	0.0157	4	0.4	2	45	0.37
G8A46961	RO.2	0.4	0.0157	4	0.4	3	45	0.37
G8A46981	RO.2	0.4	0.0157	4	0.4	4	45	0.37
G8A46987	RO.2	0.4	0.0157	4	0.4	5	45	0.37
G8A46005	RO.25	0.5	0.0197	4	0.4	2	45	0.45
G8A46804	RO.25	0.5	0.0197	4	0.4	2.5	45	0.45
G8A46962	RO.25	0.5	0.0197	4	0.4	4	45	0.45
G8A46963	RO.25	0.5	0.0197	4	0.4	6	45	0.45
G8A46964	RO.25	0.5	0.0197	4	0.4	8	45	0.45
G8A46957	RO.3	0.6	0.0236	4	0.5	2	45	0.55
G8A46988	RO.3	0.6	0.0236	4	0.5	3	45	0.55
G8A46915	RO.3	0.6	0.0236	4	0.5	4	45	0.55
G8A46989	RO.3	0.6	0.0236	4	0.5	5	45	0.55

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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

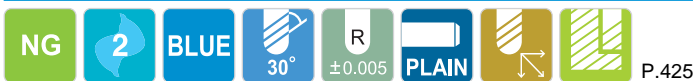
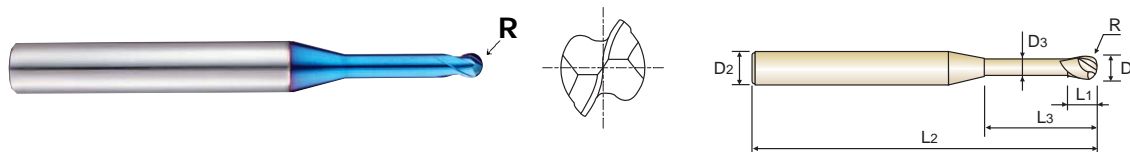
TECHNICAL DATA

◎ : Excellent ○ : Good

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

CARBIDE, 2 FLUTE BALL NOSE 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.



◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R (±0.005)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric D1	Inch					
G8A46916	RO.3	0.6	0.0236	4	0.5	6	45	0.55
G8A46917	RO.3	0.6	0.0236	4	0.5	8	45	0.55
G8A46990	RO.3	0.6	0.0236	4	0.5	10	45	0.55
G8A46918	RO.4	0.8	0.0315	4	0.6	2	45	0.75
G8A46919	RO.4	0.8	0.0315	4	0.6	4	45	0.75
G8A46008	RO.4	0.8	0.0315	4	0.6	6	45	0.75
G8A46901	RO.4	0.8	0.0315	4	0.6	8	45	0.75
G8A46965	RO.4	0.8	0.0315	4	0.6	10	45	0.75
G8A46920	RO.5	1.0	0.0394	4	0.8	3	45	0.95
G8A46921	RO.5	1.0	0.0394	4	0.8	4	45	0.95
G8A46923	RO.5	1.0	0.0394	4	0.8	5	45	0.95
G8A46010	RO.5	1.0	0.0394	4	0.8	6	45	0.95
G8A46924	RO.5	1.0	0.0394	4	0.8	7	45	0.95
G8A46902	RO.5	1.0	0.0394	4	0.8	8	45	0.95
G8A46925	RO.5	1.0	0.0394	4	0.8	9	45	0.95
G8A46903	RO.5	1.0	0.0394	4	0.8	10	45	0.95
G8A46904	RO.5	1.0	0.0394	4	0.8	12	45	0.95
G8A46926	RO.5	1.0	0.0394	4	0.8	14	50	0.95
G8A46927	RO.5	1.0	0.0394	4	0.8	16	50	0.95
G8A46966	RO.5	1.0	0.0394	4	0.8	20	55	0.95
G8A46982	RO.6	1.2	0.0472	4	1.0	6	45	1.15
G8A46012	RO.6	1.2	0.0472	4	1.0	8	45	1.15

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

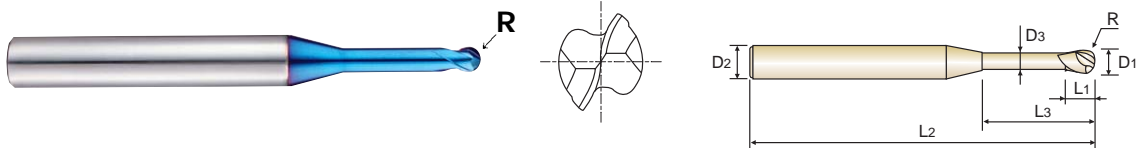
◎ : Excellent ○ : Good

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



CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING

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



NG
2
BLUE
30°
R ±0.005
PLAIN
P.425

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R (±0.005)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric	Inch					
G8A46983	R0.6	1.2	0.0472	4	1.0	10	45	1.15
G8A46905	R0.6	1.2	0.0472	4	1.0	12	45	1.15
G8A46930	R0.75	1.5	0.0472	4	1.2	6	45	1.45
G8A46015	R0.75	1.5	0.0472	4	1.2	8	45	1.45
G8A46931	R0.75	1.5	0.0472	4	1.2	10	45	1.45
G8A46906	R0.75	1.5	0.0472	4	1.2	12	45	1.45
G8A46992	R0.75	1.5	0.0472	4	1.2	14	50	1.45
G8A46907	R0.75	1.5	0.0472	4	1.2	16	50	1.45
G8A46932	R0.75	1.5	0.0472	4	1.2	20	55	1.45
G8A46939	R1.0	2.0	0.0787	4	1.6	4	45	1.95
G8A46940	R1.0	2.0	0.0787	4	1.6	6	45	1.95
G8A46020	R1.0	2.0	0.0787	4	1.6	8	45	1.95
G8A46941	R1.0	2.0	0.0787	4	1.6	10	45	1.95
G8A46942	R1.0	2.0	0.0787	4	1.6	12	50	1.95
G8A46943	R1.0	2.0	0.0787	4	1.6	14	50	1.95
G8A46909	R1.0	2.0	0.0787	4	1.6	16	50	1.95
G8A46993	R1.0	2.0	0.0787	4	1.6	18	55	1.95
G8A46910	R1.0	2.0	0.0787	4	1.6	20	55	1.95
G8A46944	R1.0	2.0	0.0787	4	1.6	22	60	1.95
G8A46945	R1.0	2.0	0.0787	4	1.6	25	60	1.95
G8A46967	R1.0	2.0	0.0787	4	1.6	30	70	1.95
G8A46948	R1.5	3.0	0.1181	6	2.4	12	50	2.85

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

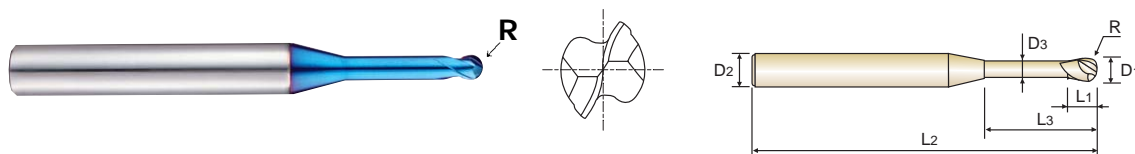
TECHNICAL DATA

◎ : Excellent ○ : Good

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

CARBIDE, 2 FLUTE BALL NOSE 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.



◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R (±0.005)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric D1	Inch					
G8A46984	R1.5	3.0	0.1181	6	2.4	14	55	2.85
G8A46030	R1.5	3.0	0.1181	6	2.4	16	55	2.85
G8A46985	R1.5	3.0	0.1181	6	2.4	18	60	2.85
G8A46911	R1.5	3.0	0.1181	6	2.4	20	60	2.85
G8A46968	R1.5	3.0	0.1181	6	2.4	25	65	2.85
G8A46969	R1.5	3.0	0.1181	6	2.4	30	70	2.85
G8A46970	R1.5	3.0	0.1181	6	2.4	35	80	2.85
G8A46950	R2.0	4.0	0.1575	6	3.2	12	60	3.85
G8A46040	R2.0	4.0	0.1575	6	3.2	16	60	3.85
G8A46912	R2.0	4.0	0.1575	6	3.2	20	65	3.85
G8A46913	R2.0	4.0	0.1575	6	3.2	25	70	3.85
G8A46971	R2.0	4.0	0.1575	6	3.2	30	70	3.85
G8A46972	R2.0	4.0	0.1575	6	3.2	35	80	3.85
G8A46973	R2.0	4.0	0.1575	6	3.2	40	90	3.85
G8A46974	R2.0	4.0	0.1575	6	3.2	45	90	3.85
G8A46975	R2.0	4.0	0.1575	6	3.2	50	100	3.85

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

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

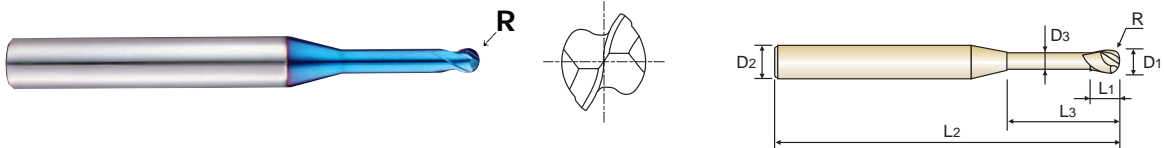
◎ : Excellent ○ : Good

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



CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING

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



NG
2
BLUE
30°
R ±0.005
PLAIN
P.425

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R (±0.005)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric D1	Inch					
G8A54005	R0.25	0.5	0.0197	6	0.5	1.5	50	0.45
G8A54901	R0.25	0.5	0.0197	6	0.5	3.3	50	0.45
G8A54006	R0.3	0.6	0.0236	6	0.6	2	50	0.55
G8A54902	R0.3	0.6	0.0236	6	0.6	4	50	0.55
G8A54008	R0.4	0.8	0.0315	6	0.8	2.5	50	0.75
G8A54903	R0.4	0.8	0.0315	6	0.8	5.5	50	0.75
G8A54010	R0.5	1.0	0.0394	6	1	3.3	50	0.95
G8A54904	R0.5	1.0	0.0394	6	1	6.7	50	0.95
G8A54905	R0.5	1.0	0.0394	6	1	12	50	0.95
G8A54012	R0.6	1.2	0.0472	6	1.2	4.4	50	1.15
G8A54906	R0.6	1.2	0.0472	6	1.2	8	50	1.15
G8A54015	R0.75	1.5	0.0591	6	1.5	5	50	1.45
G8A54907	R0.75	1.5	0.0591	6	1.5	9.7	50	1.45
G8A54908	R0.75	1.5	0.0591	6	1.5	15	50	1.45
G8A54020	R1.0	2.0	0.0787	6	2	6	50	1.95
G8A54909	R1.0	2.0	0.0787	6	2	13	50	1.95
G8A54910	R1.0	2.0	0.0787	6	2	20	60	1.95

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

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

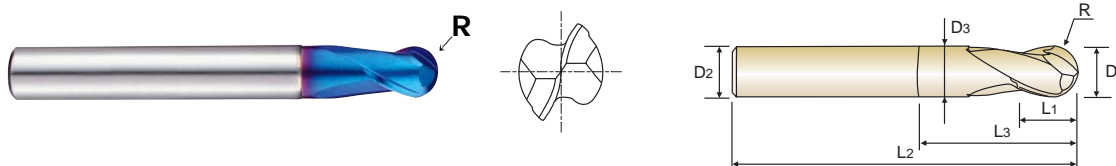
- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- 4G MILLS END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

◎ : Excellent ○ : Good

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

CARBIDE, 2 FLUTE BALL NOSE

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



NG 2 BLUE 30° R ±0.005 R ±0.010 PLAIN P.428

R0.5-R3 R3.5-R6

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric D1	Inch					
G8A28001	R0.05	0.1	0.0039	4	0.2	-	40	-
G8A28002	R0.1	0.2	0.0079	4	0.3	-	40	-
G8A28003	R0.15	0.3	0.0118	4	0.5	-	40	-
G8A28004	R0.2	0.4	0.0157	4	0.6	-	40	-
G8A28005	R0.25	0.5	0.0197	4	0.7	-	40	-
G8A28006	R0.3	0.6	0.0236	4	0.9	-	40	-
G8A28007	R0.35	0.7	0.0276	4	1.1	-	40	-
G8A28008	R0.4	0.8	0.0315	4	1.2	-	40	-
G8A28009	R0.45	0.9	0.0354	4	1.4	-	40	-
G8A28010	R0.5	1.0	0.0394	6	1.5	3	50	0.95
G8A28015	R0.75	1.5	0.0591	6	2	4	50	1.45
G8A28020	R1.0	2.0	0.0787	6	2.5	5	50	1.95
G8A28025	R1.25	2.5	0.0984	6	3	7	50	2.4
G8A28030	R1.5	3.0	0.1181	6	4	10	60	2.85
G8A28035	R1.75	3.5	0.1378	6	4.5	10	60	3.35
G8A28040	R2.0	4.0	0.1575	6	5	10	60	3.85
G8A28045	R2.25	4.5	0.1772	6	5.5	10	60	4.35
G8A28050	R2.5	5.0	0.1969	6	6	12	60	4.85
G8A28055	R2.75	5.5	0.2165	6	6.5	12	60	5.35
G8A28060	R3.0	6.0	0.2362	6	7	15	60	5.85
G8A28903	R3.0	6.0	0.2362	6	9	30	90	5.85
G8A28901	R4.0	8.0	0.3150	8	9	15	60	7.7
G8A28080	R4.0	8.0	0.3150	8	9	15	80	7.7
G8A28904	R4.0	8.0	0.3150	8	12	30	100	7.7
G8A28902	R5.0	10.0	0.3937	10	11	25	60	9.7
G8A28100	R5.0	10.0	0.3937	10	11	25	80	9.7
G8A28905	R5.0	10.0	0.3937	10	15	30	100	9.7
G8A28120	R6.0	12.0	0.4724	12	14	25	80	11.7

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

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

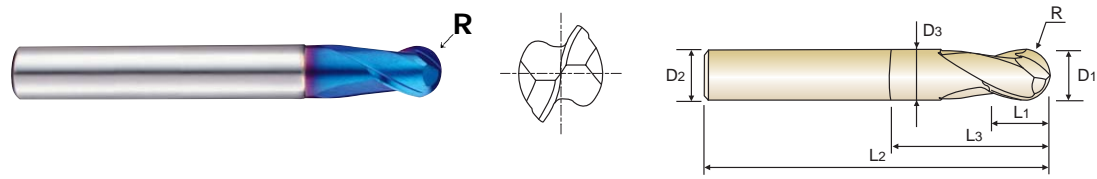
◎ : Excellent ○ : Good

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



CARBIDE, 2 FLUTE STUB LENGTH BALL NOSE with EXTENDED NECK

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



NG 2 BLUE 30° R ±0.005 R ±0.010 PLAIN P.428

R0.5-R3 R3.5-R12.5

◇ Call for Availability

Unit : mm

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

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

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

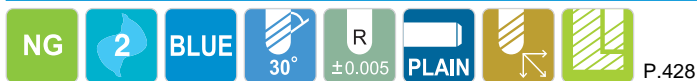
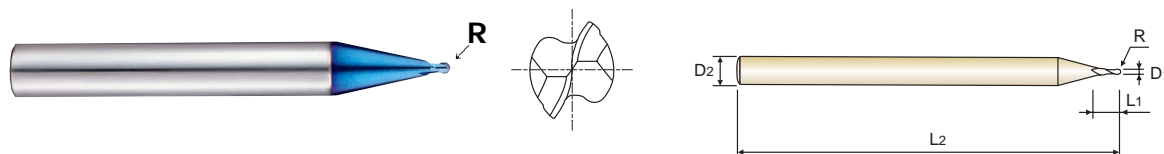
- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- 4G MILLS END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

◎ : Excellent ○ : Good

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

CARBIDE, 2 FLUTE 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.



◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R (±0.005)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Overall Length L2
		Metric D1	Inch			
G8A53004	RO.2	0.4	0.0157	6	0.4	50
G8A53005	RO.25	0.5	0.0197	6	0.5	50
G8A53006	RO.3	0.6	0.0236	6	0.6	50
G8A53008	RO.4	0.8	0.0315	6	0.8	50
G8A53010	RO.5	1.0	0.0394	6	1.0	50
G8A53012	RO.6	1.2	0.0472	6	1.2	50
G8A53015	RO.75	1.5	0.0591	6	1.5	50
G8A53020	R1.0	2.0	0.0787	6	2.0	50

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

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

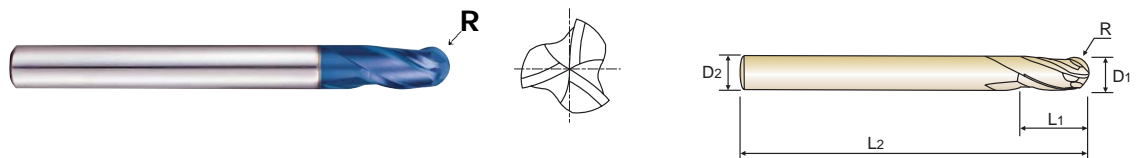
◎ : Excellent ○ : Good

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



CARBIDE, 3 FLUTE BALL NOSE

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



NG
3
BLUE
30°
R ±0.005
R ±0.010
PLAIN
P.425

R1.5-R3 R4-R10

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter		Shank Diameter D2	Length of Cut L1	Overall Length L2
		Metric D1	Inch			
G8A59030	R1.5	3.0	0.1181	6	8	60
G8A59040	R2.0	4.0	0.1575	6	8	70
G8A59050	R2.5	5.0	0.1969	6	10	80
G8A59060	R3.0	6.0	0.2362	6	12	90
G8A59080	R4.0	8.0	0.3150	8	14	100
G8A59100	R5.0	10.0	0.3937	10	18	100
G8A59120	R6.0	12.0	0.4724	12	22	110
G8A59160	R8.0	16.0	0.6299	16	30	140
G8A59200	R10.0	20.0	0.7874	20	38	160

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

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

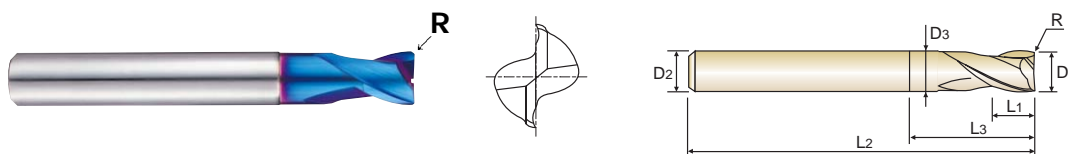
- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- 4G MILLS END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

◎ : Excellent ○ : Good

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

CARBIDE, 2 FLUTE STUB LENGTH CORNER RADIUS with EXTENDED NECK

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



NG 2 BLUE 30° R ±0.010 R ±0.015 PLAIN P.426, 427

Ø0.3-Ø6 Ø8-Ø20

◇ 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
G8A36003	-	0.3	.0118	3	0.45	-	40	-
G8A36004	-	0.4	.0157	3	0.6	-	40	-
G8A36005	RO.05	0.5	.0197	3	0.7	-	40	-
G8A36907	RO.05	0.5	.0197	4	1	-	40	-
G8A36006	RO.05	0.6	.0236	3	0.9	-	40	-
G8A36908	RO.05	0.6	.0236	4	1.2	-	40	-
G8A36909	RO.05	0.7	.0276	4	1.4	-	40	-
G8A36008	RO.05	0.8	.0315	3	1.2	-	40	-
G8A36910	RO.05	0.8	.0315	4	1.6	-	40	-
G8A36911	RO.05	0.9	.0354	4	2	-	40	-
G8A36010	RO.1	1.0	.0394	3	1.5	-	40	-
G8A36901	RO.1	1.0	.0394	4	1.5	-	40	-
G8A36903	RO.1	1.0	.0394	6	1.5	-	40	-
G8A36015	RO.1	1.5	.0591	3	2.2	-	40	-
G8A36904	RO.1	1.5	.0591	6	2.2	-	40	-
G8A36020	RO.1	2.0	.0787	3	3	6	40	1.95
G8A36902	RO.1	2.0	.0787	4	3	6	40	1.95
G8A36905	RO.1	2.0	.0787	6	3	6	40	1.95
G8A36025	RO.1	2.5	.0984	3	4	6	40	2.4
G8A36906	RO.1	2.5	.0984	6	4	6	40	2.4

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

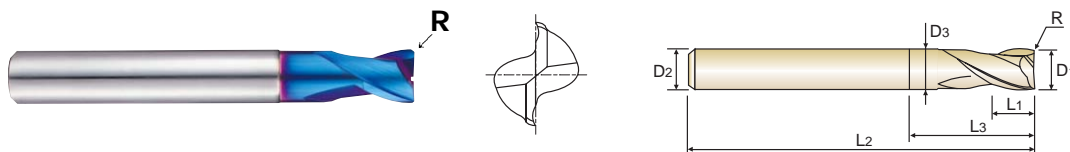
◎ : Excellent ○ : Good

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



**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.



P.426, 427

◇ Call for Availability

∅0.3-∅6 ∅8-∅20

Unit : mm

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

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

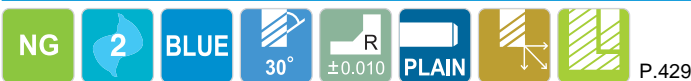
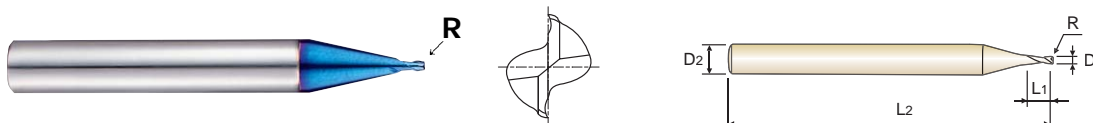
Size	Corner Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to ∅6	±0.010	0~-0.012	h6
over ∅6	±0.015	0~-0.015	

◎ : Excellent ○ : Good

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

CARBIDE, 2 FLUTE MINIATURE CORNER RADIUS

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



◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R (±0.010)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Overall Length L2
		Metric D1	Inch			
G8A50003	-	0.3	0.0118	6	0.45	50
G8A50004	-	0.4	0.0157	6	0.6	50
G8A50005	RO.05	0.5	0.0197	6	0.7	50
G8A50006	RO.05	0.6	0.0236	6	0.9	50
G8A50008	RO.05	0.8	0.0315	6	1.2	50
G8A50010	RO.1	1.0	0.0394	6	1.5	50
G8A50012	RO.1	1.2	0.0472	6	1.8	50
G8A50015	RO.15	1.5	0.0591	6	2.2	50
G8A50020	RO.15	2.0	0.0787	6	2.2	50

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

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

CBN END MILL
i-Xmill END MILL
X5070 END MILLS
4G MILLS END MILLS
X-SPEED ROUGHER END MILLS
X-POWER END MILLS
JET-POWER END MILLS
V7 Mill STEEL END MILLS
V7 Mill INOX END MILLS
ALU-POWER END MILLS
D-POWER END MILLS
STANDARD CARBIDE END MILLS
TANK-POWER END MILLS
STANDARD COBALT & HSS END MILLS
TECHNICAL DATA

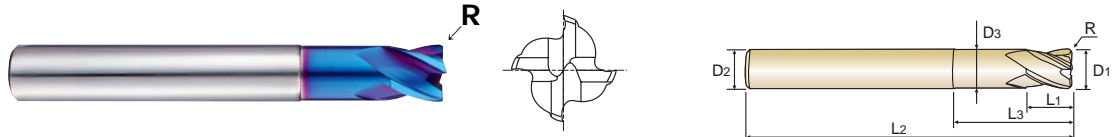
◎ : Excellent ○ : Good

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



CARBIDE, 4 FLUTE CORNER RADIUS with EXTENDED NECK

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



NG
4
BLUE
30°
R ±0.010
R ±0.015
PLAIN
P.429

Ø1-Ø6 Ø8-Ø12

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R	D1		D2	L1	L3	L2	D3
G8A47916	RO.3	3.0	0.1181	6	4	12	55	2.85
G8A47917	RO.3	3.0	0.1181	6	4	16	55	2.85
G8A47918	RO.3	3.0	0.1181	6	4	20	55	2.85
G8A47030	RO.5	3.0	0.1181	6	4	10	55	2.85
G8A47901	RO.5	3.0	0.1181	6	4	16	55	2.85
G8A47902	RO.5	3.0	0.1181	6	4	20	55	2.85
G8A47919	RO.3	4.0	0.1575	6	5	12	55	3.85
G8A47920	RO.3	4.0	0.1575	6	5	16	55	3.85
G8A47921	RO.3	4.0	0.1575	6	5	20	55	3.85
G8A47040	RO.5	4.0	0.1575	6	5	12	55	3.85
G8A47903	RO.5	4.0	0.1575	6	5	16	55	3.85
G8A47904	RO.5	4.0	0.1575	6	5	20	55	3.85
G8A47922	R1.0	4.0	0.1575	6	5	12	55	3.85
G8A47060	RO.5	6.0	0.2362	6	7	20	60	5.85
G8A47905	R1.0	6.0	0.2362	6	7	20	60	5.85
G8A47906	R1.5	6.0	0.2362	6	7	20	60	5.85
G8A47910	RO.5	8.0	0.3150	8	9	25	60	7.7
G8A47080	R1.0	8.0	0.3150	8	9	25	60	7.7
G8A47907	R1.5	8.0	0.3150	8	9	25	60	7.7
G8A47913	R2.0	8.0	0.3150	8	9	25	60	7.7
G8A47911	RO.5	10.0	0.3937	10	11	32	70	9.7
G8A47100	R1.0	10.0	0.3937	10	11	32	70	9.7
G8A47908	R1.5	10.0	0.3937	10	11	32	70	9.7
G8A47914	R2.0	10.0	0.3937	10	11	32	70	9.7
G8A47912	RO.5	12.0	0.4724	12	12	38	80	11.7
G8A47120	R1.0	12.0	0.4724	12	12	38	80	11.7
G8A47909	R1.5	12.0	0.4724	12	12	38	80	11.7
G8A47915	R2.0	12.0	0.4724	12	12	38	80	11.7

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

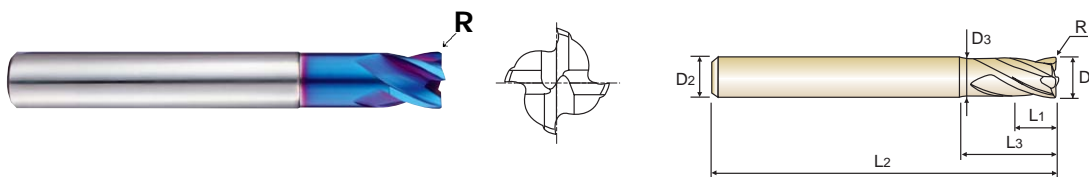
↙ The original bright blue color may discolor during use, however, the permance will not be negatively affected

◎ : Excellent ○ : Good

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

CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS with EXTENDED NECK

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



NG 4 BLUE 30° R ±0.010 R ±0.015 PLAIN P.430

Ø1-Ø6 Ø8-Ø20

◇ Call for Availability

Unit : mm

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

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

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

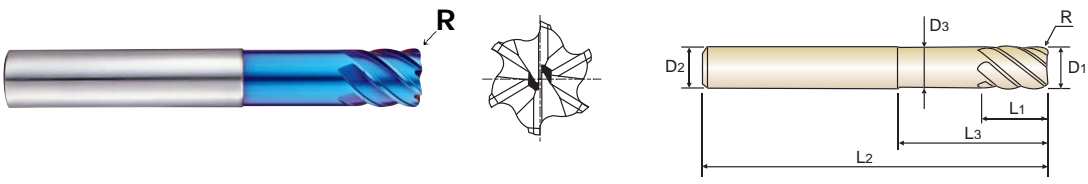
◎ : Excellent ○ : Good

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



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

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



NG
6
BLUE
45°
±0.010
±0.015
PLAIN
P.430

ø6 ø8-ø20

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric D1	Inch					
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 permannence will not be negatively affected

Size	Corner Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to ø6	±0.010	0~-0.02	h6
over ø6	±0.015	(*Extra Long Type: 0~-0.03)	

◎ : Excellent ○ : Good

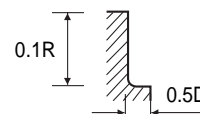
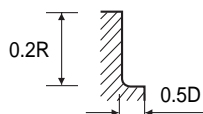
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
		○	○	◎	◎							

CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS HIGH FEED

G826 SERIES

■ NORMAL SPEED

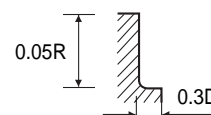
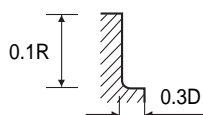
MATERIAL	HARDENED STEELS									
	~ HRC40		HRC40 ~ HRC50		HRC50 ~ HRC55		HRC55 ~ HRC60		HRC60 ~ HRC65	
HARDNESS DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8 × R1/32	9000	245	6500	155	4300	100	2700	43	1800	23
3/16 × R1/16	7500	310	5100	200	3800	140	2350	70	1650	30
1/4 × R1/16	5500	310	3900	200	2800	140	1750	70	1250	30
5/16 × R3/32	4500	310	3100	200	2200	140	1400	70	1000	30
3/8 × R3/32	3800	310	2600	200	1850	140	1170	70	840	30
1/2 × R1/8	2800	310	1950	200	1400	140	880	70	630	30



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

■ HIGH SPEED

MATERIAL	HARDENED STEELS									
	~ HRC40		HRC40 ~ HRC50		HRC50 ~ HRC55		HRC55 ~ HRC60		HRC60 ~ HRC65	
HARDNESS DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8 × R1/32	21000	600	16000	380	12000	300	9000	170	6500	92
3/16 × R1/16	16500	720	13500	550	11500	420	8000	250	5700	150
1/4 × R1/16	12500	720	10000	550	8500	420	6000	250	4300	150
5/16 × R3/32	10000	720	8000	550	6800	420	4800	250	3400	150
3/8 × R3/32	8500	720	6700	550	5700	420	4000	250	2850	150
1/2 × R1/8	6500	720	5000	550	4300	420	3000	250	2150	150



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

CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

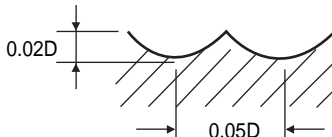
TECHNICAL
DATA



CARBIDE, 2 FLUTE BALL NOSE with EXTENDED NECK

G8A43 SERIES

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS										
	HRc 30 ~ HRc 40		HRc 40 ~ HRc 50		HRc 50 ~ HRc 55		HRc 55 ~ HRc 60		HRc 60 ~ HRc 65		HRc 65 ~ HRc 70		
	HARDNESS	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1/64 × 1/32	50000	189.0	50000	165.4	45000	149.6	40000	118.1	35000	102.4	30000	90.6	
R1/32 × 1/16	49700	224.4	47800	189.0	40000	157.5	35000	124.0	32000	110.2	28500	90.6	
R3/64 × 3/32	49700	224.4	47800	189.0	40000	157.5	35000	124.0	32000	110.2	28500	90.6	
R1/16 × 1/8	33100	236.2	31800	208.7	26500	157.5	23500	124.0	21000	110.2	19000	90.6	
R3/32 × 3/16	18600	228.4	17800	192.9	15000	147.6	13500	120.1	11500	100.4	10500	82.7	
R1/8 × 1/14	13900	190.9	13400	161.4	11000	122.1	10000	98.4	8800	84.7	8000	68.9	
R5/32 × 5/16	11100	165.4	10700	137.8	9000	106.3	8000	84.7	7000	72.8	6500	61.0	
R3/16 × 3/8	9300	145.7	8900	122.1	7500	94.5	6600	74.8	5800	65.0	5300	54.3	
R1/4 × 1/2	6950	116.1	6680	98.4	5600	74.8	5000	61.0	4400	49.2	4000	41.3	



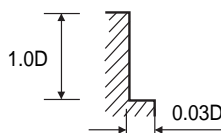
※ The Feed, in long & extra long types, should be reduced by around 50%.

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

CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS

G850 SERIES

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS									
	HRc 30 ~ HRc 40		HRc 40 ~ HRc 50		HRc 50 ~ HRc 55		HRc 55 ~ HRc 60		HRc 60 ~ HRc 65		HRc 65 ~ HRc 70	
HARDNESS DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/16	41950	69.4	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

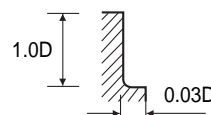
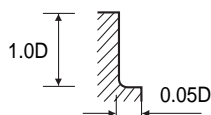


RPM = rev./min.
FEED = inch/min.

CARBIDE, 6&8 FLUTE 45° HELIX CORNER RADIUS

G851 SERIES

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS									
	HRc 30 ~ HRc 40		HRc 40 ~ HRc 50		HRc 50 ~ HRc 55		HRc 55 ~ HRc 60		HRc 60 ~ HRc 65		HRc 65 ~ HRc 70	
HARDNESS DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	23450	199.2	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.

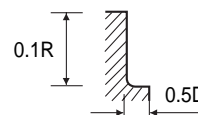
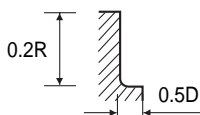


CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS HIGH FEED

G859, G854 SERIES

■ NORMAL SPEED

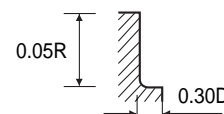
MATERIAL		HARDENED STEELS									
		~ HRC40		HRC40 ~ HRC50		HRC50 ~ HRC55		HRC55 ~ HRC60		HRC60 ~ HRC65	
DIAMETER		RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0	× R0.5	13500	255.9	9550	149.6	5500	86.6	3200	39.4	2200	21.7
3.0	× R0.5	9550	255.9	6900	163.4	4550	108.3	2850	45.3	1900	24.0
4.0	× R0.5	7950	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		HARDENED STEELS									
		~ HRC40		HRC40 ~ HRC50		HRC50 ~ HRC55		HRC55 ~ HRC60		HRC60 ~ HRC65	
DIAMETER		RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0	× R0.5	29000	590.6	22000	385.8	15000	309.1	11000	175.2	8700	96.5
3.0	× R0.5	22000	629.9	17000	393.7	12500	315.0	9500	181.1	6900	98.4
4.0	× R0.5	17000	689.0	13000	472.4	11000	362.2	8000	216.5	5600	114.2
5.0	× R0.5	15000	708.7	11000	192.1	10000	393.7	7000	236.2	4900	122.1
6.0	× R0.5	13500	728.4	10500	543.3	9000	433.1	6400	252.0	4500	141.7
6.0	× R1.0	13500	728.4	10500	543.3	9000	433.1	6400	252.0	4500	141.7
8.0	× R1.0	10000	728.4	8000	551.2	6800	433.1	4800	263.8	3400	161.4
8.0	× R2.0	10000	728.4	8000	551.2	6800	433.1	4800	263.8	3400	161.4
10.0	× R1.0	8000	728.4	6400	551.2	5400	433.1	3800	267.7	2700	149.6
10.0	× R2.0	8000	728.4	6400	551.2	5400	433.1	3800	267.7	2700	149.6
12.0	× R2.0	6600	728.4	5300	551.2	4500	433.1	3200	275.6	2250	141.7
12.0	× R3.0	6600	728.4	5300	551.2	4500	433.1	3200	275.6	2250	141.7
16.0	× R3.0	5000	728.4	3900	551.2	3300	433.1	2400	275.6	1650	129.9

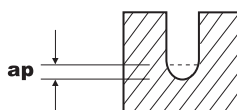


RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING

G8A46, G8A54 SERIES

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS						COPPER		
	HRc 30 ~ HRc 45			HRc 45 ~ HRc 55			HRc 55 ~ HRc 65					
	DIAMETER	RPM	FEED	ap (mm)	RPM	FEED	ap (mm)	RPM	FEED	ap (mm)	RPM	FEED
RO.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
RO.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
RO.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
RO.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
RO.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
RO.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
RO.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
RO.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
RO.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

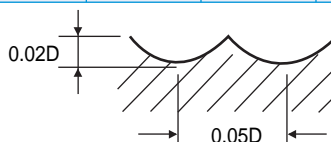


RPM = rev./min.
FEED = inch/min.

CARBIDE, 3 FLUTE BALL NOSE

G8A59 SERIES

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS							
	HRc 30 ~ HRc 45		HRc 45 ~ HRc 55		HRc 55 ~ HRc 60		HRc 60 ~ HRc 65		HRc 65 ~ HRc 70	
	DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM
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



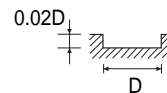
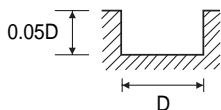
RPM = rev./min.
FEED = inch/min.



CARBIDE, 2 FLUTE - SLOTTING

G8A36 SERIES

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS									
	HRc 30 ~ HRc 40		HRc 40 ~ HRc 50		HRc 50 ~ HRc 55		HRc 55 ~ HRc 60		HRc 60 ~ HRc 65		HRc 65 ~ HRc 70	
HARDNESS	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
DIAMETER												
0.2	50000	5.1	45000	4.5	40000	3.7	33000	2.4	33000	1.8	26400	1.2
0.3	50000	7.5	45000	5.5	40000	4.5	33000	2.8	25000	2.0	20000	1.4
0.4	50000	9.3	45000	7.1	40000	5.5	33000	3.5	25000	2.2	20000	1.6
0.5	50000	14.6	45000	11.0	40000	8.7	33000	5.5	25000	3.4	20000	2.4
0.6	50000	18.5	45000	14.2	40000	11.2	30000	6.3	25000	4.1	20000	3.0
0.8	50000	23.6	40000	17.3	30000	11.6	25000	7.3	19000	4.3	15200	3.2
0.9	49000	25.8	39000	20.5	27800	13.0	22700	8.1	17500	4.9	14000	3.5
1.0	48000	29.5	38000	22.4	25500	14.2	20500	8.5	16000	5.3	12500	3.4
2.0	33300	33.5	26000	26.8	17500	16.5	14500	10.2	11000	6.3	9500	4.5
3.0	21800	33.5	17300	26.8	11500	16.5	9500	10.2	7500	6.3	6400	4.5
4.0	16700	34.7	13200	27.6	8800	17.3	7200	10.6	5600	6.7	4750	4.7
5.0	15700	39.4	12500	31.7	8300	19.7	6400	11.2	5100	7.1	4450	5.2
6.0	13100	37.4	10350	30.3	6900	18.9	5300	11.0	4200	7.1	3700	5.1
8.0	9880	36.6	7800	28.4	5200	17.5	4000	10.0	3200	6.5	2800	4.7
10.0	7800	33.5	6150	26.8	4100	16.3	3200	9.5	2550	6.1	2200	4.4
12.0	6650	33.5	5250	26.8	3500	16.3	2650	9.5	2100	6.1	1860	4.4
16.0	4900	28.7	3900	22.8	2600	14.4	2000	8.3	1600	5.3	1400	3.7
20.0	3900	26.0	3100	20.7	2050	14.4	1600	7.7	1300	4.9	1100	3.4

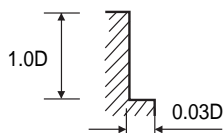


RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE - SIDE CUTTING

G8A36 SERIES

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS									
	HARDNESS		HRc 40 ~ HRc 50		HRc 50 ~ HRc 55		HRc 55 ~ HRc 60		HRc 60 ~ HRc 65		HRc 65 ~ HRc 70	
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.

CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

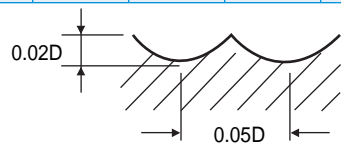
TECHNICAL
DATA



CARBIDE, 2 FLUTE BALL NOSE

G8A38, G8A28, G8A53 SERIES

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS									
	HRc 30 ~ HRc 40		HRc 40 ~ HRc 50		HRc 50 ~ HRc 55		HRc 55 ~ HRc 60		HRc 60 ~ HRc 65		HRc 65 ~ HRc 70	
	HARDNESS	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM
R0.1 × 0.2	50000	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

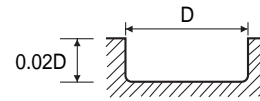
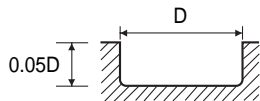


RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE MINIATURE CORNER RADIUS - SLOTTING

G8A50 SERIES

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS							
	HRc 30 ~ HRc 40		HRc 40 ~ HRc 50		HRc 50 ~ HRc 55		HRc 55 ~ HRc 60		HRc 60 ~ HRc 65	
HARDNESS	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
DIAMETER										
0.3	50000	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

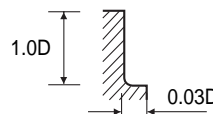


RPM = rev./min.
FEED = inch/min.

CARBIDE, 4 FLUTE CORNER RADIUS

G8A47 SERIES

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS									
	HRc 30 ~ HRc 40		HRc 40 ~ HRc 50		HRc 50 ~ HRc 55		HRc 55 ~ HRc 60		HRc 60 ~ HRc 65		HRc 65 ~ HRc 70	
HARDNESS	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
DIAMETER												
1.0	48000	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.



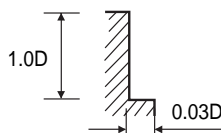
**X5070
END MILLS**

RECOMMENDED CUTTING CONDITIONS

**CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS
with EXTENDED NECK**

G8A37 SERIES

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS									
	HRC 30 ~ HRC 40		HRC 40 ~ HRC 50		HRC 50 ~ HRC 55		HRC 55 ~ HRC 60		HRC 60 ~ HRC 65		HRC 65 ~ HRC 70	
HARDNESS	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
DIAMETER												
1.0	48000	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

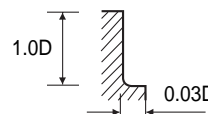
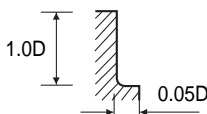


RPM = rev./min.
FEED = inch/min.

CARBIDE, 6 FLUTE 45° HELIX CORNER RADIUS

G8A39 SERIES

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS									
	HRC 30 ~ HRC 40		HRC 40 ~ HRC 50		HRC 50 ~ HRC 55		HRC 55 ~ HRC 60		HRC 60 ~ HRC 65		HRC 65 ~ HRC 70	
HARDNESS	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
DIAMETER												
6.0	24800	210.6	23500	192.9	16000	192.9	13500	129.9	10500	82.7	8000	57.1
8.0	20000	216.5	19000	196.9	12000	181.1	10000	122.1	8000	78.7	6000	55.1
10.0	16000	192.9	15500	177.2	9500	161.4	8000	114.2	6400	70.9	4800	51.2
12.0	13000	177.2	12500	161.4	8000	149.6	6600	98.4	5300	63.0	4000	45.3
16.0	10000	157.5	9700	145.7	6000	133.9	5000	90.6	4000	49.2	3000	34.3
20.0	8000	131.9	7800	133.9	4800	126.0	4000	82.7	3200	40.2	2400	27.2



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

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

CARBIDE



Being the best through innovation



4G MILLS

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

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
GMF15		CARBIDE, 2FLUTE BALL NOSE	R.002	R3/8	4
GMF16		CARBIDE, 2FLUTE BALL NOSE WITH NECK	R.004	R1/4	6
GMF17		CARBIDE, 4FLUTE BALL NOSE	R1/16	R1/4	9
GMF18		CARBIDE, 2FLUTE CORNER RADIUS	D3/64	D3/4	10
GMF19		CARBIDE, 2FLUTE CORNER RADIUS WITH NECK	D.008	D3/4	12
GMF20		CARBIDE, 4FLUTE CORNER RADIUS	D3/64	D3/4	17
GMF21		CARBIDE, 4FLUTE CORNER RADIUS WITH NECK	D3/64	D3/4	19
GMF22		CARBIDE, 2FLUTE WITH NECK	D.008	D1/2	23
GMF23		CARBIDE, 2FLUTE	D.004	D3/4	26
GMF24		CARBIDE, 2FLUTE LONG	D3/64	D3/4	29
GMF25		CARBIDE, 4FLUTE	D3/64	D3/4	31
GMF26		CARBIDE, 4FLUTE	D3/64	D3/4	32
GMF27		CARBIDE, 4FLUTE LONG	D3/64	D1	33
GMF28		CARBIDE, 4FLUTE WITH NECK	D3/64	D1/2	35
GMF29		CARBIDE, 6FLUTE 45° HELIX	D1/4	D3/4	36
RECOMMENDED CUTTING CONDITIONS					37

4G MILLS SOLID CARBIDE END MILLS

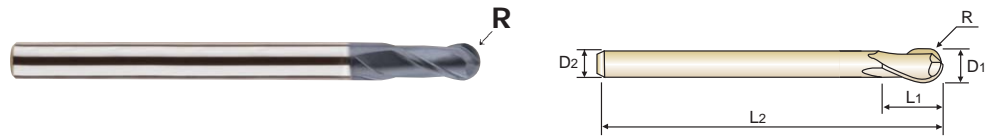
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			HRc40~45	HRc45~55								
-HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○				○				
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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 HM
2
30°
R ±.0002
R ±.0004
PLAIN
P.37

R ≤ 1/8 R > 1/8

Unit : inch

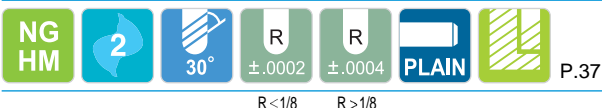
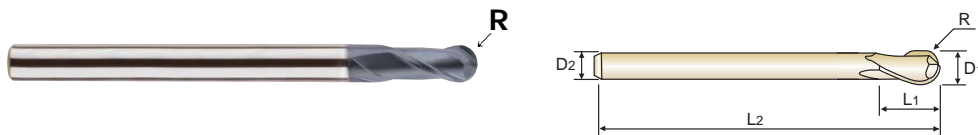
EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D1	D2	L1	L2
GMF15901	R.002	.004	3/16	.008	1-1/2
GMF15902	R.004	.008	3/16	1/64	1-1/2
GMF15903	R.006	.012	3/16	1/32	1-1/2
GMF15904	R.075	.015	3/16	1/32	1-1/2
GMF15905	R.010	.020	3/16	3/64	1-1/2
GMF15906	R.012	.024	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

◎ : Excellent ○ : Good

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

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



R ≤ 1/8 R > 1/8

Unit : inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D1	D2	L1	L2
GMF15013	R.102	13/64	1/4	5/16	2-3/8
GMF15927	R.102	13/64	1/4	3/8	3-1/8
GMF15016	R1/8	1/4	1/4	3/8	2
GMF15928	R1/8	1/4	1/4	3/8	3-1/8
GMF15929	R1/8	1/4	1/4	1/2	3-1/2
GMF15930	R1/8	1/4	1/4	1/2	5
GMF15018	R9/64	9/32	5/16	9/16	3-1/2
GMF15020	R5/32	5/16	5/16	1/2	2
GMF15931	R5/32	5/16	5/16	1/2	3-1/2
GMF15932	R5/32	5/16	5/16	9/16	4
GMF15933	R5/32	5/16	5/16	9/16	6
GMF15024	R3/16	3/8	3/8	5/8	2-3/8
GMF15934	R3/16	3/8	3/8	5/8	3-1/2
GMF15935	R3/16	3/8	3/8	11/16	4
GMF15936	R3/16	3/8	3/8	11/16	5
GMF15937	R3/16	3/8	3/8	11/16	6
GMF15938	R3/16	3/8	3/8	11/16	7
GMF15032	R1/4	1/2	1/2	11/16	3-1/8
GMF15939	R1/4	1/2	1/2	11/16	4
GMF15940	R1/4	1/2	1/2	7/8	4-1/4
GMF15941	R1/4	1/2	1/2	7/8	6
GMF15942	R1/4	1/2	1/2	7/8	8
GMF15036	R9/32	9/16	9/16	1	4
GMF15040	R5/16	5/8	5/8	1	4
GMF15943	R5/16	5/8	5/8	1-3/16	6
GMF15048	R3/8	3/4	3/4	1-3/16	4
GMF15944	R3/8	3/4	3/4	1-1/2	6

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

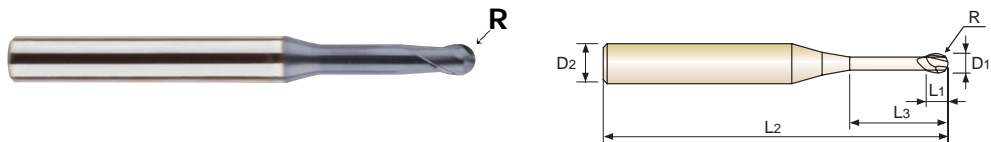
◎ : Excellent ○ : Good

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



CARBIDE, 2 FLUTE LONG NECK 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 HM
2
30°
R ±.0002
R ±.0004
PLAIN
P.38~39

R ≤ 1/8 R > 1/8

Unit : inch

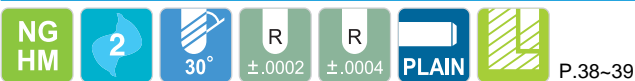
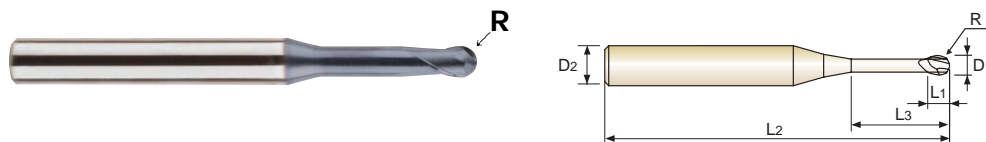
EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length
	R	D1	D2	L1	L3	L2
GMF16901	R.004	.008	3/16	.008	1/64	1-1/2
GMF16902	R.004	.008	3/16	.008	3/64	1-1/2
GMF16903	R.006	.012	3/16	.010	3/64	1-1/2
GMF16904	R.006	.012	3/16	.010	5/64	1-1/2
GMF16905	R.006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

◎ : Excellent ○ : Good

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

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



R ≤ 1/8 R > 1/8

Unit : inch

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

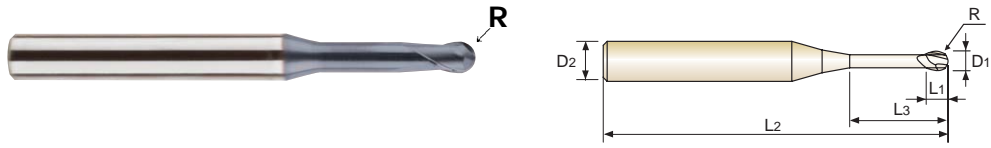
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	HB225~325	HRC30~40	HRC40~45	HRC45~55	HRC55~70							
○	◎	◎	◎	○				○				



CARBIDE, 2 FLUTE LONG NECK 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



R ≤ 1/8 R > 1/8

Unit : inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length
	R	D1	D2	L1	L3	L2
GMF16959	R1/16	1/8	1/4	1/8	1/2	2
GMF16960	R1/16	1/8	1/4	1/8	9/16	2-3/8
GMF16961	R1/16	1/8	1/4	1/8	5/8	2-3/8
GMF16962	R1/16	1/8	1/4	1/8	11/16	2-3/8
GMF16963	R1/16	1/8	1/4	1/8	3/4	2-3/8
GMF16964	R1/16	1/8	1/4	1/8	1	2-3/4
GMF16965	R1/16	1/8	1/4	1/8	1-3/16	2-3/4
GMF16966	R1/16	1/8	1/4	1/8	1-3/8	2-3/4
GMF16012	R3/32	3/16	1/4	5/32	3/8	2
GMF16967	R3/32	3/16	1/4	5/32	1/2	2
GMF16968	R3/32	3/16	1/4	5/32	9/16	2-3/8
GMF16969	R3/32	3/16	1/4	5/32	5/8	2-3/8
GMF16970	R3/32	3/16	1/4	5/32	11/16	2-3/8
GMF16971	R3/32	3/16	1/4	5/32	3/4	2-3/8
GMF16972	R3/32	3/16	1/4	5/32	1	2-3/4
GMF16973	R3/32	3/16	1/4	5/32	1-3/16	2-3/4
GMF16974	R3/32	3/16	1/4	5/32	1-3/8	2-3/4
GMF16975	R3/32	3/16	1/4	5/32	1-1/2	3-1/8
GMF16013	R.102	13/64	1/4	1/4	1-3/16	2-3/4
GMF16016	R1/8	1/4	1/4	5/16	3/4	2-3/8
GMF16976	R1/8	1/4	1/4	5/16	1-3/16	2-3/8
GMF16020	R5/32	5/16	5/16	3/8	1	2-3/4
GMF16977	R5/32	5/16	5/16	9/16	1-3/8	4
GMF16024	R3/16	3/8	3/8	1/2	1-3/16	3
GMF16978	R3/16	3/8	3/8	11/16	1-3/16	4
GMF16979	R3/16	3/8	3/8	11/16	1-1/2	4
GMF16032	R1/4	1/2	1/2	9/16	1-1/4	3-1/8
GMF16980	R1/4	1/2	1/2	7/8	1-1/4	4-1/4

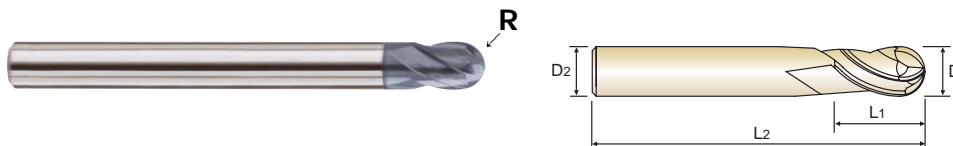
Size	Radius Tolerance (Inch)	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to \varnothing 1/4	$\pm .0002$	0~- .0005	h6
over \varnothing 1/4	$\pm .0004$	0~- .0006	

◎ : Excellent ○ : Good

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

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 HM
4
30°
R ±.0002
R ±.0004
PLAIN
P.40

R ≤ 1/8 R > 1/8

Unit : inch

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

Size	Radius Tolerance (Inch)	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to \varnothing 1/4	± .0002	0 ~ -.0008	h6
over \varnothing 1/4	± .0004		

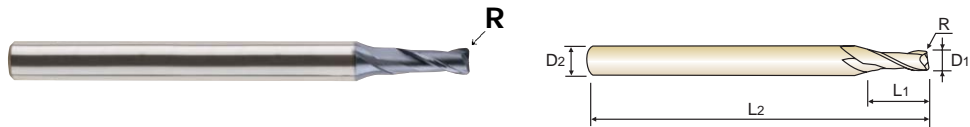
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	HB225~325	HRC30~40	HRC40~45	HRC45~55	HRC55~70								
○	◎	◎	◎	○					○				



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 HM 2 30° ±.0004 ±.0006 PLAIN P.40

D ≤ 1/4 D > 1/4

Unit : inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D1	D2	L1	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

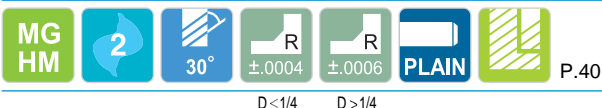
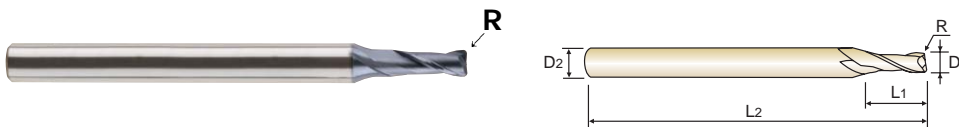
- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- 4G MILLS END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

◎ : Excellent ○ : Good

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

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.



D ≤ 1/4 D > 1/4

Unit : inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D1	D2	L1	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

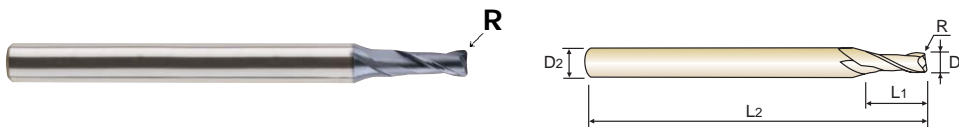
◎ : Excellent ○ : Good

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



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.



D ≤ 1/4 D > 1/4

Unit : inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D1	D2	L1	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

CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

TANK-POWER
END MILLS

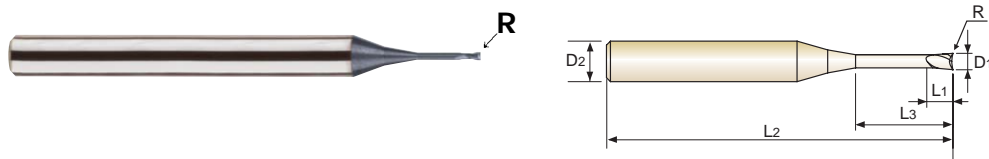
STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA

Size	Radius Tolerance (Inch)	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to \varnothing 1/4	$\pm .0004$	0~- .0005	h6
over \varnothing 1/4	$\pm .0006$	0~- .0006	

CARBIDE, 2 FLUTE LONG NECK 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.



D ≤ 1/4 D > 1/4

Unit : inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length
	R	D1	D2	L1	L3	L2
GMF19901	R.001	.008	3/16	.010	3/64	1-1/2
GMF19902	R.002	.008	3/16	.010	3/64	1-1/2
GMF19903	R.001	.012	3/16	1/64	3/64	1-1/2
GMF19904	R.001	.012	3/16	1/64	5/64	1-1/2
GMF19905	R.002	.012	3/16	1/64	3/64	1-1/2
GMF19906	R.002	.012	3/16	1/64	5/64	1-1/2
GMF19907	R.002	.015	3/16	1/32	3/64	1-1/2
GMF19908	R.002	.015	3/16	1/32	1/16	1-1/2
GMF19909	R.002	.015	3/16	1/32	5/64	1-1/2
GMF19910	R.002	.015	3/16	1/32	3/32	1-1/2
GMF19911	R.004	.015	3/16	1/32	3/64	1-1/2
GMF19912	R.004	.015	3/16	1/32	5/64	1-1/2
GMF19913	R.002	.020	3/16	1/32	3/64	1-3/4
GMF19914	R.002	.020	3/16	1/32	1/16	1-3/4
GMF19915	R.002	.020	3/16	1/32	5/64	1-3/4
GMF19916	R.002	.020	3/16	1/32	5/32	1-3/4
GMF19917	R.004	.020	3/16	1/32	5/64	1-3/4
GMF19918	R.004	.020	3/16	1/32	1/8	1-3/4
GMF19919	R.002	.024	3/16	1/32	1/8	1-3/4
GMF19920	R.002	.024	3/16	1/32	1/4	1-3/4
GMF19921	R.004	.024	3/16	1/32	5/64	1-3/4
GMF19922	R.004	.024	3/16	1/32	5/32	1-3/4
GMF19923	R.004	.024	3/16	1/32	1/4	1-3/4
GMF19924	R.008	.024	3/16	1/32	5/64	1-3/4
GMF19925	R.008	.024	3/16	1/32	5/32	1-3/4
GMF19926	R.008	.024	3/16	1/32	1/4	1-3/4
GMF19927	R.002	.031	3/16	3/64	5/64	1-3/4
GMF19928	R.002	.031	3/16	3/64	5/32	1-3/4
GMF19929	R.002	.031	3/16	3/64	1/4	1-3/4
GMF19930	R.004	.031	3/16	3/64	5/64	1-3/4
GMF19931	R.004	.031	3/16	3/64	5/32	1-3/4
GMF19932	R.004	.031	3/16	3/64	1/4	1-3/4

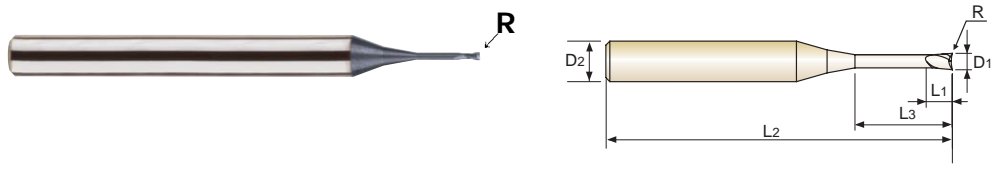
◎ : Excellent ○ : Good

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



CARBIDE, 2 FLUTE LONG NECK 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.



D ≤ 1/4 D > 1/4

Unit : inch

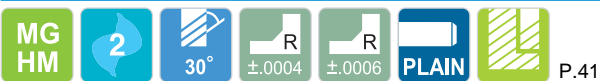
EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length
	R	D1	D2	L1	L3	L2
GMF19933	R.004	.031	3/16	3/64	5/16	1-3/4
GMF19934	R.008	.031	3/16	3/64	5/32	1-3/4
GMF19935	R.008	.031	3/16	3/64	1/4	1-3/4
GMF19936	R.008	.031	3/16	3/64	5/16	1-3/4
GMF19003	R.002	3/64	3/16	1/16	1/8	2
GMF19937	R.002	3/64	3/16	1/16	5/32	2
GMF19938	R.002	3/64	3/16	1/16	1/4	2
GMF19939	R.004	3/64	3/16	1/16	1/8	2
GMF19940	R.004	3/64	3/16	1/16	5/32	2
GMF19941	R.004	3/64	3/16	1/16	1/4	2
GMF19942	R.004	3/64	3/16	1/16	5/16	2
GMF19943	R.004	3/64	3/16	1/16	3/8	2
GMF19944	R.008	3/64	3/16	1/16	1/8	2
GMF19945	R.008	3/64	3/16	1/16	5/32	2
GMF19946	R.008	3/64	3/16	1/16	1/4	2
GMF19947	R.008	3/64	3/16	1/16	5/16	2
GMF19948	R.008	3/64	3/16	1/16	3/8	2
GMF19949	R.012	3/64	3/16	1/16	5/32	2
GMF19950	R.012	3/64	3/16	1/16	1/4	2
GMF19951	R.012	3/64	3/16	1/16	5/16	2
GMF19952	R.012	3/64	3/16	1/16	3/8	2
GMF19004	R.002	1/16	3/16	3/32	5/32	2
GMF19953	R.002	1/16	3/16	3/32	1/4	2
GMF19954	R.002	1/16	3/16	3/32	5/16	2
GMF19955	R.004	1/16	3/16	3/32	5/32	2
GMF19956	R.004	1/16	3/16	3/32	1/4	2
GMF19957	R.004	1/16	3/16	3/32	5/16	2
GMF19958	R.008	1/16	3/16	3/32	5/32	2
GMF19959	R.008	1/16	3/16	3/32	1/4	2
GMF19960	R.008	1/16	3/16	3/32	5/16	2
GMF19961	R.008	1/16	3/16	3/32	3/8	2
GMF19962	R.008	1/16	3/16	3/32	1/2	2

◎ : Excellent ○ : Good

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

CARBIDE, 2 FLUTE LONG NECK 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.



D ≤ 1/4 D > 1/4

Unit : inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length
	R	D1	D2	L1	L3	L2
GMF19963	R.012	1/16	3/16	3/32	5/32	2
GMF19964	R.012	1/16	3/16	3/32	1/4	2
GMF19965	R.012	1/16	3/16	3/32	5/16	2
GMF19966	R.012	1/16	3/16	3/32	3/8	2
GMF19967	R.012	1/16	3/16	3/32	1/2	2
GMF19005	R.004	5/64	3/16	1/8	1/4	2
GMF19968	R.004	5/64	3/16	1/8	5/16	2
GMF19969	R.004	5/64	3/16	1/8	3/8	2
GMF19970	R.004	5/64	3/16	1/8	1/2	2
GMF19971	R.008	5/64	3/16	1/8	1/4	2
GMF19972	R.008	5/64	3/16	1/8	5/16	2
GMF19973	R.008	5/64	3/16	1/8	3/8	2
GMF19974	R.008	5/64	3/16	1/8	1/2	2
GMF19975	R.008	5/64	3/16	1/8	5/8	2
GMF19976	R.012	5/64	3/16	1/8	1/4	2
GMF19977	R.012	5/64	3/16	1/8	5/16	2
GMF19978	R.012	5/64	3/16	1/8	3/8	2
GMF19979	R.012	5/64	3/16	1/8	1/2	2
GMF19980	R.012	5/64	3/16	1/8	5/8	2
GMF19981	R.020	5/64	3/16	1/8	1/4	2
GMF19982	R.020	5/64	3/16	1/8	5/16	2
GMF19983	R.020	5/64	3/16	1/8	3/8	2
GMF19984	R.020	5/64	3/16	1/8	1/2	2
GMF19985	R.020	5/64	3/16	1/8	9/16	2
GMF19008	R.004	1/8	1/4	3/16	3/8	2
GMF19986	R.004	1/8	1/4	3/16	1/2	2
GMF19987	R.004	1/8	1/4	3/16	5/8	2-3/8
GMF19988	R.008	1/8	1/4	3/16	5/16	2
GMF19989	R.008	1/8	1/4	3/16	3/8	2
GMF19990	R.008	1/8	1/4	3/16	1/2	2
GMF19991	R.008	1/8	1/4	3/16	5/8	2-3/8
GMF19992	R.008	1/8	1/4	3/16	3/4	2-3/8

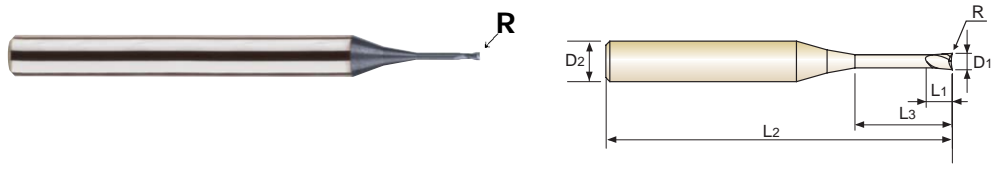
◎ : Excellent ○ : Good

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



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MG HM
2
30°
R ±.0004
R ±.0006
PLAIN
P.41

D ≤ 1/4 D > 1/4

Unit : inch

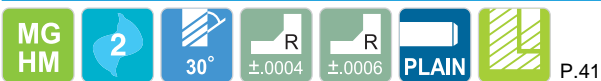
EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length
	R	D1	D2	L1	L3	L2
GMF19993	R.008	1/8	1/4	3/16	1	2-3/4
GMF19994	R.012	1/8	1/4	3/16	5/16	2
GMF19995	R.012	1/8	1/4	3/16	3/8	2
GMF19996	R.012	1/8	1/4	3/16	1/2	2
GMF19997	R.012	1/8	1/4	3/16	5/8	2-3/8
GMF19998	R.012	1/8	1/4	3/16	3/4	2-3/8
GMF19999	R.020	1/8	1/4	3/16	5/16	2
GMF19801	R.020	1/8	1/4	3/16	3/8	2
GMF19802	R.020	1/8	1/4	3/16	1/2	2
GMF19803	R.020	1/8	1/4	3/16	5/8	2-3/8
GMF19804	R.020	1/8	1/4	3/16	3/4	2-3/8
GMF19805	R.020	1/8	1/4	3/16	1	2-3/4
GMF19845	R.030	1/8	1/4	3/16	3/8	2
GMF19846	R.030	1/8	1/4	3/16	1/2	2
GMF19847	R.030	1/8	1/4	3/16	5/16	2
GMF19848	R.030	1/8	1/4	3/16	3/4	2-3/8
GMF19849	R.030	1/8	1/4	3/16	5/8	2-3/8
GMF19850	R.030	1/8	1/4	3/16	1	2-3/4
GMF19806	R.040	1/8	1/4	3/16	5/16	2
GMF19807	R.040	1/8	1/4	3/16	3/8	2
GMF19808	R.040	1/8	1/4	3/16	1/2	2
GMF19809	R.040	1/8	1/4	3/16	5/8	2-3/8
GMF19810	R.040	1/8	1/4	3/16	3/4	2-3/8
GMF19012	R.004	3/16	1/4	1/4	3/8	2
GMF19811	R.004	3/16	1/4	1/4	1/2	2
GMF19812	R.004	3/16	1/4	1/4	5/8	2-3/8
GMF19813	R.008	3/16	1/4	1/4	3/8	2
GMF19814	R.008	3/16	1/4	1/4	1/2	2
GMF19815	R.008	3/16	1/4	1/4	5/8	2-3/8
GMF19816	R.008	3/16	1/4	1/4	3/4	2-3/8
GMF19817	R.008	3/16	1/4	1/4	1	2-3/4
GMF19818	R.012	3/16	1/4	1/4	1/2	2

◎ : Excellent ○ : Good

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

CARBIDE, 2 FLUTE LONG NECK CORNER RADIUS

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



D ≤ 1/4 D > 1/4

Unit : inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length
	R	D1	D2	L1	L3	L2
GMF19819	R.012	3/16	1/4	1/4	5/8	2-3/8
GMF19820	R.012	3/16	1/4	1/4	3/4	2-3/8
GMF19821	R.012	3/16	1/4	1/4	1	2-3/4
GMF19822	R.020	3/16	1/4	1/4	3/8	2
GMF19823	R.020	3/16	1/4	1/4	1/2	2
GMF19824	R.020	3/16	1/4	1/4	5/8	2-3/8
GMF19825	R.020	3/16	1/4	1/4	3/4	2-3/8
GMF19826	R.020	3/16	1/4	1/4	1	2-3/4
GMF19827	R.020	3/16	1/4	1/4	1-3/16	2-3/4
GMF19851	R.030	3/16	1/4	1/4	3/8	2
GMF19852	R.030	3/16	1/4	1/4	1/2	2
GMF19853	R.030	3/16	1/4	1/4	5/8	2-3/8
GMF19854	R.030	3/16	1/4	1/4	3/4	2-3/8
GMF19855	R.030	3/16	1/4	1/4	1	2-3/4
GMF19856	R.030	3/16	1/4	1/4	1-3/16	2-3/4
GMF19828	R.040	3/16	1/4	1/4	3/8	2
GMF19829	R.040	3/16	1/4	1/4	1/2	2
GMF19830	R.040	3/16	1/4	1/4	5/8	2-3/8
GMF19831	R.040	3/16	1/4	1/4	3/4	2-3/8
GMF19016	R.008	1/4	1/4	3/8	3/4	2-3/8
GMF19832	R.012	1/4	1/4	3/8	3/4	2-3/8
GMF19833	R.020	1/4	1/4	3/8	3/4	2-3/8
GMF19834	R.040	1/4	1/4	3/8	3/4	2-3/8
GMF19835	R.020	1/4	1/4	5/8	1-3/16	3-1/2
GMF19857	R.030	1/4	1/4	3/8	3/4	2-3/8
GMF19858	R.030	1/4	1/4	5/8	1-3/16	3-1/2
GMF19020	R.008	5/16	5/16	1/2	1	2-3/4
GMF19836	R.012	5/16	5/16	1/2	1	2-3/4
GMF19837	R.020	5/16	5/16	1/2	1	2-3/4
GMF19859	R.030	5/16	5/16	1/2	1	2-3/4
GMF19838	R.040	5/16	5/16	1/2	1	2-3/4
GMF19024	R.012	3/8	3/8	5/8	1-3/16	3

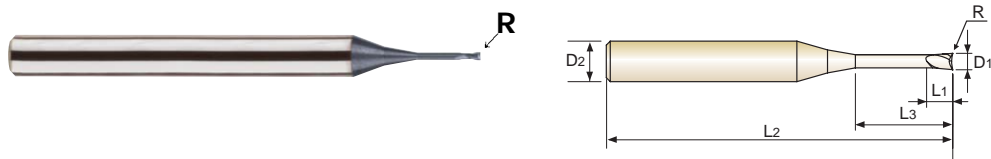
◎ : Excellent ○ : Good

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



CARBIDE, 2 FLUTE LONG NECK 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.



MG HM 2 30° ±.0004 ±.0006 PLAIN P.41

D ≤ 1/4 D > 1/4

Unit : inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length
	R	D1	D2	L1	L3	L2
GMF19839	R.020	3/8	3/8	5/8	1-3/16	3
GMF19860	R.030	3/8	3/8	5/8	1-3/16	3
GMF19840	R.040	3/8	3/8	5/8	1-3/16	3
GMF19032	R.020	1/2	1/2	11/16	1-1/4	3-1/8
GMF19861	R.030	1/2	1/2	11/16	1-1/4	3-1/8
GMF19841	R.040	1/2	1/2	11/16	1-1/4	3-1/8
GMF19842	R.060	1/2	1/2	11/16	1-1/4	3-1/8
GMF19040	R.020	5/8	5/8	3/4	1-3/8	4
GMF19862	R.030	5/8	5/8	3/4	1-3/8	4
GMF19843	R.040	5/8	5/8	3/4	1-3/8	4
GMF19048	R.020	3/4	3/4	1	1-1/2	4
GMF19863	R.030	3/4	3/4	1	1-1/2	4
GMF19844	R.040	3/4	3/4	1	1-1/2	4

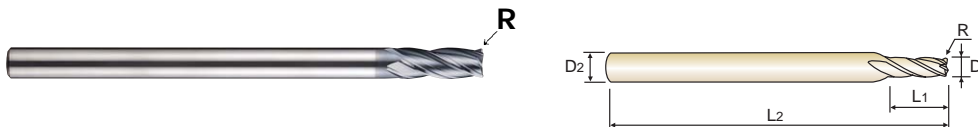
Size	Radius Tolerance (Inch)	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to Ø1/4	±.0004	0~- .0005	h6
over Ø1/4	±.0006	0~- .0006	

◎ : Excellent ○ : Good

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

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



Unit : inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D1	D2	L1	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
GMF20024	R.020	3/8	3/8	1	3

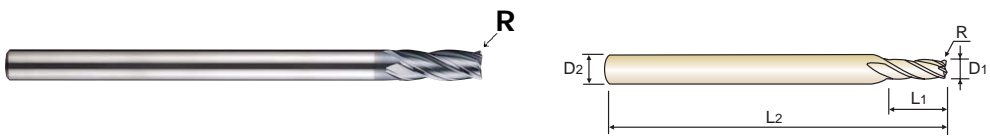
◎ : Excellent ○ : Good

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



CARBIDE, 4 FLUTE CORNER RADIUS

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- ▶ 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.
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Unit : inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D1	D2	L1	L2
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
GMF20044	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

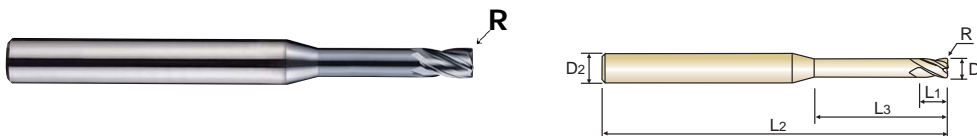
Mill Dia. Tolerance (Inch)	Corner Radius Tolerance (Inch)	Shank Dia. Tolerance
0~-.0012	±.0008	h6

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

◎ : Excellent ○ : Good

CARBIDE, 4 FLUTE LONG NECK CORNER RADIUS

- ▶ 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



Unit : inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length
	R	D1	D2	L1	L3	L2
GMF21003	R.004	3/64	3/16	1/16	5/32	2
GMF21901	R.004	3/64	3/16	1/16	1/4	2
GMF21902	R.004	3/64	3/16	1/16	5/16	2
GMF21903	R.008	3/64	3/16	1/16	5/32	2
GMF21904	R.008	3/64	3/16	1/16	1/4	2
GMF21905	R.008	3/64	3/16	1/16	5/16	2
GMF21906	R.012	3/64	3/16	1/16	5/32	2
GMF21907	R.012	3/64	3/16	1/16	1/4	2
GMF21908	R.012	3/64	3/16	1/16	5/16	2
GMF21004	R.004	1/16	3/16	3/32	1/4	2
GMF21909	R.004	1/16	3/16	3/32	5/16	2
GMF21910	R.004	1/16	3/16	3/32	3/8	2
GMF21911	R.004	1/16	3/16	3/32	1/2	2
GMF21912	R.008	1/16	3/16	3/32	1/4	2
GMF21913	R.008	1/16	3/16	3/32	5/16	2
GMF21914	R.008	1/16	3/16	3/32	3/8	2
GMF21915	R.008	1/16	3/16	3/32	1/2	2
GMF21916	R.012	1/16	3/16	3/32	1/4	2
GMF21917	R.012	1/16	3/16	3/32	5/16	2
GMF21918	R.012	1/16	3/16	3/32	3/8	2
GMF21919	R.012	1/16	3/16	3/32	1/2	2
GMF21920	R.020	1/16	3/16	3/32	1/4	2
GMF21921	R.020	1/16	3/16	3/32	5/16	2
GMF21922	R.020	1/16	3/16	3/32	3/8	2
GMF21923	R.020	1/16	3/16	3/32	1/2	2
GMF21005	R.004	5/64	3/16	1/8	1/4	2
GMF21924	R.004	5/64	3/16	1/8	5/16	2
GMF21925	R.004	5/64	3/16	1/8	3/8	2
GMF21926	R.004	5/64	3/16	1/8	1/2	2
GMF21927	R.008	5/64	3/16	1/8	1/4	2
GMF21928	R.008	5/64	3/16	1/8	5/16	2
GMF21929	R.008	5/64	3/16	1/8	3/8	2

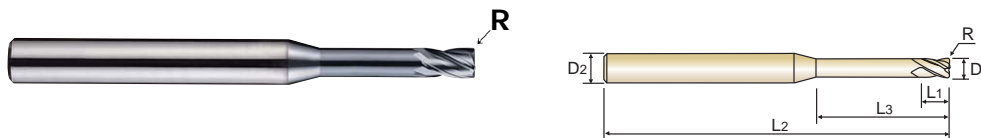
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	HB225~325	HRC30~40	HRC40~45	HRC45~55	HRC55~70							
◎	◎	◎	◎	○				○				



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Unit : inch

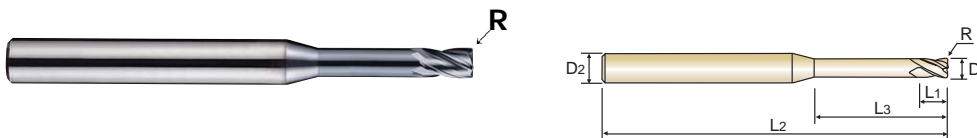
EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length
	R	D1	D2	L1	L3	L2
GMF21930	R.008	5/64	3/16	1/8	1/2	2
GMF21931	R.012	5/64	3/16	1/8	1/4	2
GMF21932	R.012	5/64	3/16	1/8	5/16	2
GMF21933	R.012	5/64	3/16	1/8	3/8	2
GMF21934	R.012	5/64	3/16	1/8	1/2	2
GMF21935	R.020	5/64	3/16	1/8	1/4	2
GMF21936	R.020	5/64	3/16	1/8	5/16	2
GMF21937	R.020	5/64	3/16	1/8	3/8	2
GMF21938	R.020	5/64	3/16	1/8	1/2	2
GMF21008	R.004	1/8	1/4	3/16	5/16	2
GMF21939	R.004	1/8	1/4	3/16	3/8	2
GMF21940	R.004	1/8	1/4	3/16	1/2	2
GMF21941	R.004	1/8	1/4	3/16	5/8	2-3/8
GMF21942	R.008	1/8	1/4	3/16	3/8	2
GMF21943	R.008	1/8	1/4	3/16	1/2	2
GMF21944	R.008	1/8	1/4	3/16	5/8	2-3/8
GMF21945	R.008	1/8	1/4	3/16	3/4	2-3/8
GMF21946	R.012	1/8	1/4	3/16	5/16	2
GMF21947	R.012	1/8	1/4	3/16	3/8	2
GMF21948	R.012	1/8	1/4	3/16	1/2	2
GMF21949	R.012	1/8	1/4	3/16	5/8	2-3/8
GMF21950	R.012	1/8	1/4	3/16	3/4	2-3/8
GMF21951	R.020	1/8	1/4	3/16	5/16	2
GMF21952	R.020	1/8	1/4	3/16	3/8	2
GMF21953	R.020	1/8	1/4	3/16	1/2	2
GMF21954	R.020	1/8	1/4	3/16	5/8	2-3/8
GMF21955	R.020	1/8	1/4	3/16	3/4	2-3/8
GMF21956	R.020	1/8	1/4	3/16	1	2-3/4
GMF21999	R.030	1/8	1/4	3/16	5/16	2
GMF21801	R.030	1/8	1/4	3/16	3/8	2
GMF21802	R.030	1/8	1/4	3/16	1/2	2
GMF21803	R.030	1/8	1/4	3/16	5/8	2-3/8

◎ : Excellent ○ : Good

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

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Unit : inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length
	R	D1	D2	L1	L3	L2
GMF21804	R.030	1/8	1/4	3/16	3/4	2-3/8
GMF21805	R.030	1/8	1/4	3/16	1	2-3/4
GMF21957	R.040	1/8	1/4	3/16	5/16	2-3/4
GMF21958	R.040	1/8	1/4	3/16	3/8	2
GMF21959	R.040	1/8	1/4	3/16	1/2	2
GMF21960	R.040	1/8	1/4	3/16	5/8	2-3/8
GMF21012	R.004	3/16	1/4	1/4	3/8	2
GMF21961	R.004	3/16	1/4	1/4	1/2	2
GMF21962	R.004	3/16	1/4	1/4	5/8	2-3/8
GMF21963	R.004	3/16	1/4	1/4	3/4	2-3/8
GMF21964	R.008	3/16	1/4	1/4	3/8	2
GMF21965	R.008	3/16	1/4	1/4	1/2	2
GMF21966	R.008	3/16	1/4	1/4	5/8	2-3/8
GMF21967	R.008	3/16	1/4	1/4	3/4	2-3/8
GMF21968	R.008	3/16	1/4	1/4	1	2-3/4
GMF21969	R.012	3/16	1/4	1/4	3/8	2
GMF21970	R.012	3/16	1/4	1/4	1/2	2
GMF21971	R.012	3/16	1/4	1/4	5/8	2-3/8
GMF21972	R.012	3/16	1/4	1/4	3/4	2-3/8
GMF21973	R.012	3/16	1/4	1/4	1	2-3/4
GMF21974	R.020	3/16	1/4	1/4	3/8	2
GMF21975	R.020	3/16	1/4	1/4	1/2	2
GMF21976	R.020	3/16	1/4	1/4	5/8	2-3/8
GMF21977	R.020	3/16	1/4	1/4	3/4	2-3/8
GMF21978	R.020	3/16	1/4	1/4	1	2-3/4
GMF21806	R.030	3/16	1/4	1/4	3/8	2
GMF21807	R.030	3/16	1/4	1/4	1/2	2
GMF21808	R.030	3/16	1/4	1/4	5/8	2-3/8
GMF21809	R.030	3/16	1/4	1/4	3/4	2-3/8
GMF21810	R.030	3/16	1/4	1/4	1	2-3/4
GMF21979	R.040	3/16	1/4	1/4	3/8	2
GMF21980	R.040	3/16	1/4	1/4	1/2	2

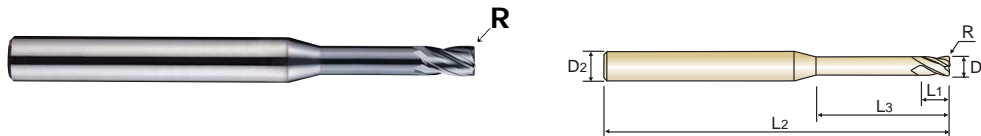
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	HB225~325	HRC30~40	HRC40~45	HRC45~55	HRC55~70							
◎	◎	◎	◎	○				○				



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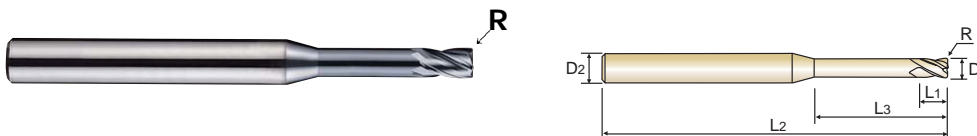
EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length
	R	D1	D2	L1	L3	L2
GMF21981	R.040	3/16	1/4	1/4	5/8	2-3/8
GMF21982	R.040	3/16	1/4	1/4	3/4	2-3/8
GMF21983	R.040	3/16	1/4	1/4	1	2-3/4
GMF21016	R.012	1/4	1/4	3/8	3/4	2-3/8
GMF21984	R.020	1/4	1/4	3/8	3/4	2-3/8
GMF21811	R.030	1/4	1/4	3/8	3/4	2-3/8
GMF21985	R.040	1/4	1/4	3/8	3/4	2-3/8
GMF21020	R.008	5/16	5/16	1/2	1	2-3/4
GMF21986	R.012	5/16	5/16	1/2	1	2-3/4
GMF21987	R.020	5/16	5/16	1/2	1	2-3/4
GMF21988	R.040	5/16	5/16	1/2	1	2-3/4
GMF21989	R.020	5/16	5/16	3/4	1-3/8	4
GMF21812	R.030	5/16	5/16	1/2	1	2-3/4
GMF21813	R.030	5/16	5/16	3/4	1-3/8	4
GMF21024	R.020	3/8	3/8	5/8	1-3/16	3
GMF21990	R.040	3/8	3/8	5/8	1-3/16	3
GMF21991	R.060	3/8	3/8	5/8	1-3/16	3
GMF21992	R.020	3/8	3/8	1	1-1/2	4
GMF21814	R.030	3/8	3/8	5/8	1-3/16	3
GMF21815	R.030	3/8	3/8	1	1-1/2	4
GMF21032	R.020	1/2	1/2	11/16	1-1/4	3-1/8
GMF21816	R.030	1/2	1/2	11/16	1-1/4	3-1/8
GMF21817	R.030	1/2	1/2	1-3/16	1-3/4	4-1/4
GMF21993	R.040	1/2	1/2	11/16	1-1/4	3-1/8
GMF21994	R.060	1/2	1/2	11/16	1-1/4	3-1/8
GMF21995	R.080	1/2	1/2	11/16	1-1/4	3-1/8
GMF21996	R.020	1/2	1/2	1-3/16	1-3/4	4-1/4
GMF21040	R.020	5/8	5/8	3/4	1-3/8	4
GMF21818	R.030	5/8	5/8	3/4	1-3/8	4

◎ : Excellent ○ : Good

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

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Unit : inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length
	R	D1	D2	L1	L3	L2
GMF21997	R.040	5/8	5/8	3/4	1-3/8	4
GMF21048	R.020	3/4	3/4	1	1-1/2	4
GMF21819	R.030	3/4	3/4	1	1-1/2	4
GMF21998	R.040	3/4	3/4	1	1-1/2	4

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

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

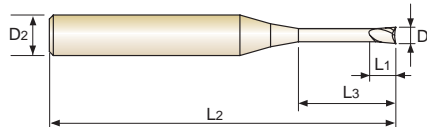
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Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	◎	○				○				



CARBIDE, 2FLUTE WITH NECK

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- ▶ 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 HM 2 30° PLAIN P.44~45

Unit : inch

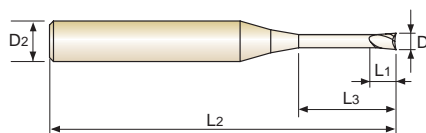
EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length
	D1	D2	L1	L3	L2
GMF22901	.008	3/16	.010	3/64	1-1/2
GMF22902	.015	3/16	1/32	3/64	1-1/2
GMF22903	.015	3/16	1/32	5/64	1-1/2
GMF22904	.015	3/16	1/32	1/8	1-1/2
GMF22905	.015	3/16	1/32	5/32	1-1/2
GMF22906	.015	3/16	1/32	3/16	1-1/2
GMF22907	.020	3/16	1/32	5/64	1-3/4
GMF22908	.020	3/16	1/32	1/8	1-3/4
GMF22909	.020	3/16	1/32	5/32	1-3/4
GMF22910	.020	3/16	1/32	3/16	1-3/4
GMF22911	.020	3/16	1/32	1/4	1-3/4
GMF22912	.024	3/16	1/32	5/64	1-3/4
GMF22913	.024	3/16	1/32	1/8	1-3/4
GMF22914	.024	3/16	1/32	5/32	1-3/4
GMF22915	.024	3/16	1/32	3/16	1-3/4
GMF22916	.024	3/16	1/32	1/4	1-3/4
GMF22917	.024	3/16	1/32	5/16	1-3/4
GMF22918	.024	3/16	1/32	3/8	1-3/4
GMF22002	1/32	3/16	3/64	5/64	1-3/4
GMF22919	1/32	3/16	3/64	1/8	1-3/4
GMF22920	1/32	3/16	3/64	5/32	1-3/4
GMF22921	1/32	3/16	3/64	3/16	1-3/4
GMF22922	1/32	3/16	3/64	1/4	1-3/4
GMF22923	1/32	3/16	3/64	5/16	1-3/4
GMF22924	1/32	3/16	3/64	3/8	1-3/4
GMF22003	3/64	3/16	1/16	1/8	2
GMF22925	3/64	3/16	1/16	5/32	2
GMF22926	3/64	3/16	1/16	3/16	2
GMF22927	3/64	3/16	1/16	1/4	2
GMF22928	3/64	3/16	1/16	5/16	2
GMF22929	3/64	3/16	1/16	3/8	2
GMF22930	3/64	3/16	1/16	1/2	2

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
-HB225	HB225~325	HRC30~40	HRC40~45	HRC45~55	HRC55~70							
◎	◎	◎	◎	○				○		○		

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Unit : inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length
	D1	D2	L1	L3	L2
GMF22931	3/64	3/16	1/16	9/16	2
GMF22932	3/64	3/16	1/16	5/8	2
GMF22933	3/64	3/16	1/16	3/4	2
GMF22004	1/16	3/16	3/32	5/32	2
GMF22934	1/16	3/16	3/32	1/4	2
GMF22935	1/16	3/16	3/32	5/16	2
GMF22936	1/16	3/16	3/32	3/8	2
GMF22937	1/16	3/16	3/32	1/2	2
GMF22938	1/16	3/16	3/32	9/16	2
GMF22939	1/16	3/16	3/32	5/8	2
GMF22940	1/16	3/16	3/32	3/4	2
GMF22005	5/64	3/16	1/8	1/4	2
GMF22941	5/64	3/16	1/8	5/16	2
GMF22942	5/64	3/16	1/8	3/8	2
GMF22943	5/64	3/16	1/8	1/2	2
GMF22944	5/64	3/16	1/8	9/16	2
GMF22945	5/64	3/16	1/8	5/8	2
GMF22946	5/64	3/16	1/8	3/4	2
GMF22006	3/32	3/16	5/32	5/16	2
GMF22947	3/32	3/16	5/32	1/2	2
GMF22948	3/32	3/16	5/32	5/8	2
GMF22949	3/32	3/16	5/32	3/4	2
GMF22008	1/8	1/4	3/16	5/16	2
GMF22950	1/8	1/4	3/16	3/8	2
GMF22951	1/8	1/4	3/16	1/2	2
GMF22952	1/8	1/4	3/16	9/16	2-3/8
GMF22953	1/8	1/4	3/16	5/8	2-3/8
GMF22954	1/8	1/4	3/16	11/16	2-3/8
GMF22955	1/8	1/4	3/16	3/4	2-3/8
GMF22956	1/8	1/4	3/16	1	2-3/4
GMF22012	3/16	1/4	1/4	3/8	2
GMF22957	3/16	1/4	1/4	1/2	2

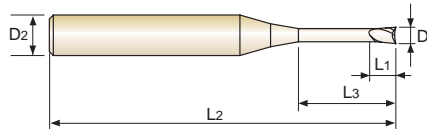
◎ : Excellent ○ : Good

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



CARBIDE, 2FLUTE WITH NECK

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



Unit : inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length
	D1	D2	L1	L3	L2
GMF22958	3/16	1/4	1/4	5/8	2-3/8
GMF22959	3/16	1/4	1/4	11/16	2-3/8
GMF22960	3/16	1/4	1/4	3/4	2-3/8
GMF22961	3/16	1/4	1/4	1	2-3/4
GMF22962	3/16	1/4	1/4	1-3/16	2-3/4
GMF22013	13/64	1/4	5/16	3/4	2-3/8
GMF22963	13/64	1/4	5/16	1-3/16	2-3/4
GMF22964	13/64	1/4	5/16	1-3/8	3
GMF22965	13/64	1/4	5/16	1-1/2	3-1/8
GMF22966	13/64	1/4	5/16	2	3-1/2
GMF22016	1/4	1/4	3/8	5/8	2-3/8
GMF22967	1/4	1/4	3/8	3/4	2-3/8
GMF22968	1/4	1/4	3/8	1-3/16	2-3/4
GMF22020	5/16	5/16	1/2	1	2-3/4
GMF22024	3/8	3/8	5/8	1-3/16	3
GMF22969	3/8	3/8	5/8	1-3/4	4
GMF22032	1/2	1/2	3/4	1-3/8	3-1/8
GMF22970	1/2	1/2	3/4	2	4-1/4

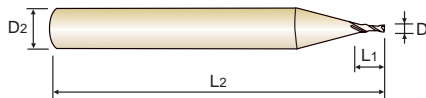
Size	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to \varnothing 1/4	0---.0005	h6
over \varnothing 1/4	0---.0006	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	HB225~325	HRC30~40	HRC40~45	HRC45~55	HRC55~70							
◎	◎	◎	◎	○				○		○		

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



Unit : inch

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

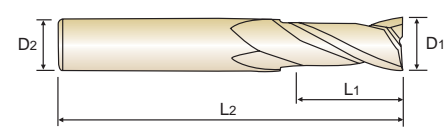
◎ : Excellent ○ : Good

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



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 HM 2 30° PLAIN P.46

Unit : inch

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

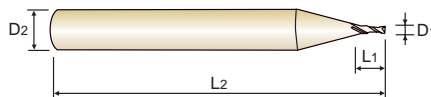
Size	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to Ø1/4	0~--.0005	h6
over Ø1/4	0~--.0006	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	HB225~325	HRC30~40	HRC40~45	HRC45~55	HRC55~70							
◎	◎	◎	◎	○				○		○		

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



Unit : inch

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

Size	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to \varnothing 1/4	0~-.0005	h6
over \varnothing 1/4	0~-.0006	

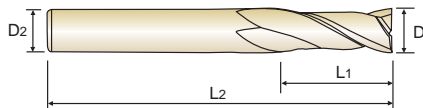
◎ : Excellent ○ : Good

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



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.



P.47~48

Unit : inch

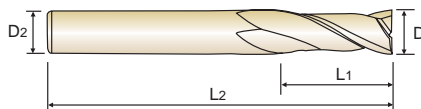
EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
GMF24003	3/64	1/4	1/8	2-3/8
GMF24901	3/64	1/4	5/32	2-3/8
GMF24902	3/64	1/4	1/4	2-3/8
GMF24903	3/64	1/4	5/16	2-3/8
GMF24904	3/64	1/4	3/8	2-3/8
GMF24004	1/16	1/4	1/4	2-3/8
GMF24905	1/16	1/4	5/16	2-3/8
GMF24906	1/16	1/4	3/8	2-3/8
GMF24907	1/16	1/4	1/2	2-3/8
GMF24908	1/16	1/4	5/8	2-3/8
GMF24005	5/64	1/4	5/16	2-3/8
GMF24909	5/64	1/4	3/8	2-3/8
GMF24910	5/64	1/4	1/2	2-3/8
GMF24911	5/64	1/4	5/8	2-3/8
GMF24006	3/32	1/4	5/8	2-3/8
GMF24008	1/8	1/4	3/8	2-3/4
GMF24912	1/8	1/4	1/2	2-3/4
GMF24913	1/8	1/4	5/8	2-3/4
GMF24914	1/8	1/4	3/4	2-3/4
GMF24915	1/8	1/4	1	2-3/4
GMF24012	3/16	1/4	1/2	2-3/4
GMF24916	3/16	1/4	5/8	2-3/4
GMF24917	3/16	1/4	3/4	2-3/4
GMF24918	3/16	1/4	1	2-3/4
GMF24919	3/16	1/4	1-3/16	2-3/4
GMF24013	13/64	1/4	3/4	2-3/4
GMF24920	13/64	1/4	1	2-3/4
GMF24921	13/64	1/4	1-3/16	3-1/8
GMF24922	13/64	1/4	1-1/2	4
GMF24016	1/4	1/4	5/8	2-3/8
GMF24923	1/4	1/4	5/8	3-1/8
GMF24924	1/4	1/4	3/4	2-3/4
GMF24925	1/4	1/4	3/4	3-1/2
GMF24926	1/4	1/4	1	3
GMF24927	1/4	1/4	1-3/16	3-1/8

◎ : Excellent ○ : Good

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

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.



P.47~48

Unit : inch

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

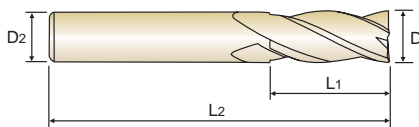
◎ : Excellent ○ : Good

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



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
- ▶ Due to Multiple Helix on 1/8" and over diameter end mills, vibration will be minimized and tool life increased.



Unit : inch

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

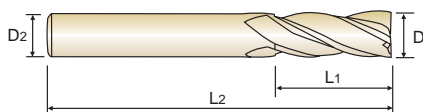
Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
0~-.0012	h6

◎ : Excellent ○ : Good

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

CARBIDE, 2 FLUTE LONG LENGTH

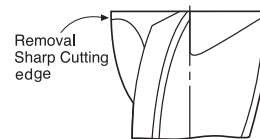
- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
 - ▶ Excellent performance when cutting steels, up to HRC55
 - ▶ Due to Multiple Helix on 1/8" and over diameter end mills, vibration will be minimized and tool life increased.
 - ▶ Due to gash land geometry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



P.49

Unit : inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	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

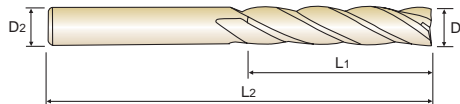
◎ : Excellent ○ : Good

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



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



Unit : inch

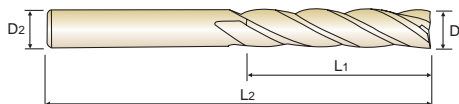
EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
GMF27003	3/64	1/4	1/8	2-3/8
GMF27901	3/64	1/4	5/32	2-3/8
GMF27902	3/64	1/4	3/16	2-3/8
GMF27903	3/64	1/4	1/4	2-3/8
GMF27004	1/16	1/4	1/4	2-3/8
GMF27005	5/64	1/4	5/16	2-3/8
GMF27904	5/64	1/4	3/8	2-3/8
GMF27905	5/64	1/4	1/2	2-3/8
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

◎ : Excellent ○ : Good

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

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



Unit : inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	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~ -0.0012012	h6 h6

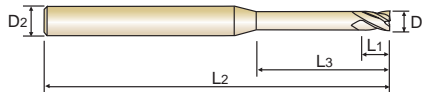
◎ : Excellent ○ : Good

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



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
- ▶ Many more various effective lengths and overall lengths than previous standard products.



Unit : inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length
	D1	D2	L1	L3	L2
GMF28003	3/64	3/16	1/16	5/32	2
GMF28901	3/64	3/16	1/16	3/16	2
GMF28902	3/64	3/16	1/16	1/4	2
GMF28903	3/64	3/16	1/16	5/16	2
GMF28004	1/16	3/16	3/32	1/4	2
GMF28904	1/16	3/16	3/32	5/16	2
GMF28905	1/16	3/16	3/32	3/8	2
GMF28906	1/16	3/16	3/32	1/2	2
GMF28907	1/16	3/16	3/32	5/8	2
GMF28005	5/64	3/16	1/8	5/16	2
GMF28908	5/64	3/16	1/8	3/8	2
GMF28909	5/64	3/16	1/8	1/2	2
GMF28910	5/64	3/16	1/8	5/8	2
GMF28008	1/8	1/4	3/16	3/8	2
GMF28911	1/8	1/4	3/16	1/2	2
GMF28912	1/8	1/4	3/16	5/8	2-3/8
GMF28913	1/8	1/4	3/16	3/4	2-3/8
GMF28914	1/8	1/4	3/16	1-3/16	2-3/4
GMF28012	3/16	1/4	1/4	1/2	2
GMF28915	3/16	1/4	1/4	5/8	2-3/8
GMF28916	3/16	1/4	1/4	3/4	2-3/8
GMF28917	3/16	1/4	1/4	1-3/16	2-3/4
GMF28918	3/16	1/4	1/4	1-1/2	3-1/8
GMF28013	13/64	1/4	5/16	3/4	2-3/8
GMF28919	13/64	1/4	5/16	1-1/2	3-1/8
GMF28016	1/4	1/4	3/8	5/8	2-3/8
GMF28920	1/4	1/4	3/8	1-3/16	2-3/4
GMF28020	5/16	5/16	1/2	1	2-3/4
GMF28921	5/16	5/16	1/2	1-5/8	4
GMF28024	3/8	3/8	5/8	1-3/16	3
GMF28922	3/8	3/8	5/8	1-3/4	4
GMF28032	1/2	1/2	3/4	1-3/8	3-1/8
GMF28923	1/2	1/2	3/4	2	4-1/4

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

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
-HB225	HB225~325	HRC30~40	HRC40~45	HRC45~55	HRC55~70							
◎	◎	◎	◎	○	◎			○		○		

CARBIDE, 6 FLUTE 45° HELIX

- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- ▶ Excellent performance when cutting steels, up to HRC55
- ▶ Due to 45° helix angle, better surface finish can be achieved when side cutting.
- ▶ Various effective length and overall length products.



Unit : inch

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

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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

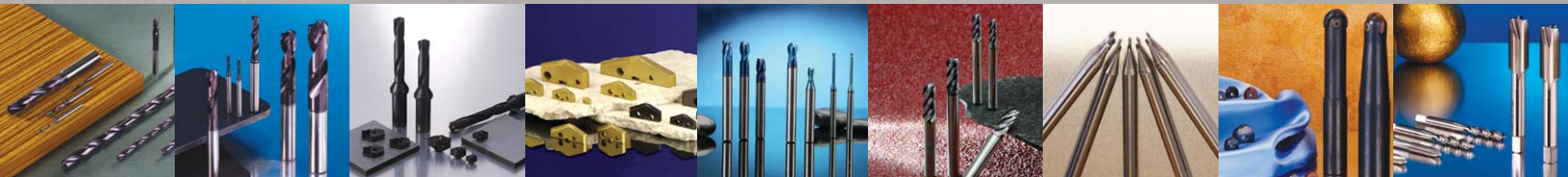
TECHNICAL DATA

◎ : Excellent ○ : Good

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



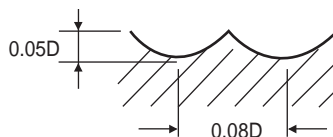
Global Cutting Tool Leader YG-1



CARBIDE, 2 FLUTE BALL NOSE

GMF15 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
	~ HRc 35		HRc 35 ~ HRc 45		HRc 45 ~ HRc 55	
HARDNESS						
STRENGTH	~ 1100N/mm ²		1110 ~ 1500N/mm ²		1500 ~ 2000N/mm ²	
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. × 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.

CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA



RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE BALL NOSE WITH NECK

GMF16 SERIES

CBN END MILL

i-Xmill END MILL

i-HS mill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS		~ HRc 35			HRc 35 ~ HRc 45			HRc 45 ~ HRc 55		
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)
.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.



RECOMMENDED CUTTING CONDITIONS

HSS

CARBIDE, 2 FLUTE BALL NOSE WITH NECK

GMF16 SERIES

MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS		~ HRc 35			HRc 35 ~ HRc 45			HRc 45 ~ HRc 55		
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	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	1-3/16	6720	57.1	.0073	6370	44.9	.0061	5580	39.8	.0041
1/4	3/4	6140	70.7	.0225	5860	59.5	.0187	5200	49.4	.0125

DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = inch/min.

CBN
END MILL

i-Xmill
END MILL

i-HS mill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA



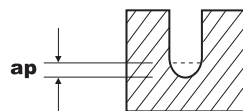
RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE BALL NOSE WITH NECK

GMF16 SERIES

MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS		~ HRc 35			HRc 35 ~ HRc 45			HRc 45 ~ HRc 55		
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)
1/4	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)

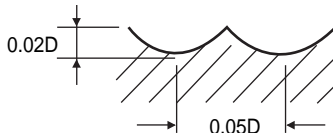


DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE BALL NOSE

GMF17 SERIES

MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS		~ HRc 35		HRc 35 ~ HRc 45		HRc 45 ~ HRc 55	
STRENGTH		~ 1100N/mm ²		1110 ~ 1500N/mm ²		1500 ~ 2000N/mm ²	
DIAMETER		RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8		22700	202.0	16540	144.3	15120	135.8
R3/32 × 3/16		17600	224.4	13020	152.6	12250	143.5
R1/8 × 1/4		14400	231.3	11530	167.3	10490	142.5
R5/32 × 5/16		11400	208.3	9270	157.9	8390	132.9
R3/16 × 3/8		9600	189.8	7720	142.5	6990	118.7
R1/4 × 1/2		7200	158.5	5790	118.7	5230	89.4

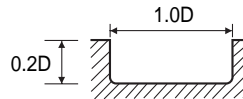


RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE CORNER RADIUS

GMF18 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	~ HRc 35		HRc 35 ~ HRc 45		HRc 45 ~ HRc 55	
STRENGTH	~ 1100N/mm ²		1110 ~ 1500N/mm ²		1500 ~ 2000N/mm ²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
3/64	25000	9.7	15870	4.1	9830	2.4
1/16	20800	9.3	12760	4.1	8030	2.2
5/64	18100	10.2	11650	4.7	7260	2.8
1/8	12500	10.4	8090	5.1	4990	2.6
9/64	11700	12.0	7540	5.9	4690	3.0
13/64	8900	15.9	5620	7.7	3680	3.7
1/4	7500	18.5	4760	9.3	3100	4.5
5/16	6000	21.5	3830	9.8	2540	4.7
3/8	5300	22.2	3440	10.2	2120	4.9
1/2	3900	15.6	2630	8.5	1590	3.7
9/16	3500	15.0	2390	7.7	1450	3.5
5/8	3100	14.4	2120	6.7	1290	3.2
3/4	2600	11.6	1720	4.9	1050	2.6



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

CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA

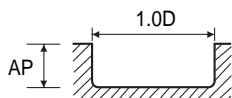


CARBIDE, 2 FLUTE CORNER RADIUS WITH NECK

GMF19 SERIES

MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS		~ HRc 35			HRc 35 ~ HRc 45			HRc 45 ~ HRc 55		
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)
.008	3/64	44290	5.3	.0006	30560	2.4	.0005	18740	1.4	.0004
.012	3/64	49210	7.7	.0017	31500	3.4	.0013	19690	2.0	.0010
.012	5/64	44290	6.3	.0009	28350	2.8	.0007	17720	1.6	.0006
.015	3/64	52490	8.3	.0021	33600	3.5	.0016	21000	2.0	.0013
.015	1/16	52490	8.3	.0021	33600	3.5	.0016	21000	2.0	.0013
.015	5/64	47240	6.7	.0012	30240	2.8	.0009	18900	1.8	.0007
.015	3/32	47240	6.7	.0012	30240	2.8	.0009	18900	1.8	.0007
.020	3/64	42320	8.5	.0040	27560	3.7	.0030	16830	2.4	.0024
.020	1/16	42320	8.5	.0028	27560	3.7	.0021	16830	2.4	.0017
.020	5/64	42320	8.5	.0028	27560	3.7	.0021	16830	2.4	.0017
.020	1/8	38090	6.9	.0016	24800	3.0	.0012	15150	2.0	.0009
.020	5/32	38090	6.9	.0016	24800	3.0	.0012	15150	2.0	.0009
.024	5/64	35830	9.7	.0033	23620	4.3	.0025	14270	2.6	.0020
.024	1/8	32240	7.9	.0019	21260	3.5	.0015	12840	2.0	.0011
.024	5/32	32240	7.9	.0019	21260	3.5	.0015	12840	2.0	.0011
.024	1/4	28660	6.1	.0012	18900	2.8	.0009	11420	1.6	.0007
.031	5/64	36980	10.0	.0062	24380	4.3	.0046	14730	2.6	.0037
.031	5/32	33280	8.1	.0025	21950	3.5	.0019	13260	2.2	.0015
.031	1/4	33280	8.1	.0015	21950	3.5	.0012	13260	2.2	.0009
.031	5/16	29590	6.5	.0015	19510	2.8	.0012	11790	1.6	.0009
3/64	1/8	27800	9.3	.0094	18140	3.9	.0070	11090	2.4	.0056
3/64	5/32	27800	9.3	.0066	18140	3.9	.0049	11090	2.4	.0039
3/64	1/4	25020	7.5	.0037	16330	3.2	.0028	9980	2.0	.0022
3/64	5/16	25020	7.5	.0037	16330	3.2	.0028	9980	2.0	.0022
3/64	3/8	25020	7.5	.0037	16330	3.2	.0028	9980	2.0	.0022
1/16	5/32	24940	11.2	.0125	15310	4.9	.0094	9640	2.6	.0075
1/16	1/4	24940	11.2	.0087	15310	4.9	.0066	9640	2.6	.0052
1/16	5/16	24940	11.2	.0087	15310	4.9	.0066	9640	2.6	.0052
1/16	3/8	22450	9.1	.0050	13780	3.9	.0037	8670	2.2	.0030
1/16	1/2	22450	9.1	.0050	13780	3.9	.0037	8670	2.2	.0030
5/64	1/4	21770	12.2	.0109	13910	5.5	.0082	8710	3.2	.0066
5/64	5/16	21770	12.2	.0109	13910	5.5	.0082	8710	3.2	.0066
5/64	3/8	21770	12.2	.0109	13910	5.5	.0082	8710	3.2	.0066
5/64	1/2	19590	10.0	.0063	12520	4.5	.0047	7840	2.6	.0037
5/64	9/16	19590	10.0	.0063	12520	4.5	.0047	7840	2.6	.0037
5/64	5/8	19590	10.0	.0063	12520	4.5	.0047	7840	2.6	.0037
1/8	5/16	15020	12.2	.0250	9730	5.9	.0187	5950	3.0	.0150
1/8	3/8	15020	12.2	.0250	9730	5.9	.0187	5950	3.0	.0150
1/8	1/2	15020	12.2	.0175	9730	5.9	.0131	5950	3.0	.0105
1/8	5/8	15020	12.2	.0175	9730	5.9	.0131	5950	3.0	.0105
1/8	3/4	13520	10.0	.0100	8760	4.7	.0075	5360	2.4	.0060
1/8	1	13520	10.0	.0100	8760	4.7	.0075	5360	2.4	.0060

DIA. = Diameter
 LBS = Length Below Shank
 RPM = rev./min.
 FEED = inch/min.

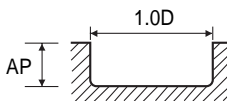


CARBIDE, 2 FLUTE CORNER RADIUS WITH NECK

GMF19 SERIES

MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS		~ HRc 35			HRc 35 ~ HRc 45			HRc 45 ~ HRc 55		
STRENGTH		~ 1100N/mm ²			1110 ~ 1500N/mm ²			1500 ~ 2000N/mm ²		
DIA.	LBS	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)
3/16	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.

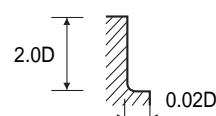
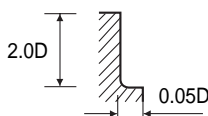


CARBIDE, 4 FLUTE CORNER RADIUS

GMF20 SERIES

MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS		~ HRc 35		HRc 35 ~ HRc 45		HRc 45 ~ HRc 55	
STRENGTH		~ 1100N/mm ²		1110 ~ 1500N/mm ²		1500 ~ 2000N/mm ²	
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



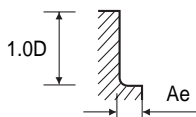
RPM = rev./min.
FEED = inch/min.



CARBIDE, 4 FLUTE CORNER RADIUS WITH NECK

GMF21 SERIES

MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS		~ HRc 35			HRc 35 ~ HRc 45			HRc 45 ~ HRc 55		
STRENGTH		~ 1100N/mm ²			1110 ~ 1500N/mm ²			1500 ~ 2000N/mm ²		
DIA.	LBS	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)
3/64	5/32	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.

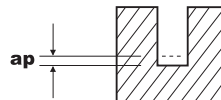
CARBIDE, 2 FLUTE WITH NECK

GMF22 SERIES

MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS		~ HRc 35			HRc 35 ~ HRc 45			HRc 45 ~ HRc 55		
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)
.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)



CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA



CARBIDE, 2 FLUTE WITH NECK

GMF22 SERIES

MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS		~ HRc 35			HRc 35 ~ HRc 45			HRc 45 ~ HRc 55		
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

CBN
END MILL

i-Xmill
END MILL

i-HS mill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

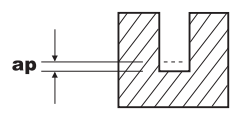
TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA

DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = inch/min.

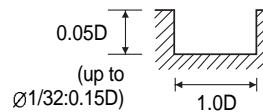
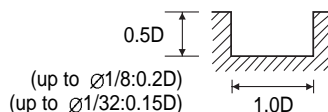
(Depth of Cut per one pass)



CARBIDE, 2 FLUTE

GMF23 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		STAINLESS STEELS		HARDENED STEELS	
HARDNESS	~ HRc 35		HRc 35 ~ HRc 45				HRc 45 ~ HRc 55	
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	20670	1.7	16540	0.7
.008	41300	3.8	24800	2.1	20670	1.7	16540	0.7
.012	38400	4.0	23000	2.4	19190	1.9	15350	0.7
.015	40900	4.5	24600	2.6	20470	2.1	16380	1.0
.020	35400	5.0	21300	2.8	17720	2.4	14170	1.0
.024	31500	5.7	18900	3.3	15750	2.8	12600	1.2
.028	27600	6.4	16500	3.8	13780	3.1	11020	1.2
.031	25400	7.1	15200	4.3	12700	3.5	10160	1.4
.035	23800	7.3	14300	4.5	11900	3.8	9520	1.4
.040	21200	7.3	12700	4.5	10580	3.8	8460	1.4
.047	18100	7.8	10900	4.7	9050	4.0	7240	1.7
1/16	14200	7.6	8500	4.5	7090	3.8	5670	1.4
5/64	11700	8.2	7600	5.2	6350	3.9	5080	1.5
3/32	10800	9.1	6900	5.8	5730	4.8	4410	1.7
1/8	8400	8.7	5300	5.6	4370	5.0	3170	1.7
9/64	8100	10.8	5000	6.7	4160	5.6	3090	1.7
3/16	6500	12.8	4000	7.6	3330	6.3	2490	2.0
13/64	6100	13.4	3700	8.0	3060	6.7	2250	2.2
1/4	5300	14.3	3200	9.1	2680	7.4	1890	2.2
17/64	5000	14.4	3000	8.7	2560	7.4	1850	2.5
9/32	4800	14.9	2900	8.5	2420	7.2	1800	2.7
5/16	4200	15.9	2500	8.3	2120	7.4	1690	3.1
11/32	3900	14.7	2300	7.6	1940	7.0	1560	2.9
23/64	3700	14.5	2200	7.2	1860	7.0	1500	2.7
3/8	3400	14.3	2100	7.0	1760	7.0	1430	2.7
13/32	3200	13.2	2000	6.4	1630	6.4	1330	2.5
7/16	3000	12.4	1800	6.0	1500	6.0	1250	2.3
1/2	2600	11.2	1600	5.3	1290	5.3	1100	2.1
9/16	2400	10.1	1500	5.0	1190	5.0	1010	1.9
5/8	2200	9.1	1400	4.6	1070	4.6	910	1.7
3/4	1800	7.4	1100	3.5	880	3.5	710	1.2



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

CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA

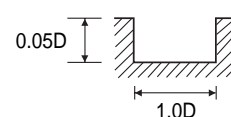
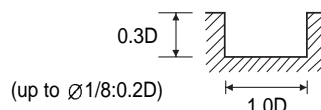


CARBIDE, 2 FLUTE LONG

GMF24 SERIES

MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS		~ HRc 35		HRc 35 ~ HRc 45		HRc 45 ~ HRc 55	
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

TECHNICAL DATA

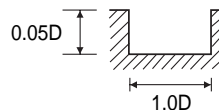
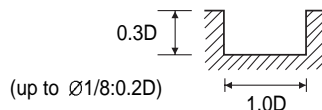


DIA. = Diameter
LOC = Length of Cut
RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE LONG

GMF24 SERIES

MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS		~ HRc 35		HRc 35 ~ HRc 45		HRc 45 ~ HRc 55	
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.

CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA

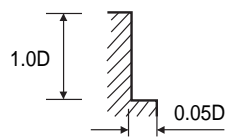


RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE

GMF25, GMF26 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		STAINLESS STEELS		HARDENED STEELS	
HARDNESS	~ HRc 35		HRc 35 ~ HRc 45				HRc 45 ~ HRc 55	
STRENGTH	~ 1100N/mm ²		1110 ~ 1500N/mm ²				1500 ~ 2000N/mm ²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/64	22680	11.8	13610	7.1	11340	5.9	9070	2.1
1/16	17720	11.3	10630	6.9	8860	5.9	7090	2.1
5/64	14560	12.1	9520	7.4	7940	6.1	6350	2.2
3/32	13440	13.6	8610	8.5	7170	7.2	5510	2.6
1/8	10540	13.0	6570	8.2	5460	6.9	3970	2.4
9/64	10090	18.8	6230	11.7	5200	9.5	3860	2.6
3/16	8180	24.0	4960	14.5	4160	11.9	3110	2.6
13/64	7640	25.1	4580	15.2	3830	12.6	2810	3.0
7/32	7330	27.1	4410	16.5	3710	13.4	2670	3.3
1/4	6570	27.1	3970	16.7	3350	13.4	2360	3.3
17/64	6290	27.5	3800	16.5	3200	13.8	2310	3.6
9/32	5980	27.7	3610	15.9	3030	13.9	2250	3.9
19/64	5650	28.7	3390	16.1	2840	14.3	2190	4.3
5/16	5290	29.6	3170	15.9	2650	14.7	2120	4.6
11/32	4830	27.5	2910	14.5	2420	13.6	1950	4.1
23/64	4590	26.9	2790	13.9	2330	13.2	1870	4.1
3/8	4280	26.5	2620	13.0	2200	13.0	1780	3.9
7/16	3710	23.2	2280	11.2	1880	11.0	1560	3.5
1/2	3240	20.7	1980	9.9	1610	9.5	1370	3.2
9/16	3030	18.8	1860	9.1	1510	8.9	1260	2.9
5/8	2770	17.6	1710	8.5	1390	8.3	1140	2.5
3/4	2200	13.9	1400	7.0	1100	6.4	890	1.6



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

- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- 4G MILLS END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA



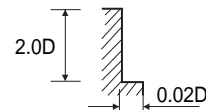
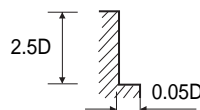
RECOMMENDED CUTTING CONDITIONS

HSS

CARBIDE, 4 FLUTE LONG

GMF27 SERIES

MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS		~ HRc 35		HRc 35 ~ HRc 45		HRc 45 ~ HRc 55	
STRENGTH		~ 1100N/mm ²		1110 ~ 1500N/mm ²		1500 ~ 2000N/mm ²	
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.

CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

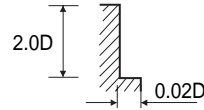
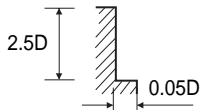
TECHNICAL
DATA



CARBIDE, 4 FLUTE LONG

GMF27 SERIES

MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS		~ HRc 35		HRc 35 ~ HRc 45		HRc 45 ~ HRc 55	
STRENGTH		~ 1100N/mm ²		1110 ~ 1500N/mm ²		1500 ~ 2000N/mm ²	
DIA.	LOC	RPM	FEED	RPM	FEED	RPM	FEED
3/8	1-1/2	2960	22.8	1730	8.9	1060	4.5
3/8	1-3/4	2960	19.5	1730	7.7	1060	3.7
3/8	2	2660	17.5	1550	6.9	950	3.4
1/2	1-3/8	2180	16.1	1320	7.1	790	3.2
1/2	1-1/2	2180	16.1	1320	7.1	790	3.2
1/2	1-3/4	2180	16.1	1320	7.1	790	3.2
1/2	2	2180	13.6	1320	6.1	790	2.6
1/2	2-1/8	2180	13.6	1320	6.1	790	2.6
1/2	2-3/8	2180	13.6	1320	6.1	790	2.6
9/16	2	2080	13.4	1210	5.5	740	2.6
5/8	2	1960	15.2	1080	5.9	680	3.0
5/8	2-3/8	1960	13.0	1080	5.1	680	2.4
5/8	2-3/4	1960	13.0	1080	5.1	680	2.4
3/4	2-3/8	1490	9.7	860	3.7	530	2.0
3/4	3-1/2	1490	8.5	860	3.4	530	1.8
1	3-1/2	1090	7.1	800	3.5	500	1.8

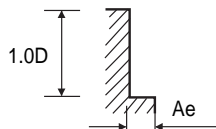


DIA. = Diameter
LOC = Length of Cut
RPM = rev./min.
FEED = inch/min.

CARBIDE, 4 FLUTE WITH NECK

GMF28 SERIES

MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS		~ HRc 35			HRc 35 ~ HRc 45			HRc 45 ~ HRc 55		
STRENGTH		~ 1100N/mm ²			1110 ~ 1500N/mm ²			1500 ~ 2000N/mm ²		
DIA.	LBS	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)
3/64	5/32	19650	12.4	.0007	12200	7.3	.0005	7560	2.0	.0004
3/64	3/16	19650	12.4	.0007	12200	7.3	.0005	7560	2.0	.0004
3/64	1/4	17690	10.0	.0004	10980	5.9	.0003	6800	1.6	.0002
3/64	5/16	17690	10.0	.0004	10980	5.9	.0003	6800	1.6	.0002
1/16	1/4	16060	11.8	.0009	10110	7.1	.0007	6140	1.8	.0006
1/16	5/16	16060	11.8	.0009	10110	7.1	.0007	6140	1.8	.0006
1/16	3/8	14460	9.7	.0005	9100	5.7	.0004	5530	1.6	.0003
1/16	1/2	14460	9.7	.0005	9100	5.7	.0004	5530	1.6	.0003
1/16	5/8	14460	9.7	.0003	9100	5.7	.0002	5530	1.6	.0002
5/64	5/16	14010	13.2	.0011	9140	7.9	.0009	6050	2.4	.0007
5/64	3/8	14010	13.2	.0011	9140	7.9	.0009	6050	2.4	.0007
5/64	1/2	12610	10.6	.0007	8230	6.5	.0005	5440	2.0	.0004
5/64	5/8	12610	10.6	.0007	8230	6.5	.0005	5440	2.0	.0004
1/8	3/8	10110	14.2	.0026	6300	8.9	.0020	3810	2.6	.0016
1/8	1/2	10110	14.2	.0019	6300	8.9	.0014	3810	2.6	.0011
1/8	5/8	10110	14.2	.0019	6300	8.9	.0014	3810	2.6	.0011
1/8	3/4	9100	11.4	.0011	5670	7.3	.0008	3430	2.2	.0006
1/8	1-3/16	9100	11.4	.0007	5670	7.3	.0005	3430	2.2	.0004
3/16	1/2	7620	22.4	.0039	4650	14.0	.0030	2960	2.4	.0024
3/16	5/8	7620	22.4	.0028	4650	14.0	.0021	2960	2.4	.0017
3/16	3/4	7620	22.4	.0028	4650	14.0	.0021	2960	2.4	.0017
3/16	1-3/16	6860	18.3	.0016	4190	11.2	.0012	2670	2.0	.0009
3/16	1-1/2	6860	18.3	.0016	4190	11.2	.0012	2670	2.0	.0009
13/64	3/4	7330	27.6	.0030	4390	16.3	.0022	2690	3.2	.0018
13/64	1-1/2	6590	22.2	.0017	3950	13.4	.0013	2420	2.6	.0010
1/4	5/8	6300	29.3	.0052	3810	18.3	.0039	2270	3.5	.0031
1/4	1-3/16	6300	29.3	.0037	3810	18.3	.0028	2270	3.5	.0022
5/16	1	5080	33.7	.0046	3040	17.9	.0035	2030	5.1	.0028
5/16	1-5/8	4570	27.4	.0026	2740	14.4	.0020	1820	4.1	.0016
3/8	1-3/16	4100	30.1	.0055	2520	15.0	.0041	1710	4.3	.0033
3/8	1-3/4	4100	30.1	.0055	2520	15.0	.0041	1710	4.3	.0033
1/2	1-3/8	3120	23.0	.0105	1900	11.2	.0079	1320	3.5	.0063
1/2	2	3120	23.0	.0074	1900	11.2	.0055	1320	3.5	.0044



DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = inch/min.

CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA

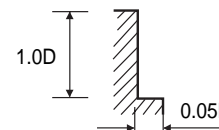
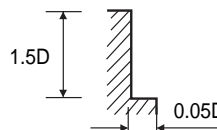
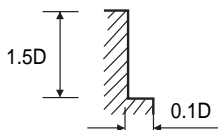


CARBIDE, 6 FLUTE 45° HELIX

GMF29 SERIES

- NORMAL SPEED

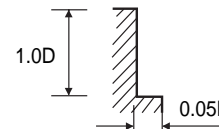
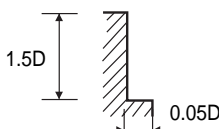
MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS		~ HRc 35		HRc 35 ~ HRc 45		HRc 45 ~ HRc 55	
STRENGTH		~ 1100N/mm ²		1110 ~ 1500N/mm ²		1500 ~ 2000N/mm ²	
DIA.	LOC	RPM	FEED	RPM	FEED	RPM	FEED
1/4	5/8	5775	81.9	4035	56.1	1640	8.7
1/4	1-3/16	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		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS		HRc 35 ~ HRc 45		HRc 45 ~ HRc 55	
STRENGTH		1110 ~ 1500N/mm ²		1500 ~ 2000N/mm ²	
DIAMETER	Length of Cut	RPM	FEED	RPM	FEED
1/4	5/8	17455	249.2	8735	124.7
1/4	1-3/16	17455	211.8	8735	106.1
5/16	3/4	13335	253.8	6670	127.1
5/16	1-1/2	13335	215.6	6670	108.1
3/8	1	11005	260.0	5555	132.3
3/8	1-1/2	11005	260.0	5555	132.3
1/2	1-3/16	8735	206.1	4365	103.1
1/2	2	8735	175.4	4365	87.7
5/8	1-1/2	6670	157.5	3340	78.8
5/8	2-3/8	6670	133.9	3340	67.0
3/4	1-3/4	5555	132.3	2785	63.9
3/4	2-3/8	5555	112.4	2785	54.2



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

CARBIDE







Being the best through innovation



X-SPEED ROUGHER

- Carbide Roughing End Mills for High-Feed Machining with reduced vibrations

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
INCH					
G907 G928		CARBIDE, 4&5 FLUTE STUB LENGTH ROUGHING CORNER RADIUS	D1/4	D1	434
G908 G929		CARBIDE, 4&5 FLUTE REGULAR LENGTH ROUGHING CORNER RADIUS	D1/4	D1	435
G909 G930		CARBIDE, 4&5 FLUTE EXTENDED REACH ROUGHING CORNER RADIUS	D1/4	D3/4	436
METRIC					
G9D75		CARBIDE, 4&5 FLUTE MULTIPLE HELIX SHORT LENGTH ROUGHING CORNER RADIUS	D6.0	D20.0	437
G9D76		CARBIDE, 4&5 FLUTE MULTIPLE HELIX LONG LENGTH ROUGHING CORNER RADIUS	D6.0	D20.0	438
G9D77		CARBIDE, 4&5 FLUTE MULTIPLE HELIX LONG REACH ROUGHING CORNER RADIUS	D6.0	D20.0	439
RECOMMENDED CUTTING CONDITIONS					440

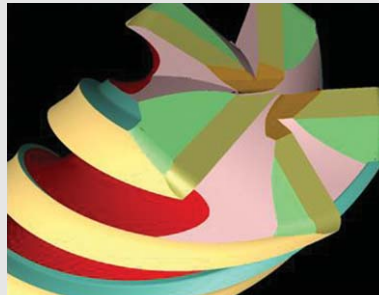
CHARACTERISTICS

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

▶ 4 FLUTE



▶ 5 FLUTE



X-SPEED ROUGHER END MILLS

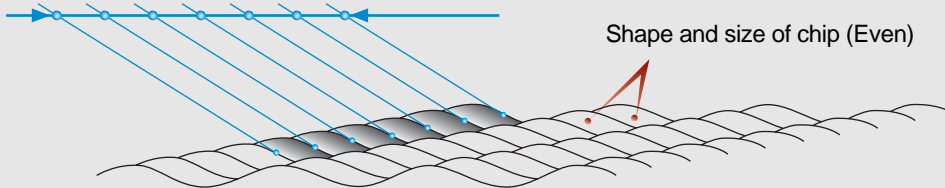
◎ : Excellent
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			HRc40~45	HRc45~55								
-HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○			○		◎		○		
◎	◎	◎	○			○		◎		○		
◎	◎	◎	○			○		◎		○		
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CHIP THICKNESS AND SHAPE

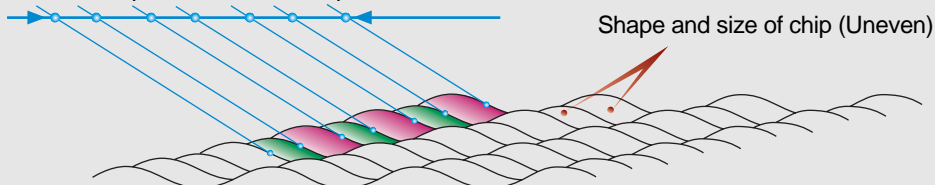
► Conventional Roughing End Mills

Even chip thickness and shape



► X-SPEED Rougher

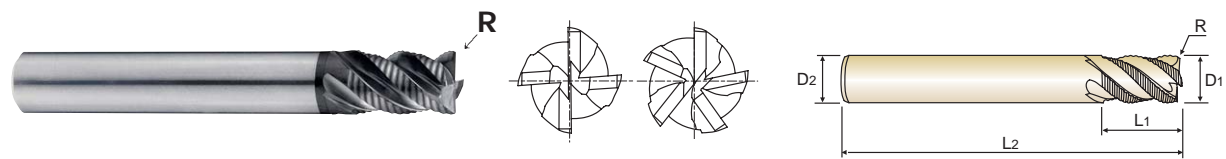
Uneven chip thickness and shape





**CARBIDE, MULTI FLUTE STUB LENGTH ROUGHING
CORNER RADIUS - FINE**

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



Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
PLAIN	FLAT	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

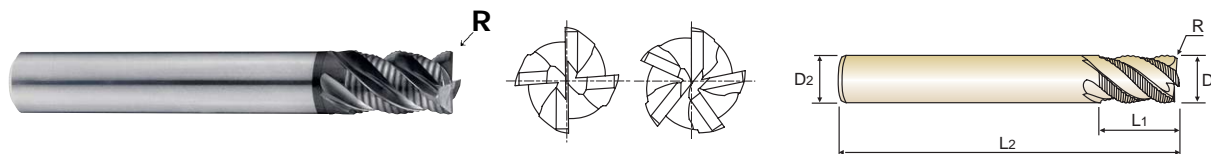
- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- 4G MILLS END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

◎ : Excellent ○ : Good

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

CARBIDE, MULTI FLUTE REGULAR LENGTH ROUGHING CORNER RADIUS - FINE

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



Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
PLAIN	FLAT	R	D1	D2	L1	L2	
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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
-HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
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CARBIDE

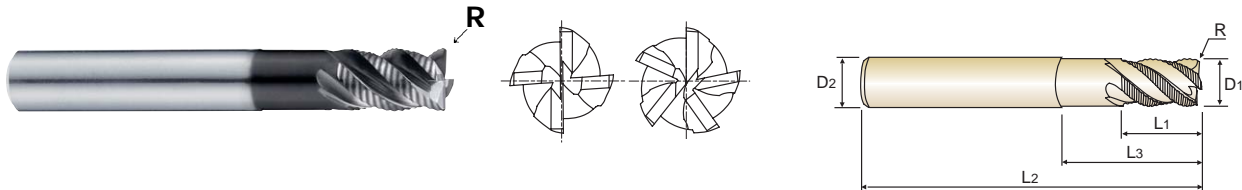
HSS

YG X-SPEED ROUGHER END MILLS

G909 SERIES PLAIN SHANK
G930 SERIES FLAT SHANK

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

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



MG 4&5 M-Helix PLAIN FLAT P.440

Unit : Inch

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

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

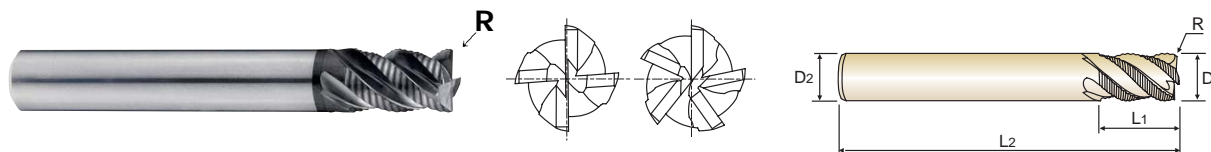
CBN END MILL
 i-Xmill END MILL
 X5070 END MILLS
 4G MILLS END MILLS
 X-SPEED ROUGHER END MILLS
 X-POWER END MILLS
 JET-POWER END MILLS
 V7 Mill STEEL END MILLS
 V7 Mill INOX END MILLS
 ALU-POWER END MILLS
 D-POWER END MILLS
 STANDARD CARBIDE END MILLS
 TANK-POWER END MILLS
 STANDARD COBALT & HSS END MILLS
 TECHNICAL DATA

◎ : Excellent ○ : Good

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

CARBIDE, MULTI FLUTE SHORT LENGTH ROUGHING CORNER RADIUS - FINE

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



Unit : mm

EDP No.	Corner Radius R	Mill Diameter		Shank Diameter D2	Length of Cut L1	Overall Length L2	No. of Flute
		Metric D1	Inch				
G9D75060	R0.5	6.0	.2362	6	9	57	4
G9D75080	R0.5	8.0	.3150	8	12	63	4
G9D75100	R0.5	10.0	.3937	10	15	72	4
G9D75120	R0.5	12.0	.4724	12	18	83	4
G9D75160	R1.0	16.0	.6299	16	24	92	5
G9D75200	R1.0	20.0	.7874	20	30	104	5

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.05	h6

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

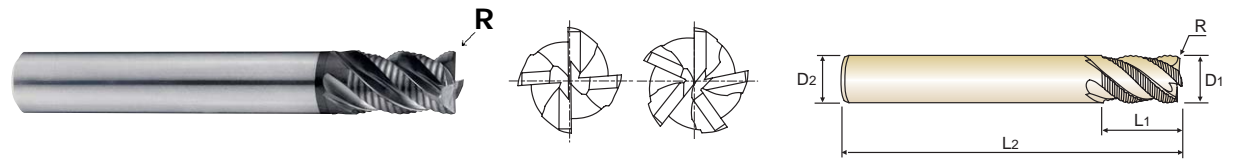
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
-HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○			○		◎		○		

YG X-SPEED ROUGHER END MILLS

G9D76 SERIES PLAIN SHANK

**CARBIDE, MULTI FLUTE LONG LENGTH ROUGHING
CORNER RADIUS - FINE**

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



MG 4&5 M-Helix PLAIN P.440

Unit : mm

EDP No.	Corner Radius R	Mill Diameter		Shank Diameter D2	Length of Cut L1	Overall Length L2	No. of Flute
		Metric D1	Inch				
G9D76060	R0.5	6.0	.2362	6	12	57	4
G9D76080	R0.5	8.0	.3150	8	16	63	4
G9D76100	R0.5	10.0	.3937	10	20	72	4
G9D76120	R0.5	12.0	.4724	12	24	83	4
G9D76160	R1.0	16.0	.6299	16	32	92	5
G9D76200	R1.0	20.0	.7874	20	40	104	5

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.05	h6

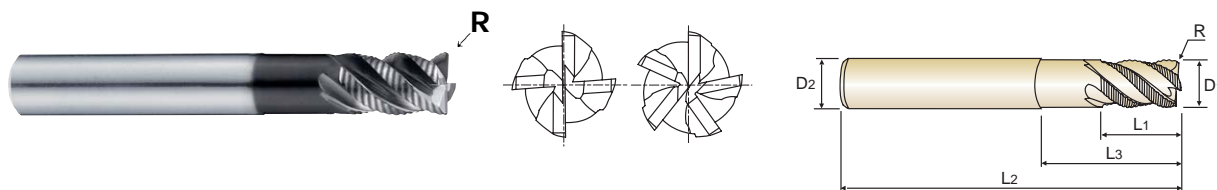
- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- 4G MILLS END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

◎ : Excellent ○ : Good

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

CARBIDE, MULTI FLUTE LONG REACH ROUGHING CORNER RADIUS - FINE

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



Unit : mm

EDP No.	Corner Radius R	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	No. of Flute
		Metric D1	Inch					
G9D77060	R0.5	6.0	.2362	6	9	18	57	4
G9D77080	R0.5	8.0	.3150	8	12	24	63	4
G9D77100	R0.5	10.0	.3937	10	15	30	72	4
G9D77120	R0.5	12.0	.4724	12	18	36	83	4
G9D77160	R1.0	16.0	.6299	16	24	48	100	5
G9D77200	R1.0	20.0	.7874	20	30	60	110	5

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.05	h6

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

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



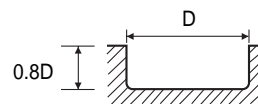
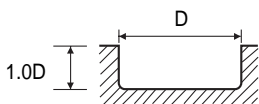
X-SPEED ROUGHER END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4&5 FLUTE MULTIPLE HELIX CORNER RADIUS - SLOTTING

G907, G928, G908, G929, G909, G930, G9D75, G9D76, G9D77 SERIES

MATERIAL		ALLOY STEELS, CARBON STEELS TOOL STEELS CAST IRON		ALLOY STEELS, CARBON STEELS TOOL STEELS, CAST IRON PREHARDENED STEELS	
HARDNESS		~ HRc25		HRc25 ~ HRc40	
DIAMETER		RPM	FEED	RPM	FEED
INCH	METRIC				
1/4	6.0	12000	61.0	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

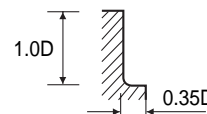
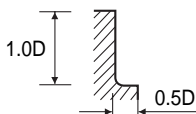


RPM = rev./min.
FEED = inch/min.

CARBIDE, 4&5 FLUTE MULTIPLE HELIX CORNER RADIUS - SIDE CUTTING

G907, G928, G908, G929, G909, G930, G9D75, G9D76, G9D77 SERIES

MATERIAL		ALLOY STEELS, CARBON STEELS TOOL STEELS CAST IRON		ALLOY STEELS, CARBON STEELS TOOL STEELS, CAST IRON PREHARDENED STEELS	
HARDNESS		~ HRc25		HRc25 ~ HRc40	
DIAMETER		RPM	FEED	RPM	FEED
INCH	METRIC				
1/4	6.0	15800	101.2	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.



Being the best through innovation

CARBIDE



X-POWER

- Medium Steels to High Hardened Steels up to HRc70

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE	
			MIN	MAX		
INCH						
EM154		CARBIDE, 2 FLUTE REGULAR LENGTH	◆	D1/16	D1	450
EM206		CARBIDE, 2 FLUTE LONG LENGTH	◆	D1/8	D1	450
EM959		CARBIDE, 2 FLUTE MINIATURE	◆	D.016	D.062	451
EM153		CARBIDE, 4 FLUTE REGULAR LENGTH	◆	D1/16	D1	452
EM207		CARBIDE, 4 FLUTE LONG LENGTH	◆	D1/8	D1	452
EM636		CARBIDE, 2 FLUTE STUB LENGTH CORNER RADIUS	◆	D1/16	D1/2	453
EM639		CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS	◆	D1/16	D1/2	453
EM637		CARBIDE, 2 FLUTE REGULAR LENGTH CORNER RADIUS	◆	D1/16	D1/2	454
EM649		CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS	◆	D1/16	D1/2	454
EM211		CARBIDE, 2 FLUTE LONG LENGTH CORNER RADIUS	◆	D1/4	D1/2	455
EM212		CARBIDE, 4 FLUTE LONG LENGTH CORNER RADIUS	◆	D1/4	D1/2	455
EM102		CARBIDE, 4 FLUTE 45°HELIX LONG LENGTH	◆	D3/8	D7/8	456
EM103		CARBIDE, 4 FLUTE 45°HELIX LONG REACH CORNER RADIUS	◆	D3/8	D7/8	457
EM965		CARBIDE, 4 FLUTE 55°HELIX STUB LENGTH CORNER RADIUS	◆	D1/4	D1/2	458
EM208		CARBIDE, 6&8 FLUTE 45°HELIX LONG LENGTH	◆	D1/4	D1	459
EM218		CARBIDE, 6&8 FLUTE 45°HELIX EXTRA LONG LENGTH	◆	D1/4	D1	459
EM668		CARBIDE, 6&8 FLUTE 45°HELIX LONG LENGTH CORNER RADIUS	◆	D1/4	D3/4	460

◆ U.S.A Stock


















X-POWER END MILLS

◎ : Excellent
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			HRC40~45	HRC45~55								
-HRC20	HRC20~30	HRC30~40	HRC40~45	HRC45~55	HRC55~70							

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SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE	
			MIN	MAX		
INCH						
EM209		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE	◆	R1/64	R1/2	461
EM210		CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE	◆	R1/16	R1/2	461
EM961		CARBIDE, 2 FLUTE MEDIUM LENGTH BALL NOSE	◆	R1/16	R1/2	462
EM962		CARBIDE, 2 FLUTE LONG REACH BALL NOSE	◆	R3/64	R3/8	463
EM960		CARBIDE, 2 FLUTE MINIATURE BALL NOSE	◆	R.012	R.031	464
EM109		CARBIDE, 2 FLUTE 15° HELIX STUB CUT LENGTH BALL NOSE for OVER HRc55	◆	R1/64	R1/4	465
EM963		CARBIDE, 2 FLUTE BALL NOSE with TAPER NECK	◆	R1/32	R1/4	466
EM979		CARBIDE, 2 FLUTE BALL NOSE with PENCIL NECK	◆	R3/32	R1/4	467
EM084		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE (MMC-ECONOMY TYPE)	◆	R1/16	R5/16	469
EM093		CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE (MMC-ECONOMY TYPE)	◆	R1/16	R5/16	470
EM096		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE (MMC-SPHERE TYPE)	◆	R1/16	R5/16	471
EM097		CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE (MMC-SPHERE TYPE)	◆	R1/16	R5/16	472
EM666		CARBIDE, MULTI FLUTE 20° HELIX STUB LENGTH FINE PITCH ROUGHING	◆	D1/4	D1	473
EM156		CARBIDE, MULTI FLUTE 20° HELIX LONG LENGTH FINE PITCH ROUGHING	◆	D1/4	D1	473
EM662		CARBIDE, MULTI FLUTE 20° HELIX LONG LENGTH FINE PITCH ROUGHING BALL NOSE	◆	R1/8	R1/2	474
EM966		CARBIDE, 2 FLUTE for RIB PROCESSING	◆	D1/32	D1/8	475
EM967		CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING	◆	R1/64	R1/16	476


◆ U.S.A Stock

X-POWER END MILLS

⊙ : Excellent
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			HRc40~45	HRc45~55								
-HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
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SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE	
			MIN	MAX		
METRIC						
EM810		CARBIDE, 2 FLUTE SHORT LENGTH	◇	D1.0	D25.0	477
EM816		CARBIDE, 2 FLUTE LONG LENGTH	◇	D2.0	D25.0	478
EM811		CARBIDE, 4 FLUTE SHORT LENGTH	◇	D2.0	D25.0	479
EM817		CARBIDE, 4 FLUTE LONG LENGTH	◇	D2.0	D25.0	480
EM895		CARBIDE, 3 FLUTE 38°HELIX SHORT LENGTH	◇	D1.0	D20.0	481
EM810		CARBIDE, 2 FLUTE MINIATURE	◇	D0.4	D1.5	482
EM818		CARBIDE, 2 FLUTE LONG LENGTH CORNER RADIUS	◇	D3.0	D20.0	483
EM819		CARBIDE, 4 FLUTE LONG LENGTH CORNER RADIUS	◇	D3.0	D20.0	483
EM905		CARBIDE, 4 FLUTE 45°HELIX SHORT LENGTH CORNER RADIUS	◇	D10.0	D22.0	484
EM839		CARBIDE, 4 FLUTE STUB CUT LENGTH CORNER RADIUS	◇	D2.0	D16.0	485
EM812		CARBIDE, 6&8 FLUTE 45°HELIX LONG LENGTH	◇	D6.0	D25.0	486
EM834		CARBIDE, 6&8 FLUTE 45°HELIX EXTRA LONG LENGTH	◇	D6.0	D25.0	486
EM835		CARBIDE, 6 FLUTE 45°HELIX LONG LENGTH CORNER RADIUS	◇	D6.0	D20.0	487
EM897		CARBIDE, 6 FLUTE 45°HELIX STUB CUT LENGTH CORNER RADIUS	◇	D6.0	D12.0	488
EM876		CARBIDE, 2 FLUTE SHORT LENGTH BALL NOSE	◇	R0.5	R12.5	489
EM813 EM823		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE	◇	R0.5	R12.5	490
EM815 EM825		CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE	◇	R0.5	R12.5	490














◇ Call for Availability

X-POWER END MILLS

⊙ : Excellent
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			HRc40~45	HRc45~55								
-HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE	
			MIN	MAX		
METRIC						
EM899		CARBIDE, 2 FLUTE MEDIUM LENGTH BALL NOSE	◇	R1.5	R12.5	491
EM838		CARBIDE, 2 FLUTE LONG REACH BALL NOSE	◇	R1.0	R10.0	492
EM865		CARBIDE, 2 FLUTE MINIATURE BALL NOSE	◇	R0.3	R0.75	493
EM868		CARBIDE, 2 FLUTE 15°HELIX STUB CUT LENGTH BALL NOSE for OVER HRc55	◇	R0.5	R12.5	494
EM902		CARBIDE, 2 FLUTE BALL NOSE with TAPER NECK	◇	R0.5	R6.0	495
EM669		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE (MMC-ECONOMY TYPE)	◇	R1.5	R8.0	496
EM673		CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE (MMC-ECONOMY TYPE)	◇	R2.5	R8.0	497
EM863		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE (MMC- SPHERE TYPE)	◇	R1.5	R8.0	498
EM864		CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE (MMC- SPHERE TYPE)	◇	R2.5	R8.0	499
EM832		CARBIDE, MULTI FLUTE 20° HELIX SHORT LENGTH FINE PITCH ROUGHING	◇	D6.0	D25.0	500
EM814		CARBIDE, MULTI FLUTE 20° HELIX LONG LENGTH FINE PITCH ROUGHING	◇	D6.0	D25.0	501
EM833		CARBIDE, 3&4 FLUTE 20° HELIX LONG LENGTH FINE PITCH ROUGHING BALL NOSE	◇	R3.0	R10.0	502
EM837		CARBIDE, 2 FLUTE TAPER	◇	D2.0	D8.0	503
EM883		CARBIDE, 2 FLUTE for RIB PROCESSING	◇	D0.8	D3.0	504
EM886		CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING	◇	R0.3	R2.0	505
RECOMMENDED CUTTING CONDITIONS					506	

◇ Call for Availability

X-POWER END MILLS

⊙ : Excellent
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			HRc40~45	HRc45~55								
-HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○				○				
			○	⊙	⊙							
○	○	⊙	⊙	○								
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				



CARBIDE, 2 FLUTE REGULAR & LONG LENGTH

- ▶ Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- ▶ Superior workpiece finishes.
- ▶ Increased feed rate.



MG
2
30°
PLAIN
P.506

◆ U.S.A Stock

EM154 Series ■ REGULAR LENGTH

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
93074	1/16	1/8	3/16	1-1/2
93075	1/8	1/8	1/2	1-1/2
93076	3/16	3/16	5/8	2
93077	1/4	1/4	3/4	2-1/2
93078	5/16	5/16	13/16	2-1/2
93079	3/8	3/8	1	2-1/2
93080	1/2	1/2	1	3
93081	5/8	5/8	1-1/4	3-1/2
93082	3/4	3/4	1-1/2	4
93083	1	1	1-1/2	4

EM206 Series ■ LONG LENGTH

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
93084	1/8	1/8	3/4	2-1/4
93085	3/16	3/16	3/4	2-1/2
93086	1/4	1/4	1-1/8	3
93087	5/16	5/16	1-1/8	3
93088	3/8	3/8	1-1/8	3
93089	1/2	1/2	2	4
93090	5/8	5/8	2-1/4	5
93091	3/4	3/4	2-1/4	5
93092	1	1	2-1/4	5

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

◎ : Excellent ○ : Good

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

CARBIDE, 2 FLUTE MINIATURE

- ▶ High precision milling in medical, optical, electronics and aero space industries.
- ▶ Excellent performance on high hardened steel(HRc70).



◆ 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

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

CARBIDE

HSS



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.



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

MG 4 30° PLAIN P.507

◆ U.S.A Stock

EM153 Series ■ REGULAR LENGTH Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
93093	1/16	1/8	3/16	1-1/2
93094	1/8	1/8	1/2	1-1/2
93095	3/16	3/16	5/8	2
93096	1/4	1/4	3/4	2-1/2
93097	5/16	5/16	13/16	2-1/2
93098	3/8	3/8	1	2-1/2
93594	7/16	7/16	1	2-3/4
93099	1/2	1/2	1	3
93100	5/8	5/8	1-1/4	3-1/2
93101	3/4	3/4	1-1/2	4
93102	1	1	1-1/2	4

EM207 Series ■ LONG LENGTH Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
93103	1/8	1/8	3/4	2-1/4
93104	3/16	3/16	3/4	2-1/2
93105	1/4	1/4	1-1/8	3
93106	5/16	5/16	1-1/8	3
93107	3/8	3/8	1-1/8	3
93108	1/2	1/2	2	4
93109	5/8	5/8	2-1/4	5
93110	3/4	3/4	2-1/4	5
93111	1	1	2-1/4	5

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

◎ : Excellent ○ : Good

Series	Carbon Steels ~HRc20	Alloy Steels HRc20-30	Prehardened Steels HRc30-40	Hardened Steels HRc40-45 HRc45-55		High Hardened Steels HRc55-70	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
EM153	○	◎	◎	◎	○				○		○		
EM207	○	◎	◎	◎	○				○				

- ▶ Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- ▶ Superior workpiece finishes.
- ▶ Increased feed rate.



P.508, 509

◆ U.S.A Stock

EM636(2 FLUTE), EM639(4 FLUTE) Series

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
2 FLUTE	4 FLUTE	R (±.001)				
93172	93216	R.008	1/16	1/4	1/8	2-1/4
93173	93217	R.010	1/8	1/4	1/4	2-1/4
93174	93218	R.020	1/8	1/4	1/4	2-1/4
93175	-	R.030	1/8	1/4	1/4	2-1/4
93176	93220	R.010	3/16	1/4	3/8	2-1/2
93177	93221	R.020	3/16	1/4	3/8	2-1/2
93178	93222	R.030	3/16	1/4	3/8	2-1/2
93179	93223	R.010	1/4	1/4	1/2	3
93180	93224	R.020	1/4	1/4	1/2	3
93181	93225	R.030	1/4	1/4	1/2	3
93182	93226	R.020	5/16	5/16	1/2	3
93183	93227	R.030	5/16	5/16	1/2	3
93184	93228	R.060	5/16	5/16	1/2	3
93185	93229	R.090	5/16	5/16	1/2	3
93186	93230	R.020	3/8	3/8	5/8	3
93187	93231	R.030	3/8	3/8	5/8	3
93188	93232	R.060	3/8	3/8	5/8	3
93189	93233	R.090	3/8	3/8	5/8	3
93190	93234	R.020	1/2	1/2	5/8	4
93191	93235	R.030	1/2	1/2	5/8	4
93192	93236	R.060	1/2	1/2	5/8	4
93193	93237	R.090	1/2	1/2	5/8	4

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

◎ : Excellent ○ : Good

Series	Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
	~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
EM636	○	◎	◎	◎	○								
EM639	○	◎	◎	◎	○				○		○		



CARBIDE, 2&4 FLUTE REGULAR LENGTH CORNER RADIUS

- ▶ Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- ▶ Superior workpiece finishes.
- ▶ Increased feed rate.



MG
2&4
30°
±.001
PLAIN
P.508, 509

◆ U.S.A Stock

EM637(2 FLUTE), EM649(4 FLUTE) Series

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
2 FLUTE	4 FLUTE	R (±.001)				
93194	93238	R.008	1/16	1/4	3/16	2-1/4
93195	93239	R.010	1/8	1/4	1/2	2-1/4
93196	93240	R.020	1/8	1/4	1/2	2-1/4
93197	-	R.030	1/8	1/4	1/2	2-1/4
93198	93242	R.010	3/16	1/4	5/8	2-1/2
93199	93243	R.020	3/16	1/4	5/8	2-1/2
93200	93244	R.030	3/16	1/4	5/8	2-1/2
93201	93245	R.010	1/4	1/4	3/4	3
93202	93246	R.020	1/4	1/4	3/4	3
93203	93247	R.030	1/4	1/4	3/4	3
93204	93248	R.020	5/16	5/16	13/16	3
93205	93249	R.030	5/16	5/16	13/16	3
93206	93250	R.060	5/16	5/16	13/16	3
93207	93251	R.090	5/16	5/16	13/16	3
93208	93252	R.020	3/8	3/8	1	3
93209	93253	R.030	3/8	3/8	1	3
93210	93254	R.060	3/8	3/8	1	3
93211	93255	R.090	3/8	3/8	1	3
93600	93595	R.020	7/16	7/16	1	4
93601	93597	R.030	7/16	7/16	1	4
93602	93598	R.060	7/16	7/16	1	4
93603	93599	R.090	7/16	7/16	1	4
93212	93256	R.020	1/2	1/2	1	4
93213	93257	R.030	1/2	1/2	1	4
93214	93258	R.060	1/2	1/2	1	4
93215	93259	R.090	1/2	1/2	1	4

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

◎ : Excellent ○ : Good

Series	Carbon Steels ~HRc20	Alloy Steels HRc20-30	Prehardened Steels HRc30-40	Hardened Steels HRc40-45 HRc45-55	High Hardened Steels HRc55-70	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
EM637	○	◎	◎	◎	○							
EM649	○	◎	◎	◎	○			○		○		

CARBIDE, 2&4 FLUTE LONG LENGTH CORNER RADIUS

- ▶ Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- ▶ Superior workpiece finishes.
- ▶ Increased feed rate.



P.508, 509

◆ U.S.A Stock

EM211(2 FLUTE), EM212(4 FLUTE) Series

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
2 FLUTE	4 FLUTE	R (±.001)				
93143	93157	R.020	1/4	1/4	1-1/8	3
93144	93158	R.030	1/4	1/4	1-1/8	3
93145	93159	R.020	5/16	5/16	1-1/8	3
93146	93160	R.030	5/16	5/16	1-1/8	3
93147	93161	R.060	5/16	5/16	1-1/8	3
93148	93162	R.090	5/16	5/16	1-1/8	3
93149	93163	R.020	3/8	3/8	1-1/8	3
93150	93164	R.030	3/8	3/8	1-1/8	3
93151	93165	R.060	3/8	3/8	1-1/8	3
93152	93166	R.090	3/8	3/8	1-1/8	3
93153	93167	R.020	1/2	1/2	2	4
93154	93168	R.030	1/2	1/2	2	4
93155	93169	R.060	1/2	1/2	2	4
93156	93170	R.090	1/2	1/2	2	4

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

◎ : Excellent ○ : Good

Series	Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
	~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
EM211	○	◎	◎	◎	○								
EM212	○	◎	◎	◎	○				○		○		



EM102 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE 45° HELIX LONG LENGTH

- ▶ Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- ▶ 4 flute allows for better workpiece finishes.
- ▶ Increased production.



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

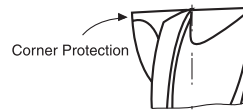
MG 4 45° PLAIN P.509

◆ U.S.A Stock

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
93395	3/8	5/16	5/8	5
93396	1/2	3/8	3/4	6
93397	5/8	1/2	7/8	6-1/2
93398	3/4	5/8	1	7
93399	7/8	3/4	1-1/4	8

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

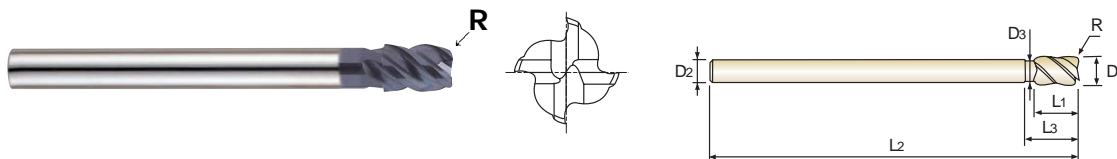


◎ : Excellent ○ : Good

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

CARBIDE, 4 FLUTE 45° HELIX LONG REACH CORNER RADIUS

- ▶ Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- ▶ Superior workpiece finishes.
- ▶ Increased feed rate.



◆ U.S.A Stock

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (±.001)	D1	D2	L1	L3	L2	D3
93400	R.020	3/8	5/16	5/8	.750	5	.293
93405	R.040	3/8	5/16	5/8	.750	5	.293
93401	R.020	1/2	3/8	3/4	.875	6	.355
93406	R.040	1/2	3/8	3/4	.875	6	.355
93402	R.020	5/8	1/2	7/8	1.000	6-1/2	.480
93407	R.040	5/8	1/2	7/8	1.000	6-1/2	.480
93403	R.020	3/4	5/8	1	1.125	7	.605
93408	R.040	3/4	5/8	1	1.125	7	.605
93404	R.020	7/8	3/4	1-1/4	1.375	8	.730
93409	R.040	7/8	3/4	1-1/4	1.375	8	.730

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

◎ : Excellent ○ : Good

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

CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

TANK-POWER
END MILLS

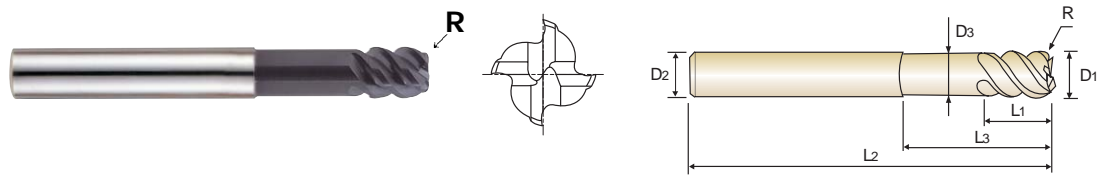
STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA



CARBIDE, 4 FLUTE 55° HELIX STUB LENGTH CORNER RADIUS

- ▶ Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- ▶ Corner radius and corner protection against chipping.



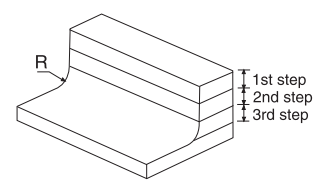
MG 4 55° ±.001 PLAIN P.511

◆ U.S.A Stock

Unit : Inch

EDP No.	Corner Radius	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



- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- 4G MILLS END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

◎ : Excellent ○ : Good

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

CARBIDE, 6&8 FLUTE 45°HELIX LONG & EXTRA LONG LENGTH

- ▶ Designed to machine high hardened materials.
- ▶ High speed cutting and finish milling with high feed rate.
- ▶ Superior workpiece finishes.
- ▶ Superior wear resistant.
- ▶ Suitable for dry milling.
- ▶ Corner Protection against chipping.



P.512, 513

◆ U.S.A Stock

EM208 Series LONG LENGTH

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
93119	1/4	1/4	1/2	2-1/4	6
93120	5/16	5/16	3/4	2-1/2	6
93121	3/8	3/8	7/8	2-7/8	6
93122	1/2	1/2	1	3-1/4	6
93123	5/8	5/8	1-1/4	3-5/8	6
93124	3/4	3/4	1-1/2	4-1/8	8
93171	1	1	1-3/4	4-1/4	8

EM218 Series EXTRA LONG LENGTH

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
99666	1/4	1/4	1	2-3/4	6
99667	5/16	5/16	1-1/2	3-5/8	6
99668	3/8	3/8	1-3/4	4	6
99669	1/2	1/2	2-3/16	4-3/8	6
99670	5/8	5/8	2-5/8	5-1/8	6
99588	3/4	3/4	2-1/4	5	8
99589	3/4	3/4	3-1/4	6	8
99590	3/4	3/4	4-1/8	7	8
99591	1	1	4-1/8	7	8

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

◎ : Excellent ○ : Good

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



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.513

◆ U.S.A Stock

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
	R					
93277	R.020	1/4	1/4	1/2	2-1/4	6
93278	R.020	5/16	5/16	3/4	2-1/2	6
93279	R.020	3/8	3/8	7/8	2-7/8	6
93280	R.030	3/8	3/8	7/8	2-7/8	6
93281	R.020	1/2	1/2	1	3-1/4	6
93282	R.030	1/2	1/2	1	3-1/4	6
93283	R.030	5/8	5/8	1-1/4	3-5/8	6
93284	R.060	5/8	5/8	1-1/4	3-5/8	6
93285	R.030	3/4	3/4	1-1/2	4-1/8	8
93286	R.060	3/4	3/4	1-1/2	4-1/8	8
93287	R.090	3/4	3/4	1-1/2	4-1/8	8

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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

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

CARBIDE, 2&4 FLUTE LONG LENGTH BALL NOSE

- ▶ Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- ▶ For copy-milling machines.



P.514, 515

◆ U.S.A Stock

EM209(2 FLUTE), EM210(4 FLUTE) Series

Unit : Inch

EDP No.		Radius of Ball Nose R (±.001)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
2 FLUTE	4 FLUTE					
93260	-	R 1/64	1/32	1/4	1/32	2-1/2
93261	-	R 1/32	1/16	1/4	1/16	2-1/2
93262	-	R 3/64	3/32	1/4	3/32	2-1/2
93125	93134	R 1/16	1/8	1/8	5/16	2-3/8
93126	93135	R 3/32	3/16	3/16	3/8	3-1/8
93127	93136	R 1/8	1/4	1/4	1/2	3-1/2
93128	93137	R 5/32	5/16	5/16	9/16	4
93129	93138	R 3/16	3/8	3/8	3/4	4
93130	93139	R 1/4	1/2	1/2	7/8	4-1/4
93131	93140	R 5/16	5/8	5/8	1-1/4	5-1/2
93132	93141	R 3/8	3/4	3/4	1-1/2	6-1/4
93133	93142	R 1/2	1	1	2	7-1/8

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

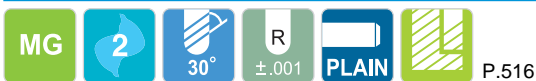
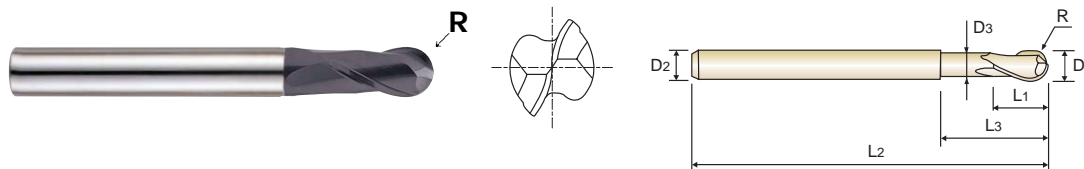
◎ : Excellent ○ : Good

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



CARBIDE, 2 FLUTE MEDIUM LENGTH BALL NOSE

- ▶ Deep slotting milling is possible by reduced neck.
- ▶ High efficiency milling is possible in deep slotting with projection of the end mill being long.



◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (±.001)	D1	D2	L1	L3	L2	D3
93517	R1/16	1/8	1/4	5/16	-	2-3/4	-
93518	R3/32	3/16	1/4	1/2	-	3-1/8	-
93519	R1/8	1/4	1/4	1/2	7/8	3-1/8	.242
93520	R5/32	5/16	5/16	9/16	1-1/16	3-1/2	.305
93521	R3/16	3/8	3/8	3/4	1-1/4	4	.367
93522	R1/4	1/2	1/2	7/8	1-3/8	4-1/4	.492
93523	R5/16	5/8	5/8	1-1/4	2	5-1/2	.617
93524	R3/8	3/4	3/4	1-1/2	2-1/4	6-1/4	.742
93525	R1/2	1	1	2-1/8	3	7	.992

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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

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

CARBIDE, 2 FLUTE LONG REACH BALL NOSE

► Longer overall length than EM209, EM210, type and suitable for machining deeply located area.



MG
2
30°
R ±.001
PLAIN
P.517

◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R (±.001)				
93578	R3/64	3/32	1/8	1/4	3-1/8
93579	R1/16	1/8	1/8	5/16	4
93580	R3/32	3/16	3/16	3/8	4-3/4
93581	R1/8	1/4	1/4	3/8	4-3/4
93582	R5/32	5/16	5/16	9/16	5-1/2
93583	R3/16	3/8	3/8	3/4	7
93584	R1/4	1/2	1/2	7/8	8
93585	R5/16	5/8	5/8	1-1/4	10
93586	R3/8	3/4	3/4	1-1/2	10

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

◎ : Excellent ○ : Good

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



CARBIDE, 2 FLUTE MINIATURE BALL NOSE

- ▶ High precision milling in medical, optical, electronics and aerospace industrials.
- ▶ Excellent performance at dry cutting condition.
- ▶ Excellent performance on high hardened steel up to HRc70.



MG
2
30°
R ±.0005
PLAIN
P.523

◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R (±.0005)				
93507	R.012	.024	1/8	.043	1-1/2
93508	R.014	.028	1/8	.060	1-1/2
93509	R.0155	.031	1/8	.080	1-1/2
93510	R.0175	.035	1/8	.087	1-1/2
93511	R.020	.040	1/8	.100	1-1/2
93512	R.0215	.043	1/8	.118	1-1/2
93513	R.0235	.047	1/8	.118	1-1/2
93514	R.026	.052	1/8	.138	1-1/2
93515	R.0275	.055	1/8	.138	1-1/2
93516	R.031	.062	1/8	.157	1-1/2

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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

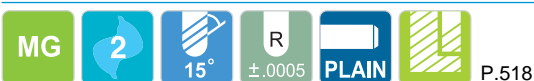
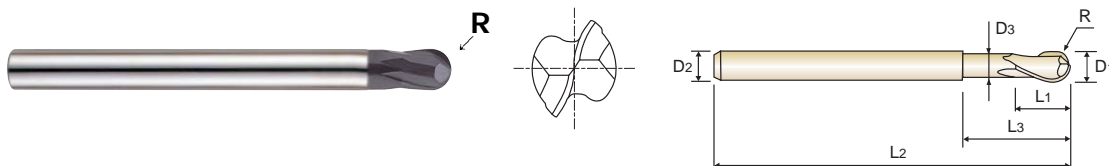
TECHNICAL DATA

◎ : Excellent ○ : Good

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

CARBIDE, 2 FLUTE 15° HELIX STUB CUT LENGTH BALL NOSE
for OVER HRc55

- ▶ Suitable for HRc55~HRc70 high hardened materials.
- ▶ Strong cutting edges and higher tool rigidity.


HRc55 ~ HRc70
◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (±.0005)	D1	D2	L1	L3	L2	D3
93485	R1/64	1/32	1/4	1/32	1/16	2	.029
93486	R1/32	1/16	1/4	1/16	1/8	2	.059
93487	R3/64	3/32	1/4	3/32	3/16	2	.090
93488	R1/16	1/8	1/4	1/8	1/4	2-1/2	.121
93489	R3/32	3/16	1/4	3/16	3/8	3	.184
93490	R1/8	1/4	1/4	1/4	1/2	3-1/2	.246
93491	R5/32	5/16	5/16	5/16	5/8	4	.309
93492	R3/16	3/8	3/8	3/8	3/4	4	.371
93493	R1/4	1/2	1/2	1/2	1	4-1/2	.496

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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

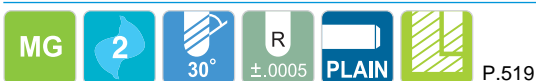
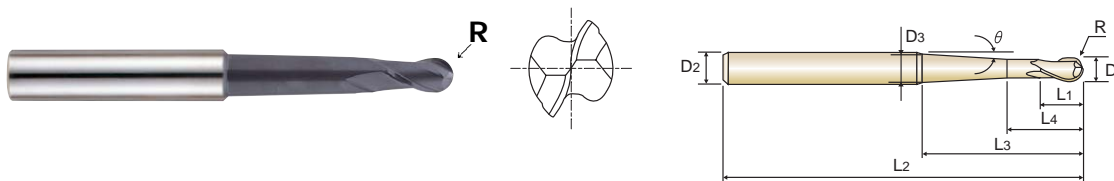
◎ : Excellent ○ : Good

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



CARBIDE, 2 FLUTE BALL NOSE with TAPER NECK

► High efficiency milling is possible in deep slotting with projection of the end mill being long.



◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose R (±.0005)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Under Neck Parallel Length L4	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Neck Taper Angle θ
93526	R1/32	1/16	1/4	5/32	15/64	7/8	2-3/8	.096	1°30'
93527	R1/32	1/16	1/4	5/32	15/64	1-5/8	3-1/8	.208	3°
93528	R1/16	1/8	1/4	1/4	21/64	2-1/16	3-5/8	.216	1°30'
93529	R3/32	3/16	3/8	3/8	29/64	2-3/8	4-3/8	.288	1°30'
93530	R1/8	1/4	3/8	1/2	5/8	2-1/16	4-3/8	.325	1°30'
93531	R5/32	5/16	1/2	9/16	11/16	2-1/16	4-3/4	.385	1°30'
93532	R3/16	3/8	1/2	11/16	13/16	2-3/8	5-1/16	.458	1°30'
93533	R1/4	1/2	3/4	7/8	1	3-1/4	6-3/8	.618	1°30'

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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

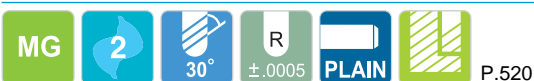
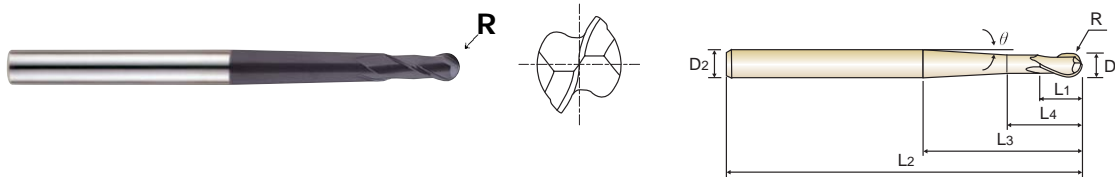
TECHNICAL DATA

◎ : Excellent ○ : Good

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

CARBIDE, 2 FLUTE BALL NOSE with PENCIL NECK

▶ High efficiency milling is possible in deep slotting with projection of the end mill being long.

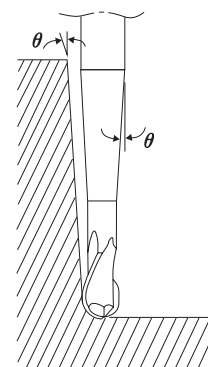


◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Under Neck Parallel Length	Length Below Shank	Overall Length	Neck Taper Angle
	R (±.0005)	D1	D2	L1	L4	L3	L2	θ
93534	R3/32	3/16	3/8	9/16	.659	3-11/32	7-3/4	2°
93535	R3/32	3/16	3/8	9/16	.666	2-13/16	6	2°30'
93536	R1/8	1/4	1/2	3/4	.859	4-7/16	7-3/4	2°
93537	R1/8	1/4	1/2	3/4	.856	3-23/32	6	2°30'
93538	R5/32	5/16	1/2	3/4	.868	4-29/32	7-3/4	1°20'
93539	R5/32	5/16	1/2	3/4	.870	3-15/16	6	1°45'
93540	R3/16	3/8	5/8	1-3/16	1.326	4-29/32	7-3/4	2°
93541	R3/16	3/8	5/8	1-3/16	1.325	4-3/16	6	2°30'
93542	R1/4	1/2	5/8	1-3/16	1.309	4	7-3/4	1°20'
93543	R1/4	1/2	5/8	1-3/16	1.329	3-3/8	6	1°45'

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



MILLING ON TAPERED WALL

◎ : Excellent ○ : Good

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



X-POWER BALL NOSE END MILLS - MMC

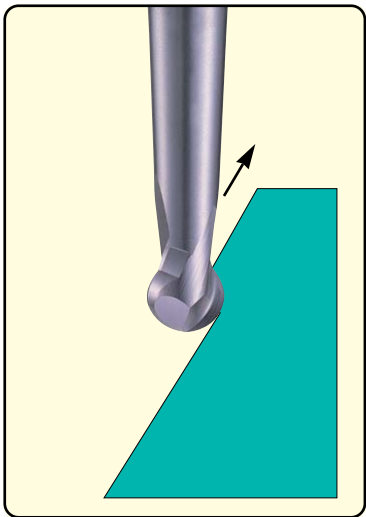
Useful Field Area

- 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.

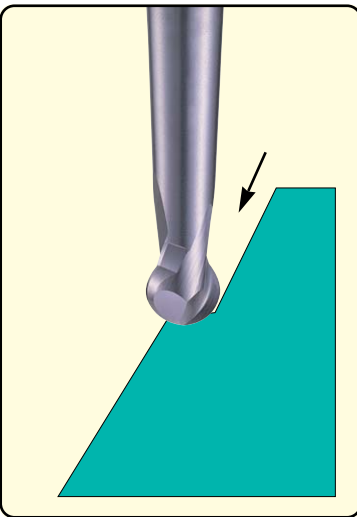
Characteristics

- 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.
- Outstanding tool geometry and sphere shape ball enables more increased tool life and higher speed and feed operation.

Surpassing Milling Operation

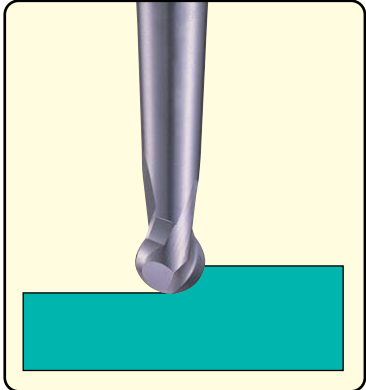


Favorable Back Milling

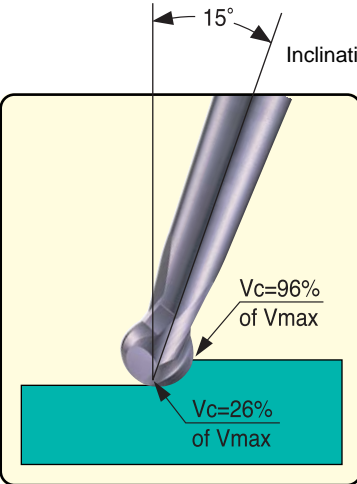


Unfavorable Drilling

- Operating angle 14° ~ 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

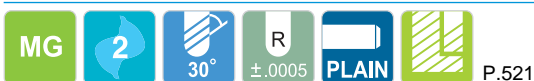
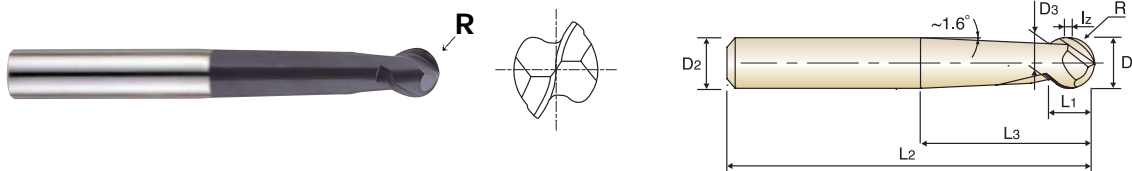


Favorable Profiling

- When 15° inclination milling operation, more productivity and higher speed and feed are possible.
- Decreased cutting force.
- Excellent surface roughness and brightness.

CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE (MMC-ECONOMY TYPE)

- ▶ Designed for copy milling.
- ▶ Increased feed rates.
- ▶ 15° inclination.
- ▶ Easy to regrind.


◆ 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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

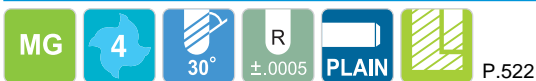
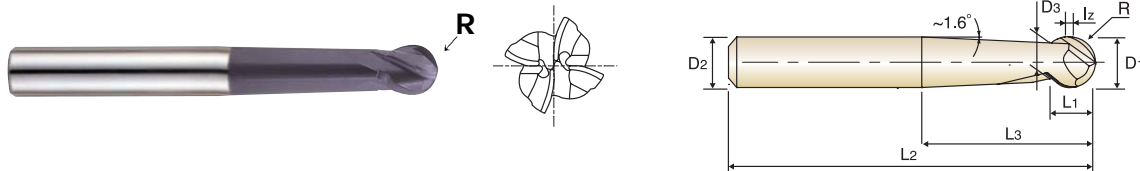
◎ : Excellent ○ : Good

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



CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE (MMC-ECONOMY TYPE)

- ▶ Designed for copy milling.
- ▶ Increased feed rates.
- ▶ 15° inclination.
- ▶ Easy to regrind.



◆ U.S.A Stock

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

Unit : Inch

EDP No.	Radius of Ball Nose R (±.0005)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Lz
93295	R1/16	1/8	1/4	5/32	1-1/4	3-1/4	.100	.060
93296	R3/32	3/16	1/4	7/32	1-1/4	3-1/4	.150	.080
93297	R1/8	1/4	1/4	9/32	1-1/4	4	.200	.080
93298	R5/32	5/16	5/16	3/8	1-1/2	4	.250	.120
93299	R3/16	3/8	3/8	13/32	1-3/4	4	.300	.120
93300	R1/4	1/2	1/2	17/32	2-1/4	4-1/4	.400	.120
93301	R5/16	5/8	5/8	5/8	2-3/4	6-1/4	.500	.120

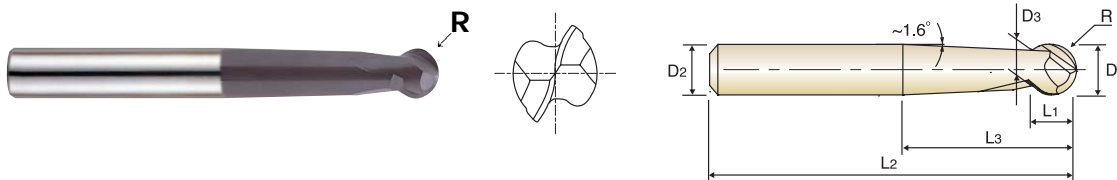
Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0010	0~-.0003

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

◎ : Excellent ○ : Good

CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE (MMC-SPHERE TYPE)

- ▶ Designed for copy milling.
- ▶ Increased feed rates.
- ▶ 15° inclination.(see page 000)
- ▶ Sphere Angle : 250°



MG
2
30°
R ±.0005
PLAIN
P.521

◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (±.0005)	D1	D2	L1	L3	L2	D3
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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

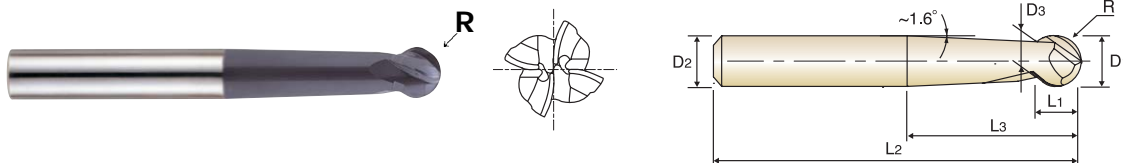
◎ : Excellent ○ : Good

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



CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE (MMC-SPHERE TYPE)

- ▶ Designed for copy milling.
- ▶ Increased feed rates.
- ▶ 15° inclination.(see page 000)
- ▶ Sphere Angle : 250°



◆ 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
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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

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

CARBIDE, MULTI FLUTE 20° HELIX STUB & LONG LENGTH FINE PITCH ROUGHING

- ▶ Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- ▶ High velocity milling of hardened steels.
- ▶ For dry and wet milling.
- ▶ Fast chip ejection.



◆ U.S.A Stock

EM666 Series ■ STUB LENGTH

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
93270	1/4	1/4	5/16	2-1/8	3
93271	5/16	5/16	3/8	2-1/4	3
93272	3/8	3/8	9/16	2-1/2	3
93273	1/2	1/2	5/8	3	4
93274	5/8	5/8	7/8	3-1/4	4
93275	3/4	3/4	1	3-3/4	4
93276	1	1	1	4	5

EM156 Series ■ LONG LENGTH

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
93112	1/4	1/4	3/4	2-1/2	3
93113	5/16	5/16	3/4	2-1/2	3
93114	3/8	3/8	7/8	2-1/2	3
93115	1/2	1/2	1	3	4
93116	5/8	5/8	1-1/4	3-1/2	4
93117	3/4	3/4	1-5/8	4	4
93118	1	1	1-3/4	4	5

Mill Dia. (inch)	Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
1/4~3/8	0 ~ -.0022	0 ~ -.0003
1/2~5/8	0 ~ -.0027	
3/4~1	0 ~ -.0033	

◎ : Excellent ○ : Good

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



CARBIDE, MULTI FLUTE 20° HELIX LONG LENGTH FINE PITCH ROUGHING BALL NOSE

- ▶ Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- ▶ High velocity milling of hardened steels.
- ▶ For dry and wet milling.
- ▶ Fast chip ejection.



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA



◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose R (±.001)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
93263	R1/8	1/4	1/4	3/4	2-1/2	3
93264	R5/32	5/16	5/16	3/4	2-1/2	3
93265	R3/16	3/8	3/8	7/8	2-1/2	3
93266	R1/4	1/2	1/2	1	3	4
93267	R5/16	5/8	5/8	1-1/4	3-1/2	4
93268	R3/8	3/4	3/4	1-5/8	4	4
93269	R1/2	1	1	1-3/4	4	5

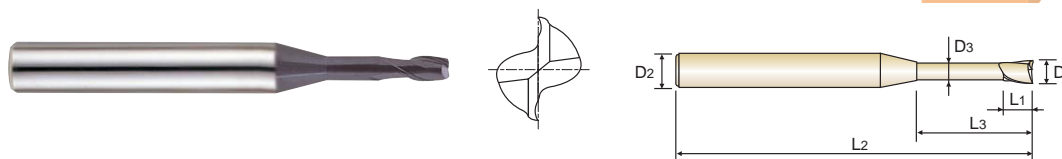
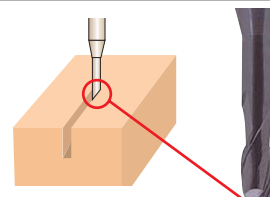
Mill Dia. (inch)	Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
1/4~3/8	0 ~ -.0022	0 ~ -.0003
1/2~5/8	0 ~ -.0027	
3/4~1	0 ~ -.0033	

◎ : Excellent ○ : Good

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

CARBIDE, 2 FLUTE for RIB PROCESSING

- ▶ For deep slotting & pocketing.
- ▶ For depths of 6 to 10X cutting diameter.
- ▶ Machine carbon steel, alloy steel, tool steel, die and mold steels.
- ▶ Suitable for high speed cutting and high precision machining.
- ▶ Designed with reinforced shank for higher stability and rigidity.
- ▶ Long neck design for deep machining near walls.


◆ U.S.A Stock

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	D1	D2	L1	L3	L2	D3
93548	1/32	1/8	3/64	7/32	2	.029
93549	1/32	1/8	3/64	5/16	2	.029
93550	3/64	1/8	1/16	7/32	2	.045
93551	3/64	1/8	1/16	9/32	2	.045
93552	3/64	1/8	1/16	1/2	2	.045
93553	1/16	1/8	3/32	5/16	2	.060
93554	1/16	1/8	3/32	3/8	2	.060
93555	1/16	1/8	3/32	1/2	2	.060
93556	1/16	1/8	3/32	5/8	2	.060
93557	5/64	1/8	1/8	1/2	2	.076
93558	5/64	1/8	1/8	5/8	2	.076
93559	3/32	1/8	9/64	1/2	2	.090
93560	3/32	1/8	9/64	5/8	2	.090
93561	1/8	1/4	3/16	9/16	2-1/4	.120
93562	1/8	1/4	3/16	3/4	2-1/4	.120

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~-.0006	0~-.0003

◎ : Excellent ○ : Good

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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

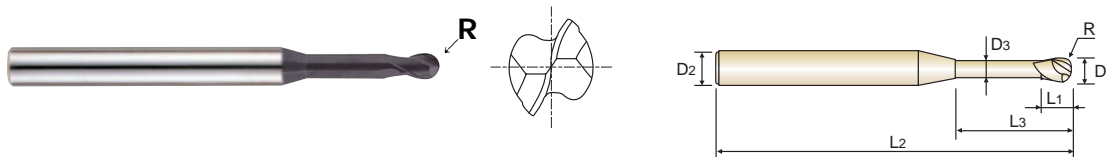
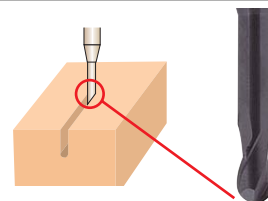
TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING

- ▶ For 3-D milling, deep slotting and pocketing.
- ▶ For depths of 6 to 10X cutting diameter.
- ▶ Machine carbon steel, alloy steel, tool steel, die and mold steels.
- ▶ Suitable for high speed cutting and high precision machining.
- ▶ Designed with reinforced shank for higher stability and rigidity.
- ▶ Long neck design for deep machining near walls.



◆ U.S.A Stock

Unit : Inch

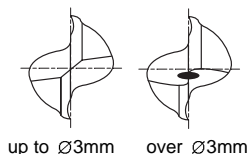
EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (±.0005)	D1	D2	L1	L3	L2	D3
93563	R1/64	1/32	1/8	3/64	7/32	2	.029
93564	R1/64	1/32	1/8	3/64	5/16	2	.029
93565	R.0234	3/64	1/8	1/16	7/32	2	.045
93566	R.0234	3/64	1/8	1/16	9/32	2	.045
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

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

CARBIDE, 2 FLUTE SHORT LENGTH

- ▶ Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- ▶ Superior workpiece finishes.
- ▶ Increased feed rates.



up to Ø3mm over Ø3mm

MG
2
30°
PLAIN
P.506

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	Metric	Inch			
EM810901	1.0	.0394	6	2.5	40
EM810902	1.5	.0591	6	4	40
EM810020	2.0	.0787	4	6	40
EM810903	2.0	.0787	6	6	40
EM810025	2.5	.0984	4	8	40
EM810904	2.5	.0984	6	8	40
EM810030	3.0	.1181	6	8	45
EM810035	3.5	.1378	6	10	45
EM810040	4.0	.1575	6	11	45
EM810045	4.5	.1772	6	11	45
EM810050	5.0	.1969	6	13	50
EM810055	5.5	.2165	6	13	50
EM810060	6.0	.2362	6	13	50
EM810065	6.5	.2559	8	16	60
EM810070	7.0	.2756	8	16	60
EM810075	7.5	.2953	8	16	60
EM810080	8.0	.3150	8	19	60
EM810085	8.5	.3346	10	19	70
EM810090	9.0	.3543	10	19	70
EM810095	9.5	.3740	10	19	70
EM810100	10.0	.3937	10	22	70
EM810105	10.5	.4134	12	22	75
EM810110	11.0	.4330	12	22	75
EM810115	11.5	.4527	12	22	75
EM810120	12.0	.4724	12	26	75
EM810906	13.0	.5118	12	26	85
EM810140	14.0	.5512	14	26	85
EM810905	14.0	.5512	16	26	85
EM810908	15.0	.5905	16	26	90

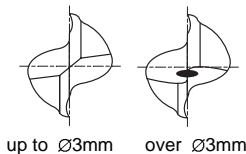
◎ : Excellent ○ : Good

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



CARBIDE, 2 FLUTE SHORT& LONG LENGTH

- ▶ Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- ▶ Superior workpiece finishes.
- ▶ Increased feed rates.



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

MG 2 30° PLAIN P.506

◇ Call for Availability

EM810 Series ■ SHORT LENGTH Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	Metric	Inch			
EM810160	16.0	.6299	16	32	100
EM810909	17.0	.6692	16	32	100
EM810180	18.0	.7087	18	32	100
EM810911	19.0	.7480	20	32	100
EM810200	20.0	.7874	20	38	105
EM810220	22.0	.8661	20	38	105
EM810240	24.0	.9449	25	45	120
EM810250	25.0	.9843	25	45	120

EM816 Series ■ LONG LENGTH Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	Metric	Inch			
EM816020	2.0	.0787	4	8	40
EM816030	3.0	.1181	6	12	50
EM816040	4.0	.1575	6	15	50
EM816050	5.0	.1969	6	20	60
EM816060	6.0	.2362	6	20	60
EM816080	8.0	.3150	8	25	70
EM816100	10.0	.3937	10	30	90
EM816120	12.0	.4724	12	30	90
EM816140	14.0	.5512	16	40	110
EM816160	16.0	.6299	16	50	110
EM816180	18.0	.7087	20	50	110
EM816200	20.0	.7874	20	55	110
EM816250	25.0	.9843	25	75	140

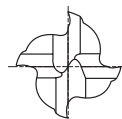
Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	h6

◎ : Excellent ○ : Good

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

CARBIDE, 4 FLUTE SHORT LENGTH

- ▶ Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- ▶ 4 flute allows for better workpiece finishes.
- ▶ Increased production.



◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	Metric	Inch			
EM811020	2.0	.0787	4	6	40
EM811901	2.0	.0787	6	6	40
EM811025	2.5	.0984	4	8	40
EM811902	2.5	.0984	6	8	40
EM811030	3.0	.1181	6	8	45
EM811035	3.5	.1378	6	10	45
EM811040	4.0	.1575	6	11	45
EM811045	4.5	.1772	6	11	45
EM811050	5.0	.1969	6	13	50
EM811055	5.5	.2165	6	13	50
EM811060	6.0	.2362	6	13	50
EM811065	6.5	.2559	8	16	60
EM811070	7.0	.2756	8	16	60
EM811075	7.5	.2953	8	16	60
EM811080	8.0	.3150	8	19	60
EM811085	8.5	.3346	10	19	70
EM811090	9.0	.3543	10	19	70
EM811095	9.5	.3740	10	19	70
EM811100	10.0	.3937	10	22	70
EM811105	10.5	.4134	12	22	75
EM811110	11.0	.4330	12	22	75
EM811115	11.5	.4527	12	22	75
EM811120	12.0	.4724	12	26	75
EM811904	13.0	.5118	12	26	85
EM811140	14.0	.5512	14	26	85
EM811905	14.0	.5512	12	26	85
EM811903	14.0	.5512	16	26	85
EM811906	15.0	.5905	16	26	90
EM811160	16.0	.6299	16	32	100

◎ : Excellent ○ : Good

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

CARBIDE

HSS

X-POWER
END MILLS

EM811 SERIES

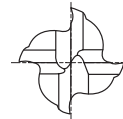
PLAIN SHANK

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.507

◇ Call for Availability

EM811 Series ■ SHORT LENGTH

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	Metric	Inch			
EM811907	17.0	.6692	16	32	100
EM811180	18.0	.7087	18	32	100
EM811908	18.0	.7087	16	32	100
EM811909	19.0	.7480	20	32	100
EM811200	20.0	.7874	20	38	105
EM811220	22.0	.8661	20	38	105
EM811240	24.0	.9449	25	45	120
EM811250	25.0	.9843	25	45	120

EM817 Series ■ LONG LENGTH

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	Metric	Inch			
EM817020	2.0	.0787	4	8	40
EM817030	3.0	.1181	6	12	50
EM817040	4.0	.1575	6	15	50
EM817050	5.0	.1969	6	20	60
EM817060	6.0	.2362	6	20	60
EM817080	8.0	.3150	8	25	70
EM817100	10.0	.3937	10	30	90
EM817120	12.0	.4724	12	30	90
EM817140	14.0	.5512	16	40	110
EM817160	16.0	.6299	16	50	110
EM817180	18.0	.7087	20	50	110
EM817200	20.0	.7874	20	55	110
EM817250	25.0	.9843	25	75	140

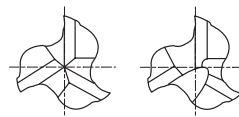
Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	h6

◎ : Excellent ○ : Good

Series	Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
	~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
EM811	○	◎	◎	◎	○				○		○		
EM817	○	◎	◎	◎	○				○				

CARBIDE, 3 FLUTE 38° HELIX SHORT LENGTH

- ▶ Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- ▶ Possesses the advantage of 2 flute and 4 flute end mill.
- ▶ Superior workpiece finishes.



under Ø3mm from Ø3mm

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	Metric	Inch			
EM895010	1.0	.0394	3	2.5	38
EM895015	1.5	.0591	4	5	50
EM895025	2.5	.0984	3	7	38
EM895030	3.0	.1181	3	10	38
EM895901	3.0	.1181	6	10	50
EM895035	3.5	.1378	4	12	50
EM895902	3.5	.1378	6	12	50
EM895040	4.0	.1575	4	12	50
EM895903	4.0	.1575	6	12	50
EM895045	4.5	.1772	6	14	57
EM895050	5.0	.1969	5	14	50
EM895904	5.0	.1969	6	14	57
EM895060	6.0	.2362	6	16	57
EM895080	8.0	.3150	8	20	63
EM895100	10.0	.3937	10	22	72
EM895120	12.0	.4724	12	25	73
EM895140	14.0	.5512	14	25	75
EM895160	16.0	.6299	16	32	82
EM895180	18.0	.7087	18	32	92
EM895200	20.0	.7874	20	38	92

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

◎ : Excellent ○ : Good

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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA



EM810 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE MINIATURE

- ▶ High precision milling in medical, optical, electronics and aero space industries.
- ▶ Excellent performance on hardened steel



- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- 4G MILLS END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

MG 2 30° PLAIN P.508

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	Metric	Inch			
EM810004	0.4	.0157	3	0.8	40
EM810005	0.5	.0197	3	1	40
EM810006	0.6	.0236	3	1.2	40
EM810007	0.7	.0276	3	1.4	40
EM810008	0.8	.0315	3	1.6	40
EM810009	0.9	.0354	3	2	40
EM810010	1.0	.0394	4	2.5	40
EM810011	1.1	.0433	4	2.5	40
EM810012	1.2	.0472	4	4	40
EM810013	1.3	.0512	4	4	40
EM810014	1.4	.0551	4	4	40
EM810015	1.5	.0591	4	4	40

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

◎ : Excellent ○ : Good

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

CARBIDE, 2&4 FLUTE LONG LENGTH CORNER RADIUS

- ▶ Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- ▶ Superior workpiece finishes.
- ▶ Increased feed rates.



◇ Call for Availability

EM818(2 FLUTE), EM819(4 FLUTE) Series

Unit : mm

EDP No.		Corner Radius R	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
2 FLUTE	4 FLUTE		Metric	Inch			
EM818030	EM819030	RO.3	3.0	.1181	6	12	50
EM818040	EM819040	RO.3	4.0	.1575	6	15	50
EM818911	EM819911	RO.5	4.0	.1575	6	15	50
EM818050	EM819050	RO.3	5.0	.1969	6	20	60
EM818912	EM819912	RO.5	5.0	.1969	6	20	60
EM818913	EM819913	RO.3	6.0	.2362	6	20	60
EM818060	EM819060	RO.5	6.0	.2362	6	20	60
EM818901	EM819901	R1.0	6.0	.2362	6	20	60
EM818914	EM819914	RO.3	8.0	.3150	8	25	70
EM818080	EM819080	RO.5	8.0	.3150	8	25	70
EM818902	EM819902	R1.0	8.0	.3150	8	25	70
EM818903	EM819903	R1.5	8.0	.3150	8	25	70
EM818904	EM819904	R2.0	8.0	.3150	8	25	70
EM818915	EM819915	RO.3	10.0	.3937	10	30	90
EM818100	EM819100	RO.5	10.0	.3937	10	30	90
EM818905	EM819905	R1.0	10.0	.3937	10	30	90
EM818906	EM819906	R1.5	10.0	.3937	10	30	90
EM818907	EM819907	R2.0	10.0	.3937	10	30	90
EM818120	EM819120	RO.5	12.0	.4724	12	30	90
EM818908	EM819908	R1.0	12.0	.4724	12	30	90
EM818909	EM819909	R1.5	12.0	.4724	12	30	90
EM818910	EM819910	R2.0	12.0	.4724	12	30	90
EM818160	EM819160	RO.5	16.0	.6299	16	50	110
EM818916	EM819916	R1.0	16.0	.6299	16	50	110
EM818917	EM819917	R1.5	16.0	.6299	16	50	110
EM818918	EM819918	R2.0	16.0	.6299	16	50	110
EM818200	EM819200	RO.5	20.0	.7874	20	55	110
EM818919	EM819919	R1.0	20.0	.7874	20	55	110
EM818920	EM819920	R1.5	20.0	.7874	20	55	110
EM818921	EM819921	R2.0	20.0	.7874	20	55	110

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

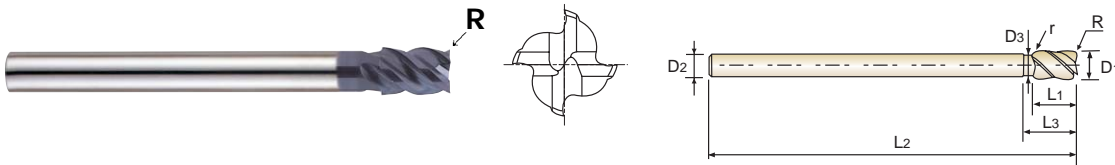
◎ : Excellent ○ : Good

Series	Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
	~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
EM811	○	◎	◎	◎	○								
EM817	○	◎	◎	◎	○				○		○		



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.510

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter		Shank Diameter D ₂	Length of Cut L ₁	Length Below Shank L ₃	Overall Length L ₂	Neck Diameter D ₃
		Metric D ₁	Inch					
EM905100	R0.5	10.0	.3937	8	15	19.2	130	7.5
EM905901	R1.0	10.0	.3937	8	15	19.2	130	7.5
EM905120	R0.5	12.0	.4724	10	18	22.2	150	9.5
EM905902	R1.0	12.0	.4724	10	18	22.2	150	9.5
EM905140	R0.5	14.0	.5512	12	21	25.2	160	11.5
EM905903	R1.0	14.0	.5512	12	21	25.2	160	11.5
EM905180	R0.5	18.0	.7087	16	27	31.2	180	15.5
EM905904	R1.0	18.0	.7087	16	27	31.2	180	15.5
EM905220	R0.5	22.0	.8661	20	33	37.2	200	19.5
EM905905	R1.0	22.0	.8661	20	33	37.2	200	19.5

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

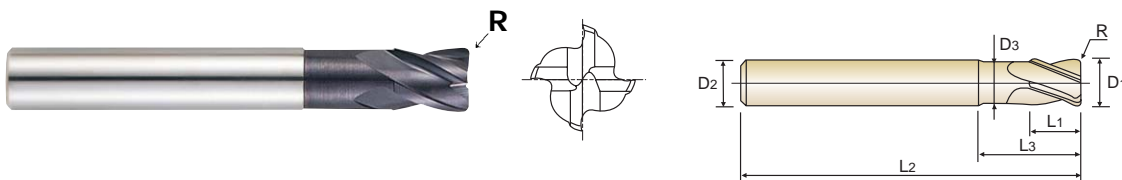
- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- 4G MILLS END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

◎ : Excellent ○ : Good

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

CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS

- ▶ Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- ▶ Superior workpiece finishes.
- ▶ Increased feed rates.



◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter		Shank Diameter D ₂	Length of Cut L ₁	Length Below Shank L ₃	Overall Length L ₂	Neck Diameter D ₃
		Metric D ₁	Inch					
EM839020	RO.2	2.0	.0787	6	2.5	5	50	1.9
EM839025	RO.25	2.5	.0984	6	3	6	50	2.4
EM839030	RO.3	3.0	.1181	6	4	7	50	2.8
EM839035	RO.35	3.5	.1378	6	4.5	8	50	3.2
EM839040	RO.4	4.0	.1575	6	5	9	50	3.7
EM839050	RO.5	5.0	.1969	6	6	12	50	4.6
EM839060	RO.6	6.0	.2362	6	7	14	55	5.6
EM839080	RO.8	8.0	.3150	8	10	18	60	7.4
EM839100	R1.0	10.0	.3937	10	12	25	70	9.4
EM839120	R1.2	12.0	.4724	12	15	30	80	11.4
EM839160	R1.6	16.0	.6299	16	18	35	90	15.4

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

◎ : Excellent ○ : Good

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



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.512, 513

◇ Call for Availability

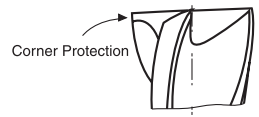
EM812 Series ■ LONG LENGTH Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flute
	Metric	Inch				
EM812060	6.0	.2362	6	13	57	6
EM812070	7.0	.2756	8	16	63	6
EM812080	8.0	.3150	8	19	63	6
EM812090	9.0	.3543	10	19	72	6
EM812100	10.0	.3937	10	22	72	6
EM812120	12.0	.4724	12	26	83	6
EM812140	14.0	.5512	14	26	83	6
EM812901	14.0	.5512	16	26	83	6
EM812160	16.0	.6299	16	32	92	6
EM812180	18.0	.7087	18	32	92	8
EM812200	20.0	.7874	20	38	104	8
EM812250	25.0	.9843	25	44	104	8

EM834 Series ■ EXTRA LONG LENGTH Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flute
	Metric	Inch				
EM834060	6.0	.2362	6	26	70	6
EM834080	8.0	.3150	8	36	90	6
EM834100	10.0	.3937	10	46	100	6
EM834120	12.0	.4724	12	56	110	6
EM834160	16.0	.6299	16	66	130	6
EM834200	20.0	.7874	20	76	140	6
EM834250	25.0	.9843	25	92	180	6

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



◎ : Excellent ○ : Good

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

CARBIDE, 6 FLUTE 45° HELIX LONG LENGTH CORNER RADIUS

- ▶ Designed to machine hardened materials.
- ▶ High speed cutting and finish milling with high feed rates.
- ▶ Superior workpiece finishes.
- ▶ Superior wear resistant.
- ▶ Suitable for dry milling.



◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	R	Metric	Inch			
EM835060	R0.5	6.0	.2362	6	13	70
EM835080	R0.5	8.0	.3150	8	19	90
EM835100	R0.5	10.0	.3937	10	22	100
EM835901	R1.0	10.0	.3937	10	22	100
EM835120	R0.5	12.0	.4724	12	26	110
EM835902	R1.0	12.0	.4724	12	26	110
EM835160	R1.0	16.0	.6299	16	32	130
EM835903	R1.5	16.0	.6299	16	32	130
EM835200	R1.0	20.0	.7874	20	38	140
EM835904	R1.5	20.0	.7874	20	38	140
EM835905	R2.0	20.0	.7874	20	38	140

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

◎ : Excellent ○ : Good

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



CARBIDE, 6 FLUTE 45° HELIX STUB LENGTH CORNER RADIUS

- ▶ High speed cutting
- ▶ Excellent performance in dry cutting
- ▶ Cutting up to three times length of the cutting diameter due to reduced neck.



MG 6 45° PLAIN P.528

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter		Shank Diameter D ₂	Length of Cut L ₁	Length Below Shank L ₃	Overall Length L ₂	Neck Diameter D ₃
		Metric D ₁	Inch					
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

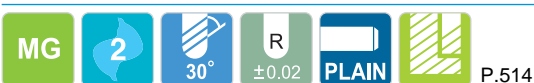
- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- 4G MILLS END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

◎ : Excellent ○ : Good

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

CARBIDE, 2 FLUTE SHORT LENGTH BALL NOSE

- ▶ Economic type with short overall length.
- ▶ Radius tolerance $\pm 0.02\text{mm}$ & short length of cut.



◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R (± 0.02)	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
		Metric	Inch			
EM876010	R0.5	1.0	.0394	3	3	38
EM876012	R0.6	1.2	.0472	3	3	38
EM876015	R0.75	1.5	.0591	3	3	38
EM876020	R1.0	2.0	.0787	6	3	50
EM876030	R1.5	3.0	.1181	6	4	50
EM876040	R2.0	4.0	.1575	6	5	54
EM876050	R2.5	5.0	.1969	6	6	54
EM876060	R3.0	6.0	.2362	6	7	54
EM876070	R3.5	7.0	.2756	8	8	58
EM876080	R4.0	8.0	.3150	8	9	58
EM876090	R4.5	9.0	.3543	10	10	66
EM876100	R5.0	10.0	.3937	10	11	66
EM876120	R6.0	12.0	.4724	12	12	73
EM876140	R7.0	14.0	.5512	14	14	75
EM876160	R8.0	16.0	.6299	16	16	82
EM876180	R9.0	18.0	.7087	18	18	84
EM876200	R10.0	20.0	.7874	20	20	92
EM876250	R12.5	25.0	.9843	25	25	104

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

◎ : Excellent ○ : Good

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



EM813 / EM815 SERIES

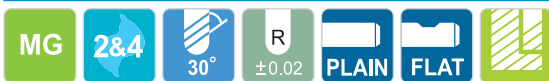
PLAIN SHANK

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.



P.514, 515

◇ Call for Availability

EM813, EM823(2 FLUTE), EM815, EM825(4 FLUTE) Series

Unit : mm

EDP No.				Radius of Ball Nose R (±0.02)	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
2 FLUTE		4 FLUTE			Metric	Inch			
PLAIN	FLAT	PLAIN	FLAT						
93302	—	93335	—	R0.5	1.0	.0394	4	2.5	50
93303	—	—	—	R0.6	1.2	.0472	4	3	50
93304	—	93336	—	R0.75	1.5	.0591	4	4	50
93305	93320	93337	93352	R1.0	2.0	.0787	6	5	50
93306	93321	93338	93353	R1.5	3.0	.1181	6	8	60
93307	93322	93339	93354	R2.0	4.0	.1575	6	8	70
93308	93323	93340	93355	R2.5	5.0	.1969	6	10	80
93309	93324	93341	93356	R3.0	6.0	.2362	6	12	90
93310	93325	93342	93357	R3.5	7.0	.2756	8	14	90
93311	93326	93343	93358	R4.0	8.0	.3150	8	14	100
93312	93327	93344	93359	R4.5	9.0	.3543	10	18	100
93313	93328	93345	93360	R5.0	10.0	.3937	10	18	100
93314	93329	93346	93361	R6.0	12.0	.4724	12	22	110
93315	93330	93347	93362	R7.0	14.0	.5512	14	26	110
93316	93331	93348	93363	R8.0	16.0	.6299	16	30	140
93317	93332	93349	93364	R9.0	18.0	.7087	18	34	140
93318	93333	93350	93365	R10.0	20.0	.7874	20	38	160
93319	93334	93351	93366	R12.5	25.0	.9843	25	50	180

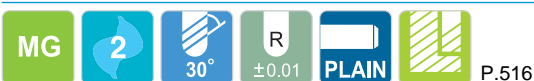
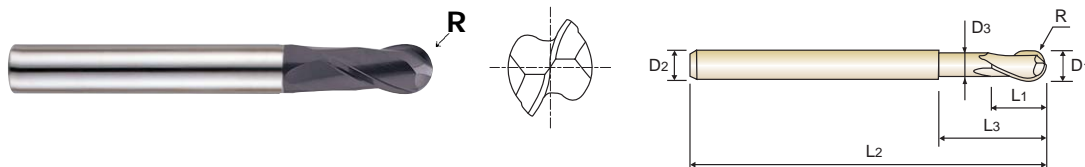
Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	h6

◎ : Excellent ○ : Good

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

CARBIDE, 2 FLUTE MEDIUM LENGTH BALL NOSE

- ▶ Deep slotting milling is possible by reduced neck.
- ▶ High efficiency milling is possible in deep slotting with projection of the end mill being long.



◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric D1	Inch					
EM899030	R1.5	3.0	.1181	6	8	—	70	—
EM899040	R2.0	4.0	.1575	6	8	—	70	—
EM899050	R2.5	5.0	.1969	6	12	—	80	—
EM899060	R3.0	6.0	.2362	6	12	22	80	5.8
EM899070	R3.5	7.0	.2756	8	14	—	90	—
EM899080	R4.0	8.0	.3150	8	14	27	90	7.8
EM899100	R5.0	10.0	.3937	10	18	31	100	9.8
EM899120	R6.0	12.0	.4724	12	22	35	110	11.8
EM899140	R7.0	14.0	.5512	12	26	—	120	—
EM899160	R8.0	16.0	.6299	16	30	50	140	15.8
EM899180	R9.0	18.0	.7087	16	34	—	140	—
EM899200	R10.0	20.0	.7874	20	38	58	160	19.8
EM899250	R12.5	25.0	.9843	25	55	75	180	24.8

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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

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



CARBIDE, 2 FLUTE LONG REACH BALL NOSE

► Longer overall length than EM813 types and suitable for machining deeply located area.



CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

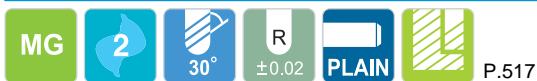
D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA



◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R (±0.02)	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
		Metric	Inch			
EM838020	R1.0	2.0	.0787	3	6	80
EM838030	R1.5	3.0	.1181	3	8	100
EM838040	R2.0	4.0	.1575	4	8	100
EM838050	R2.5	5.0	.1969	6	10	120
EM838060	R3.0	6.0	.2362	6	10	120
EM838080	R4.0	8.0	.3150	8	14	140
EM838100	R5.0	10.0	.3937	10	18	180
EM838120	R6.0	12.0	.4724	12	22	200
EM838160	R8.0	16.0	.6299	16	30	250
EM838200	R10.0	20.0	.7874	20	38	250

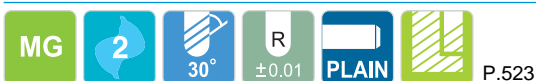
Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	h6

◎ : Excellent ○ : Good

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

CARBIDE, 2 FLUTE MINIATURE BALL NOSE

- ▶ High precision milling in medical, optical, electronics and aerospace industrials.
- ▶ Excellent performance at dry cutting condition.
- ▶ Excellent performance on hardened steel.



◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
		Metric	Inch			
93424	RO.30	0.6	.0236	3	1.1	40
93425	RO.35	0.7	.0276	3	1.5	40
93426	RO.40	0.8	.0315	3	2.0	40
93427	RO.45	0.9	.0354	3	2.2	40
93428	RO.50	1.0	.0394	3	2.5	40
93429	RO.55	1.1	.0433	3	3.0	40
93430	RO.60	1.2	.0472	3	3.0	40
93431	RO.65	1.3	.0512	3	3.5	40
93432	RO.70	1.4	.0551	3	3.5	40
93433	RO.75	1.5	.0591	3	4.0	40

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

CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA

◎ : Excellent ○ : Good

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

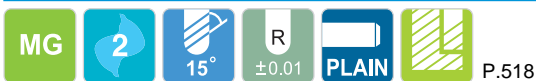
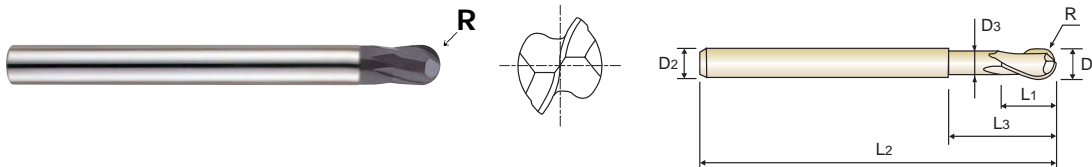


EM868 SERIES PLAIN SHANK

**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.



◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric D1	Inch					
EM868010	R0.5	1.0	.0394	4	1	2.2	50	0.95
EM868901	R0.5	1.0	.0394	6	1	2.2	50	0.95
EM868012	R0.6	1.2	.0472	4	1.2	2.6	50	1.1
EM868015	R0.75	1.5	.0591	4	1.5	3	50	1.4
EM868020	R1.0	2.0	.0787	6	2	4	50	1.9
EM868030	R1.5	3.0	.1181	6	3	6	60	2.9
EM868040	R2.0	4.0	.1575	6	4	8	70	3.9
EM868050	R2.5	5.0	.1969	6	5	10	80	4.9
EM868060	R3.0	6.0	.2362	6	6	12	90	5.9
EM868070	R3.5	7.0	.2756	8	7	14	90	6.9
EM868080	R4.0	8.0	.3150	8	8	16	100	7.9
EM868090	R4.5	9.0	.3543	10	9	18	100	8.9
EM868100	R5.0	10.0	.3937	10	10	20	100	9.9
EM868120	R6.0	12.0	.4724	12	12	24	110	11.9
EM868140	R7.0	14.0	.5512	14	14	28	110	13.8
EM868160	R8.0	16.0	.6299	16	16	32	140	15.8
EM868180	R9.0	18.0	.7087	18	18	36	140	17.8
EM868200	R10.0	20.0	.7874	20	20	40	160	19.8
EM868250	R12.5	25.0	.9843	25	25	50	180	24.8

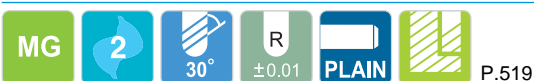
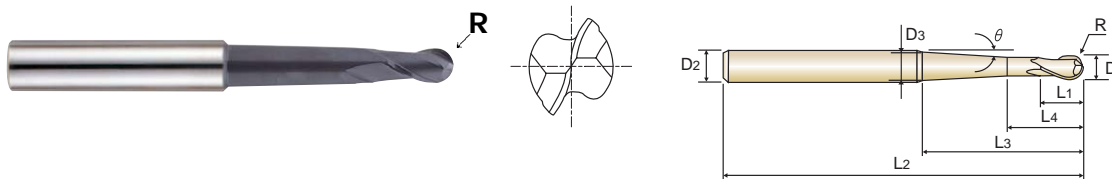
Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	h6

◎ : Excellent ○ : Good

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

CARBIDE, 2 FLUTE BALL NOSE with TAPER NECK

► High efficiency milling is possible in deep slotting with projection of the end mill being long.



◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Under Neck Parallel Length L4	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Neck Taper Angle θ
		Metric D1	Inch							
EM902010	R0.5	1.0	.0394	6	2	4	23	60	2.0	1°30'
EM902901	R0.5	1.0	.0394	6	2	4	23	60	4.3	5°
EM902902	R0.5	1.0	.0394	6	2	4	42	80	5.0	3°
EM902020	R1.0	2.0	.0787	6	4	6	23	60	2.9	1°30'
EM902903	R1.0	2.0	.0787	6	4	6	23	60	5.0	5°
EM902904	R1.0	2.0	.0787	6	4	6	41	80	5.7	3°
EM902030	R1.5	3.0	.1181	6	6	8	32	70	5.6	3°
EM902905	R1.5	3.0	.1181	6	6	8	52	90	5.3	1°30'
EM902040	R2.0	4.0	.1575	6	8	10	28	70	6.0	3°
EM902906	R2.0	4.0	.1575	6	8	10	49	90	6.0	1°30'
EM902050	R2.5	5.0	.1969	8	10	12	41	90	8.0	3°
EM902907	R2.5	5.0	.1969	8	10	12	61	110	7.6	1°30'
EM902060	R3.0	6.0	.2362	8	12	15	34	90	8.0	3°
EM902908	R3.0	6.0	.2362	8	12	15	53	110	8.0	1°30'
EM902080	R4.0	8.0	.3150	10	14	17	36	100	10.0	3°
EM902909	R4.0	8.0	.3150	10	14	17	55	120	10.0	1°30'
EM902100	R5.0	10.0	.3937	12	18	21	40	110	12.0	3°
EM902910	R5.0	10.0	.3937	12	18	21	59	130	12.0	1°30'
EM902120	R6.0	12.0	.4724	16	22	25	63	140	16.0	3°
EM902911	R6.0	12.0	.4724	16	22	25	83	160	15.0	1°30'

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

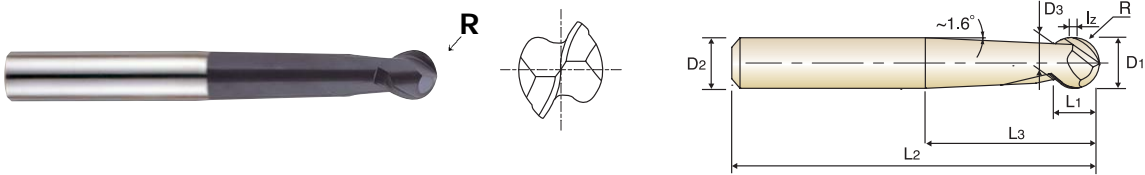
◎ : Excellent ○ : Good

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



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° ±0.01 PLAIN P.521

◇ Call for Availability

- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- 4G MILLS END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Lz
		Metric	Inch						
EM669030	R1.5	3.0	.1181	6	4	30	80	2.5	1.5
EM669040	R2.0	4.0	.1575	6	5	30	80	3.3	1.5
EM669050	R2.5	5.0	.1969	6	6	43	80	4.1	2.0
EM669060	R3.0	6.0	.2362	6	7	30	100	4.7	2.0
EM669080	R4.0	8.0	.3150	8	9	36	100	6.5	3.0
EM669100	R5.0	10.0	.3937	10	11	43	100	8.2	3.0
EM669120	R6.0	12.0	.4724	12	13	52	100	9.8	3.0
EM669160	R8.0	16.0	.6299	16	15	61	150	13.4	3.0

※ ECONOMIC TYPE HAS MORE ADVANTAGE IN RESHARPENING THAN SPHERE TYPE.

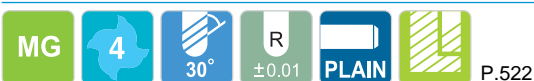
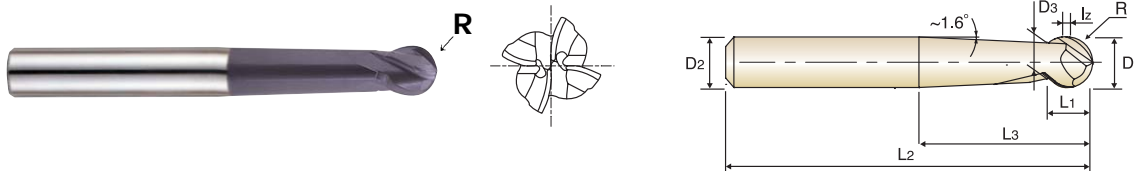
Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	h6

◎ : Excellent ○ : Good

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

CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE (MMC-ECONOMY TYPE)

- ▶ Designed for copy milling.
- ▶ Increased feed rates.
- ▶ 15° inclination.
- ▶ Easy to regrind.



◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Lz
		Metric D1	Inch						
EM673050	R2.5	5.0	.1969	6	6	43	80	4.1	2.0
EM673060	R3.0	6.0	.2362	6	7	30	100	4.7	2.0
EM673080	R4.0	8.0	.3150	8	9	36	100	6.5	3.0
EM673100	R5.0	10.0	.3937	10	11	43	100	8.2	3.0
EM673120	R6.0	12.0	.4724	12	13	52	100	9.8	3.0
EM673160	R8.0	16.0	.6299	16	15	61	150	13.4	3.0

※ ECONOMIC TYPE HAS MORE ADVANTAGE IN RESHARPENING THAN SPHERE TYPE.

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

CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA

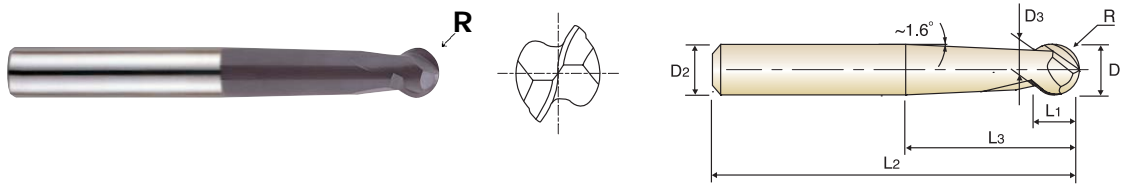
◎ : Excellent ○ : Good

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



CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE (MMC-SPHERE TYPE)

- ▶ Designed for copy milling.
- ▶ Increased feed rates.
- ▶ 15° inclination.(see page 000)
- ▶ Sphere Angle : 250°



MG 2 30° ±0.01 PLAIN P.521

◇ Call for Availability

- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- 4G MILLS END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric D1	Inch					
EM863030	R1.5	3.0	.1181	6	2.3	30	80	2.5
EM863040	R2.0	4.0	.1575	6	3.1	30	80	3.3
EM863050	R2.5	5.0	.1969	6	3.9	38	80	4.1
EM863060	R3.0	6.0	.2362	6	4.9	28	100	4.7
EM863080	R4.0	8.0	.3150	8	6.3	33	100	6.5
EM863100	R5.0	10.0	.3937	10	7.9	40	100	8.2
EM863120	R6.0	12.0	.4724	12	9.5	49	100	9.8
EM863160	R8.0	16.0	.6299	16	12.4	59	150	13.4

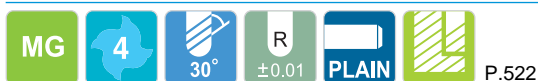
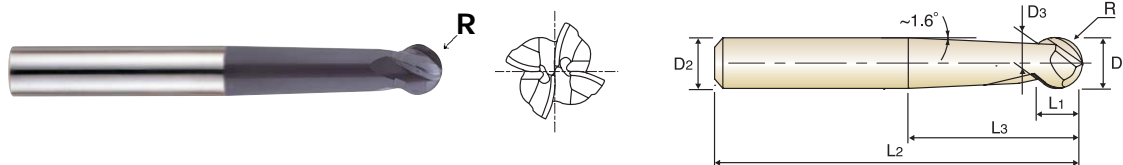
Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0 ~ -0.03	h6

◎ : Excellent ○ : Good

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

CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE (MMC-SPHERE TYPE)

- ▶ Designed for copy milling.
- ▶ Increased feed rates.
- ▶ 15° inclination.(see page 000)
- ▶ Sphere Angle : 250°



◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric D1	Inch					
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

CBN END MILL
i-Xmill END MILL
X5070 END MILLS
4G MILLS END MILLS
X-SPEED ROUGHER END MILLS
X-POWER END MILLS
JET-POWER END MILLS
V7 Mill STEEL END MILLS
V7 Mill INOX END MILLS
ALU-POWER END MILLS
D-POWER END MILLS
STANDARD CARBIDE END MILLS
TANK-POWER END MILLS
STANDARD COBALT & HSS END MILLS
TECHNICAL DATA

◎ : Excellent ○ : Good

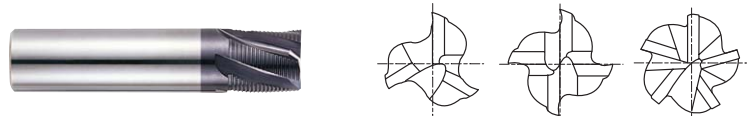
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
-HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○	○			○				



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.



CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA



◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flute
	Metric	Inch				
	h10		h6			
EM832060	6.0	.2362	6	7	54	3
EM832070	7.0	.2756	8	8	58	3
EM832080	8.0	.3150	8	9	58	3
EM832090	9.0	.3543	10	13	66	4
EM832100	10.0	.3937	10	14	66	4
EM832120	12.0	.4724	12	16	73	4
EM832140	14.0	.5512	14	18	75	4
EM832160	16.0	.6299	16	22	82	4
EM832180	18.0	.7087	18	24	84	4
EM832200	20.0	.7874	20	26	92	4
EM832250	25.0	.9843	25	25	110	5

Tolerances according to DIN 7160 & 7161

Tolerance range in µm					
Nominal-Diameter in mm					
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
h10	0 - 40	0 - 48	0 - 58	0 - 70	0 - 84
h6	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13

◎ : Excellent ○ : Good

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

**CARBIDE, MULTI FLUTE 20° HELIX LONG LENGTH
FINE PITCH ROUGHING**

- ▶ Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- ▶ High velocity milling of hardened steels.
- ▶ For dry and wet milling.
- ▶ Fast chip ejection.



◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flute
	Metric	Inch				
	h10		h6			
EM814060	6.0	.2362	6	16	57	3
EM814070	7.0	.2756	8	16	63	3
EM814080	8.0	.3150	8	16	63	3
EM814090	9.0	.3543	10	19	72	4
EM814100	10.0	.3937	10	22	72	4
EM814120	12.0	.4724	12	26	83	4
EM814140	14.0	.5512	14	26	83	4
EM814901	14.0	.5512	16	26	83	4
EM814160	16.0	.6299	16	32	92	4
EM814180	18.0	.7087	18	32	92	4
EM814200	20.0	.7874	20	38	104	4
EM814250	25.0	.9843	25	45	121	5

Tolerances according to DIN 7160 & 7161

Tolerance range in 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

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



CARBIDE, 3&4 FLUTE 20° HELIX LONG LENGTH FINE PITCH ROUGHING BALL NOSE

- ▶ Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- ▶ High velocity milling of hardened steels.
- ▶ For dry and wet milling.
- ▶ Fast chip ejection.



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

MG FINE 3&4 20° ±0.02 PLAIN P.524

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R (±0.02)	Mill Diameter		Shank Diameter h6	Length of Cut	Overall Length	No. of Flute
		Metric h10	Inch				
EM833060	R3.0	6.0	.2362	6	16	57	3
EM833080	R4.0	8.0	.3150	8	16	63	3
EM833100	R5.0	10.0	.3937	10	22	72	4
EM833120	R6.0	12.0	.4724	12	26	83	4
EM833140	R7.0	14.0	.5512	14	26	83	4
EM833160	R8.0	16.0	.6299	16	32	92	4
EM833180	R9.0	18.0	.7087	18	32	92	4
EM833200	R10.0	20.0	.7874	20	38	104	4

Tolerances according to DIN 7160 & 7161

Tolerance range in µm					
Nominal-Diameter in mm					
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
h10	0 - 40	0 - 48	0 - 58	0 - 70	0 - 84
h6	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13

◎ : Excellent ○ : Good

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

CARBIDE, 2 FLUTE TAPER

- ▶ Designed for milling die cavity.
- ▶ Suitable for machining tool steels, alloy steels, mold steels and other hardened materials.



MG
2
30°
PLAIN
P.525

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	Taper Angle
	Metric	Inch				
EM837913	2.0	.0787	4	6	45	30°
EM837020	2.0	.0787	4	6	45	1°
EM837901	2.0	.0787	4	6	45	2°
EM837902	2.0	.0787	4	6	45	3°
EM837914	3.0	.1181	6	10	55	30°
EM837030	3.0	.1181	6	10	55	1°
EM837903	3.0	.1181	6	10	55	2°
EM837904	3.0	.1181	6	10	55	3°
EM837915	4.0	.1575	6	15	55	30°
EM837040	4.0	.1575	6	15	55	1°
EM837905	4.0	.1575	6	15	55	2°
EM837906	4.0	.1575	6	15	55	3°
EM837916	5.0	.1969	6	15	60	30°
EM837050	5.0	.1969	6	15	60	1°
EM837907	5.0	.1969	6	15	60	2°
EM837908	5.0	.1969	6	15	60	3°
EM837917	6.0	.2362	6	20	60	30°
EM837060	6.0	.2362	6	20	60	1°
EM837909	6.0	.2362	6	20	60	2°
EM837910	6.0	.2362	8	20	65	3°
EM837918	8.0	.3150	8	25	70	30°
EM837080	8.0	.3150	8	25	70	1°
EM837911	8.0	.3150	8	25	70	2°
EM837912	8.0	.3150	10	25	75	3°

▶ We can supply various sizes and taper angles.

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance	Taper Angle Tolerance
0~-0.03	h6	±5'

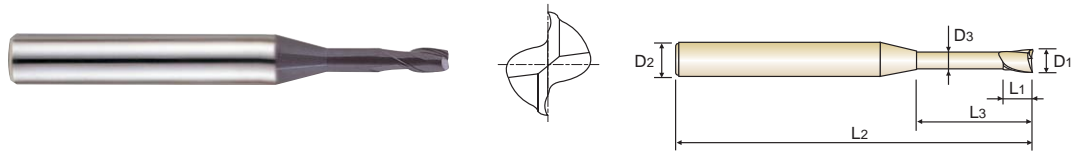
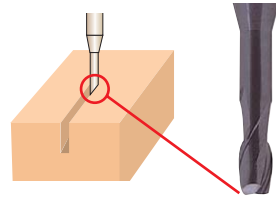
◎ : Excellent ○ : Good

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



CARBIDE, 2 FLUTE for RIB PROCESSING

- ▶ For deep slotting & pocketing.
- ▶ For depths of 6 to 10X cutting diameter.
- ▶ Machine carbon steel, alloy steel, tool steel, die and mold steels.
- ▶ Suitable for high speed cutting and high precision machining.
- ▶ Designed with reinforced shank for higher stability and rigidity.
- ▶ Long neck design for deep machining near walls.



◇ Call for Availability

Unit : mm

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

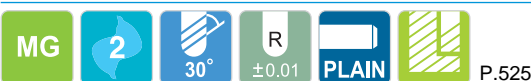
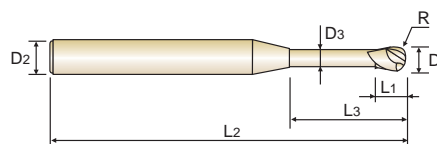
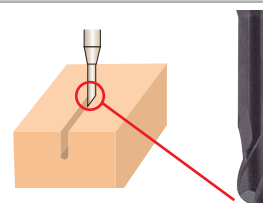
- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- 4G MILLS END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

◎ : Excellent ○ : Good

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

CARBIDE, 2 FLUTE BALL NOSE 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.



◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric D1	Inch					
EM886006	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

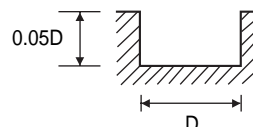
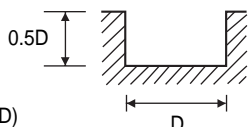
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
-HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○				○				



CARBIDE, 2 FLUTE FINISH - SLOTTING

EM154, EM810 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS TOOL STEELS		STAINLESS STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC45				HRC45 ~ HRC55		HRC55 ~ HRC65	
STRENGTH	~ 1000N/mm ²		1000 ~ 1500N/mm ²				1500 ~ 2000N/mm ²		2000N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/16	11560	7.5	7560	4.7	6300	3.6	5040	1.4		
1/8	8920	8.3	5560	5.5	4620	4.7	3360	1.6	1900	1.6
3/16	6300	12.6	3780	7.5	3160	6.3	2320	2.0	1260	1.6
1/4	5560	13.8	3360	8.7	2840	7.1	2000	2.2	1100	1.6
5/16	4200	15.0	2520	7.9	2100	7.1	1680	3.0	840	1.6
3/8	3260	13.0	2000	6.3	1680	6.3	1360	2.4	680	1.4
1/2	2740	11.0	1680	5.1	1360	5.1	1160	2.2	560	1.4
5/8	2200	8.7	1360	4.3	1060	4.3	900	1.6	440	0.8
3/4	1680	6.7	1060	3.2	840	3.2	680	1.2	320	0.8
1	1360	5.1	840	2.8	680	2.4	540	0.8	260	0.6

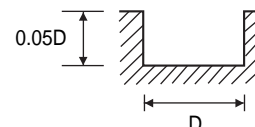
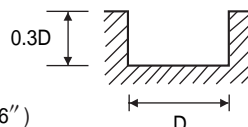


RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE LONG LENGTH FINISH - SLOTTING

EM206, EM816 SERIES

Material	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS TOOL STEELS		STAINLESS STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC45		HRC45 ~ HRC55	
STRENGTH	~ 1000N/mm ²		1000 ~ 1500N/mm ²		1500 ~ 2000N/mm ²	
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

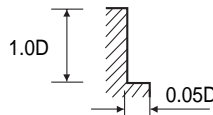


RPM = rev./min.
FEED = inch/min.

CARBIDE, 4 FLUTE FINISH - SIDE CUTTING

EM153, EM811 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS TOOL STEELS		STAINLESS STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC45				HRC45 ~ HRC55		HRC55 ~ HRC65	
STRENGTH	~ 1000N/mm ²		1000 ~ 1500N/mm ²				1500 ~ 2000N/mm ²		2000N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/16	11560	11.0	7560	6.7	6300	5.5	5040	2.0		
1/8	8920	12.6	5560	7.9	4620	6.7	3360	2.4	1900	2.4
3/16	6300	23.6	3780	14.2	3160	11.8	2320	2.8	1260	2.4
1/4	5560	26.0	3360	16.2	2840	13.0	2000	3.2	1100	2.4
5/16	4200	28.0	2520	15.0	2100	13.8	1680	4.3	840	2.4
3/8	3260	24.0	2000	11.8	1680	11.8	1360	3.6	680	2.0
1/2	2740	20.5	1680	9.9	1360	9.5	1160	3.2	560	2.0
5/8	2200	16.2	1360	7.9	1060	7.9	900	2.4	440	1.2
3/4	1680	12.6	1060	6.3	840	5.9	680	1.6	320	1.2
1	1360	9.9	840	5.1	680	4.7	540	1.2	260	0.8

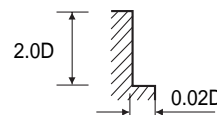
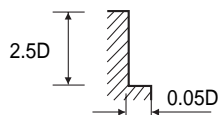


RPM = rev./min.
FEED = inch/min.

CARBIDE, 4 FLUTE LONG LENGTH FINISH - SIDE CUTTING

EM207, EM817 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS TOOL STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC45		HRC45 ~ HRC55		HRC55 ~ HRC65	
STRENGTH	~ 1000N/mm ²		1000 ~ 1500N/mm ²		1500 ~ 2000N/mm ²		2000N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	4410	4.5	3570	3.9	2200	2.2	1890	1.2
3/16	3050	7.1	2420	5.5	1580	2.8	1260	1.6
1/4	2630	8.5	2100	7.1	1370	3.5	1160	2.0
5/16	2000	9.1	1580	7.1	1050	3.5	840	2.0
3/8	1680	9.1	1370	7.1	840	3.5	670	2.0
1/2	1370	7.1	1160	6.3	700	2.8	560	1.6
5/8	1160	6.3	890	4.9	560	2.4	440	1.4
3/4	840	4.5	680	3.5	420	1.8	340	1.0
1	670	4.5	540	3.5	340	1.8	270	1.0



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

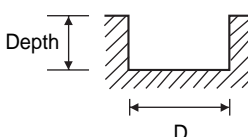


CARBIDE, 2 FLUTE MINIATURE - SLOTTING

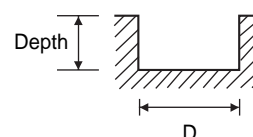
EM959, EM810 SERIES

MATERIAL	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 x D
D ≥ .040
Depth=0.25 x D



D < .040
Depth=0.02 x D
D ≥ .040
Depth=0.05 x D

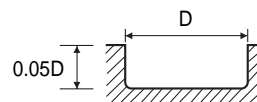
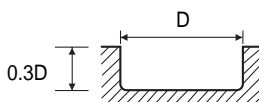


RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE CORNER RADIUS - SLOTTING

EM636, EM637, EM211 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS TOOL STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc65	
STRENGTH	~ 1000N/mm ²		1000 ~ 1750N/mm ²		1750 ~ 2000N/mm ²		2000N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	2630	4.9	2100	4.2	1370	2.0	1160	1.4
5/16	2000	5.3	1580	4.2	1050	2.0	840	1.4
3/8	1680	5.3	1370	4.2	840	2.0	670	1.4
1/2	1370	4.2	1160	3.8	700	1.5	550	1.0

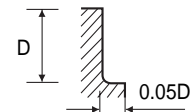
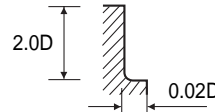
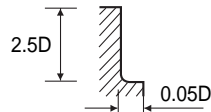


RPM = rev./min.
FEED = inch/min.

CARBIDE, 4 FLUTE CORNER RADIUS - SIDE CUTTING

EM639, EM649, EM212 SERIES

MATERIAL	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

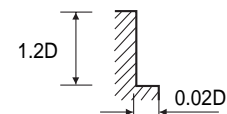
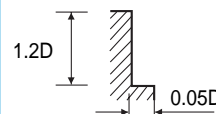
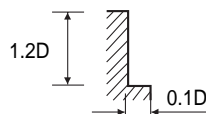


RPM = rev./min.
FEED = inch/min.

CARBIDE, 4 FLUTE 45° HELIX - SIDE CUTTING

EM102 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		STAINLESS STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC45				HRC45 ~ HRC55		HRC55 ~ HRC60	
STRENGTH	~ 1000N/mm 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	1600	7.7	1400	5.3	1000	2.6
1/2	2260	27.0	1950	12.3	1200	6.3	1050	4.6	750	2.0
5/8	1800	22.6	1560	10.1	960	5.1	840	4.1	600	1.7
3/4	1500	19.0	1300	8.5	800	4.5	700	3.9	500	1.6
7/8	1290	16.1	1120	7.6	690	4.5	600	3.9	430	1.6



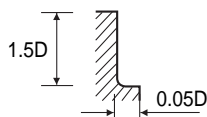
RPM = rev./min.
FEED = inch/min.



CARBIDE, 4 FLUTE 45° HELIX CORNER RADIUS - SIDE CUTTING

EM103, EM905 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		STAINLESS STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC45				HRC45 ~ HRC55		HRC55 ~ HRC65	
STRENGTH	~ 1000N/mm ²		1000 ~ 1500N/mm ²				1500 ~ 2000N/mm ²		2000N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/8	7690	79.0	7690	48.0	5680	36.0	5680	29.0	3840	19.0
1/2	5760	79.0	5760	48.0	4260	36.0	4260	29.0	2880	19.0
5/8	4600	71.0	4600	48.0	3410	36.0	3410	29.0	2300	19.0
3/4	3850	60.0	3850	48.0	2840	36.0	2840	29.0	1920	19.0
7/8	3300	51.0	3300	48.0	2430	36.0	2430	29.0	1650	19.0

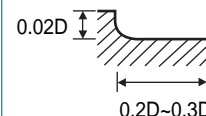
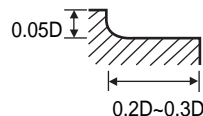
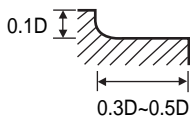


RPM = rev./min.
FEED = inch/min.

CARBIDE, 4 FLUTE 45° HELIX CORNER RADIUS - CONTOURING

EM103, EM905 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		STAINLESS STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC45				HRC45 ~ HRC55		HRC55 ~ HRC65	
STRENGTH	~ 1000N/mm ²		1000 ~ 1500N/mm ²				1500 ~ 2000N/mm ²		2000N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/8	7690	45.0	5680	36.0	5680	31.0	5680	18.0	3840	11.0
1/2	5760	45.0	4260	36.0	4260	31.0	4260	18.0	2880	11.0
5/8	4600	45.0	3410	36.0	3410	31.0	3410	18.0	2300	11.0
3/4	4850	45.0	2840	36.0	2840	31.0	2840	18.0	1920	11.0
7/8	3300	45.0	2430	36.0	2430	31.0	2430	18.0	1650	11.0

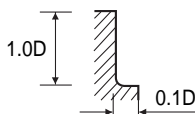


RPM = rev./min.
FEED = inch/min.

CARBIDE, 4 FLUTE 55° HELIX CORNER RADIUS - SIDE CUTTING

EM965 SERIES

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		STAINLESS STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	HRc30 ~ HRc40				HRc40 ~ HRc50		HRc50 ~ HRc65	
STRENGTH	1000 ~ 1250N/mm ²				1250 ~ 1700N/mm ²		1500N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	21000	32.0	13000	21.0	13000	9.5	7300	9.5
3/16	18000	56.0	11000	33.0	11000	9.5	4800	9.5
1/4	13000	66.0	7500	40.0	7500	13.0	4200	9.5
5/16	9500	61.0	6500	39.0	6500	17.0	3200	9.5
3/8	7700	48.0	5700	39.0	5700	22.0	3850	12.0
1/2	5800	48.0	4260	39.0	4260	25.0	2900	15.0
5/8	4200	48.0	3100	39.0	3100	29.0	2100	19.0

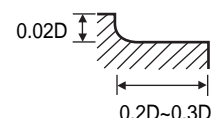
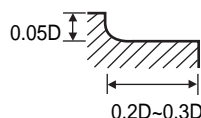
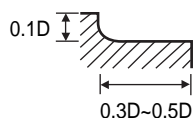


RPM = rev./min.
FEED = inch/min.

CARBIDE, 4 FLUTE 55° HELIX CORNER RADIUS - CONTOURING

EM965 SERIES

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		STAINLESS STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	HRc30 ~ HRc40				HRc40 ~ HRc50		HRc50 ~ HRc65	
STRENGTH	1000 ~ 1250N/mm ²				1250 ~ 1700N/mm ²		1500N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	21000	24	13000	18	13000	6	7300	5.5
3/16	18000	42	11000	29	11000	6	4800	5.5
1/4	13000	50	7500	35	7500	8	4200	5.5
5/16	9500	46	6500	34	6500	10	3200	5.5
3/8	7700	36	5700	34	5700	12	3850	7.5
1/2	5800	36	4260	34	4260	15	2900	9.5
5/8	4200	36	3100	34	3100	18	2100	11.5



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

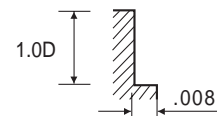
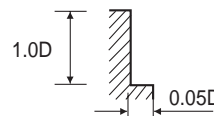
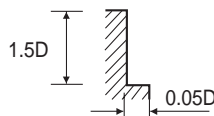
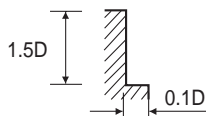


CARBIDE, 6&8 FLUTE 45° HELIX LONG LENGTH - SIDE CUTTING

EM208, EM812 SERIES

■ NORMAL SPEED

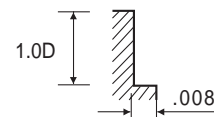
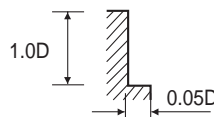
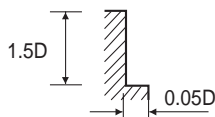
MATERIAL	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS TOOL STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~HRc30		HRc30 ~ HRc50		HRc50 ~ HRc55		HRc60 ~ HRc65	
STRENGTH	~1000N/mm ²		1000 ~ 1750N/mm ²		1750 ~ 2080N/mm ²		2080N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	5560	79.0	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	CARBON STEELS TOOL STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~HRc50		HRc50 ~ HRc60		HRc60 ~	
STRENGTH	~1750N/mm ²		1750N/mm ²		1750N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
1/4	16800	240.0	8400	120.0	4200	58.0
5/16	12600	240.0	6300	120.0	3160	58.0
3/8	9980	235.0	5040	120.0	2520	58.0
1/2	8400	199.0	4200	100.0	2100	50.0
5/8	6300	149.0	3160	75.0	1580	37.0
3/4	5040	120.0	2520	58.0	1260	30.0
1	3790	75.0	1890	38.0	950	19.0



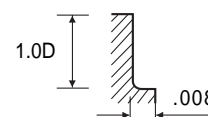
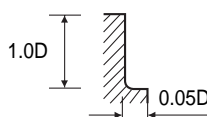
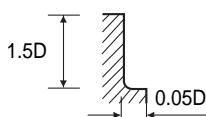
RPM = rev./min.
FEED = inch/min.

CARBIDE, 6&8 FLUTE 45° HELIX CORNER RADIUS - SIDE CUTTING

EM668, EM835 SERIES

■ HIGH SPEED

MATERIAL	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

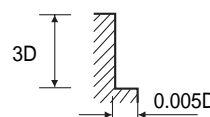
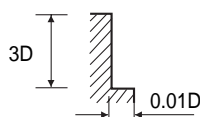


RPM = rev./min.
FEED = inch/min.

CARBIDE, 6&8 FLUTE 45° HELIX EXTRA LONG LENGTH - SIDE CUTTING

EM218, EM812, EM834 SERIES

MATERIAL	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.



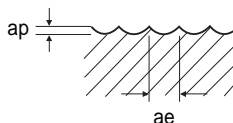
CARBIDE, 2 FLUTE BALL NOSE

EM209, EM876, EM813, EM823 SERIES

■ NORMAL SPEED

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC40		HRC45 ~ HRC65	
STRENGTH	~ 1000N/mm 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



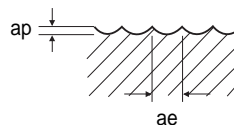
ap: D1/32~D1/4 = .008"
D5/16~D3/4 = .012"
ae: 0.1 × D

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

■ HIGH SPEED

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		HARDENED STEELS	
HARDNESS	~ HRC45		HRC45 ~ HRC65	
STRENGTH	~ 1500N/mm ²		1500N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED
R1/64 × 1/32	25000	25.6	25000	15.7
R1/32 × 1/16	23000	27.5	23000	16.9
R3/64 × 3/32	21000	34.6	19000	19.3
R1/16 × 1/8	21000	39.4	17000	20.5
R3/32 × 3/16	21000	70.9	12000	23.6
R1/8 × 1/4	21000	90.9	10500	24.8
R5/32 × 5/16	15760	111.8	7880	29.1
R3/16 × 3/8	13660	120.0	6300	33.0
R1/4 × 1/2	10500	103.5	5260	33.0
R5/16 × 5/8	8200	103.5	3780	28.0
R3/8 × 3/4	6300	99.0	2940	20.8

ap: D1/32~D1/4 = .008"
D5/16~D3/4=.012"
ae: 0.05 × D



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

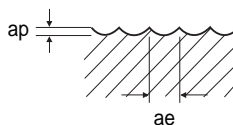
CARBIDE, 4 FLUTE BALL NOSE

EM210, EM815, EM825 SERIES

■ NORMAL SPEED

MATERIAL	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



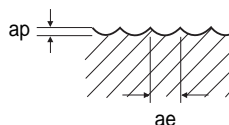
ap: D1/8~D1/4 =.008"
D5/16~D5/8 =.012"
ae: 0.1 × D

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

■ HIGH SPEED

MATERIAL	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.



CARBIDE, 2 FLUTE MEDIUM LENGTH BALL NOSE

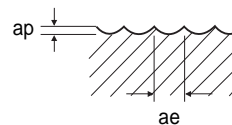
EM961, EM899 SERIES

■ NORMAL SPEED

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	HRc30 ~ HRc40		HRc45 ~ HRc50		HRc50 ~ HRc55	
STRENGTH	1000 ~ 1250N/mm 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



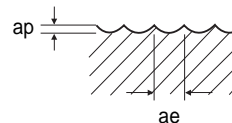
RPM = rev./min.
FEED = inch/min.

■ HIGH SPEED

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRc45		HRc45 ~ HRc50		HRc50 ~ HRc55	
STRENGTH	1000 ~ 1250N/mm ²		1500 ~ 1750N/mm ²		1750 ~ 2000N/mm ²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	21000	39.4	12700	68.9	12300	65.7
R3/32 × 3/16	21000	70.9	9400	65.0	9050	61.8
R1/8 × 1/4	21000	90.9	8600	69.0	8250	65.7
R5/32 × 5/16	15760	111.8	7000	61.0	6700	57.5
R3/16 × 3/8	13660	120.1	6050	57.1	5800	53.5
R1/4 × 1/2	10500	103.5	5450	55.9	5200	52.4
R5/16 × 5/8	8200	103.5	4350	48.4	4150	44.5
R3/8 × 3/4	6300	99.2	3500	39.4	3300	35.4
R1/2 × 1	5040	99.2	2800	39.4	2650	35.4

ap: D1/8-D1/4 = .008"
D5/16-D1 = .012"
ae: 0.05 × D

ap: D1/8 = .006"
D3/16-D5/16 = .010"
D3/8-D1 = .012"
ae: 0.05 × D



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

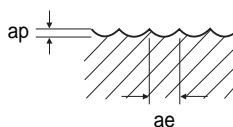
CARBIDE, 2 FLUTE LONG REACH BALL NOSE

EM962, EM838 SERIES

■ NORMAL SPEED

MATERIAL	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



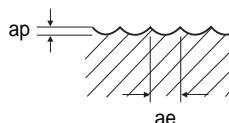
ap: D3/32~D1/4 =.008"
D5/16~D3/4 =.012"
ae: 0.1×D

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

■ HIGH SPEED

MATERIAL	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.



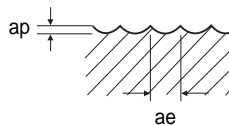
CARBIDE, 2 FLUTE BALL NOSE for OVER HRc55

EM109, EM868 SERIES

■ NORMAL SPEED

MATERIAL	HARDENED STEELS		HARDENED STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	HRc45 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc70	
STRENGTH	1500 ~ 1750N/mm ²		1750 ~ 2000N/mm ²		2000 ~ 2080N/mm ²		2080N/mm ² ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	12700	43.3	12300	41.3	11800	39.4	8400	26.0
R3/32 × 3/16	9400	43.3	9050	41.3	8600	37.4	5600	26.8
R1/8 × 1/4	8600	45.3	8250	43.3	7850	37.4	4850	27.6
R5/32 × 5/16	7000	41.3	6700	39.4	6350	37.4	3800	25.6
R3/16 × 3/8	6050	39.4	5800	37.8	5450	35.4	3200	24.4
R1/4 × 1/2	5450	39.4	5200	37.8	4900	35.4	2750	24.0
R5/16 × 5/8	4350	34.3	4150	32.7	3900	32.3	2150	10.4
R3/8 × 3/4	3500	27.2	3300	25.6	3150	24.8	1700	8.7
R1/2 × 1	2800	27.2	2650	25.6	2520	24.8	1360	8.7

ap: D1/8 = .006"
 D3/16 ~ D5/16 = .010"
 D3/8 ~ D1 = .012"
 ae: 0.1 × D

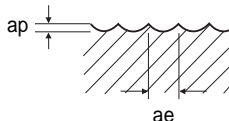


RPM = rev./min.
 FEED = inch/min.

■ HIGH SPEED

MATERIAL	HARDENED STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	HRc45 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc70	
STRENGTH	1500 ~ 1750N/mm ²		1750 ~ 2000N/mm ²		2000 ~ 2080N/mm ²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	12700	68.9	12300	65.7	11800	33.9
R3/32 × 3/16	9400	65.0	9050	61.8	8600	29.5
R1/8 × 1/4	8600	68.9	8250	65.7	7850	27.6
R5/32 × 5/16	7000	61.0	6700	57.5	6350	25.6
R3/16 × 3/8	6050	57.1	5800	53.5	5450	24.4
R1/4 × 1/2	5450	55.9	5200	52.4	4900	24.0
R5/16 × 5/8	4350	48.4	4150	44.5	3900	10.4
R3/8 × 3/4	3500	39.4	3300	35.4	3150	8.7
R1/2 × 1	2800	39.4	2640	35.4	2520	8.7

ap: D1/8 = .006"
 D3/16 ~ D5/16 = .010"
 D3/8 ~ D1 = .012"
 ae: 0.05 × D



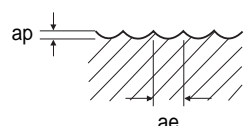
RPM = rev./min.
 FEED = inch/min.

CARBIDE, 2 FLUTE BALL NOSE with TAPER NECK

EM963, EM902 SERIES

■ NORMAL SPEED

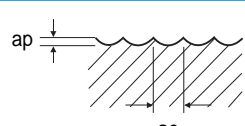
MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
	HRC30 ~ HRC40		HRC45 ~ HRC50		HRC50 ~ HRC55	
	1000 ~ 1250N/mm ²		1250 ~ 1750N/mm ²		1750 ~ 2000N/mm ²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R1/32 × 1/16	9700	8.3	13800	19.9	13600	17.9
R1/16 × 1/8	8000	14.6	10200	34.6	9800	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

<p>ap: D1/16~D1/4 = .008" D5/16~D1/2 = .012" ae: 0.2 × D</p>	<p>ap: D1/16~D1/8 = 0.05" × D D3/16~D5/16 = .010" D3/8~D1/2 = .012" ae: 0.1 × D</p>	
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RPM = rev./min.
FEED = inch/min.

■ HIGH SPEED

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
	~ HRC45		HRC45 ~ HRC50		HRC50 ~ HRC55	
	1500N/mm ²		1250 ~ 1750N/mm ²		1750 ~ 2000N/mm ²	
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

<p>ap: D1/16~D1/4 = .008" D5/16~D1/2 = .012" ae: 0.05 × D</p>	<p>ap: D1/16~D1/8 = 0.05" × D D3/16~D5/16 = .010" D3/8~D1/2 = .012" ae: 0.05 × D</p>	
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RPM = rev./min.
FEED = inch/min.

CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA



CARBIDE, 2 FLUTE BALL NOSE with PENCIL NECK

EM979 SERIES

■ NORMAL SPEED

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	HRc30 ~ HRc40		HRc45 ~ HRc50		HRc50 ~ HRc55	
STRENGTH	1000 ~ 1250N/mm 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	
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RPM = rev./min.
FEED = inch/min.

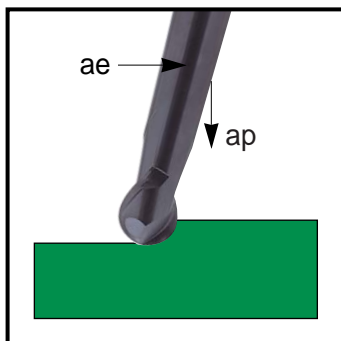
■ HIGH SPEED

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRc45		HRc45 ~ HRc50		HRc50 ~ HRc55	
STRENGTH	1500N/mm 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	
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RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE BALL NOSE - MMC



RECOMMENDED CUTTING CONDITIONS

- ▶ $ap=0.02 \times D1$
- ▶ $ae=0.05 \times D1$

EM084, EM096, EM669, EM863 SERIES

■ NORMAL SPEED

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOYED STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
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	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.



CARBIDE, 4 FLUTE BALL NOSE - MMC

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

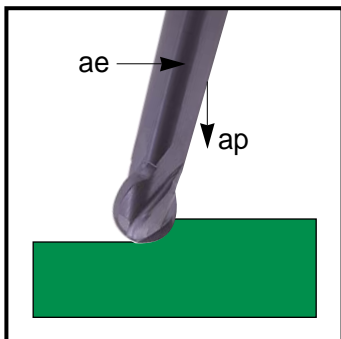
D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA



RECOMMENDED CUTTING CONDITIONS

▶ $ap=0.02 \times D1$
▶ $ae=0.05 \times D1$

EM093, EM097, EM673, EM864 SERIES

■ NORMAL SPEED

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOYED STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	~HRC30		HRC30 ~ HRC40		HRC45 ~ HRC65	
STRENGTH	~1000N/mm 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	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

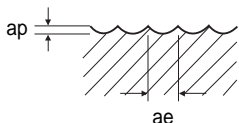
RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE MINIATURE BALL NOSE

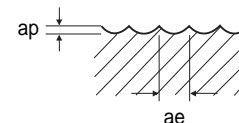
EM960, EM865 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		HARDENED STEELS	
HARDNESS	HRc30 ~ HRc45		HRc45 ~ HRc55	
STRENGTH	1000 ~ 1500N/mm 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

$D < .040$ $D \geq .040$
 $ap = 0.05 \times D$ $ap = 0.075 \times D$
 $ae = 0.15 \times D$ $ae = 0.15 \times D$



$D < .040$ $D \geq .040$
 $ap = 0.05 \times D$ $ap = 0.05 \times D$
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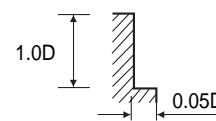
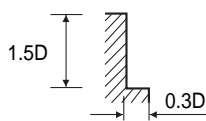


RPM = rev./min.
FEED = inch/min.

CARBIDE, MULTI FLUTE ROUGHING - SIDE CUTTING

EM666, EM156, EM832, EM814 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~HRc30		HRc30 ~ HRc38		HRc38 ~ HRc45		HRc45 ~ HRc55		HRc55 ~ HRc65	
STRENGTH	~1000N/mm 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



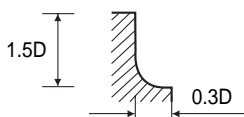
RPM = rev./min.
FEED = inch/min.



CARBIDE, MULTI FLUTE ROUGHING BALL NOSE - SIDE CUTTING

EM662, EM833 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
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



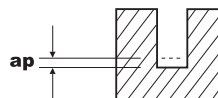
RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE FINISH for RIB PROCESSING

EM966, EM883 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS	~ HRC30			HRC30 ~ HRC45			HRC45 ~ HRC55		
STRENGTH	~ 1000N/mm ²			1000 ~ 1500N/mm ²			1500 ~ 2000N/mm ²		
DIAMETER	RPM	FEED	ap	RPM	FEED	ap	RPM	FEED	ap
1/32	27000-35000	7.5-16.5	.0006-.0014	19500-24500	2.4-9.5	.0006-.0014	12500-14800	1.4-3.7	.0003-.0006
3/64	18500-23500	7.5-23.6	.0022-.0039	13000-16500	3.7-11.8	.0022-.0039	8300-10500	2.0-3.9	.0004-.0009
1/16	14000-18000	7.5-23.6	.0030-.0057	10200-12800	3.7-11.8	.0030-.0057	6400-8000	2.0-3.9	.0006-.0012
5/64	12000-14500	7.5-23.6	.0035-.0071	8300-10500	3.7-11.8	.0035-.0071	5300-6600	2.0-3.9	.0007-.0014
3/32	9500-12000	7.5-23.6	.0044-.0093	6700-8500	3.7-11.8	.0044-.0093	4300-5300	2.0-3.9	.0009-.0018
1/8	8000-10000	7.5-23.6	.0053-.0106	5500-7000	3.7-11.8	.0053-.0106	3500-4400	2.0-3.9	.0011-.0022

(Depth of Cut per one pass)



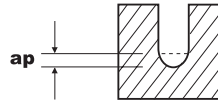
RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING

EM967, EM886 SERIES

MATERIAL	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)

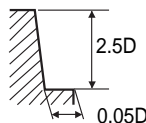


RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE TAPER - SIDE CUTTING

EM837 SERIES

MATERIAL	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



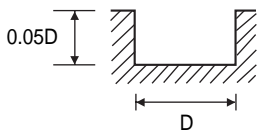
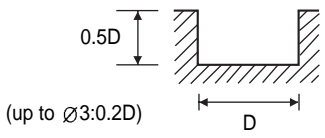
RPM = rev./min.
FEED = inch/min.



CARBIDE, 3 FLUTE - SLOTTING

EM895 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		STAINLESS STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC45				HRC45 ~ HRC55		HRC55 ~ HRC65	
STRENGTH	~ 1000N/mm 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	6300	3.2	5040	1.2		
3.0	8920	7.5	5560	5.1	4620	4.3	3360	1.4	1900	1.6
4.0	7560	10.6	4620	6.3	3880	5.1	2940	1.4	1480	1.4
5.0	6300	11.0	3780	6.7	3160	5.5	2320	1.8	1260	1.4
6.0	5560	12.2	3360	7.9	2840	6.3	2000	2.0	1100	1.4
8.0	4200	13.4	2520	7.1	2100	6.3	1680	2.6	840	1.4
10.0	3260	11.8	2000	5.5	1680	5.7	1360	2.2	680	1.2
12.0	2740	9.8	1680	4.7	1360	4.7	1160	2.0	560	1.2
16.0	2200	7.9	1360	3.9	1060	3.9	900	1.4	440	0.8
18.0	1940	6.9	1210	3.4	950	3.4	790	1.2	380	0.8
20.0	1680	5.9	1060	2.8	840	2.8	680	1.0	320	0.8

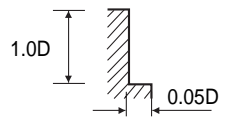


RPM = rev./min. FEED = inch/min.

CARBIDE, 3 FLUTE - SIDE CUTTING

EM895 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		STAINLESS STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC45				HRC45 ~ HRC55		HRC55 ~ HRC65	
STRENGTH	~ 1000N/mm 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	6300	4.5	5040	1.2		
3.0	8920	9.5	5560	5.9	4620	4.9	3360	1.6	1900	1.8
4.0	7560	16.9	4620	10.2	3880	8.3	2940	1.8	1480	1.8
5.0	6300	17.7	3780	10.6	3160	9.1	2320	2.2	1260	1.8
6.0	5560	19.7	3360	12.2	2840	9.8	2000	2.4	1100	1.8
8.0	4200	20.9	2520	11.4	2100	10.4	1680	3.2	840	1.8
10.0	3260	18.1	2000	9.1	1680	9.1	1360	2.8	680	1.4
12.0	2740	15.4	1680	7.5	1360	7.1	1160	2.4	560	1.4
16.0	2200	12.2	1360	5.9	1060	5.9	900	1.8	440	0.8
18.0	1940	11.0	1210	5.3	950	5.1	790	1.4	380	0.8
20.0	1680	9.5	1060	4.7	840	4.5	680	1.2	320	0.8

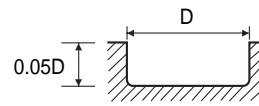
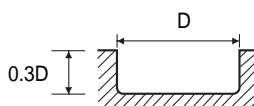


RPM = rev./min. FEED = inch/min.

CARBIDE, 2 FLUTE LONG CORNER RADIUS - SLOTTING

EM818 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC45		HRC45 ~ HRC55		HRC55 ~ HRC65	
STRENGTH	~ 1000N/mm 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

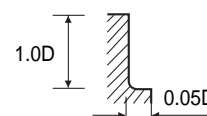
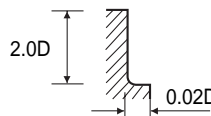
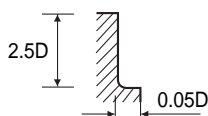


RPM = rev./min.
FEED = inch/min.

CARBIDE, 4 FLUTE LONG CORNER RADIUS - SIDE CUTTING

EM819 SERIES

MATERIAL	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



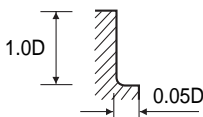
RPM = rev./min.
FEED = inch/min.



CARBIDE, 4 FLUTE STUB CORNER RADIUS - SIDE CUTTING

EM839 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC45		HRC45 ~ HRC55		HRC55 ~ HRC65	
STRENGTH	~ 1000N/mm 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

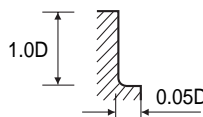


RPM = rev./min.
FEED = inch/min.

CARBIDE, 6 FLUTE STUB CORNER RADIUS - SIDE CUTTING

EM897 SERIES

MATERIAL	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.



Being the best through innovation

CARBIDE



JET-POWER

- Exotic materials like Stainless Steels, Nickel alloys and Titanium

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE	
			MIN	MAX		
INCH						
EH108		CARBIDE, 3&4 FLUTE 50° HELIX REGULAR LENGTH	◆	D1/8	D1	532
EE882		YPM, 6 FLUTE 35° HELIX REGULAR LENGTH	◆	D3/4	D1-1/2	533
E5075 E5105		CARBIDE, 3 FLUTE 35° HELIX STUB LENGTH CORNER RADIUS - "HOSS"	◆	D1/8	D1	534
E5074 E5104		CARBIDE, 3 FLUTE 35° HELIX REGULAR LENGTH CORNER RADIUS - "HOSS"	◆	D1/8	D1	535
EH094		CARBIDE, MULTI FLUTE STUB LENGTH FINE PITCH ROUGHING	◆	D1/4	D1	536
EH095		CARBIDE, MULTI FLUTE LONG LENGTH FINE PITCH ROUGHING	◆	D1/4	D1	537
EH969		CARBIDE, MULTI FLUTE 45° HELIX LONG LENGTH FINE PITCH ROUGHING	◆	D3/16	D1	538
EH970		CARBIDE, MULTI FLUTE 45° HELIX LONG REACH FINE PITCH ROUGHING	◆	D1/4	D3/4	539
◆ U.S.A Stock						
METRIC						
EH830		CARBIDE, 3&4 FLUTE 50° HELIX LONG LENGTH	◇	D6.0	D25.0	540
EE515		PREMIUM HSS-PM, 4&6 FLUTE SHORT LENGTH	◇	D3.0	D25.0	541
EH852		CARBIDE, MULTI FLUTE SHORT FINE PITCH ROUGHING	◇	D6.0	D25.0	542
EH831		CARBIDE, MULTI FLUTE LONG LENGTH FINE PITCH ROUGHING	◇	D6.0	D25.0	543
EH917		CARBIDE, MULTI FLUTE 45° HELIX SHORT LENGTH FINE PITCH ROUGHING	◇	D6.0	D20.0	544
EH919		CARBIDE, MULTI FLUTE 45° HELIX LONG LENGTH FINE PITCH ROUGHING	◇	D4.0	D25.0	545
EH921		CARBIDE, MULTI FLUTE 45° HELIX LONG REACH FINE PITCH ROUGHING	◇	D6.0	D20.0	546
RECOMMENDED CUTTING CONDITIONS					547	

◇ Call for Availability

JET-POWER END MILLS

⊙ : Excellent
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			HRc40~45	HRc45~55								
-HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							

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

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

CARBIDE, 3&4 FLUTE 50° HELIX REGULAR LENGTH

- ▶ Suitable for low hardness materials (under HRc 45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steels, inconel, nimonc, etc.
- ▶ Corner Protection against chipping.



MG 3&4 50° PLAIN FLAT P.547

◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
PLAIN	FLAT					
95063	—	1/8	1/8	1/2	1-1/2	3
95064	—	3/16	3/16	5/8	2	3
95065	—	1/4	1/4	3/4	2-1/2	3
95066	—	5/16	5/16	13/16	2-1/2	3
—	95067	3/8	3/8	1	2-1/2	3
95115	—	7/16	7/16	1	2-3/4	3
—	95068	1/2	1/2	1	3	3
—	95069	5/8	5/8	1-1/4	3-1/2	3
—	95070	3/4	3/4	1-1/2	4	4
—	95071	1	1	1-1/2	4	4

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



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

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

YPM, 6 FLUTE 35° HELIX REGULAR LENGTH

- ▶ Designed to machine low hardness materials (under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steel, inconel, nimonic, etc.
- ▶ High velocity milling operation and good surface finishes.



YPM
6
35°
FLAT
P.548

◇ U.S.A Stock

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
95094	3/4	3/4	1-5/8	3-7/8
95095	7/8	7/8	1-7/8	4-1/8
95096	1	1	2	4-1/2
95097	1-1/4	1-1/4	2	4-1/2
95098	1-1/2	1-1/4	2	4-1/2

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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

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

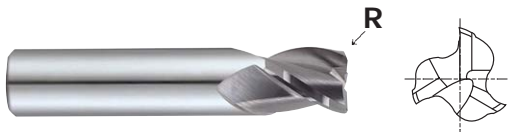


E5075 SERIES
E5105 SERIES

PLAIN SHANK
Ø1/8~Ø5/16
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).



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

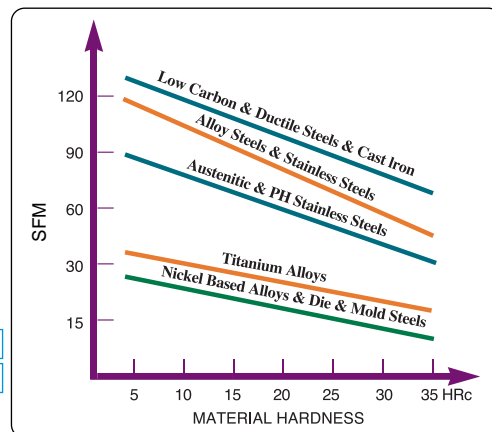
Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~- .0012	0~- .0003

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

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

CARBIDE, 3 FLUTE 35° HELIX REGULAR LENGTH CORNER RADIUS - "HOSS"

- ▶ #1 Choice for slotting, ramping & pocket work on stainless, monel & other alloys up to HRc35.
- ▶ Dry milling is recommended on steel alloys to reduce thermal shock and increase the life (YG:TYLON F or E COATING).



◆ U.S.A Stock

Ø1/8-Ø5/16 Ø11/32-Ø1

Unit : Inch

EDP No.					Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TIN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	R				
56558	56558TN	56558TC	56558TF	56558TE	.008 ~ .010	1/8	1/8	1/2	1-1/2
56561	56561TN	56561TC	56561TF	56561TE	.008 ~ .010	5/32	3/16	9/16	2
56565	56565TN	56565TC	56565TF	56565TE	.008 ~ .010	3/16	3/16	9/16	2
56570	56570TN	56570TC	56570TF	56570TE	.015 ~ .020	7/32	1/4	3/4	2-1/2
56573	56573TN	56573TC	56573TF	56573TE	.015 ~ .020	1/4	1/4	3/4	2-1/2
56576	56576TN	56576TC	56576TF	56576TE	.015 ~ .020	9/32	5/16	13/16	2-1/2
56579	56579TN	56579TC	56579TF	56579TE	.015 ~ .020	5/16	5/16	13/16	2-1/2
56582	56582TN	56582TC	56582TF	56582TE	.015 ~ .020	11/32	3/8	1	2-1/2
56584	56584TN	56584TC	56584TF	56584TE	.015 ~ .020	3/8	3/8	1	2-1/2
56588	56588TN	56588TC	56588TF	56588TE	.015 ~ .020	7/16	7/16	1	2-3/4
56593	56593TN	56593TC	56593TF	56593TE	.030 ~ .035	1/2	1/2	1-1/4	3
56595	56595TN	56595TC	56595TF	56595TE	.030 ~ .035	5/8	5/8	1-5/8	3-1/2
56598	56598TN	56598TC	56598TF	56598TE	.030 ~ .035	3/4	3/4	1-5/8	4
56600	56600TN	56600TC	56600TF	56600TE	.030 ~ .035	1	1	2	4

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

◎ : Excellent ○ : Good

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

CARBIDE, MULTI FLUTE STUB LENGTH FINE PITCH ROUGHING

- ▶ Designed to machine low hardness materials (under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steel, inconel, nimonic.
- ▶ High velocity milling operation.
- ▶ Fast chip ejection.



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA



◆ U.S.A Stock

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
95072	1/4	1/4	5/16	2-1/8	3
95073	5/16	5/16	3/8	2-1/4	3
95074	3/8	3/8	9/16	2-1/2	3
95075	1/2	1/2	5/8	3	4
95076	5/8	5/8	7/8	3-1/4	4
95077	3/4	3/4	1	3-3/4	4
95078	1	1	1	4	5

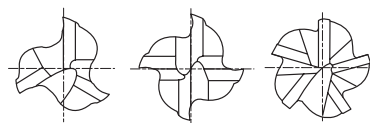
Mill Dia. (inch)	Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
1/4~3/8	0 ~ -.0022	0 ~ -.0003
1/2~5/8	0 ~ -.0027	
3/4~1	0 ~ -.0033	

◎ : Excellent ○ : Good

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

CARBIDE, MULTI FLUTE LONG LENGTH FINE PITCH ROUGHING

- ▶ Suitable for low hardness materials (under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steel, inconel, nimonic, etc.
- ▶ High velocity milling operation.
- ▶ Fast chip ejection.



MG
FINE
3-5
30°
PLAIN
P.549

◆ U.S.A Stock

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
95079	1/4	1/4	3/4	2-1/2	3
95080	5/16	5/16	3/4	2-1/2	3
95081	3/8	3/8	7/8	2-1/2	3
95082	1/2	1/2	1	3	4
95083	5/8	5/8	1-1/4	3-1/2	4
95084	3/4	3/4	1-5/8	4	4
95085	1	1	1-3/4	4	5

Mill Dia. (inch)	Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
1/4~3/8	0 ~ -.0022	0 ~ -.0003
1/2~5/8	0 ~ -.0027	
3/4~1	0 ~ -.0033	

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

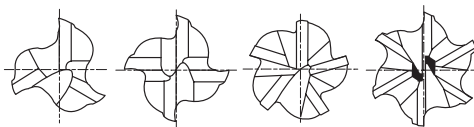
TECHNICAL DATA

◎ : Excellent ○ : Good

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

CARBIDE, MULTI FLUTE 45° HELIX LONG LENGTH FINE PITCH ROUGHING

- ▶ Suitable for low hardness materials (under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steel, titanium, inconel, nimonic, etc.
- ▶ High chip removed and minimizing breakages of cutting edges.
- ▶ Corner Protection against chipping.



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

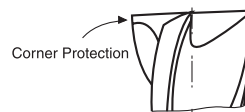
MG
FINE
3-6
45°
PLAIN
P.549

◆ U.S.A Stock

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
95107	3/16	1/4	1/2	2-1/4	3
95108	1/4	1/4	3/4	2-1/2	4
95109	5/16	5/16	3/4	2-1/2	4
95110	3/8	3/8	7/8	2-1/2	4
95111	1/2	1/2	1	3	4
95112	5/8	5/8	1-1/4	3-1/2	5
95113	3/4	3/4	1-5/8	4	6
95114	1	1	1-3/4	4	6

Mill Dia. (inch)	Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
3/16	0 ~ -.0019	0 ~ -.0003
1/4~3/8	0 ~ -.0022	
1/2~5/8	0 ~ -.0027	
3/4~1	0 ~ -.0033	

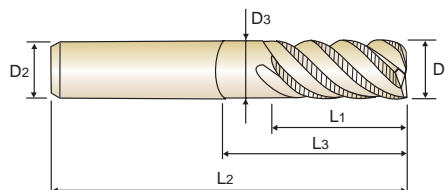
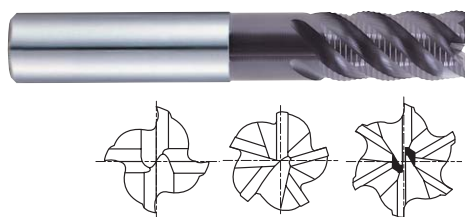


◎ : Excellent ○ : Good

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

CARBIDE, MULTI FLUTE 45° HELIX LONG REACH FINE PITCH ROUGHING

- ▶ Suitable for low hardness materials (under HRC45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steel, titanium, inconel, nimonic, etc.
- ▶ High chip removed and minimizing breakages of cutting edges.
- ▶ Corner Protection against chipping.



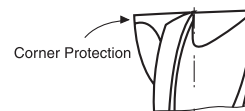
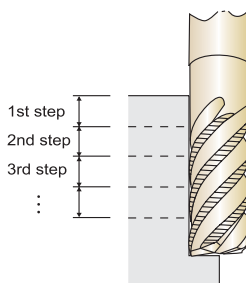
MG
FINE
4-6
45°
PLAIN
P.549

◆ U.S.A Stock

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	No. of Flute
	D1	D2	L1	L3	L2	D3	
95101	1/4	1/4	3/4	7/8	2-1/2	.230	4
95102	5/16	5/16	3/4	1	2-1/2	.292	4
95103	3/8	3/8	7/8	1-1/4	2-1/2	.355	4
95104	1/2	1/2	1	1-1/2	3	.480	4
95105	5/8	5/8	1-1/4	2	4	.605	5
95106	3/4	3/4	1-5/8	2-3/8	4-3/8	.719	6

Mill Dia. (inch)	Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
1/4~3/8	0 ~ -.0022	0 ~ -.0003
1/2~5/8	0 ~ -.0027	
3/4~1	0 ~ -.0033	



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
-HRC20	HRC20~30	HRC30~40	HRC40~45	HRC45~55	HRC55~70							
○	◎	◎	○							◎	◎	○

CARBIDE, 3&4 FLUTE 50° HELIX LONG LENGTH

- ▶ Reduces chipping of corner edges
- ▶ Suitable for low hardness materials (under HRC45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steels, Inconel, nimonic, etc



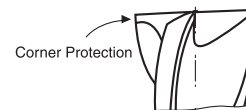
MG 3&4 50° PLAIN P.547

◇ 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



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

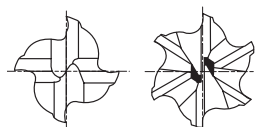
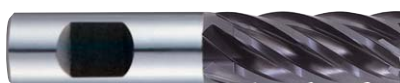
TECHNICAL DATA

◎ : Excellent ○ : Good

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

PREMIUM HSS-PM, 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.



◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flute
	Metric	Inch				
EE515030	3.0	.1181	6	8	52	4
EE515040	4.0	.1575	6	11	55	4
EE515050	5.0	.1969	6	13	57	4
EE515060	6.0	.2362	6	13	57	4
EE515080	8.0	.3150	10	19	69	4
EE515100	10.0	.3937	10	22	72	4
EE515120	12.0	.4724	12	26	83	4
EE515140	14.0	.5512	12	26	83	4
EE515160	16.0	.6299	16	32	92	6
EE515180	18.0	.7087	16	32	92	6
EE515200	20.0	.7874	20	38	104	6
EE515250	25.0	.9843	25	45	121	6

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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

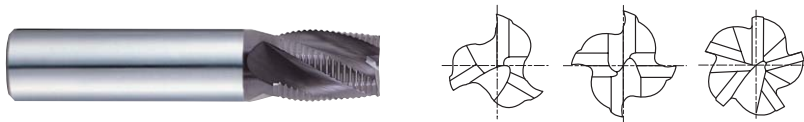
TECHNICAL DATA

◎ : Excellent ○ : Good

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

CARBIDE, MULTI FLUTE SHORT LENGTH FINE PITCH ROUGHING

- ▶ Designed to machine low hardness materials (under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steel, inconel, nimonic.
- ▶ High velocity milling operation.
- ▶ Fast chip ejection.



MG FINE 3-5 30° PLAIN P.549

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flute
	Metric	Inch				
	h10		h6			
EH852060	6.0	.2362	6	7	54	3
EH852070	7.0	.2756	8	8	58	3
EH852080	8.0	.3150	8	9	58	3
EH852090	9.0	.3543	10	13	66	4
EH852100	10.0	.3937	10	14	66	4
EH852120	12.0	.4724	12	16	73	4
EH852140	14.0	.5512	14	18	75	4
EH852160	16.0	.6299	16	22	82	4
EH852180	18.0	.7087	18	24	84	4
EH852200	20.0	.7874	20	26	92	4
EH852250	25.0	.9843	25	25	110	5

Tolerances according to DIN 7160 & 7161

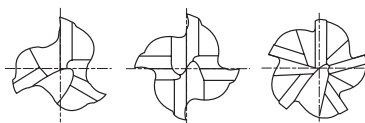
Tolerance range in μm					
Nominal-Diameter in mm					
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
h10	0 - 40	0 - 48	0 - 58	0 - 70	0 - 84
h6	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13

◎ : Excellent ○ : Good

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

CARBIDE, MULTI FLUTE LONG LENGTH FINE PITCH ROUGHING

- ▶ Designed to machine low hardness materials (under HRC45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steel, inconel, nimonic.
- ▶ High velocity milling operation.
- ▶ Fast chip ejection.



◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flute
	Metric	Inch				
	h10		h6			
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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
-HRC20	HRC20~30	HRC30~40	HRC40~45	HRc45~55	HRc55~70							
○	◎	◎	○							◎	◎	○

CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA

CARBIDE, MULTI FLUTE 45° HELIX SHORT LENGTH FINE PITCH ROUGHING

- ▶ High chip removal and minimizing breakages of cutting edges.
- ▶ Suitable for low hardness materials (under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steels, Inconel, nimonic, etc

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS



◇ 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

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

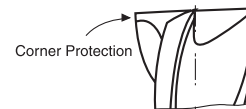
TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

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

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

CARBIDE, MULTI FLUTE 45° HELIX LONG LENGTH FINE PITCH ROUGHING

- ▶ High chip removal and minimizing breakages of cutting edges.
- ▶ Suitable for low hardness materials (under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steels, Inconel, nimonin, etc



◇ 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

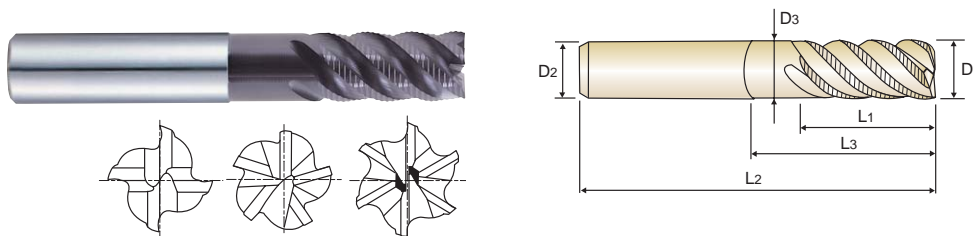


Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
-HRc20	HRc20-30	HRc30-40	HRc40-45	HRc45-55	HRc55-70							
○	◎	◎	○							◎	◎	○

◎ : Excellent ○ : Good

CARBIDE, MULTI FLUTE 45° HELIX LONG REACH FINE PITCH ROUGHING

- ▶ Suitable for low hardness materials (under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steel, titanium, inconel, nimonic, etc.
- ▶ High chip removed and minimizing breakages of cutting edges.
- ▶ Corner Protection against chipping.



MG FINE 4-6 45° PLAIN P.549

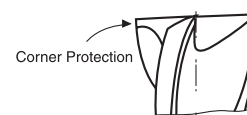
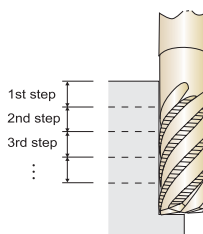
◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	No. of Flute
	Metric	Inch						
	D1		D2	L1	L3	L2	D3	
EH921060	6.0	.2362	6	16	20	57	5.5	4
EH921080	8.0	.3150	8	16	26	63	7.5	4
EH921100	10.0	.3937	10	22	31	72	9.5	4
EH921120	12.0	.4724	12	26	37	83	11.5	4
EH921160	16.0	.6299	16	32	51	100	15.5	5
EH921200	20.0	.7874	20	38	59	110	19.2	6

Tolerances according to DIN 7160 & 7161

Tolerance range in μm					
Nominal-Diameter in mm					
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
h10	0 - 40	0 - 48	0 - 58	0 - 70	0 - 84
h6	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13



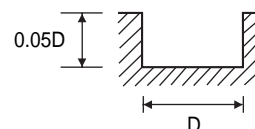
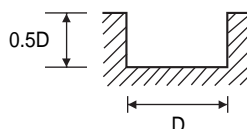
◎ : Excellent ○ : Good

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

CARBIDE, 3&4 FLUTE FINISH - SLOTING

EH108, EH830 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS		TITANIUM ALLOY		INCONEL	
HARDNESS	~HRc30		HRc30 ~ HRc45							
STRENGTH	~1000N/mm ²		1000 ~ 1500N/mm ²							
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	5560	12.2	3360	7.9	2840	6.3	1500	2.2	1160	1.6
5/16	4200	13.4	2520	7.1	2100	6.3	1090	2.2	840	1.6
3/8	3260	11.8	2000	5.5	1680	5.5	870	2.2	670	1.6
1/2	2740	9.8	1680	4.7	1370	4.7	730	1.8	560	1.2
5/8	2200	7.9	1360	3.9	1050	4.0	550	1.4	420	1.0
3/4	1750	6.9	1100	3.4	880	3.4	480	1.2	350	1.2
1	1360	4.5	840	2.4	670	2.4	350	0.8	270	0.6



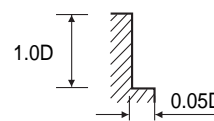
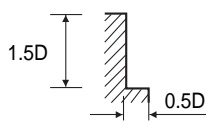
※ The Feed, in long & extra long types, should be reduced by around 50%.

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

CARBIDE, 3&4 FLUTE FINISH - SIDE CUTTING

EH108, EH830 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS		TITANIUM ALLOY		INCONEL	
HARDNESS	~HRc30		HRc30 ~ HRc45							
STRENGTH	~1000N/mm ²		1000 ~ 1500N/mm ²							
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	5560	15.8	3360	9.9	2840	8.3	1360	3.0	1050	2.2
5/16	4200	16.5	2520	9.1	2100	8.7	1090	2.8	840	2.0
3/8	3260	14.6	2000	7.1	1680	8.7	880	2.8	680	2.0
1/2	2740	12.2	1680	5.9	1370	7.1	730	2.6	560	1.8
5/8	2200	9.9	1360	4.7	1050	5.3	550	2.0	420	1.4
3/4	1750	8.7	1100	4.4	880	5.4	480	1.6	350	1.2
1	1360	5.9	840	3.0	670	4.5	350	1.4	270	1.0



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

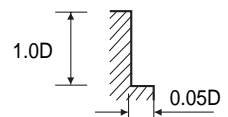
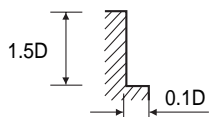
RPM = rev./min.
FEED = inch/min.



YPM, 6 FLUTE - SIDE CUTTING

EE882 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS		TITANIUM ALLOY		INCONEL	
HARDNESS	~HRC30		HRC30 ~ HRC45							
STRENGTH	~1000N/mm ²		1000 ~ 1500N/mm ²							
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/4	960	8.0	215	0.8	480	4.8	220	1.4	170	1.0
7/8	730	7.3	180	0.7	365	4.4	190	1.1	145	0.8
1	640	6.6	165	0.6	320	4.0	170	1.0	130	0.7
1-1/4	520	5.3	130	0.5	260	3.2	140	0.8	105	0.6
1-1/2	430	4.4	105	0.4	215	2.6	110	0.6	85	0.5



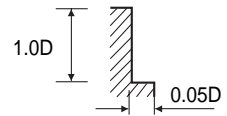
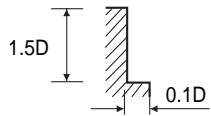
※ The Feed, in long & extra long types, should be reduced by around 50%.

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

PREMIUM HSS-PM, 4&6 FLUTE SHORT- SIDE CUTTING

EE515 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS TITANIUM ALLOY		INCONEL	
HARDNESS	~ HRC30		HRC30 ~ HRC45					
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3.0	4400	7.3	1100	0.9	2200	4.3	880	1.1
4.0	3600	8.3	900	1.2	1800	4.9	720	1.5
5.0	3000	8.9	750	1.2	1500	5.3	600	1.4
6.0	2600	9.3	600	1.1	1300	5.5	480	1.4
8.0	2000	9.8	500	1.1	1000	5.9	400	1.3
10.0	1600	11.2	410	1.2	800	6.7	330	1.4
12.0	1320	9.8	340	1.1	660	5.9	270	1.4
14.0	1160	9.3	290	1.1	580	5.5	230	1.3
16.0	1000	8.9	250	1.0	500	5.3	200	1.2
18.0	900	8.3	225	0.9	450	4.9	180	1.1
20.0	800	7.9	200	0.7	400	4.7	160	0.8
25.0	640	6.5	165	0.6	320	3.9	130	0.7

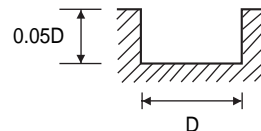
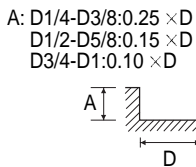
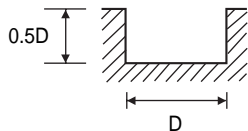


RPM = rev./min.
FEED = inch/min.

CARBIDE, MULTI FLUTE ROUGHING - SLOTTING

EH094, EH095, EH969, EH970, EH852, EH831, EH917, EH919, EH921 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS		TITANIUM ALLOY		INCONEL	
HARDNESS	~HRc30		HRc30 ~ HRc45							
STRENGTH	~1000N/mm ²		1000 ~ 1500N/mm ²							
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	15600	91.4	12400	33.1	8400	22.5	3150	10.6	2400	7.5
5/16	11600	91.4	9200	33.1	6300	22.5	2350	9.8	1800	7.1
3/8	9200	91.4	7600	33.1	5100	22.5	1700	10.2	1300	7.5
1/2	8000	94.5	6000	31.5	4200	22.5	1560	10.2	1200	7.5
5/8	6000	94.5	4800	29.9	3300	20.1	1040	5.8	800	4.3
3/4	5200	91.4	4400	28.4	2500	16.6	910	5.5	675	4.0
1	4300	84.7	3200	24.4	2160	16.2	780	5.1	600	4.3



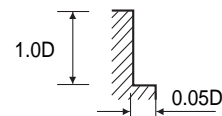
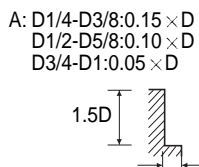
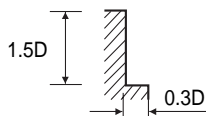
※ The Feed, in long & extra long types, should be reduced by around 50%.

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

CARBIDE, MULTI FLUTE ROUGHING - SIDE CUTTING

EH094, EH095, EH969, EH970, EH852, EH831, EH917, EH919, EH921 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS		TITANIUM ALLOY		INCONEL	
HARDNESS	~HRc30		HRc30 ~ HRc45							
STRENGTH	~1000N/mm ²		1000 ~ 1500N/mm ²							
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	15600	91.4	12400	33.1	8400	22.5	3150	10.6	2400	7.5
5/16	11600	91.4	9200	33.1	6300	22.5	2350	9.8	1800	7.1
3/8	9200	91.4	7600	33.1	5100	22.5	1700	10.2	1300	7.5
1/2	8000	94.5	6000	31.5	4200	22.5	1560	10.2	1200	7.5
5/8	6000	94.5	4800	29.9	3300	22.1	1040	5.9	800	4.3
3/4	5200	91.4	4400	28.4	2700	16.6	910	5.5	700	4.0
1	4300	84.7	3200	24.4	2160	16.2	780	5.1	600	4.3



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

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



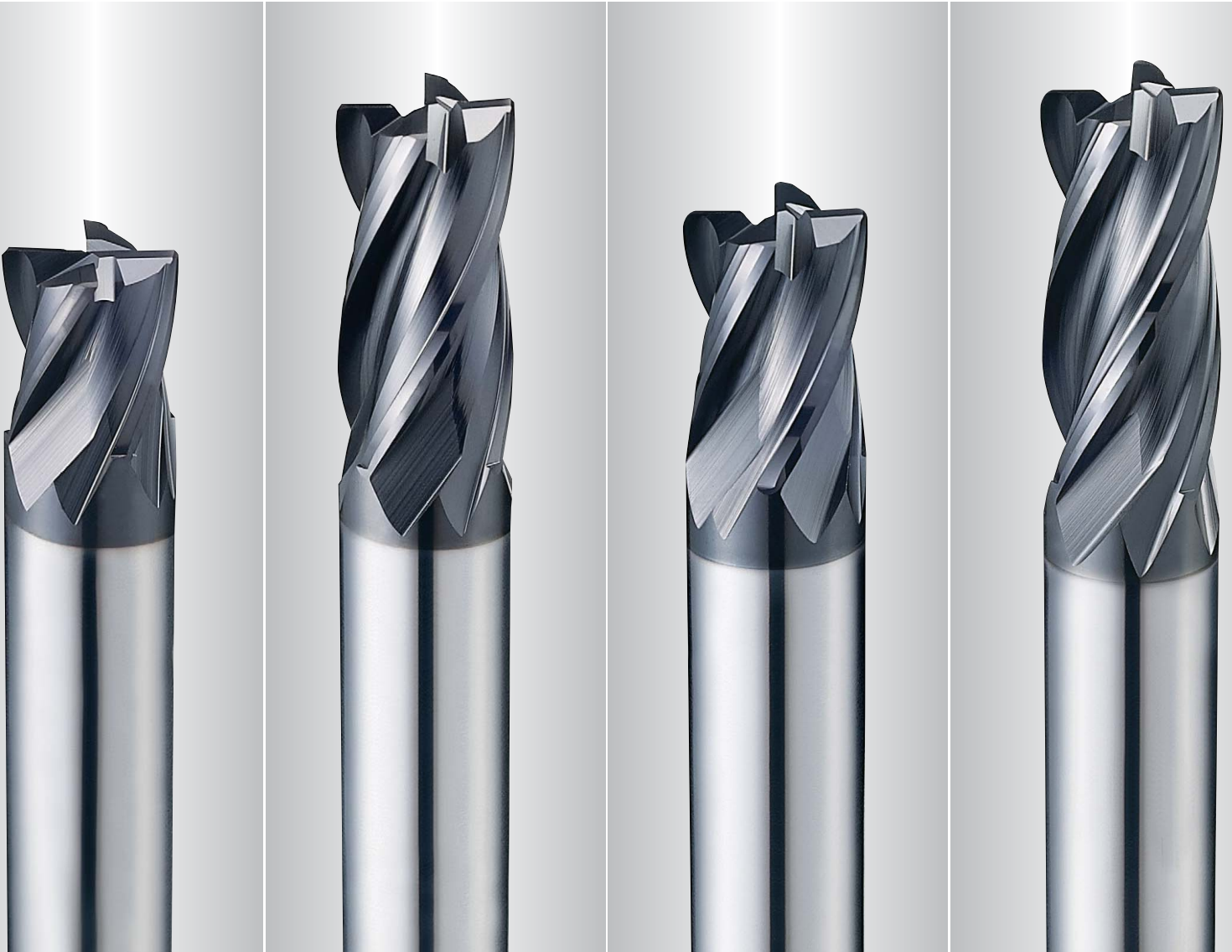
Global Cutting Tool Leader **YG-1**





Being the best through innovation









CARBIDE



V7 Mill STEEL

- Silent Cutting of Steels up to HRc40.
Designed as Unequal Leads.

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE	
			MIN	MAX		
INCH						
EMD56 EMD57		CARBIDE, 4 FLUTE MULTIPLE HELIX STUB LENGTH	◆	D1/8	D1	554
EMD58 EMD59		CARBIDE, 4 FLUTE MULTIPLE HELIX STUB LENGTH CORNER RADIUS	◆	D1/8	D1	555
EMD46 EMD47		CARBIDE, 4 FLUTE MULTIPLE HELIX REGULAR LENGTH	◆	D1/8	D1	556
EMD48 EMD49		CARBIDE, 4 FLUTE MULTIPLE HELIX REGULAR LENGTH CORNER RADIUS	◆	D1/8	D1	557
◆ U.S.A Stock						
METRIC						
EMD42 EMD43		CARBIDE, 4 FLUTE MULTIPLE HELIX SHORT LENGTH	◇	D3.0	D20.0	558
EMD44 EMD45		CARBIDE, 4 FLUTE MULTIPLE HELIX SHORT LENGTH CORNER RADIUS	◇	D3.0	D20.0	559
EMD38 EMD39		CARBIDE, 4 FLUTE MULTIPLE HELIX REGULAR LENGTH	◇	D3.0	D25.0	560
EMD40 EMD41		CARBIDE, 4 FLUTE MULTIPLE HELIX REGULAR LENGTH CORNER RADIUS	◇	D3.0	D25.0	561
RECOMMENDED CUTTING CONDITIONS						562

◇ Call for Availability

V7 Mill STEEL END MILLS

◎ : Excellent
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			HRc40~45	HRc45~55								
-HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							

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

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◎	◎	◎	○					○		○		
◎	◎	◎	○					○		○		



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

CARBIDE, 4 FLUTE MULTIPLE HELIX STUB LENGTH

- ▶ Special flute geometry and multiple helix eliminate vibrations
- ▶ Designed for machine mild steels, cast irons, tool steels, and low hardened steels up to HRc 40.
- ▶ Excellent work piece finishes.
- ▶ Higher speeds, deeper cuts and higher metal removal rates.



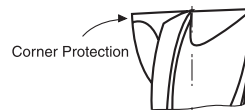
◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT				
EMD56008	-	1/8	1/8	1/8	1-1/2
EMD56010	-	5/32	3/16	3/16	2
EMD56012	-	3/16	3/16	3/16	2
EMD56014	-	7/32	1/4	1/4	2
EMD56016	-	1/4	1/4	1/4	2
EMD56020	-	5/16	5/16	5/16	2
-	EMD57024	3/8	3/8	3/8	2
-	EMD57028	7/16	7/16	7/16	2-1/2
-	EMD57032	1/2	1/2	1/2	2-1/2
-	EMD57040	5/8	5/8	5/8	3
-	EMD57048	3/4	3/4	3/4	3
-	EMD57064	1	1	1	4

▶ Shanks 3/8" and over come standard with Flats.

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



◎ : Excellent ○ : Good

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

CARBIDE, 4 FLUTE MULTIPLE HELIX STUB LENGTH CORNER RADIUS

- ▶ Special flute geometry and multiple helix eliminate vibrations
- ▶ Designed for machine mild steels, cast irons, tool steels, and low hardened steels up to HRc 40.
- ▶ Excellent work piece finishes.
- ▶ Higher speeds, deeper cuts and higher metal removal rates.



MG 4 PLAIN FLAT P.562

◆ U.S.A Stock

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R				
EMD58008	-	R.010	1/8	1/8	1/8	1-1/2
EMD58010	-	R.010	5/32	3/16	3/16	2
EMD58012	-	R.010	3/16	3/16	3/16	2
EMD58014	-	R.015	7/32	1/4	1/4	2
EMD58016	-	R.015	1/4	1/4	1/4	2
EMD58020	-	R.015	5/16	5/16	5/16	2
-	EMD59024	R.015	3/8	3/8	3/8	2
-	EMD59028	R.015	7/16	7/16	7/16	2-1/2
-	EMD59032	R.025	1/2	1/2	1/2	2-1/2
-	EMD59040	R.035	5/8	5/8	5/8	3
-	EMD59048	R.035	3/4	3/4	3/4	3
-	EMD59064	R.035	1	1	1	4

▶ Shanks 3/8" and over come standard with Flats.

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

◎ : Excellent ○ : Good

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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

CARBIDE

HSS



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

CARBIDE, 4 FLUTE MULTIPLE HELIX REGULAR LENGTH

- ▶ Special flute geometry and multiple helix eliminate vibrations
- ▶ Designed for machine mild steels, cast irons, tool steels, and low hardened steels up to HRc 40.
- ▶ Excellent work piece finishes.
- ▶ Higher speeds, deeper cuts and higher metal removal rates.



◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT				
EMD46008	-	1/8	1/8	3/8	1-1/2
EMD46010	-	5/32	3/16	7/16	2
EMD46012	-	3/16	3/16	7/16	2
EMD46014	-	7/32	1/4	7/16	2-1/2
EMD46016	-	1/4	1/4	1/2	2-1/2
EMD46018	-	9/32	5/16	5/8	2-1/2
EMD46020	-	5/16	5/16	13/16	2-1/2
EMD46022	EMD47022	11/32	3/8	13/16	2-1/2
EMD46024	EMD47024	3/8	3/8	7/8	2-1/2
EMD46026	EMD47026	13/32	7/16	15/16	2-3/4
EMD46028	EMD47028	7/16	7/16	1	2-3/4
EMD46030	EMD47030	15/32	1/2	1	3
EMD46032	EMD47032	1/2	1/2	1	3
EMD46036	EMD47036	9/16	9/16	1-1/8	3-1/2
EMD46040	EMD47040	5/8	5/8	1-1/4	3-1/2
EMD46048	EMD47048	3/4	3/4	1-1/2	4
EMD46064	EMD47064	1	1	1-1/2	4

▶ Shanks 3/8" and over come standard with Flats.

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



◎ : Excellent ○ : Good

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

CARBIDE, 4 FLUTE MULTIPLE HELIX REGULAR LENGTH CORNER RADIUS

- ▶ Special flute geometry and multiple helix eliminate vibrations
- ▶ Designed for machine mild steels, cast irons, tool steels, and low hardened steels up to HRc 40.
- ▶ Excellent work piece finishes.
- ▶ Higher speeds, deeper cuts and higher metal removal rates.



MG 4 PLAIN FLAT P.562

◆ U.S.A Stock

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R				
EMD48008	-	R.010	1/8	1/8	3/8	1-1/2
EMD48012	-	R.010	3/16	3/16	7/16	2
EMD48016	-	R.015	1/4	1/4	1/2	2-1/2
EMD48020	-	R.015	5/16	5/16	13/16	2-1/2
EMD48024	EMD49024	R.015	3/8	3/8	7/8	2-1/2
EMD48028	EMD49028	R.015	7/16	7/16	1	2-3/4
EMD48032	EMD49032	R.025	1/2	1/2	1	3
EMD48036	EMD49036	R.025	9/16	9/16	1-1/8	3-1/2
EMD48040	EMD49040	R.035	5/8	5/8	1-1/4	3-1/2
EMD48048	EMD49048	R.035	3/4	3/4	1-1/2	4
EMD48064	EMD49064	R.035	1	1	1-1/2	4

▶ Shanks 3/8" and over come standard with Flats.

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

◎ : Excellent ○ : Good

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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

CARBIDE

HSS

YG V7 Mill STEEL END MILLS

EMD42 SERIES PLAIN SHANK
EMD43 SERIES FLAT SHANK

CARBIDE, 4 FLUTE MULTIPLE HELIX SHORT LENGTH

- ▶ Special flute geometry and multiple helix eliminate vibrations
- ▶ Designed for machine mild steels, cast irons, tool steels, and low hardened steels up to HRc 40.
- ▶ Excellent work piece finishes.
- ▶ Higher speeds, deeper cuts and higher metal removal rates.



- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- 4G MILLS END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

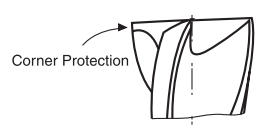
MG DIN 6527 4 PLAIN FLAT P.562

◇ Call for Availability

Unit : mm

EDP No.		Mill Diameter		Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	Metric	Inch			
EMD42030	EMD43030	3.0	.1181	6	5	50
EMD42040	EMD43040	4.0	.1575	6	8	54
EMD42050	EMD43050	5.0	.1969	6	9	54
EMD42060	EMD43060	6.0	.2362	6	10	54
EMD42080	EMD43080	8.0	.3150	8	12	58
EMD42100	EMD43100	10.0	.3937	10	14	66
EMD42120	EMD43120	12.0	.4724	12	16	73
EMD42140	EMD43140	14.0	.5512	14	18	75
EMD42160	EMD43160	16.0	.6299	16	22	82
EMD42180	EMD43180	18.0	.7087	18	24	84
EMD42200	EMD43200	20.0	.7874	20	26	92

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



◎ : Excellent ○ : Good

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

CARBIDE, 4 FLUTE MULTIPLE HELIX SHORT LENGTH CORNER RADIUS

- ▶ Special flute geometry and multiple helix eliminate vibrations
- ▶ Designed for machine mild steels, cast irons, tool steels, and low hardened steels up to HRc 40.
- ▶ Excellent work piece finishes.
- ▶ Higher speeds, deeper cuts and higher metal removal rates.



◇ Call for Availability

Unit : mm

EDP No.		Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R	Metric	Inch			
EMD44030	EMD45030	RO.3	3.0	.1181	6	5	50
EMD44040	EMD45040	RO.3	4.0	.1575	6	8	54
EMD44050	EMD45050	RO.3	5.0	.1969	6	9	54
EMD44060	EMD45060	RO.4	6.0	.2362	6	10	54
EMD44080	EMD45080	RO.4	8.0	.3150	8	12	58
EMD44100	EMD45100	RO.4	10.0	.3937	10	14	66
EMD44120	EMD45120	RO.6	12.0	.4724	12	16	73
EMD44140	EMD45140	RO.6	14.0	.5512	14	18	75
EMD44160	EMD45160	RO.8	16.0	.6299	16	22	82
EMD44180	EMD45180	RO.8	18.0	.7087	18	24	84
EMD44200	EMD45200	RO.8	20.0	.7874	20	26	92

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

◎ : Excellent ○ : Good

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

CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA

CARBIDE

HSS



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

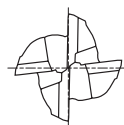
TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

CARBIDE, 4 FLUTE MULTIPLE HELIX REGULAR LENGTH

- ▶ Special flute geometry and multiple helix eliminate vibrations
- ▶ Designed for machine mild steels, cast irons, tool steels, and low hardened steels up to HRc 40.
- ▶ Excellent work piece finishes.
- ▶ Higher speeds, deeper cuts and higher metal removal rates.



◇ Call for Availability

Unit : mm

EDP No.		Mill Diameter		Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	Metric	Inch			
EMD38030	EMD39030	3.0	.1181	6	8	57
EMD38040	EMD39040	4.0	.1575	6	11	57
EMD38050	EMD39050	5.0	.1969	6	13	57
EMD38060	EMD39060	6.0	.2362	6	13	57
EMD38080	EMD39080	8.0	.3150	8	19	63
EMD38100	EMD39100	10.0	.3937	10	22	72
EMD38120	EMD39120	12.0	.4724	12	26	83
EMD38140	EMD39140	14.0	.5512	14	26	83
EMD38160	EMD39160	16.0	.6299	16	32	92
EMD38180	EMD39180	18.0	.7087	18	32	92
EMD38200	EMD39200	20.0	.7874	20	38	104
EMD38250	EMD39250	25.0	.9800	25	38	104

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



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

◎ : Excellent ○ : Good

CARBIDE, 4 FLUTE MULTIPLE HELIX REGULAR LENGTH CORNER RADIUS

- ▶ Special flute geometry and multiple helix eliminate vibrations
- ▶ Designed for machine mild steels, cast irons, tool steels, and low hardened steels up to HRc 40.
- ▶ Excellent work piece finishes.
- ▶ Higher speeds, deeper cuts and higher metal removal rates.



MG DIN 6527 4 PLAIN FLAT P.562

◇ Call for Availability

Unit : mm

EDP No.		Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R	Metric	Inch			
EMD40030	EMD41030	R0.3	3.0	.1181	6	8	57
EMD40040	EMD41040	R0.3	4.0	.1575	6	11	57
EMD40050	EMD41050	R0.3	5.0	.1969	6	13	57
EMD40060	EMD41060	R0.4	6.0	.2362	6	13	57
EMD40080	EMD41080	R0.4	8.0	.3150	8	19	63
EMD40100	EMD41100	R0.4	10.0	.3937	10	22	72
EMD40120	EMD41120	R0.6	12.0	.4724	12	26	83
EMD40140	EMD41140	R0.6	14.0	.5512	14	26	83
EMD40160	EMD41160	R0.8	16.0	.6299	16	32	92
EMD40180	EMD41180	R0.8	18.0	.7087	18	32	92
EMD40200	EMD41200	R0.8	20.0	.7874	20	38	104
EMD40250	EMD41250	R0.8	25.0	.9800	25	38	104

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

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

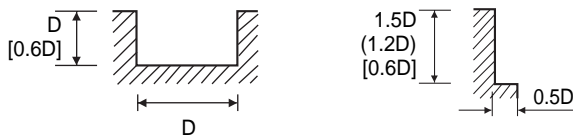
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
-HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○					○		○		



CARBIDE, 4 FLUTE

EMD56, EMD57, EMD58, EMD59, EMD46, EMD47, EMD48, EMD49 SERIES

MATERIAL	ALLOY STEELS CAST IRON		ALLOY STEELS CAST IRON	
HARDNESS	~ HRc 30		HRc 30 ~ HRc 40	
STRENGTH	~ 1000N/mm ²		1000 ~ 1300N/mm ²	
DIAMETER	RPM	FEED	RPM	FEED
1/8	12735	10.2	8910	7.1
3/16	8490	10.9	5940	7.6
1/4	6370	11.5	4460	8.1
5/16	5100	13.0	3560	9.1
3/8	4245	18.4	2970	12.7
7/16	4010	24.5	2800	17.0
1/2	3500	25.9	2460	18.0
9/16	3110	26.0	2180	18.1
5/8	2800	26.1	1960	18.3
3/4	2340	24.0	1640	16.7
1	1755	17.4	1230	12.2



* 1.2 x D Axial cutting depth should be applied for Short length series DIA over 5/16mm
 * 0.6 x D Axial cutting depth should be applied for Stub length series.

* () : Short length Type
 * [] : Stub length Type

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



Being the best through innovation

CARBIDE



V7 Mill INOX

- Silent Cutting of Stainless Steels up to HRc40.
Designed as Variable Leads, YG-1's Patent.

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE	
			MIN	MAX		
INCH						
EMC75 EMD60		CARBIDE, 4 FLUTE STUB LENGTH	◆	D1/8	D1	566
EMC76 EMD61		CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS	◆	D1/8	D1	567
EMB12 EMB37		CARBIDE, 4 FLUTE REGULAR LENGTH	◆	D1/8	D1	568
EMB13 EMB38		CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS	◆	D1/8	D1	569
EMB20		CARBIDE, 4 FLUTE EXTENDED LENGTH LONG REACH	◆	D1/4	D1	570
EMB78 EMB79		CARBIDE, 4 FLUTE REGULAR LENGTH BALL NOSE	◆	R1/16	R1/2	571
EMB76 EMB77		CARBIDE, 5 FLUTE REGULAR LENGTH	◆	D1/4	D1	572

◆ U.S.A Stock

METRIC

EMB41 EMB42		CARBIDE, 4 FLUTE SHORT LENGTH	◇	D3.0	D20.0	573
EMB43 EMB44		CARBIDE, 4 FLUTE SHORT LENGTH CORNER RADIUS	◇	D3.0	D20.0	574
EMB14 EMB39		CARBIDE, 4 FLUTE REGULAR LENGTH	◇	D3.0	D25.0	575
EMB15 EMB40		CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS	◇	D3.0	D25.0	576
EMB74 EMB75		CARBIDE, 4 FLUTE REGULAR LENGTH BALL NOSE	◇	R1.5	R12.5	577
EMB72 EMB73		CARBIDE, 5 FLUTE REGULAR LENGTH	◇	D6.0	D25.0	578
RECOMMENDED CUTTING CONDITIONS						579

◇ Call for Availability

V7 Mill INOX END MILLS

⊙ : Excellent
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			HRc40~45	HRc45~55								
-HRc20	HRc20~30	HRc30~40			HRc55~70							

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

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

CARBIDE

HSS



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

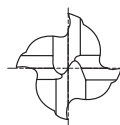
TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

CARBIDE, 4 FLUTE STUB LENGTH

- ▶ Special flute geometry eliminates vibrations
- ▶ Designed for mild steels, stainless steel, cast iron, tool steels, titanium alloys, prehardened steels and low hardness material
- ▶ Excellent work piece finishes
- ▶ Higher speeds, deeper cuts and metal removal rates



◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT				
EMC75008	-	1/8	1/8	1/8	1-1/2
EMC75010	-	5/32	3/16	3/16	2
EMC75012	-	3/16	3/16	3/16	2
EMC75014	-	7/32	1/4	1/4	2
EMC75016	-	1/4	1/4	1/4	2
EMC75020	-	5/16	5/16	5/16	2
-	EMD60024	3/8	3/8	3/8	2
-	EMD60028	7/16	7/16	7/16	2-1/2
-	EMD60032	1/2	1/2	1/2	2-1/2
-	EMD60040	5/8	5/8	5/8	3
-	EMD60048	3/4	3/4	3/4	3
-	EMD60064	1	1	1	4

▶ Shanks 3/8" and over come standard with Flats.

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



◎ : Excellent ○ : Good

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

CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS

- ▶ Special flute geometry eliminates vibrations
- ▶ Designed for mild steels, stainless steel, cast iron, tool steels, titanium alloys, prehardened steels and low hardness material
- ▶ Excellent work piece finishes
- ▶ Higher speeds, deeper cuts and metal removal rates



◆ U.S.A Stock

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R				
EMC76008	-	R.015	1/8	1/8	1/8	1-1/2
EMC76010	-	R.015	5/32	3/16	3/16	2
EMC76012	-	R.015	3/16	3/16	3/16	2
EMC76014	-	R.020	7/32	1/4	1/4	2
EMC76016	-	R.020	1/4	1/4	1/4	2
EMC76020	-	R.020	5/16	5/16	5/16	2
-	EMD61024	R.020	3/8	3/8	3/8	2
-	EMD61028	R.020	7/16	7/16	7/16	2-1/2
-	EMD61032	R.030	1/2	1/2	1/2	2-1/2
-	EMD61040	R.040	5/8	5/8	5/8	3
-	EMD61048	R.040	3/4	3/4	3/4	3
-	EMD61064	R.040	1	1	1	4

▶ Shanks 3/8" and over come standard with Flats.

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
±.0012	h6

◎ : Excellent ○ : Good

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



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

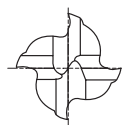
TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

CARBIDE, 4 FLUTE REGULAR LENGTH

- ▶ Special flute geometry eliminates vibrations
- ▶ Designed for mild steels, stainless steel, cast iron, tool steels, titanium alloys, prehardened steels and low hardness material
- ▶ Excellent work piece finishes
- ▶ Higher speeds, deeper cuts and metal removal rates



◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT				
EMB12008	-	1/8	1/8	3/8	1-1/2
EMB12010	-	5/32	3/16	7/16	2
EMB12012	-	3/16	3/16	7/16	2
EMB12014	-	7/32	1/4	7/16	2-1/2
EMB12016	-	1/4	1/4	1/2	2-1/2
EMB12018	-	9/32	5/16	5/8	2-1/2
EMB12020	-	5/16	5/16	13/16	2-1/2
EMB12022	-	11/32	3/8	13/16	2-1/2
-	EMB37024	3/8	3/8	7/8	2-1/2
-	EMB37026	13/32	7/16	15/16	2-3/4
-	EMB37028	7/16	7/16	1	2-3/4
-	EMB37030	15/32	1/2	1	3
-	EMB37032	1/2	1/2	1	3
-	EMB37036	9/16	9/16	1-1/8	3-1/2
-	EMB37040	5/8	5/8	1-1/4	3-1/2
-	EMB37048	3/4	3/4	1-1/2	4
-	EMB37064	1	1	1-1/2	4

▶ Shanks 3/8" and over come standard with Flats.

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



◎ : Excellent ○ : Good

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

CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS

- ▶ Special flute geometry eliminates vibrations
- ▶ Designed for mild steels, stainless steel, cast iron, tool steels, titanium alloys, prehardened steels and low hardness material
- ▶ Excellent work piece finishes
- ▶ Higher speeds, deeper cuts and metal removal rates



MG 4 PLAIN FLAT P.579

◆ U.S.A Stock

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R				
EMB13008	-	R.015	1/8	1/8	3/8	1-1/2
EMB13012	-	R.015	3/16	3/16	7/16	2
EMB13016	-	R.020	1/4	1/4	1/2	2-1/2
EMB13020	-	R.020	5/16	5/16	13/16	2-1/2
-	EMB38024	R.020	3/8	3/8	7/8	2-1/2
-	EMB38028	R.020	7/16	7/16	1	2-3/4
-	EMB38032	R.030	1/2	1/2	1	3
-	EMB38036	R.030	9/16	9/16	1-1/8	3-1/2
-	EMB38040	R.040	5/8	5/8	1-1/4	3-1/2
-	EMB38048	R.040	3/4	3/4	1-1/2	4
-	EMB38064	R.040	1	1	1-1/2	4

▶ Shanks 3/8" and over come standard with Flats.

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
±.0012	h6

◎ : Excellent ○ : Good

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

CARBIDE

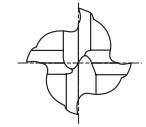
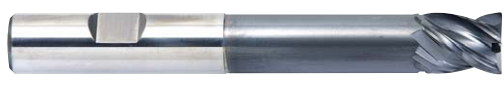
HSS

YG V7 Mill INOX END MILLS

EMB20 SERIES PLAIN SHANK FLAT SHANK

CARBIDE, 4 FLUTE EXTENDED LENGTH, LONG REACH

- ▶ Higher speeds, deeper cuts and metal removal rates.
- ▶ Improved surface finishes
- ▶ New "NANO" AlTiN coating



MG 4 PLAIN FLAT P.579

◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Reach Length	Overall Length
PLAIN	FLAT					
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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

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

CARBIDE, 4 FLUTE REGULAR LENGTH BALL NOSE

- ▶ Special flute geometry eliminates vibrations
- ▶ Designed for mild steels, stainless steel, cast iron, tool steels, titanium alloys, prehardened steels and low hardness material
- ▶ Excellent work piece finishes
- ▶ Higher speeds, deeper cuts and metal removal rates



MG 4 R ±.0004" PLAIN FLAT P.580

◆ U.S.A Stock

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R (±.0004)				
EMB78008	-	R1/16	1/8	1/8	3/8	1-1/2
EMB78010	-	R5/64	5/32	3/16	7/16	2
EMB78012	-	R3/32	3/16	3/16	7/16	2
EMB78016	-	R1/8	1/4	1/4	1/2	2-1/2
EMB78020	-	R5/32	5/16	5/16	13/16	2-1/2
-	EMB79024	R3/16	3/8	3/8	7/8	2-1/2
-	EMB79032	R1/4	1/2	1/2	1	3
-	EMB79040	R5/16	5/8	5/8	1-1/4	3-1/2
-	EMB79048	R3/8	3/4	3/4	1-1/2	4
-	EMB79064	R1/2	1	1	1-1/2	4

▶ Shanks 3/8" and over come standard with Flats.

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

◎ : Excellent ○ : Good

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

CARBIDE

HSS



CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

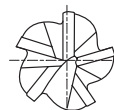
TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA

CARBIDE, 5 FLUTE REGULAR LENGTH

- ▶ Special flute geometry eliminates vibrations
- ▶ Designed for mild steels, stainless steel, cast iron, tool steels, titanium alloys, prehardened steels and low hardness material
- ▶ Excellent work piece finishes
- ▶ Higher speeds, deeper cuts and metal removal rates



◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT				
EMB76016	-	1/4	1/4	1/2	2-1/2
EMB76020	-	5/16	5/16	13/16	2-1/2
EMB76024	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



◎ : Excellent ○ : Good

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

CARBIDE, 4 FLUTE SHORT LENGTH

- ▶ Special flute geometry eliminates vibrations
- ▶ Designed for mild steels, stainless steel, cast iron, tool steels, titanium alloys, prehardened steels and low hardness material
- ▶ Excellent work piece finishes
- ▶ Higher speeds, deeper cuts and metal removal rates



MG 4 PLAIN FLAT P.579

◇ Call for Availability

Unit : mm

EDP No.		Mill Diameter		Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	Metric	Inch			
EMB41030	EMB42030	3.0	.1181	6	7	54
EMB41040	EMB42040	4.0	.1575	6	8	54
EMB41050	EMB42050	5.0	.1969	6	10	54
EMB41060	EMB42060	6.0	.2362	6	10	54
EMB41080	EMB42080	8.0	.3150	8	12	58
EMB41100	EMB42100	10.0	.3937	10	14	66
EMB41120	EMB42120	12.0	.4724	12	16	73
EMB41140	EMB42140	14.0	.5512	14	18	75
EMB41160	EMB42160	16.0	.6299	16	22	82
EMB41180	EMB42180	18.0	.7087	18	24	84
EMB41200	EMB42200	20.0	.7874	20	26	92

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



◎ : Excellent ○ : Good

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



CARBIDE, 4 FLUTE SHORT LENGTH CORNER RADIUS

- ▶ Special flute geometry eliminates vibrations
- ▶ Designed for mild steels, stainless steel, cast iron, tool steels, titanium alloys, prehardened steels and low hardness material
- ▶ Excellent work piece finishes
- ▶ Higher speeds, deeper cuts and metal removal rates



◇ 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

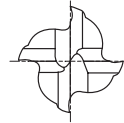
Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
± 0.030	h6

◎ : Excellent ○ : Good

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

CARBIDE, 4 FLUTE REGULAR LENGTH

- ▶ Special flute geometry eliminates vibrations
- ▶ Designed for mild steels, stainless steel, cast iron, tool steels, titanium alloys, prehardened steels and low hardness material
- ▶ Excellent work piece finishes
- ▶ Higher speeds, deeper cuts and metal removal rates



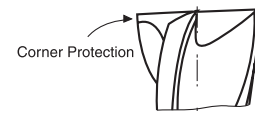
MG 4 PLAIN FLAT P.579

◇ Call for Availability

Unit : mm

EDP No.		Mill Diameter		Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	Metric	Inch			
EMB14030	-	3.0	.1181	6	8	57
EMB14040	-	4.0	.1575	6	11	57
EMB14050	-	5.0	.1969	6	13	57
EMB14060	-	6.0	.2362	6	13	57
EMB14080	-	8.0	.3150	8	19	63
EMB14100	-	10.0	.3937	10	22	72
-	EMB39120	12.0	.4724	12	26	83
-	EMB39140	14.0	.5512	14	26	83
-	EMB39160	16.0	.6299	16	32	92
-	EMB39180	18.0	.7087	18	32	92
-	EMB39200	20.0	.7874	20	38	104
-	EMB39250	25.0	.9800	25	38	104

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



◎ : Excellent ○ : Good

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

CARBIDE

HSS



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

CARBIDE, 4 FLUTE REGULAR LENGTH 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

◇ 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 (inch)	Shank Dia. Tolerance
± 0.030	h6

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

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



◇ Call for Availability

Unit : mm

EDP No.		Radius of Ball Nose R (±0.01)	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT		Metric	Inch			
EMB74030	EMB75030	R1.5	3.0	.1181	6	8	57
EMB74040	EMB75040	R2.0	4.0	.1575	6	11	57
EMB74050	EMB75050	R2.5	5.0	.1969	6	13	57
EMB74060	EMB75060	R3.0	6.0	.2362	6	13	57
EMB74080	EMB75080	R4.0	8.0	.3150	8	19	63
EMB74100	EMB75100	R5.0	10.0	.3937	10	22	72
EMB74120	EMB75120	R6.0	12.0	.4724	12	26	83
EMB74160	EMB75160	R8.0	16.0	.6299	16	32	92
EMB74200	EMB75200	R10.0	20.0	.7874	20	38	104
EMB74250	EMB75250	R12.5	25.0	.9800	25	38	104

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

◎ : Excellent ○ : Good

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

CARBIDE

HSS



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

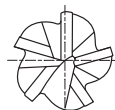
TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

CARBIDE, 5 FLUTE 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
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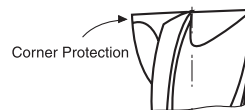


◇ Call for Availability

Unit : mm

EDP No.		Mill Diameter		Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	Metric	Inch			
EMB72060	EMB73060	6.0	.2362	6	13	57
EMB72080	EMB73080	8.0	.3150	8	19	63
EMB72100	EMB73100	10.0	.3937	10	22	72
EMB72120	EMB73120	12.0	.4724	12	26	83
EMB72140	EMB73140	14.0	.5512	14	26	83
EMB72160	EMB73160	16.0	.6299	16	32	92
EMB72180	EMB73180	18.0	.7087	18	32	92
EMB72200	EMB73200	20.0	.7874	20	38	104
EMB72250	EMB73250	25.0	.9800	25	38	104

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



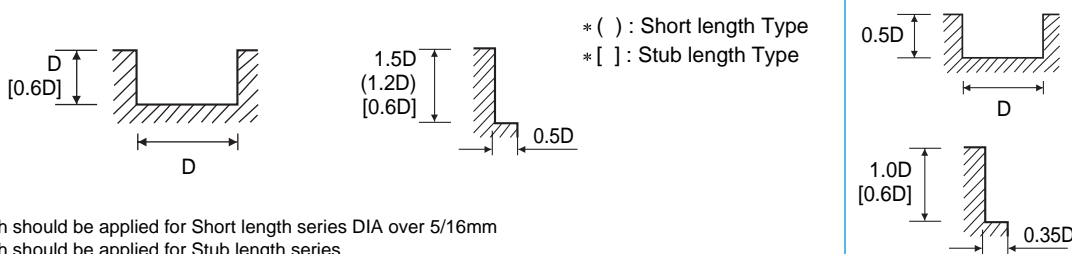
◎ : Excellent ○ : Good

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

CARBIDE, 4 FLUTE

EMC75, EMD60, EMC76, EMD61, EMB12, EMB37, EMB13, EMB38, EMB20 SERIES

MATERIAL	ALLOY STEELS CAST IRON		STAINLESS STEELS 300SERIES		STAINLESS STEELS 400SERIES		TITANIUM		INCONEL	
HARDNESS	~HRc 20									
STRENGTH	~1000N/mm ²									
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	12735	10.2	9625	7.3	13475	7.6	8320	7.6	2565	2.1
3/16	8490	10.9	6385	8.3	12000	8.4	5550	8.4	1685	1.8
1/4	6370	11.5	4810	9.6	6815	9.6	4160	9.6	1285	2.5
5/16	5100	13.0	3850	10.7	5390	10.7	3330	10.7	1025	2.8
3/8	4245	18.4	3210	15.4	4490	15.4	2770	15.4	855	4.1
7/16	4010	24.5	2750	20.9	3850	20.9	2380	20.7	735	5.5
1/2	3500	25.9	2400	21.0	3370	21.0	2080	21.0	640	5.6
9/16	3110	26.0	2140	21.2	2990	21.2	1850	21.2	570	5.7
5/8	2800	26.1	1925	21.2	2700	21.2	1660	21.2	510	5.6
3/4	2340	24.0	1600	19.4	2250	19.4	1390	19.4	425	5.2
1	1755	17.4	1200	14.7	1685	15.1	1040	15.1	315	4.3



* 1.2 x D Axial cutting depth should be applied for Short length series DIA over 5/16mm
* 0.6 x D Axial cutting depth should be applied for Stub length series.

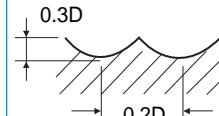
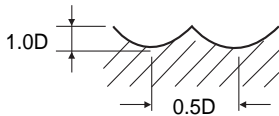
RPM = rev./min.
FEED = inch/min.

- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- 4G MILLS END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

CARBIDE, 4 FLUTE BALL NOSE

EMB78, EMB79 SERIES

MATERIAL	ALLOY STEELS CAST IRON		STAINLESS STEELS 300SERIES		STAINLESS STEELS 400SERIES		TITANIUM		INCONEL	
HARDNESS	~HRc 20									
STRENGTH	~1000N/mm ²									
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

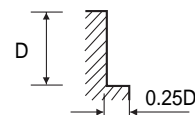
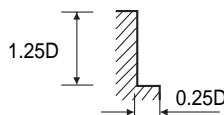


RPM = rev./min.
FEED = inch/min.

CARBIDE, 5 FLUTE

EMB76, EMB77 SERIES

MATERIAL	ALLOY STEELS CAST IRON		STAINLESS STEELS 300SERIES		STAINLESS STEELS 400SERIES		TITANIUM		INCONEL	
HARDNESS	~HRc 20									
STRENGTH	~1000N/mm ²									
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.



Being the best through innovation

CARBIDE



ALU-POWER

- Silent Cutting of Aluminium Alloys, Mirror Surface

SELECTION GUIDE





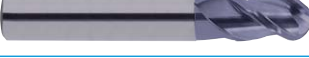
ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
INCH					
E5253		CARBIDE, 2 FLUTE 42° HELIX REGULAR & LONG LENGTH - "BANSHEE" (FLAT SHANK) ◆	D1/4	D1	586
E5254		CARBIDE, 2 FLUTE 42° HELIX REGULAR & LONG LENGTH - "BANSHEE" (PLAIN SHANK) ◆	D1/16	D1	587
E5976		CARBIDE, 2 FLUTE 37° HELIX with EXTENDED NECK ◆	D1/4	D1	588
E5980		CARBIDE, 3 FLUTE 45° HELIX STUB LENGTH ◆	D1/8	D1	589
E5981		CARBIDE, 3 FLUTE 45° HELIX REGULAR LENGTH ◆	D1/8	D1	590
E5983		CARBIDE, 3 FLUTE, 45° HELIX REGULAR LENGTH CORNER RADIUS ◆	D1/2	D1	590
E5982		CARBIDE, 3 FLUTE 45° HELIX LONG LENGTH ◆	D1/4	D1	591
E5984		CARBIDE, 3 FLUTE 45° HELIX LONG LENGTH CORNER RADIUS ◆	D1/2	D1	591
E5E44		CARBIDE, 3 FLUTE ROUGHING ◆	D1/4	D1	592
E5E98		CARBIDE, 3 FLUTE ROUGHING with NECK ◆	D1/4	D1	592
E5E45		CARBIDE, 3 FLUTE 37° ROUGHING BALL NOSE ◆	D1/4	D1	593
E5977		CARBIDE, 3 FLUTE 37° HELIX with EXTENDED NECK ◆	D1/4	D1	594
E5985		CARBIDE, 3 FLUTE 37° HELIX with EXTENDED NECK CORNER RADIUS ◆	D1/2	D1	595
E5973		CARBIDE, 2 FLUTE CORNER RADIUS with NECK ◆	D5/32	D3/4	596
E5974		CARBIDE, 2 FLUTE 50° HELIX STUB CUT LENGTH BALL NOSE with NECK ◆	R1/8	R3/8	597
E5978		CARBIDE, 2 FLUTE 37° HELIX LONG REACH BALL NOSE ◆	R1/8	R1/2	598
E5975		CARBIDE, 3 FLUTE 40° HELIX LONG LENGTH BALL NOSE with NECK ◆	R3/64	R5/16	599

◆ U.S.A Stock

SELECTION GUIDE







ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	

METRIC - CARBIDE

E5522 EG522		CARBIDE, 2 FLUTE 45° HELIX LONG LENGTH TiCN COATED	◇	D3.0	D20.0	600
EG930		CARBIDE, 2 FLUTE 25° HELIX STUB CUT LENGTH CORNER RADIUS TiCN COATED	◇	D2.0	D20.0	601
EG909		CARBIDE, 2 FLUTE STUB CUT LENGTH CORNER RADIUS with NECK TiCN COATED	◇	D4.0	D20.0	602
EG910		CARBIDE 2 FLUTE 50° HELIX STUB CUT LENGTH BALL NOSE with NECK TiCN COATED	◇	R3.0	R10.0	603
EG908		CARBIDE, 3 FLUTE 40° HELIX LONG LENGTH BALL NOSE with NECK TiCN COATED	◇	R1.0	R8.0	604



◇ Call for Availability

INCH / SPEED FREEK - HSS POWDERED METAL

EK191		T15, 3 FLUTE 42° HELIX REGULAR LENGTH ROUGHING for ALUMINUM	◆	D1/2	D2	605
EK191		T15, 3 FLUTE 42° HELIX REGULAR LENGTH ROUGHING with CORNER RADIUS for ALUMINUM	◆	D3/4	D1-1/4	605
EK226		T15, 3 FLUTE 42° HELIX MEDIUM LENGTH ROUGHING for ALUMINUM	◆	D3/4	D2	606
EK226		T15, 3 FLUTE 42° HELIX MEDIUM LENGTH ROUGHING with CORNER RADIUS for ALUMINUM	◆	D3/4	D1-1/4	606
EK192		T15, 3 FLUTE 42° HELIX LONG LENGTH ROUGHING for ALUMINUM	◆	D1/2	D2	607
EK192		T15, 3 FLUTE 42° HELIX LONG LENGTH ROUGHING with CORNER RADIUS for ALUMINUM	◆	D3/4	D1-1/4	608
EK196		3 FLUTE BALL NOSE 42° HELIX ROUGHING BALL NOSE REGULAR LENGTH for ALUMINUM	◆	R1/4	R5/8	609
EK193		3 FLUTE FINISHING with & without CORNER RADIUS REGULAR & MEDIUM & LONG LENGTH	◆	D1/2	D1-1/2	610

◆ U.S.A Stock

METRIC / SPEED FREEK - HSS POWDERED METAL

EP922		PREMIUM HSS-PM, 3 FLUTE, 42° HELIX SHORT LENGTH ROUGHING for ALUMINUM	◇	D12.0	D32.0	612
EP924		PREMIUM HSS-PM, 3 FLUTE 42° HELIX LONG LENGTH ROUGHING for ALUMINUM	◇	D12.0	D32.0	613
RECOMMENDED CUTTING CONDITIONS					614	

ALU-POWER END MILLS

⊙ : Excellent
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			HRc40~45	HRc45~55								
-HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							

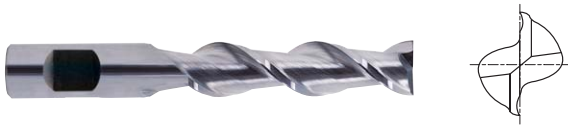
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CARBIDE, 2 FLUTE 42° HELIX REGULAR LENGTH - "BANSHEE"

- ▶ 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.614

◆ U.S.A Stock

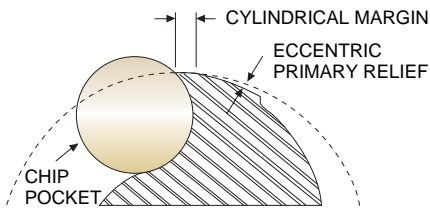
Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
17574	17574TN	17574TC	17574TF	17574TE	1/4	3/8	3/4	2-1/2
17580	17580TN	17580TC	17580TF	17580TE	5/16	3/8	13/16	2-1/2
17584	17584TN	17584TC	17584TF	17584TE	3/8	3/8	1	2-1/2
17593	17593TN	17593TC	17593TF	17593TE	1/2	1/2	1	3
18593	18593TN	18593TC	18593TF	18593TE	1/2	1/2	2	4
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

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

CARBIDE, 2 FLUTE 42° HELIX REGULAR LENGTH - "BANSHEE"

- ▶ High velocity milling of aluminum & other non ferrous materials.
- ▶ Excellent plunging capabilities.
- ▶ Improved surface roughness-cylindrical margin which is controlled tightly.
- ▶ Maximum-metal removal rate.
- ▶ Superior chip evacuation.
- ▶ Mirror face-excellent surface finish.



MG
2
42°
PLAIN
P.614

◆ U.S.A Stock

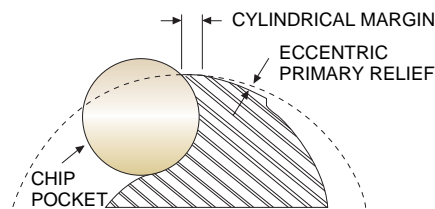
Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
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.

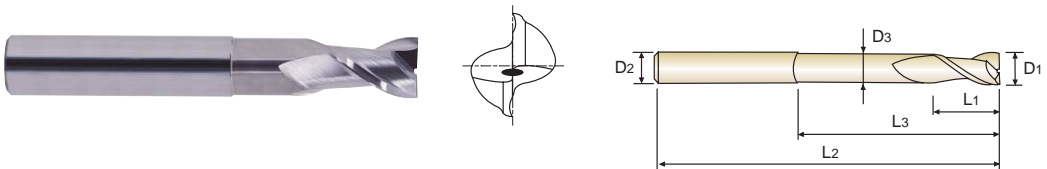


◎ : Excellent ○ : Good

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

CARBIDE, 2 FLUTE 37° HELIX with EXTENDED NECK

- ▶ High velocity milling of aluminum & other non-ferrous materials.
- ▶ Excellent plunging capabilities.
- ▶ Improved surface roughness-cylindrical margin which is controlled tightly.
- ▶ Maximum-metal removal rate.
- ▶ Superior chip evacuation.
- ▶ Mirror face-excellent surface finish.



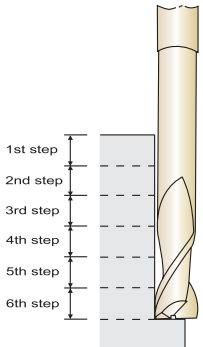
MG 2 37° PLAIN P.617

◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
UNCOATED	TiCN COATED	D1	D2	L1	L3	L2	D3
39573	39573TC	1/4	1/4	3/8	2-1/4	4	.220
39584	39584TC	3/8	3/8	1/2	2-1/4	4	.345
39593	39593TC	1/2	1/2	5/8	2-1/4	5	.470
39908	39908TC	1/2	1/2	5/8	3-1/4	6	.470
39901	39901TC	1/2	1/2	5/8	4	6	.470
39595	39595TC	5/8	5/8	3/4	2-1/4	5	.585
39902	39902TC	5/8	5/8	3/4	3-1/4	6	.585
39903	39903TC	5/8	5/8	3/4	4-1/4	7	.585
39598	39598TC	3/4	3/4	1	2-1/4	5	.710
39904	39904TC	3/4	3/4	1	3-1/4	6	.710
39905	39905TC	3/4	3/4	1	4-1/4	7	.710
39600	39600TC	1	1	1-1/8	2-1/4	5	.960
39906	39906TC	1	1	1-1/8	3-1/4	6	.960
39907	39907TC	1	1	1-1/8	4-1/4	7	.960

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



STEP MILLING

◎ : Excellent ○ : Good

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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

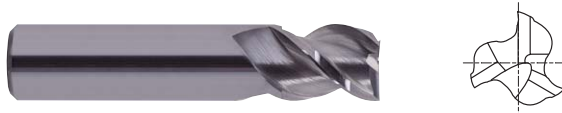
TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

CARBIDE, 3 FLUTE 45° HELIX STUB LENGTH

- ▶ Designed to machine aluminium at high speed condition.
- ▶ Improved surface roughness-cylindrical margin which is controlled tightly.
- ▶ Mirror face-excellent surface finish.


◆ U.S.A Stock

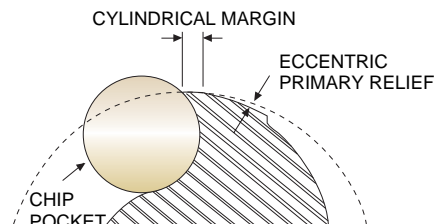
Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED				
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

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



CARBIDE, 3 FLUTE 45° HELIX REGULAR LENGTH & CORNER RADIUS

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



- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- 4G MILLS END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

MG 3 45° PLAIN P.615

◆ U.S.A Stock

■ 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

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

CARBIDE, 3 FLUTE 45° HELIX LONG LENGTH & CORNER RADIUS

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



◆ U.S.A Stock

■ 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

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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

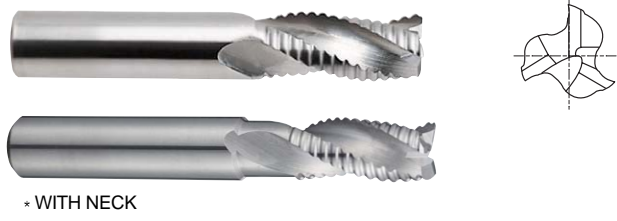
STANDARD COBALT & HSS END MILLS

TECHNICAL DATA



CARBIDE, 3 FLUTE ROUGHING / ROUGHING with NECK

- ▶ Excellent cutting qualities on aluminum, copper
- ▶ Increased tool life and superior chip evacuation
- ▶ Reduces chipping of corner edges



- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- 4G MILLS END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

MG 3 30° PLAIN P.622

ROUGHING

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
44016	1/4	1/4	3/4	2-1/2
44024	3/8	3/8	7/8	2-1/2
44032	1/2	1/2	1	3
44040	5/8	5/8	1-1/4	3-1/2
44048	3/4	3/4	1-5/8	4
44064	1	1	1-3/4	4

ROUGHING WITH NECK

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length
98016	1/4	1/4	3/4	1	2-1/2
98024	3/8	3/8	7/8	1-1/4	3
98032	1/2	1/2	1	1-3/8	3-1/4
98040	5/8	5/8	1-1/4	1-3/4	3-3/4
98048	3/4	3/4	1-5/8	2-1/4	4-1/2
98064	1	1	1-3/4	2-1/2	5

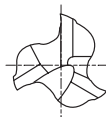
Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~- .0005	0~- .0003

◎ : Excellent ○ : Good

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

CARBIDE, 3 FLUTE ROUGHING BALL NOSE

- ▶ Excellent cutting qualities on aluminum, copper
- ▶ Increased tool life and superior chip evacuation
- ▶ Reduces chipping of corner edges



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

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

CBN END MILL

i-Xmill END MILL

i-HS mill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

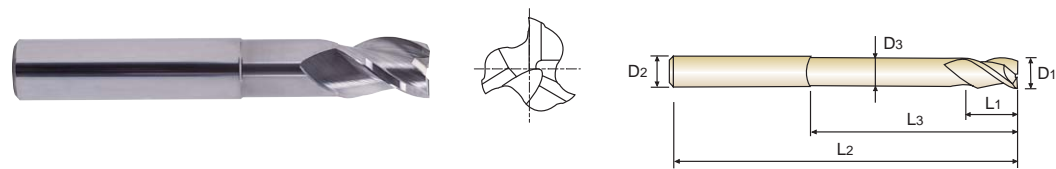
TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

CARBIDE, 3 FLUTE 37° HELIX with EXTENDED NECK

- ▶ High velocity milling of aluminum & other non-ferrous materials.
- ▶ 3flute and 37° helix allow harmonic balance at high speed condition and smooth cutting.
- ▶ Improved surface roughness-cylindrical margin which is controlled tightly.
- ▶ Maximum-metal removal rate.
- ▶ Superior chip evacuation.
- ▶ Mirror face-excellent surface finish.



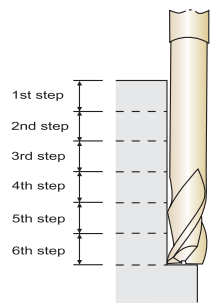
MG 3 37° PLAIN P.616

◆ U.S.A Stock

Unit : Inch

EDP No.		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



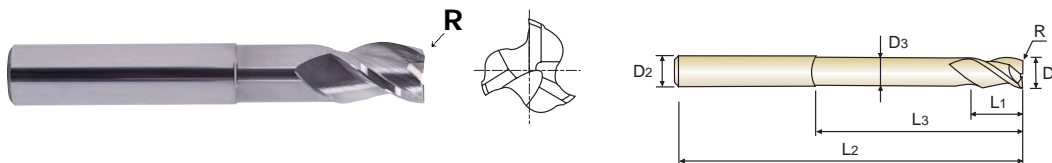
STEP MILLING

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

◎ : Excellent ○ : Good

CARBIDE, 3 FLUTE 37° HELIX with EXTENDED NECK CORNER RADIUS

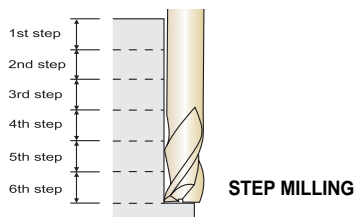
- ▶ High velocity milling of aluminum & other non-ferrous materials.
- ▶ 3flute and 37° helix allow harmonic balance at high speed condition and smooth cutting.
- ▶ Improved surface roughness-cylindrical margin which is controlled tightly.
- ▶ Maximum-metal removal rate.
- ▶ Superior chip evacuation.
- ▶ Mirror face-excellent surface finish.


◆ U.S.A Stock

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
UNCOATED	TiCN COATED	R	D1	D2	L1	L3	L2	D3
EA40321	EA40321C	R.060	1/2	1/2	5/8	3-1/4	6	.470
EA40322	EA40322C	R.060	1/2	1/2	5/8	4	6	.470
EA40401	EA40401C	R.060	5/8	5/8	3/4	2-1/4	5	.585
EA40402	EA40402C	R.060	5/8	5/8	3/4	3-1/4	6	.585
EA40403	EA40403C	R.060	5/8	5/8	3/4	4-1/4	7	.585
EA40481	EA40481C	R.060	3/4	3/4	1	2-1/4	5	.710
EA40482	EA40482C	R.060	3/4	3/4	1	3-1/4	6	.710
EA40483	EA40483C	R.060	3/4	3/4	1	4-1/4	7	.710
EA40641	EA40641C	R.060	1	1	1-1/8	2-1/4	5	.960
EA40642	EA40642C	R.060	1	1	1-1/8	3-1/4	6	.960
EA40643	EA40643C	R.060	1	1	1-1/8	4-1/4	7	.960
EA10321	EA10321C	R.120	1/2	1/2	5/8	3-1/4	6	.470
EA10322	EA10322C	R.120	1/2	1/2	5/8	4	6	.470
EA10401	EA10401C	R.120	5/8	5/8	3/4	2-1/4	5	.585
EA10402	EA10402C	R.120	5/8	5/8	3/4	3-1/4	6	.585
EA10403	EA10403C	R.120	5/8	5/8	3/4	4-1/4	7	.585
EA10481	EA10481C	R.120	3/4	3/4	1	2-1/4	5	.710
EA10482	EA10482C	R.120	3/4	3/4	1	3-1/4	6	.710
EA10483	EA10483C	R.120	3/4	3/4	1	4-1/4	7	.710
EA10641	EA10641C	R.120	1	1	1-1/8	2-1/4	5	.960
EA10642	EA10642C	R.120	1	1	1-1/8	3-1/4	6	.960
EA10643	EA10643C	R.120	1	1	1-1/8	4-1/4	7	.960

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



◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
-HRc20	HRc20-30	HRc30-40	HRc40-45	HRc45-55	HRc55-70							
									◎			

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

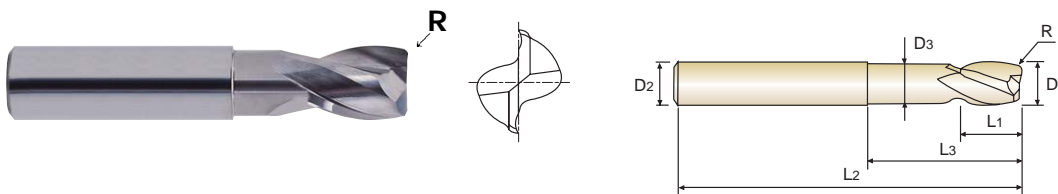
TECHNICAL DATA



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.



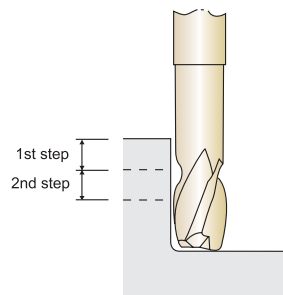
MG 2 30° ±.001 PLAIN P.617

◆ U.S.A Stock

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
UNCOATED	TiCN COATED	R	D1	D2	L1	L3	L2	D3
24562	24562TC	R.012	5/32	1/4	3/16	3/8	2	.140
24573	24573TC	R.020	1/4	1/4	5/16	3/4	2-3/8	.226
24579	24579TC	R.024	5/16	5/16	3/8	1-1/8	2-3/4	.282
24584	24584TC	R.031	3/8	3/8	1/2	1-1/2	3-1/8	.336
24593	24593TC	R.040	1/2	1/2	9/16	1-1/2	3-1/2	.460
24595	24595TC	R.051	5/8	5/8	3/4	1-3/4	4	.566
24598	24598TC	R.063	3/4	3/4	1	1-3/4	4	.670

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



STEP MILLING

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

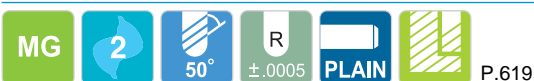
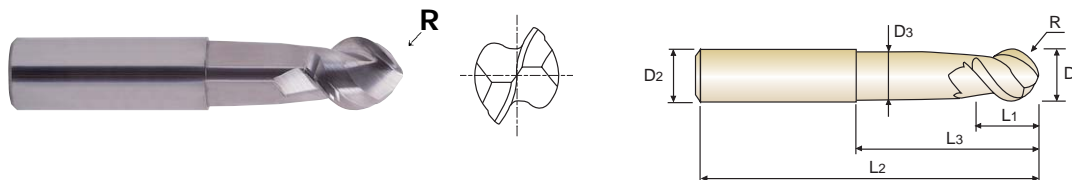
TECHNICAL DATA

◎ : Excellent ○ : Good

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

CARBIDE, 2 FLUTE 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.



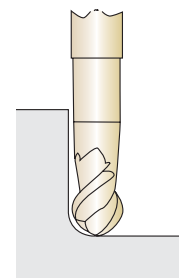
P.619

◆ U.S.A Stock

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
UNCOATED	TiCN COATED	R (±.0005)	D1	D2	L1	L3	L2	D3
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



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

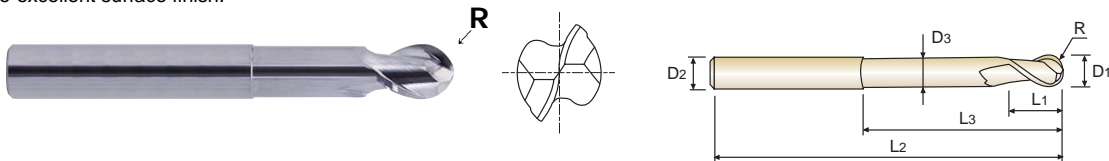
TECHNICAL DATA

◎ : Excellent ○ : Good

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

CARBIDE, 2 FLUTE 37° HELIX LONG REACH BALL NOSE

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



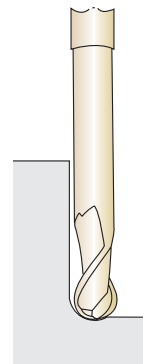
MG 2 37° ±.001 PLAIN P.618

◆ U.S.A Stock

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
UNCOATED	TiCN COATED	R (±.001)	D1	D2	L1	L3	L2	D3
89573	89573TC	R 1/8	1/4	1/4	3/8	2-1/4	4	.220
89584	89584TC	R 3/16	3/8	3/8	1/2	2-1/4	4	.345
89593	89593TC	R 1/4	1/2	1/2	5/8	2-1/4	5	.470
89901	89901TC	R 1/4	1/2	1/2	5/8	3-1/4	6	.470
89902	89902TC	R 1/4	1/2	1/2	5/8	4	6	.470
89595	89595TC	R 5/16	5/8	5/8	3/4	2-1/4	5	.585
89903	89903TC	R 5/16	5/8	5/8	3/4	3-1/4	6	.585
89904	89904TC	R 5/16	5/8	5/8	3/4	4-1/4	7	.585
89598	89598TC	R 3/8	3/4	3/4	1	2-1/4	5	.710
89905	89905TC	R 3/8	3/4	3/4	1	3-1/4	6	.710
89906	89906TC	R 3/8	3/4	3/4	1	4-1/4	7	.710
89600	89600TC	R1/2	1	1	1-1/8	2-1/4	5	.960
89907	89907TC	R1/2	1	1	1-1/8	3-1/4	6	.960
89908	89908TC	R1/2	1	1	1-1/8	4-1/4	7	.960

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



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

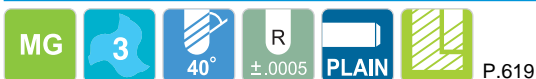
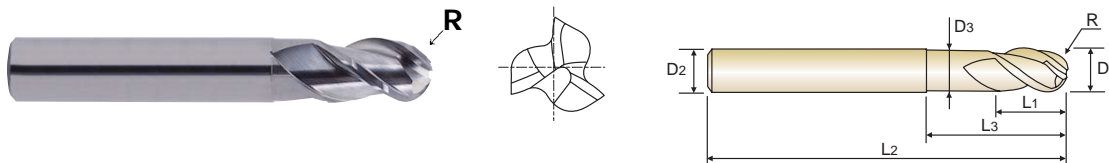
TECHNICAL DATA

◎ : Excellent ○ : Good

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

CARBIDE, 3 FLUTE 40° HELIX LONG LENGTH BALL NOSE with NECK

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

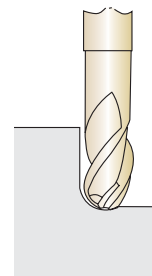


◆ U.S.A Stock

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
UNCOATED	TiCN COATED	R (±.0005)	D1	D2	L1	L3	L2	D3
38602	38602TC	R 3/64	3/32	1/4	1/8	3/16	2-3/8	.090
38601	38601TC	R 1/16	1/8	1/4	3/16	1/4	2-3/8	.117
38566	38566TC	R 3/32	3/16	1/4	1/4	3/8	2-1/2	.172
38573	38573TC	R 1/8	1/4	1/4	3/8	1/2	3	.235
38579	38579TC	R 5/32	5/16	5/16	1/2	1	3	.289
38584	38584TC	R 3/16	3/8	3/8	5/8	1-1/4	3-1/8	.351
38593	38593TC	R 1/4	1/2	1/2	3/4	1-3/8	3-1/2	.476
38595	38595TC	R 5/16	5/8	5/8	1	1-1/2	4	.601

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



JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

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



CARBIDE, 2 FLUTE 45° HELIX LONG LENGTH - TiCN COATED

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



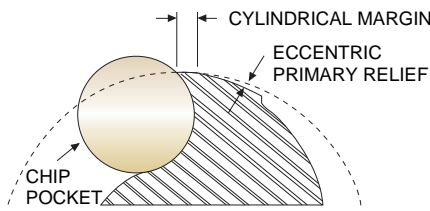
◇ Call for Availability

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.

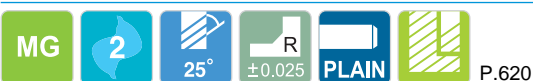
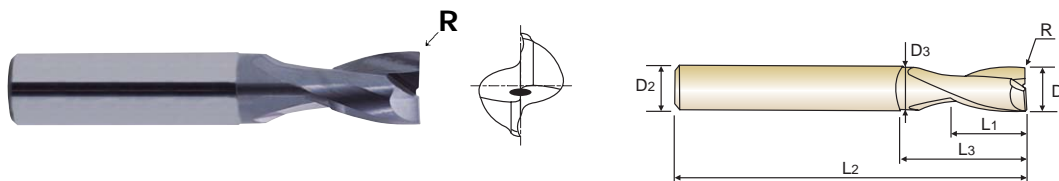


◎ : Excellent ○ : Good

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

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

- ▶ Designed for the machining aluminum and its alloys, non-ferrous materials.
- ▶ Increased tool life and higher cutting accuracy.
- ▶ Maximum-stock removal, chip ejection, stability.
- ▶ Corner Radius for avoiding the chipping.
- ▶ Mirror face-excellent surface finish.

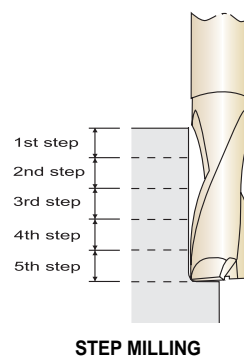


◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R (±0.025)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric D1	Inch					
EG930020	RO.2	2.0	.0787	3	3	6	40	1.9
EG930030	RO.2	3.0	.1181	3	4	8	40	2.9
EG930040	RO.2	4.0	.1575	4	5	12	50	3.8
EG930050	RO.2	5.0	.1969	5	8	14	50	4.8
EG930060	RO.2	6.0	.2362	6	8	18	65	5.7
EG930080	RO.2	8.0	.3150	8	10	22	70	7.7
EG930100	RO.2	10.0	.3937	10	14	28	80	9.7
EG930120	RO.2	12.0	.4724	12	16	35	90	11.5
EG930160	RO.2	16.0	.6299	16	20	40	90	15.5
EG930200	RO.2	20.0	.7874	20	25	50	100	19.5

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



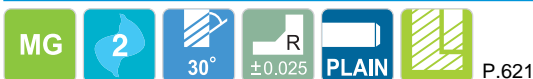
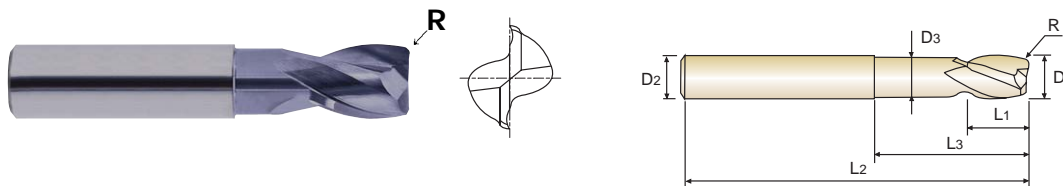
STEP MILLING

◎ : Excellent ○ : Good

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

CARBIDE, 2 FLUTE STUB CUT LENGTH CORNER RADIUS with NECK TiCN COATED

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

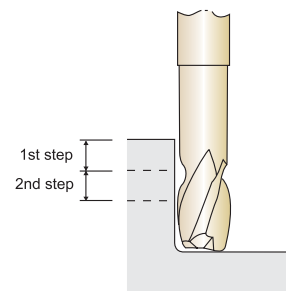


◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R (±0.025)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric D1	Inch					
EG909040	R0.3	4.0	.1575	6	5	10	50	3.6
EG909060	R0.5	6.0	.2362	6	8	20	60	5.4
EG909080	R0.6	8.0	.3150	8	10	30	70	7.2
EG909100	R0.8	10.0	.3937	10	12	36	80	9.0
EG909120	R1.0	12.0	.4724	12	14	40	90	11.0
EG909160	R1.3	16.0	.6299	16	18	45	100	14.5
EG909200	R1.6	20.0	.7874	20	24	45	100	18.0

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



STEP MILLING

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

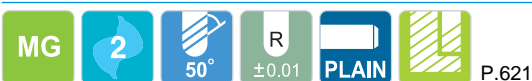
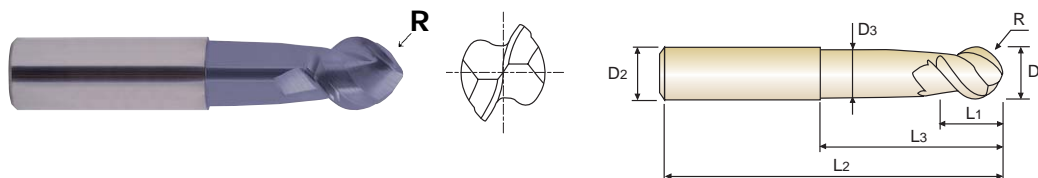
TECHNICAL DATA

◎ : Excellent ○ : Good

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

**CARBIDE, 2 FLUTE 50° HELIX STUB CUT LENGTH BALL NOSE
with NECK TiCN COATED**

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

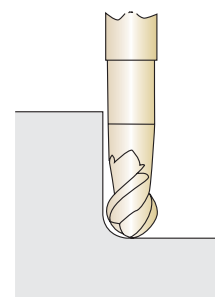


◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric D1	Inch					
EG910060	R 3.0	6.0	.2362	6	5.5	25	55	5.4
EG910080	R 4.0	8.0	.3150	8	7	30	65	7.2
EG910100	R 5.0	10.0	.3937	10	8.5	35	75	9.0
EG910120	R 6.0	12.0	.4724	12	10.5	40	75	11.0
EG910160	R 8.0	16.0	.6299	16	14	50	90	14.5
EG910200	R 10.0	20.0	.7874	20	17	50	100	18.0

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


CBN END MILL
i-Xmill END MILL
X5070 END MILLS
4G MILLS END MILLS
X-SPEED ROUGHER END MILLS
X-POWER END MILLS
JET-POWER END MILLS
V7 Mill STEEL END MILLS
V7 Mill INOX END MILLS
ALU-POWER END MILLS
D-POWER END MILLS
STANDARD CARBIDE END MILLS
TANK-POWER END MILLS
STANDARD COBALT & HSS END MILLS
TECHNICAL DATA

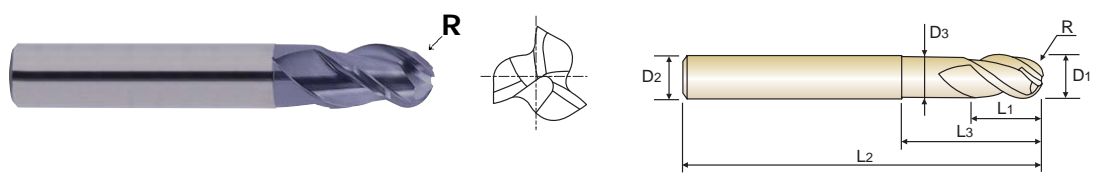
◎ : Excellent ○ : Good

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



CARBIDE, 3 FLUTE 40° HELIX LONG LENGTH BALL NOSE with NECK TiCN COATED

- ▶ Excellent cutting performance on stainless steels, Aluminum & copper.
- ▶ Increased tool life and higher cutting accuracy.
- ▶ Mirror face-excellent surface finish.

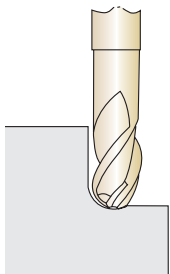


◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric	Inch					
EG908020	R1.0	2.0	.0787	6	3	2.5	60	1.9
EG908025	R1.25	2.5	.0984	6	4	6	60	2.4
EG908030	R1.5	3.0	.1181	6	4.5	6.5	60	2.8
EG908035	R1.75	3.5	.1378	6	5	7	65	3.2
EG908040	R2.0	4.0	.1575	6	6	8	65	3.7
EG908050	R2.5	5.0	.1969	6	7.5	10	65	4.6
EG908060	R3.0	6.0	.2362	6	9	12	75	5.6
EG908080	R4.0	8.0	.3150	8	12	25	75	7.4
EG908100	R5.0	10.0	.3937	10	15	30	80	9.4
EG908120	R6.0	12.0	.4724	12	18	36	90	11.4
EG908160	R8.0	16.0	.6299	16	24	40	100	15.4

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



- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- 4G MILLS END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

◎ : Excellent ○ : Good

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

T15, 3 FLUTE 42° HELIX REGULAR LENGTH ROUGHING for ALUMINUM

- ▶High performance metal removal in aluminum alloys.
- ▶Corner radius against chipping


◆ U.S.A Stock
■ SQUARE

Unit : Inch

EDP No.		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


◆ U.S.A Stock
■ with CORNER RADIUS

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED	R				
66903	66903 PC	R .060	3/4	3/4	1-5/8	3-7/8
66904	66904 PC	R .090	3/4	3/4	1-5/8	3-7/8
66905	66905 PC	R .120	3/4	3/4	1-5/8	3-7/8
66906	66906 PC	R .060	1	1	2	4-1/2
66907	66907 PC	R .090	1	1	2	4-1/2
66908	66908 PC	R .120	1	1	2	4-1/2
66909	66909 PC	R .060	1-1/4	1-1/4	2	4-1/2
66910	66910 PC	R .090	1-1/4	1-1/4	2	4-1/2
66911	66911 PC	R .120	1-1/4	1-1/4	2	4-1/2

■ The TiN coated, or TiAlN coated is available on your request.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

◎ : Excellent ○ : Good

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



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.624

◆ U.S.A Stock

■ SQUARE

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED				
80524	80524 PC	3/4	3/4	2-1/4	4-5/8
80540	80540 PC	1	1	3	5-1/2
80541	80541 PC	1-1/4	1-1/4	3	5-1/2
80542	80542 PC	1-1/2	1-1/4	3	5-1/2
* 80543	* 80543 PC	2	2	3	6-3/4

* Combination Shank

T15
ALU
3
42°
R ±.001
FLAT
P.624

◆ U.S.A Stock

■ with CORNER RADIUS

Unit : Inch

EDP No.		Corner Radius R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED					
80901	80901 PC	R .060	3/4	3/4	2-1/4	4-5/8
80902	80902 PC	R .090	3/4	3/4	2-1/4	4-5/8
80903	80903 PC	R .120	3/4	3/4	2-1/4	4-5/8
80904	80904 PC	R .060	1	1	3	5-1/2
80905	80905 PC	R .090	1	1	3	5-1/2
80906	80906 PC	R .120	1	1	3	5-1/2
80907	80907 PC	R .060	1-1/4	1-1/4	3	5-1/2
80908	80908 PC	R .090	1-1/4	1-1/4	3	5-1/2
80909	80909 PC	R .120	1-1/4	1-1/4	3	5-1/2

■ The TiN coated, or TiAlN coated is available on your request.

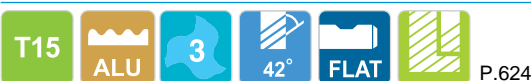
Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

◎ : Excellent ○ : Good

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

T15, 3 FLUTE 42° HELIX LONG LENGTH ROUGHING for ALUMINUM

► High performance metal removal in aluminum alloys.



◆ 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

■ with NECK

*Combination Shank

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

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

CARBIDE

HSS

**SPEED FREEK
END MILLS****EK192 SERIES**

FLAT SHANK

**T15, 3 FLUTE 42° HELIX LONG LENGTH ROUGHING
with CORNER RADIUS for ALUMINUM**

- ▶ High performance metal in aluminum alloys.
- ▶ Corner radius against chipping



◆ 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

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

**T15, 3 FLUTE 42° HELIX ROUGHING BALL NOSE REGULAR LENGTH
for ALUMINUM**

►High performance metal removal in aluminum alloys.



◆ U.S.A Stock

Unit : Inch

EDP No.		Radius of Ball Nose R (±.001)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED					
EP12032	EP12032C	R1/4	1/2	1/2	1-1/4	3-1/4
EP12040	EP12040C	R5/16	5/8	5/8	1-5/8	3-3/4
EP12048	EP12048C	R3/8	3/4	3/4	1-5/8	3-7/8
EP12064	EP12064C	R1/2	1	1	2	4-1/2
EP12110	EP12110C	R5/8	1-1/4	1-1/4	2	4-1/2

■ The TiN coated, or TiAlN coated is available on your request.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

CBN
END MILLi-Xmill
END MILLX5070
END MILLS4G MILLS
END MILLSX-SPEED
ROUGHER
END MILLSX-POWER
END MILLSJET-POWER
END MILLSV7 Mill STEEL
END MILLSV7 Mill INOX
END MILLSALU-POWER
END MILLSD-POWER
END MILLSSTANDARD
CARBIDE
END MILLSTANK-POWER
END MILLSSTANDARD
COBALT
& HSS
END MILLSTECHNICAL
DATA

◎ : Excellent ○ : Good

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



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.623

◆ U.S.A Stock

■ SQUARE

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED				
EP10323	EP10323C	1/2	1/2	1-1/4	3-1/4
EP10324	EP10324C	1/2	1/2	2	4
EP10403	EP10403C	5/8	5/8	1-5/8	3-3/4
EP10404	EP10404C	5/8	5/8	2-1/2	4-5/8
EP10484	EP10484C	3/4	3/4	1-5/8	3-7/8
EP10485	EP10485C	3/4	3/4	2-1/4	4-5/8
EP10486	EP10486C	3/4	3/4	3	5-1/4
EP10644	EP10644C	1	1	2	4-1/2
EP10645	EP10645C	1	1	3	5-1/2
EP10646	EP10646C	1	1	4	6-1/2
EP11165	EP11165C	1-1/4	1-1/4	2	4-1/2
EP11166	EP11166C	1-1/4	1-1/4	3	5-1/2
EP11167	EP11167C	1-1/4	1-1/4	4	6-1/2
EP11324	EP11324C	1-1/2	1-1/4	2	4-1/2
EP11325	EP11325C	1-1/2	1-1/4	3	5-1/2
EP11326	EP11326C	1-1/2	1-1/4	4	6-1/2

■ SQUARE with NECK

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
UNCOATED	TiCN COATED						
EK13210	EK13210C	3/4	3/4	1-1/2	3	5-1/4	.705
EK13211	EK13211C	3/4	3/4	1-1/2	4	6-1/4	.705
EK13212	EK13212C	1	1	1-1/2	3	5-1/2	.950
EK13213	EK13213C	1	1	2	4	6-1/2	.950
EK13214	EK13214C	1	1	2	6	8-1/2	.950
EK13215	EK13215C	1-1/4	1-1/4	2	4	6-1/2	1.200
EK13216	EK13216C	1-1/4	1-1/4	2	6	8-1/2	1.200

■ The TIN coated, or TiAlN coated is available on your request.

Mill Dia. Tolerance (inch)	
0~+.0010	* *0~+.0015

**The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

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

**T15, 3 FLUTE FINISHING CORNER RADIUS
REGULAR LENGTH & MEDIUM LENGTH & LONG LENGTH**

- ▶High performance metal removal in aluminum alloys.
- ▶Corner radius against chipping


◆ U.S.A Stock

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED	R				
EP10321	EP10321C	R.120	1/2	1/2	1-1/4	3-1/4
EP10322	EP10322C	R.120	1/2	1/2	2	4
EP10401	EP10401C	R.120	5/8	5/8	1-5/8	3-3/4
EP10402	EP10402C	R.120	5/8	5/8	2-1/2	4-5/8
EP10481	EP10481C	R.120	3/4	3/4	1-5/8	3-7/8
EP10482	EP10482C	R.120	3/4	3/4	2-1/4	4-5/8
EP10483	EP10483C	R.120	3/4	3/4	3	5-1/4
EP10641	EP10641C	R.120	1	1	2	4-1/2
EP10642	EP10642C	R.120	1	1	3	5-1/2
EP10643	EP10643C	R.120	1	1	4	6-1/2
EP11162	EP11162C	R.120	1-1/4	1-1/4	2	4-1/2
EP11163	EP11163C	R.120	1-1/4	1-1/4	3	5-1/2
EP11164	EP11164C	R.120	1-1/4	1-1/4	4	6-1/2
EP11321	EP11321C	R.120	1-1/2	1-1/4	2	4-1/2
EP11322	EP11322C	R.120	1-1/2	1-1/4	3	5-1/2
EP11323	EP11323C	R.120	1-1/2	1-1/4	4	6-1/2

■ The TiN coated, or TiAlN coated is available on your request.

Mill Dia. Tolerance (inch)	
0~+.0010	* * 0~+.0015

**The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

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

CARBIDE

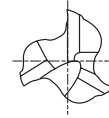
HSS

**SPEED FREEK
END MILLS****EP922 SERIES**

PLAIN SHANK

**PREMIUM HSS-PM, 3 FLUTE 42° HELIX SHORT LENGTH ROUGHING
for ALUMINUM**

- ▶ Maximum stock removal rates at High Speed Condition.
- ▶ Reduces vibrations and improves surface roughness.



◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	Metric	Inch			
	js12				
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

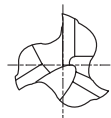
Tolerance range in μm						
Nominal-Diameter in mm						
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30	over 30 to 50
js12	± 50	± 60	± 75	± 90	± 105	± 125
h6	$\begin{matrix} 0 \\ -6 \end{matrix}$	$\begin{matrix} 0 \\ -8 \end{matrix}$	$\begin{matrix} 0 \\ -9 \end{matrix}$	$\begin{matrix} 0 \\ -11 \end{matrix}$	$\begin{matrix} 0 \\ -13 \end{matrix}$	$\begin{matrix} 0 \\ -16 \end{matrix}$

◎ : Excellent ○ : Good

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

**PREMIUM HSS-PM, 3 FLUTE 42° HELIX LONG LENGTH ROUGHING
for ALUMINUM**

- ▶ Maximum stock removal rates at High Speed Condition.
- ▶ Reduces vibrations and improves surface roughness.



◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	Metric	Inch			
	js12		h6		
EP924120	12.0	.4724	12	53	110
EP924140	14.0	.5512	12	53	110
EP924160	16.0	.6299	16	63	123
EP924180	18.0	.7087	16	63	123
EP924200	20.0	.7874	20	75	141
EP924220	22.0	.8661	20	75	141
EP924250	25.0	.9843	25	90	166
EP924280	28.0	1.1024	25	90	166
EP924320	32.0	1.2598	32	106	186

Tolerances according to DIN 7160 & 7161

Tolerance range in 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	$\begin{matrix} 0 \\ -6 \end{matrix}$	$\begin{matrix} 0 \\ -8 \end{matrix}$	$\begin{matrix} 0 \\ -9 \end{matrix}$	$\begin{matrix} 0 \\ -11 \end{matrix}$	$\begin{matrix} 0 \\ -13 \end{matrix}$	$\begin{matrix} 0 \\ -16 \end{matrix}$

◎ : Excellent ○ : Good

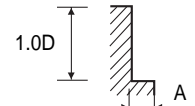
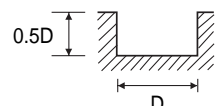
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
-HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
									◎			



CARBIDE, 2 FLUTE 42° HELIX - "BANSHEE"

E5253, E5254 SERIES

MATERIAL	ALUMINUM NONFERROUS METALS		ALUMINUM NONFERROUS METALS	
	DIAMETER	RPM	FEED	RPM
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 : $\varnothing 1/8 \sim \varnothing 3/8 = 0.25 \times D$
 $\varnothing 1/2 \sim \varnothing 13/16 = 0.5 \times D$

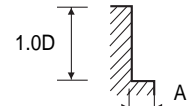
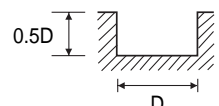
※ The Feed, in long & extra long types, should be reduced by around 50%.

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

CARBIDE, 2 FLUTE 42° HELIX TiCN COATED - "BANSHEE"

EG253, EG254 SERIES

MATERIAL	ALUMINUM NONFERROUS METALS		ALUMINUM NONFERROUS METALS	
	DIAMETER	RPM	FEED	RPM
1/8	15600	42.5	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 : $\varnothing 1/8 \sim \varnothing 3/8 = 0.25 \times D$
 $\varnothing 1/2 \sim \varnothing 13/16 = 0.5 \times D$

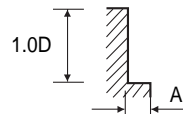
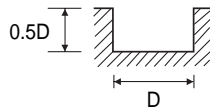
※ The Feed, in long & extra long types, should be reduced by around 50%.

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

CARBIDE, 3 FLUTE 45° HELIX FINISH

E5980, E5981, E5982, E5983, E5984 SERIES

MATERIAL	ALUMINUM NONFERROUS METALS		ALUMINUM NONFERROUS METALS	
	DIAMETER	RPM	FEED	RPM
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 : $\varnothing 1/8 \sim \varnothing 3/8 = 0.25 \times D$
 $\varnothing 1/2 \sim \varnothing 13/16 = 0.5 \times D$

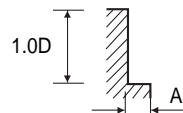
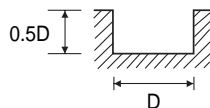
※ The Feed, in long & extra long types, should be reduced by around 50%.

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

CARBIDE, 3 FLUTE 45° HELIX FINISH TiCN COATED

EG980, EG981, EG982, EG983, EG984 SERIES

MATERIAL	ALUMINUM NONFERROUS METALS		ALUMINUM NONFERROUS METALS	
	DIAMETER	RPM	FEED	RPM
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 : $\varnothing 1/8 \sim \varnothing 3/8 = 0.25 \times D$
 $\varnothing 1/2 \sim \varnothing 13/16 = 0.5 \times D$

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

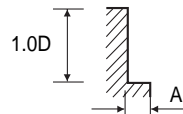
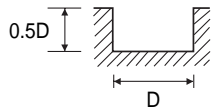
RPM = rev./min.
 FEED = inch/min.



CARBIDE, 3 FLUTE 37° HELIX with EXTENDED NECK

E5977, E5985 SERIES

MATERIAL	ALUMINUM NONFERROUS METALS		ALUMINUM NONFERROUS METALS	
	DIAMETER	RPM	FEED	RPM
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 : $\varnothing 1/4 \sim \varnothing 3/8 = 0.25 \times D$
 $\varnothing 1/2 \sim \varnothing 1 = 0.5 \times D$

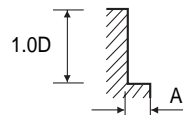
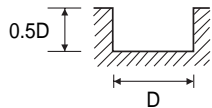
※ The Feed, in long & extra long types, should be reduced by around 50%.

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

CARBIDE, 3 FLUTE 37° HELIX with EXTENDED NECK TiCN COATED

EG977, EG985 SERIES

MATERIAL	ALUMINUM NONFERROUS METALS		ALUMINUM NONFERROUS METALS	
	DIAMETER	RPM	FEED	RPM
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 : $\varnothing 1/4 \sim \varnothing 3/8 = 0.25 \times D$
 $\varnothing 1/2 \sim \varnothing 1 = 0.5 \times D$

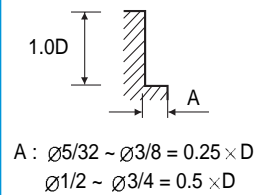
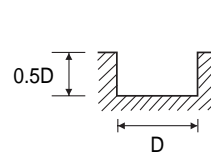
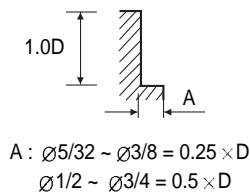
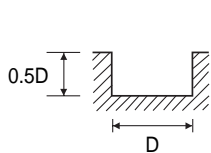
※ The Feed, in long & extra long types, should be reduced by around 50%.

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

CARBIDE, 2 FLUTE CORNER RADIUS with NECK

E5973 SERIES

MATERIAL	ALUMINUM NONFERROUS METALS				COPPER ALLOY			
	DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM
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



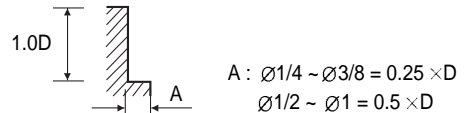
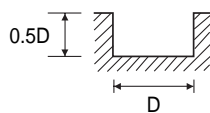
※ The Feed, in long & extra long types, should be reduced by around 50%.

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

CARBIDE, 2 FLUTE 37° HELIX with EXTENDED NECK

E5976 SERIES

MATERIAL	ALUMINUM NONFERROUS METALS		ALUMINUM NONFERROUS METALS	
	DIAMETER	RPM	FEED	RPM
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



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

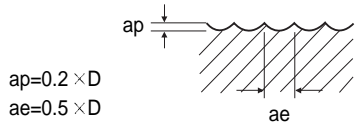
RPM = rev./min.
FEED = inch/min.



CARBIDE, 2 FLUTE 37° HELIX LONG REACH BALL NOSE

E5978 SERIES

MATERIAL	ALUMINUM NONFERROUS 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



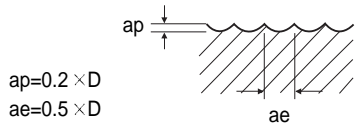
※ The Feed, in long & extra long types, should be reduced by around 50%.

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

CARBIDE, 2 FLUTE 37° HELIX LONG REACH BALL NOSE TiCN COATED

EG978 SERIES

MATERIAL	ALUMINUM NONFERROUS METALS	
DIAMETER	RPM	FEED
R1/8 × 1/4	14500	71.7
R5/32 × 5/16	11200	81.9
R3/16 × 3/8	11200	96.2
R1/4 × 1/2	11200	122.9
R5/16 × 5/8	8800	110.5
R3/8 × 3/4	5600	104.0



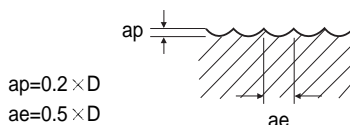
※ The Feed, in long & extra long types, should be reduced by around 50%.

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

CARBIDE, 2 FLUTE 50° HELIX BALL NOSE with NECK

E5974 SERIES

MATERIAL	ALUMINUM ALUMINUM ALLOY		COPPER ALLOY	
	DIAMETER	RPM	FEED	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



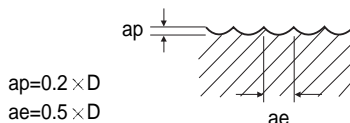
※ The Feed, in long & extra long types, should be reduced by around 50%.

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

CARBIDE, 3 FLUTE 40° HELIX BALL NOSE with NECK

E5975 SERIES

MATERIAL	ALUMINUM ALUMINUM ALLOY		COPPER ALLOY	
	DIAMETER	RPM	FEED	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%.

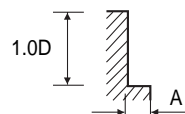
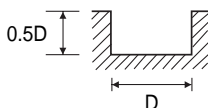
RPM = rev./min.
FEED = inch/min.



CARBIDE, 2 FLUTE

E5522 SERIES

MATERIAL	ALUMINUM LOW SILICON ALUMINUM			
	DIAMETER	RPM	FEED	FEED
	3.0	10000	27.6	35.4
	4.0	10000	35.4	43.3
	5.0	10000	39.4	51.2
	6.0	10000	47.2	59.1
	8.0	8000	55.1	70.9
	10.0	8000	66.9	82.7
	12.0	8000	82.7	102.4
	14.0	6000	70.9	86.6
	16.0	6000	74.8	94.5
	18.0	4000	55.1	70.9
	20.0	4000	63.0	74.8



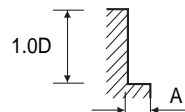
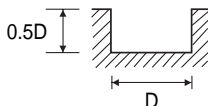
A : $\varnothing 3 \sim \varnothing 10 = 0.25 \times D$
 $\varnothing 12 \sim \varnothing 20 = 0.5 \times D$

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

CARBIDE, 2 FLUTE TiCN COATED

EG522, EG930 SERIES

MATERIAL	ALUMINUM LOW SILICON ALUMINUM			
	DIAMETER	RPM	FEED	FEED
	3.0	13000	35.4	47.2
	4.0	13000	47.2	55.1
	5.0	13000	51.2	66.9
	6.0	13000	59.1	78.7
	8.0	10000	70.9	90.6
	10.0	10000	86.6	106.3
	12.0	10000	106.3	133.9
	14.0	8000	90.6	110.2
	16.0	8000	98.4	122.1
	18.0	5000	70.9	90.6
	20.0	5000	78.7	98.4



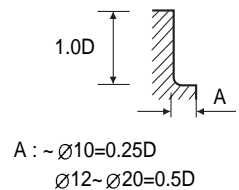
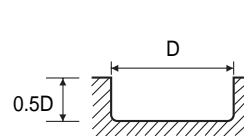
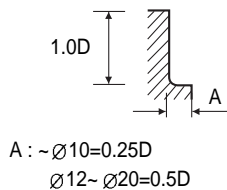
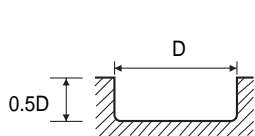
A : $\varnothing 3 \sim \varnothing 10 = 0.25 \times D$
 $\varnothing 12 \sim \varnothing 20 = 0.5 \times D$

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

CARBIDE, 2 FLUTE CORNER RADIUS TiCN COATED

EG909 SERIES

MATERIAL	ALUMINUM ALUMINUM ALLOY				COPPER ALLOY				
	DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	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	

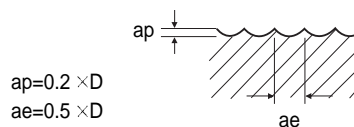


RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE 50° HELIX BALL NOSE TiCN COATED

EG910 SERIES

MATERIAL	ALUMINUM ALUMINUM ALLOY		COPPER ALLOY		
	DIAMETER	RPM	FEED	RPM	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.

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA



CARBIDE, 3 FLUTE 40° HELIX BALL NOSE TiCN COATED

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

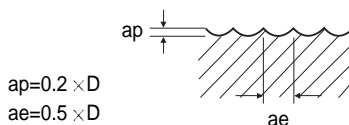
TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

EG908 SERIES

MATERIAL	ALUMINUM LOW SILICON ALUMINUM		COPPER ALLOY	
	DIAMETER	RPM	FEED	RPM
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

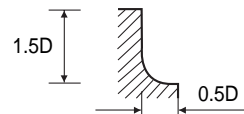
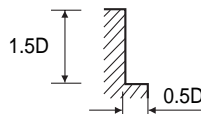
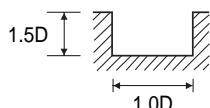


RPM = rev./min.
FEED = inch/min.

CARBIDE, 3 FLUTE ROUGHING

E5E44, E5E98, E5E45 SERIES

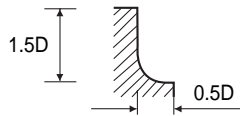
MATERIAL	ALUMINUM ALUMINUM ALLOY					
	DIAMETER	RPM	FEED	RPM	FEED	RPM
1/4	7000	20.7	10000	29.5	10000	29.5
3/8	4700	16.1	6700	22.8	6700	22.8
1/2	3600	16.3	5100	23.0	5100	23.0
5/8	2800	16.9	4000	24.0	4000	24.0
3/4	2300	18.5	3300	26.4	3300	26.4
1	1800	17.3	2500	24.4	2500	24.4



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

T15, 3 FLUTE 42° HELIX SPEED-FREAK BALL NOSE
EK196 SERIES

MATERIAL	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

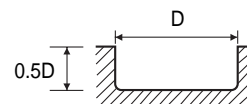
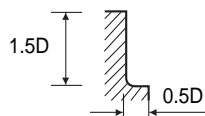


※ The FEED, in long & long reach types, should be reduced by around 50%

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

T15, 3 FLUTE, 42° HELIX FINISHING with CORNER RADIUS
EK193 SERIES

MATERIAL	ALUMINUM ALUMINUM ALLOY			
DIAMETER	RPM	FEED	RPM	FEED
1/2	4500	38	4095	38
5/8	3500	26	3185	39
3/4	2300	27	2093	41
1	2000	27	1820	40
1-1/4	1600	26	1456	38
1-1/2	1350	25	1229	38



※ The FEED, in long & long reach types, should be reduced by around 50%

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

 CBN
END MILL

 i-Xmill
END MILL

 X5070
END MILLS

 4G MILLS
END MILLS

 X-SPEED
ROUGHER
END MILLS

 X-POWER
END MILLS

 JET-POWER
END MILLS

 V7 Mill STEEL
END MILLS

 V7 Mill INOX
END MILLS

 ALU-POWER
END MILLS

 D-POWER
END MILLS

 STANDARD
CARBIDE
END MILLS

 TANK-POWER
END MILLS

 STANDARD
COBALT
& HSS
END MILLS

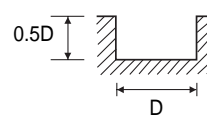
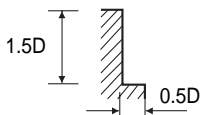
 TECHNICAL
DATA



PREMIUM HSS-PM, 3 FLUTE 42° HELIX ROUGHING TiAIN COATED

EP922, EP924 SERIES

MATERIAL	ALUMINUM ALUMINUM ALLOY			
	DIAMETER	RPM	FEED	FEED
12.0	2800	16.1	2800	21.7
16.0	2200	18.3	2200	24.6
20.0	1700	20.7	1700	27.6
25.0	1400	18.3	1400	24.6
32.0	1100	20.7	1100	27.6



※ The FEED, in long & long reach types, should be reduced by around 50%

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

SPEED FREEK

YG T-15 3 FLUTE ALUMINUM ROUGHER SPEEDS & FEEDS

MATERIAL	UNCOATED	TiCN	CHIP LOAD PER TOOTH & CUTTING DIAMETER				
	SFM	SFM	1/2	3/4	1.00	1.25	2.00
ALUMINUM [SOFT]	250-500	400-2,500	.005	.007	.010	.012	.015
AIRCRAFT ALUMINUM [UNDER 10% SILICON]	250-750	500-3,250	.005	.007	.010	.012	.015

3/4 DIA. / TiCN COATED / 10,186 RPM [2,000 SFM] @ 213 IPM

SFM	$0.262 \times \text{CUTTER DIA} \times \text{RPM}$	FPT	$\frac{\text{IPM}}{N \times \text{RPM}}$
RPM	$3.82 \times \frac{\text{SFM}}{\text{CUTTER DIA}}$	IPR	$\frac{\text{IPM}}{\text{RPM}}$
IPM	$\text{FPT} \times N \times \text{RPM}$	CUTTING TIME	$\frac{\text{LENGTH OF CUT}}{\text{IPM}}$

SFM = SURFACE FEET PER MINUTE
RPM = REVOLUTIONS PER MINUTE
N = NUMBER OF TEETH
IPR = INCHES PER REVOLUTION
IPM = INCHES PER MINUTE
FPT = FEED PER TOOTH



Being the best through innovation

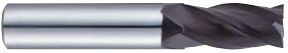







CARBIDE



D-POWER





- Diamond Coated Carbide End Mills for Graphite

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE	
			MIN	MAX		
INCH						
EI107		CARBIDE, 4(2) FLUTE REGULAR LENGTH	◆	D1/64	D1/2	628
EI099		CARBIDE, 2 FLUTE REGULAR LENGTH BALL NOSE	◆	R.0391	R1/4	629
EI106		CARBIDE, 4 FLUTE REGULAR LENGTH BALL NOSE	◆	R.0391	R1/4	629
EI971		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE	◆	R.0391	R1/4	630
EI972		CARBIDE, 2 FLUTE LONG REACH BALL NOSE	◆	R.0391	R5/32	631
EIB07		CARBIDE, 4 FLUTE REGULAR LENGTH BALL NOSE with NECK	◆	R.0156	R.0625	632
EIB05		CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS	◆	D1/16	D1/2	633
EIB06		CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS with NECK	◆	D1/32	D3/8	634

◆ U.S.A Stock

METRIC

EI880		CARBIDE, 2 FLUTE SHORT LENGTH BALL NOSE	◇	R1.0	R6.0	635
EI881		CARBIDE, 3 FLUTE SHORT LENGTH BALL NOSE	◇	R1.0	R6.0	635
EI451		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE	◇	R1.0	R6.0	636
EI450		CARBIDE, 2 FLUTE LONG REACH BALL NOSE	◇	R1.0	R4.0	637
RECOMMENDED CUTTING CONDITIONS						638

◇ Call for Availability

D-POWER END MILLS

◎ : Excellent
○ : Good

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

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



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.



CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA



for GRAPHITE
◆ U.S.A Stock

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
★ 99686	1/64	1/8	3/65	1-1/2
99629	1/8	1/8	1/2	1-1/2
99630	3/16	3/16	5/8	2
99631	1/4	1/4	3/4	2-1/2
99632	5/16	5/16	13/16	2-1/2
99633	3/8	3/8	7/8	2-1/2
99635	1/2	1/2	1	3

★ 2Flute

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

- ▶ Recommended Cutting Condition
- ▶ Cutting speed : 500~1200 SFPM
- ▶ Feed : .002~.006 inch/tooth

◎ : Excellent ○ : Good

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

CARBIDE, 2&4 FLUTE REGULAR LENGTH BALL NOSE

- ▶ Higher hardness of film and excellent wear-resistance increase the tool life dramatically.
- ▶ Ultra fine film of YG-1's diamond coated carbide ball end mills ensure the smooth and excellent surface on work materials.
- ▶ High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass, etc.
- ▶ YG-1's diamond coated carbide ball end mills may have good result for the machining of non-ferrous metals and non-metallic materials.



for GRAPHITE
◆ U.S.A Stock

E1099(2 FLUTE), E1106(4 FLUTE) Series

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
2 FLUTE	4 FLUTE	R (±.0008)				
99572	99621	R .0391	5/64	1/8	1/4	1-1/2
99573	99622	R 3/64	3/32	1/8	3/8	1-1/2
99574	99623	R 1/16	1/8	1/8	1/2	1-1/2
99575	99624	R 3/32	3/16	3/16	5/8	2
99576	99625	R 1/8	1/4	1/4	3/4	2-1/2
99577	99626	R 5/32	5/16	5/16	13/16	2-1/2
99578	99627	R 3/16	3/8	3/8	7/8	2-1/2
99583	99628	R 1/4	1/2	1/2	1	3

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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

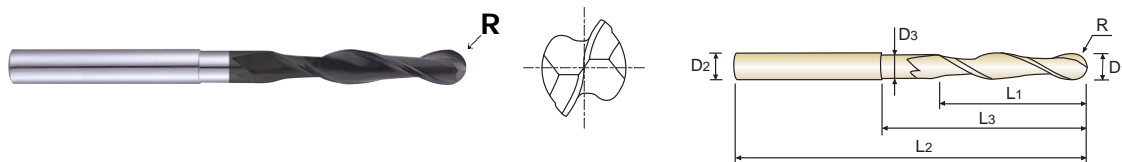
◎ : Excellent ○ : Good

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



CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE

- ▶ Higher hardness of film and excellent wear-resistance increase the tool life 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. metallic materials.



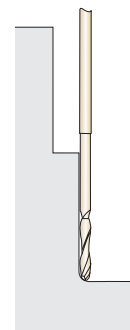
MG 2 30° ±.0008 PLAIN P.638

for GRAPHITE
◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (±.0008)	D1	D2	L1	L3	L2	D3
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



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

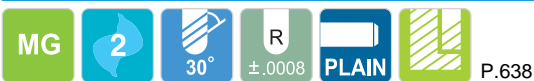
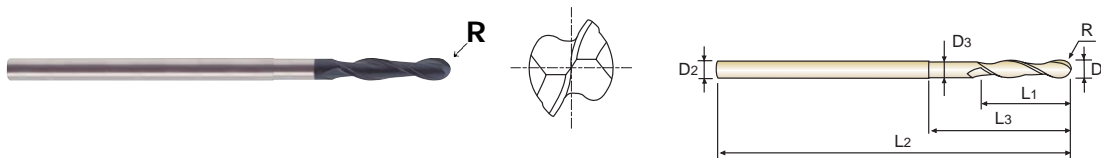
TECHNICAL DATA

◎ : Excellent ○ : Good

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

CARBIDE, 2 FLUTE LONG REACH BALL NOSE

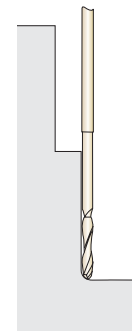
- ▶ Higher hardness of film and excellent wear-resistance increase the tool life dramatically.
- ▶ Ultra fine film of YG-1's diamond coated carbide ball end mills ensure the smooth and excellent surface on work materials.
- ▶ High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass, 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. metallic materials.


 for GRAPHITE
 ◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (±.0008)	D1	D2	L1	L3	L2	D3
99678	R.0391	5/64	1/8	3/8	3/4	4	.076
99679	R1/16	1/8	1/8	5/8	1	4	.120
99980	R3/32	3/16	3/16	1-1/8	2	4-3/4	.182
99680	R3/32	3/16	1/4	1-1/8	2	4-3/4	.186
99681	R1/8	1/4	1/4	1-1/8	2	6	.230
99682	R5/32	5/16	5/16	1-1/2	2-3/8	6	.293

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



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

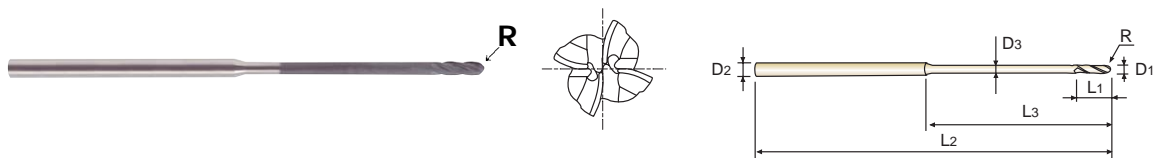
◎ : Excellent ○ : Good

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



CARBIDE, 4 FLUTE REGULAR LENGTH 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. metallic materials.



MG 4 30° ±.0008 PLAIN P.638

for GRAPHITE
◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (±.0008)	D1	D2	L1	L3	L2	D3
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

- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- 4G MILLS END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

◎ : Excellent ○ : Good

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

CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS

- ▶ Higher hardness of film and excellent wear-resistance increase the tool life 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. metallic materials.


 for GRAPHITE
 ◆ U.S.A Stock

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (±.001)	D1	D2	L1	L3	L2	D3
EIB05004	R.010	1/16	1/8	3/16	-	1-1/2	-
EIB05901	R.015	1/16	1/8	3/16	-	1-1/2	-
EIB05006	R.010	3/32	1/8	3/8	-	1-1/2	-
EIB05008	R.015	1/8	1/8	1/2	-	1-1/2	-
EIB05902	R.020	1/8	1/8	1/2	-	1-1/2	-
EIB05012	R.020	3/16	3/16	5/8	-	2	-
EIB05911	R.020	3/16	3/16	3/16	1-1/2	4	.169
EIB05903	R.030	3/16	3/16	5/8	-	2	-
EIB05016	R.020	1/4	1/4	3/4	-	2-1/2	-
EIB05913	R.020	1/4	1/4	1/4	2	4	.230
EIB05912	R.020	1/4	1/4	1/4	2	6	.230
EIB05904	R.030	1/4	1/4	3/4	-	2-1/2	-
EIB05024	R.020	3/8	3/8	7/8	-	2-1/2	-
EIB05908	R.020	3/8	3/8	3/8	2	4	.355
EIB05907	R.020	3/8	3/8	3/8	-	4	-
EIB05905	R.030	3/8	3/8	7/8	-	2-1/2	-
EIB05032	R.030	1/2	1/2	1	-	3	-
EIB05906	R.060	1/2	1/2	1	-	3	-
EIB05909	R.030	1/2	1/2	1-1/2	-	4	-
EIB05910	R.030	1/2	1/2	3	-	6	-

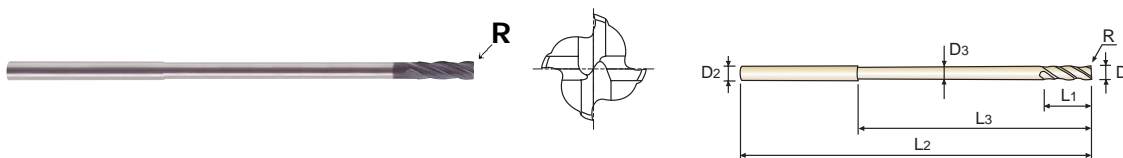
Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~-.0012	0~-.0003

◎ : Excellent ○ : Good

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

CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS with NECK

- ▶ Higher hardness of film and excellent wear-resistance increase the tool life 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. metallic materials.



MG 4 30° ±.001 PLAIN P.639

for GRAPHITE
◆ U.S.A Stock

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (±.001)	D1	D2	L1	L3	L2	D3
EIB06002	R.005	1/32	1/8	3/32	3/8	3	.028
EIB06901	R.005	1/32	1/8	3/32	1/2	3	.028
EIB06003	R.010	3/64	1/8	9/64	9/16	3	.043
EIB06902	R.010	3/64	1/8	9/64	3/4	3	.043
EIB06004	R.010	1/16	1/8	3/16	3/4	3	.057
EIB06903	R.010	1/16	1/8	3/16	1	3	.057
EIB06006	R.010	3/32	1/8	9/32	1	3	.086
EIB06904	R.010	3/32	1/8	9/32	1-1/2	3	.086
EIB06008	R.010	1/8	1/8	3/8	1-1/2	3	.115
EIB06905	R.010	1/8	1/8	3/8	2	3	.115
EIB06906	R.015	1/8	1/8	3/16	.800	2-1/2	.115
EIB06907	R.020	3/8	3/8	3/8	3	6	.355

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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

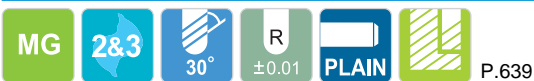
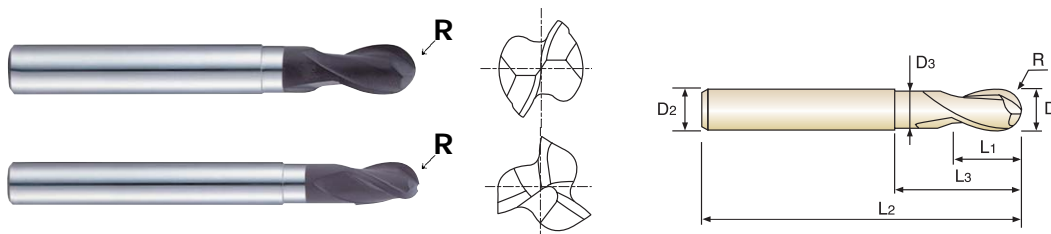
TECHNICAL DATA

◎ : Excellent ○ : Good

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

CARBIDE, 2&3 FLUTE SHORT LENGTH BALL NOSE

- ▶ Higher hardness of film and excellent wear-resistance increase the tool life dramatically.
- ▶ Ultra fine film of YG-1's diamond coated carbide ball end mills ensure the smooth and excellent surface on work materials.
- ▶ High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass, etc.
- ▶ YG-1's diamond coated carbide ball end mills may have good result for the machining of non-ferrous metals and non-metallic materials.



for GRAPHITE
◇ Call for Availability

EI880(2 FLUTE), EI881(3 FLUTE) Series

Unit : mm

EDP No.		Radius of Ball Nose R (±0.01)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
2 FLUTE	3 FLUTE		Metric	Inch					
		R (±0.01)	D1						
EI880020	EI881020	R1.0	2.0	.0787	6	3	5	60	1.9
EI880025	EI881025	R1.25	2.5	.0984	6	4	6	60	2.4
EI880030	EI881030	R1.5	3.0	.1181	6	4.5	6.5	60	2.8
EI880035	EI881035	R1.75	3.5	.1378	6	5	7	65	3.2
EI880040	EI881040	R2.0	4.0	.1575	6	6	8	65	3.7
EI880050	EI881050	R2.5	5.0	.1969	6	7.5	10	65	4.6
EI880060	EI881060	R3.0	6.0	.2362	6	9	12	75	5.6
EI880080	EI881080	R4.0	8.0	.3150	8	12	25	75	7.4
EI880100	EI881100	R5.0	10.0	.3937	10	15	30	80	9.4
EI880120	EI881120	R6.0	12.0	.4724	12	18	36	90	11.4

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

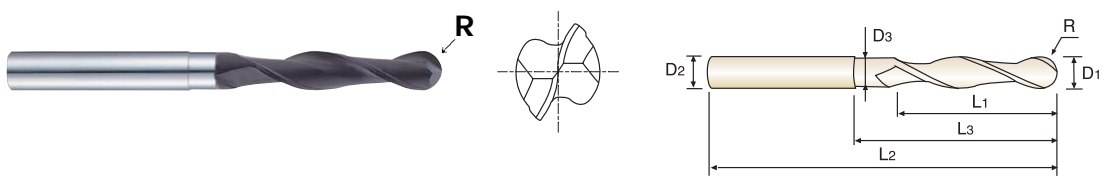
◎ : Excellent ○ : Good

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



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.
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- ▶ YG-1's diamond coated carbide ball end mills may have good result for the machining of non-ferrous metals and non-metallic materials.



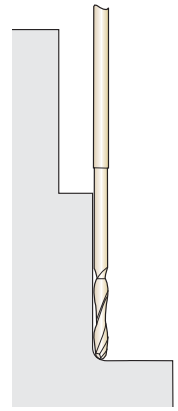
MG 2 30° ±0.01 PLAIN P.639

for GRAPHITE
 ◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric D1	Inch					
99558	R1.0	2.0	.0787	4	10	20	80	1.95
99559	R1.5	3.0	.1181	4	15	25	80	2.9
99560	R2.0	4.0	.1575	4	20	30	80	3.9
99561	R2.5	5.0	.1969	6	30	50	100	4.9
99562	R3.0	6.0	.2362	6	30	50	100	5.5
99563	R4.0	8.0	.3150	8	40	60	110	7.5
99564	R5.0	10.0	.3937	10	50	70	120	9.5
99565	R6.0	12.0	.4724	12	55	75	130	11.5

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



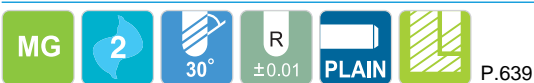
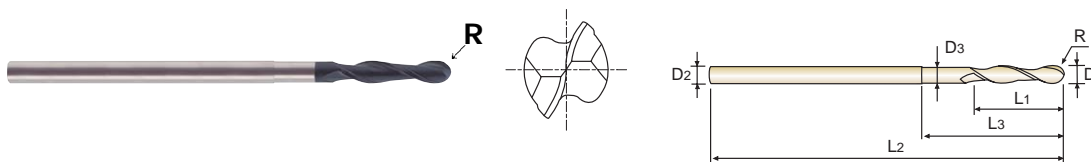
- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- 4G MILLS END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

◎ : Excellent ○ : Good

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

CARBIDE, 2 FLUTE LONG REACH BALL NOSE

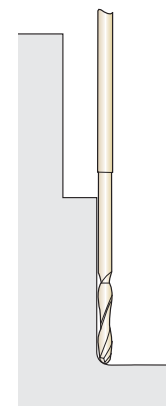
- ▶ Higher hardness of film and excellent wear-resistance increase the tool life dramatically.
- ▶ Ultra fine film of YG-1's diamond coated carbide ball end mills ensure the smooth and excellent surface on work materials.
- ▶ High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass, etc.
- ▶ YG-1's diamond coated carbide ball end mills may have good result for the machining of non-ferrous metals and non-metallic materials.


for GRAPHITE
 ◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric	Inch					
		D1						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



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

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

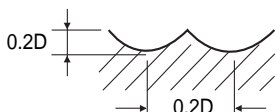


CARBIDE, 4 FLUTE BALL NOSE

E1106 SERIES

MATERIAL	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.

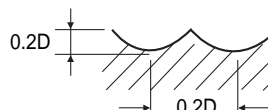


RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE BALL NOSE

E1099, E1971, E1972 SERIES

MATERIAL	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

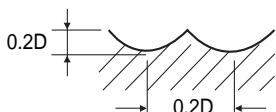


RPM = rev./min.
FEED = inch/min.

CARBIDE, 4 FLUTE BALL NOSE with NECK

EIB07 SERIES

MATERIAL	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

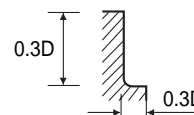


RPM = rev./min.
FEED = inch/min.

CARBIDE, 4 FLUTE CORNER RADIUS

EIB05 SERIES

MATERIAL	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

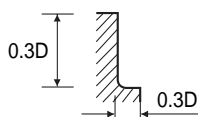


RPM = rev./min.
FEED = inch/min.

CARBIDE, 4 FLUTE CORNER RADIUS with NECK

EIB06 SERIES

MATERIAL	GRAPHITE	
	DIAMETER	RPM
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
3/8	26000	316.1
1/2	21000	301.4

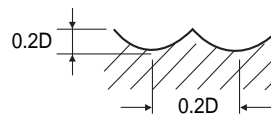


RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE BALL NOSE

EI880, EI451, EI450 SERIES

MATERIAL	GRAPHITE	
	DIAMETER	RPM
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

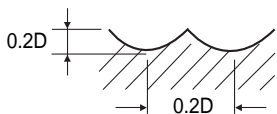


RPM = rev./min.
FEED = inch/min.

CARBIDE, 3 FLUTE BALL NOSE

EI881 SERIES

MATERIAL	GRAPHITE	
	DIAMETER	RPM
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

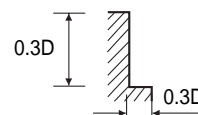


RPM = rev./min.
FEED = inch/min.

CARBIDE, 4 FLUTE

EI107 SERIES

MATERIAL	GRAPHITE	
	DIAMETER	RPM
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.

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA



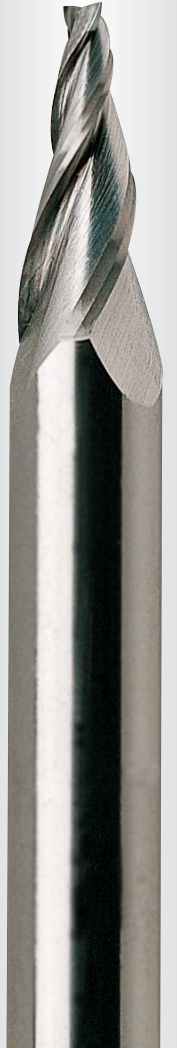
Global Cutting Tool Leader **YG-1**





Being the best through innovation

CARBIDE



STANDARD CARBIDE

- General Purpose

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
INCH					
E5020		CARBIDE, 2 FLUTE REGULAR LENGTH	D1/32	D1	646
E5021		CARBIDE, 4 FLUTE REGULAR LENGTH	D1/16	D1	647
E5244		CARBIDE, 2 FLUTE STUB LENGTH	D1/16	D3/4	648
E5245		CARBIDE, 4 FLUTE STUB LENGTH	D1/16	D3/4	649
E5011		CARBIDE, 2 FLUTE LONG LENGTH	D1/8	D1	650
E5012		CARBIDE, 4 FLUTE LONG LENGTH	D1/8	D1	650
E5026		CARBIDE, 2 FLUTE EXTRA LONG LENGTH	D1/8	D1	651
E5065		CARBIDE, 4 FLUTE EXTRA LONG LENGTH	D1/8	D1	652
E5022		CARBIDE, 2 FLUTE STUB LENGTH DOUBLE	D1/32	D1/2	653
E5023		CARBIDE, 4 FLUTE STUB LENGTH DOUBLE	D1/16	D1/2	654
E5025		CARBIDE, 2 FLUTE REGULAR LENGTH DOUBLE	D1/8	D1/2	655
E5024		CARBIDE, 4 FLUTE REGULAR LENGTH DOUBLE	D1/8	D1/2	655
E5249		CARBIDE, 2 FLUTE REGULAR LENGTH BALL NOSE	R1/16	R1/2	656
E5250		CARBIDE, 4 FLUTE REGULAR LENGTH BALL NOSE	R1/16	R1/2	656
E5014		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE	R1/16	R1/2	657
E5060		CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE	R1/16	R1/2	657
E5018		CARBIDE, 2 FLUTE EXTRA LONG LENGTH BALL NOSE	R1/16	R1/2	658
E5062		CARBIDE, 4 FLUTE EXTRA LONG LENGTH BALL NOSE	R1/16	R1/2	659
E5251 E5252		CARBIDE, 2&4 FLUTE STUB LENGTH DOUBLE BALL NOSE	R7/64	R1/4	660

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
INCH					
E5216		CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS	D1/8	D1	661
E5069		CARBIDE, 5 FLUTE 45° HELIX REGULAR LENGTH CORNER RADIUS	D1/4	D1	663
E5243		CARBIDE, 3 FLUTE 45° HELIX REGULAR LENGTH	D1/8	D1	664
E5059		CARBIDE, 3 FLUTE 50° HELIX STUB & REGULAR & LONG LENGTH	D1/4	D3/4	665
E5246		CARBIDE, 3 FLUTE 60° HELIX REGULAR LENGTH	D1/8	D1	666
E5066		CARBIDE, 5 FLUTE 45° HELIX STUB LENGTH	D1/8	D1	667
E5067		CARBIDE, 5 FLUTE 45° HELIX REGULAR LENGTH	D1/8	D1	668
E5068		CARBIDE, 5 FLUTE 45° HELIX MEDIUM & LONG LENGTH	D1/4	D1	669
E5073		CARBIDE, 5 FLUTE 45° HELIX EXTRA LONG LENGTH	D5/16	D1	670
E5058		CARBIDE, 6 FLUTE 40° HELIX REGULAR LENGTH	D3/16	D3/4	671
E5056 E5057		CARBIDE, 5 FLUTE 45° HELIX STUB & REGULAR LENGTH FINE PITCH ROUGHING	D3/8	D1	672
E5077		CARBIDE, 3 FLUTE TAPER	D3/32	D1/4	673
E5078		CARBIDE, 3 FLUTE TAPER BALL NOSE	R.047	R.125	674
METRIC					
EH527		CARBIDE, 2 FLUTE LONG LENGTH TiAIN 'F' COATED	D3.5	D20.0	675
EH540		CARBIDE, 4 FLUTE LONG LENGTH TiAIN 'F' COATED	D3.5	D20.0	676
EH882		CARBIDE, 3 FLUTE 35° HELIX CORNER RADIUS TiAIN 'F' COATED	D3.0	D20.0	677
RECOMMENDED CUTTING CONDITIONS					678

STANDARD CARBIDE END MILLS

◎ : Excellent
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			HRc40~45	HRc45~55								
-HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							

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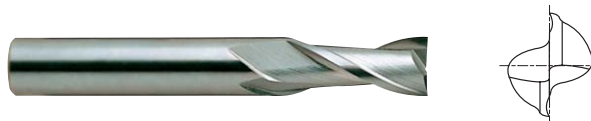
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E5020 SERIES FLAT SHANK

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.679

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
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

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

◎ : Excellent ○ : Good

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

CARBIDE, 4 FLUTE REGULAR LENGTH

► Possible for high-speed cutting, suitable for high efficiency machining for hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
07554	07554TN	07554TC	07554TF	07554TE	1/16	1/8	3/16	1-1/2
07555	07555TN	07555TC	07555TF	07555TE	5/64	1/8	3/16	1-1/2
07556	07556TN	07556TC	07556TF	07556TE	3/32	1/8	3/8	1-1/2
07557	07557TN	07557TC	07557TF	07557TE	7/64	1/8	3/8	1-1/2
07558	07558TN	07558TC	07558TF	07558TE	1/8	1/8	1/2	1-1/2
07560	07560TN	07560TC	07560TF	07560TE	9/64	3/16	1/2	2
07561	07561TN	07561TC	07561TF	07561TE	5/32	3/16	9/16	2
07564	07564TN	07564TC	07564TF	07564TE	11/64	3/16	5/8	2
07565	07565TN	07565TC	07565TF	07565TE	3/16	3/16	5/8	2
07569	07569TN	07569TC	07569TF	07569TE	13/64	1/4	5/8	2-1/2
07570	07570TN	07570TC	07570TF	07570TE	7/32	1/4	5/8	2-1/2
07572	07572TN	07572TC	07572TF	07572TE	15/64	1/4	3/4	2-1/2
07573	07573TN	07573TC	07573TF	07573TE	1/4	1/4	3/4	2-1/2
07576	07576TN	07576TC	07576TF	07576TE	9/32	5/16	3/4	2-1/2
07579	07579TN	07579TC	07579TF	07579TE	5/16	5/16	13/16	2-1/2
07584	07584TN	07584TC	07584TF	07584TE	3/8	3/8	1	2-1/2
07588	07588TN	07588TC	07588TF	07588TE	7/16	7/16	1	2-3/4
07593	07593TN	07593TC	07593TF	07593TE	1/2	1/2	1	3
07595	07595TN	07595TC	07595TF	07595TE	5/8	5/8	1-1/4	3-1/2
07598	07598TN	07598TC	07598TF	07598TE	3/4	3/4	1-1/2	4
07600	07600TN	07600TC	07600TF	07600TE	1	1	1-1/2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005

◎ : Excellent ○ : Good

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



E5244 SERIES PLAIN SHANK

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

CARBIDE, 2 FLUTE STUB LENGTH

► Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
30554	30554TN	30554TC	30554TF	30554TE	1/16	1/8	1/8	1-1/2
30556	30556TN	30556TC	30556TF	30556TE	3/32	1/8	3/16	1-1/2
30558	30558TN	30558TC	30558TF	30558TE	1/8	1/8	1/4	1-1/2
30561	30561TN	30561TC	30561TF	30561TE	5/32	3/16	5/16	2
30565	30565TN	30565TC	30565TF	30565TE	3/16	3/16	3/8	2
30570	30570TN	30570TC	30570TF	30570TE	7/32	1/4	7/16	2
30573	30573TN	30573TC	30573TF	30573TE	1/4	1/4	1/2	2
30579	30579TN	30579TC	30579TF	30579TE	5/16	5/16	1/2	2
30584	30584TN	30584TC	30584TF	30584TE	3/8	3/8	5/8	2
30588	30588TN	30588TC	30588TF	30588TE	7/16	7/16	5/8	2-1/2
30593	30593TN	30593TC	30593TF	30593TE	1/2	1/2	5/8	2-1/2
30595	30595TN	30595TC	30595TF	30595TE	5/8	5/8	3/4	3
30598	30598TN	30598TC	30598TF	30598TE	3/4	3/4	1	3

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~- .0012	0~- .0005

◎ : Excellent ○ : Good

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

CARBIDE, 4 FLUTE STUB LENGTH

► Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
31554	31554TN	31554TC	31554TF	31554TE	1/16	1/8	1/8	1-1/2
31556	31556TN	31556TC	31556TF	31556TE	3/32	1/8	3/16	1-1/2
31558	31558TN	31558TC	31558TF	31558TE	1/8	1/8	1/4	1-1/2
31561	31561TN	31561TC	31561TF	31561TE	5/32	3/16	5/16	2
31565	31565TN	31565TC	31565TF	31565TE	3/16	3/16	3/8	2
31570	31570TN	31570TC	31570TF	31570TE	7/32	1/4	7/16	2
31573	31573TN	31573TC	31573TF	31573TE	1/4	1/4	1/2	2
31579	31579TN	31579TC	31579TF	31579TE	5/16	5/16	1/2	2
31584	31584TN	31584TC	31584TF	31584TE	3/8	3/8	5/8	2
31588	31588TN	31588TC	31588TF	31588TE	7/16	7/16	5/8	2-1/2
31593	31593TN	31593TC	31593TF	31593TE	1/2	1/2	5/8	2-1/2
31595	31595TN	31595TC	31595TF	31595TE	5/8	5/8	3/4	3
31598	31598TN	31598TC	31598TF	31598TE	3/4	3/4	1	3

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

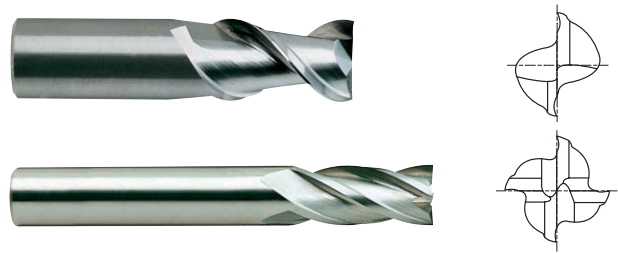
◎ : Excellent ○ : Good

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



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.679, 680

E5011(2 FLUTE) Series

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
02558	02558TN	02558TC	02558TF	02558TE	1/8	1/8	3/4	2-1/4
02565	02565TN	02565TC	02565TF	02565TE	3/16	3/16	3/4	2-1/2
02573	02573TN	02573TC	02573TF	02573TE	1/4	1/4	1-1/8	3
02579	02579TN	02579TC	02579TF	02579TE	5/16	5/16	1-1/8	3
02584	02584TN	02584TC	02584TF	02584TE	3/8	3/8	1-1/8	3
02588	02588TN	02588TC	02588TF	02588TE	7/16	7/16	2	4
02593	02593TN	02593TC	02593TF	02593TE	1/2	1/2	2	4
02595	02595TN	02595TC	02595TF	02595TE	5/8	5/8	2-1/4	5
02598	02598TN	02598TC	02598TF	02598TE	3/4	3/4	2-1/4	5
02600	02600TN	02600TC	02600TF	02600TE	1	1	2-1/4	5

E5012(4 FLUTE) Series

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
08558	08558TN	08558TC	08558TF	08558TE	1/8	1/8	3/4	2-1/4
08565	08565TN	08565TC	08565TF	08565TE	3/16	3/16	3/4	2-1/2
08573	08573TN	08573TC	08573TF	08573TE	1/4	1/4	1-1/8	3
08579	08579TN	08579TC	08579TF	08579TE	5/16	5/16	1-1/8	3
08584	08584TN	08584TC	08584TF	08584TE	3/8	3/8	1-1/8	3
08588	08588TN	08588TC	08588TF	08588TE	7/16	7/16	2	4
08593	08593TN	08593TC	08593TF	08593TE	1/2	1/2	2	4
08595	08595TN	08595TC	08595TF	08595TE	5/8	5/8	2-1/4	5
08598	08598TN	08598TC	08598TF	08598TE	3/4	3/4	2-1/4	5
08600	08600TN	08600TC	08600TF	08600TE	1	1	2-1/4	5

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005

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

◎ : Excellent ○ : Good

- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- 4G MILLS END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

CARBIDE, 2 FLUTE EXTRA LONG LENGTH

► Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



MG
2
30°
PLAIN
P.679

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
54558	54558TN	54558TC	54558TF	54558TE	1/8	1/8	1	3
54565	54565TN	54565TC	54565TF	54565TE	3/16	3/16	1-1/8	3
54904	54904TN	54904TC	54904TF	54904TE	3/16	3/16	1	4
54573	54573TN	54573TC	54573TF	54573TE	1/4	1/4	1-1/2	4
54901	54901TN	54901TC	54901TF	54901TE	1/4	1/4	1-1/2	6
54579	54579TN	54579TC	54579TF	54579TE	5/16	5/16	1-5/8	4
54584	54584TN	54584TC	54584TF	54584TE	3/8	3/8	1-3/4	4
54902	54902TN	54902TC	54902TF	54902TE	3/8	3/8	1-1/2	6
54588	54588TN	54588TC	54588TF	54588TE	7/16	7/16	3	6
54903	54903TN	54903TC	54903TF	54903TE	1/2	1/2	1-1/2	6
54593	54593TN	54593TC	54593TF	54593TE	1/2	1/2	3	6
54595	54595TN	54595TC	54595TF	54595TE	5/8	5/8	3	6
54598	54598TN	54598TC	54598TF	54598TE	3/4	3/4	3	6
54600	54600TN	54600TC	54600TF	54600TE	1	1	3	6

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

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



E5065 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE EXTRA LONG LENGTH

► Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA



Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
55558	55558TN	55558TC	55558TF	55558TE	1/8	1/8	1	3
55565	55565TN	55565TC	55565TF	55565TE	3/16	3/16	1-1/8	3
55904	55904TN	55904TC	55904TF	55904TE	3/16	3/16	1	4
55573	55573TN	55573TC	55573TF	55573TE	1/4	1/4	1-1/2	4
55901	55901TN	55901TC	55901TF	55901TE	1/4	1/4	1-1/2	6
55579	55579TN	55579TC	55579TF	55579TE	5/16	5/16	1-5/8	4
55584	55584TN	55584TC	55584TF	55584TE	3/8	3/8	1-3/4	4
55902	55902TN	55902TC	55902TF	55902TE	3/8	3/8	1-1/2	6
55588	55588TN	55588TC	55588TF	55588TE	7/16	7/16	3	6
55903	55903TN	55903TC	55903TF	55903TE	1/2	1/2	1-1/2	6
55593	55593TN	55593TC	55593TF	55593TE	1/2	1/2	3	6
55595	55595TN	55595TC	55595TF	55595TE	5/8	5/8	3	6
55598	55598TN	55598TC	55598TF	55598TE	3/4	3/4	3	6
55600	55600TN	55600TC	55600TF	55600TE	1	1	3	6

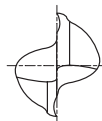
Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005

◎ : Excellent ○ : Good

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

CARBIDE, 2 FLUTE STUB LENGTH DOUBLE

- ▶ Same construction features as 2&4 flute single end mill in a more economical version.
- ▶ Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



P.679

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
32552	32552TN	32552TC	32552TF	32552TE	1/32	1/8	1/16	1-1/2
32553	32553TN	32553TC	32553TF	32553TE	3/64	1/8	3/32	1-1/2
32554	32554TN	32554TC	32554TF	32554TE	1/16	1/8	1/8	1-1/2
32555	32555TN	32555TC	32555TF	32555TE	5/64	1/8	1/8	1-1/2
32556	32556TN	32556TC	32556TF	32556TE	3/32	1/8	3/16	1-1/2
32557	32557TN	32557TC	32557TF	32557TE	7/64	1/8	3/16	1-1/2
32558	32558TN	32558TC	32558TF	32558TE	1/8	1/8	1/4	1-1/2
32560	32560TN	32560TC	32560TF	32560TE	9/64	3/16	5/16	2
32562	32562TN	32562TC	32562TF	32562TE	5/32	3/16	5/16	2
32564	32564TN	32564TC	32564TF	32564TE	11/64	3/16	5/16	2
32565	32565TN	32565TC	32565TF	32565TE	3/16	3/16	3/8	2
32569	32569TN	32569TC	32569TF	32569TE	13/64	1/4	1/2	2-1/2
32570	32570TN	32570TC	32570TF	32570TE	7/32	1/4	1/2	2-1/2
32572	32572TN	32572TC	32572TF	32572TE	15/64	1/4	1/2	2-1/2
32573	32573TN	32573TC	32573TF	32573TE	1/4	1/4	1/2	2-1/2
32579	32579TN	32579TC	32579TF	32579TE	5/16	5/16	1/2	2-1/2
32584	32584TN	32584TC	32584TF	32584TE	3/8	3/8	9/16	2-1/2
32588	32588TN	32588TC	32588TF	32588TE	7/16	7/16	9/16	2-3/4
32593	32593TN	32593TC	32593TF	32593TE	1/2	1/2	5/8	3

Mill Dia. Tolerance (inch)	
0~-.0012	* * 0~-.0020

**The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

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



CARBIDE, 4 FLUTE STUB LENGTH DOUBLE

- ▶ Same construction features as 2&4 flute single end mill in a more economical version.
- ▶ Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

MG 4 30° PLAIN P.680

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
33554	33554TN	33554TC	33554TF	33554TE	1/16	1/8	1/8	1-1/2
33555	33555TN	33555TC	33555TF	33555TE	5/64	1/8	1/8	1-1/2
33556	33556TN	33556TC	33556TF	33556TE	3/32	1/8	3/16	1-1/2
33557	33557TN	33557TC	33557TF	33557TE	7/64	1/8	3/16	1-1/2
33558	33558TN	33558TC	33558TF	33558TE	1/8	1/8	1/4	1-1/2
33560	33560TN	33560TC	33560TF	33560TE	9/64	3/16	5/16	2
33561	33561TN	33561TC	33561TF	33561TE	5/32	3/16	5/16	2
33564	33564TN	33564TC	33564TF	33564TE	11/64	3/16	5/16	2
33565	33565TN	33565TC	33565TF	33565TE	3/16	3/16	3/8	2
33569	33569TN	33569TC	33569TF	33569TE	13/64	1/4	1/2	2-1/2
33570	33570TN	33570TC	33570TF	33570TE	7/32	1/4	1/2	2-1/2
33572	33572TN	33572TC	33572TF	33572TE	15/64	1/4	1/2	2-1/2
33573	33573TN	33573TC	33573TF	33573TE	1/4	1/4	1/2	2-1/2
33579	33579TN	33579TC	33579TF	33579TE	5/16	5/16	1/2	2-1/2
33584	33584TN	33584TC	33584TF	33584TE	3/8	3/8	9/16	2-1/2
33588	33588TN	33588TC	33588TF	33588TE	7/16	7/16	9/16	2-3/4
33593	33593TN	33593TC	33593TF	33593TE	1/2	1/2	5/8	3

Mill Dia. Tolerance (inch)	
0~-.0012	* * 0~-.0020

**The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

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

CARBIDE, 2&4 FLUTE REGULAR LENGTH DOUBLE

- ▶ Same construction features as single end mill in a more economical version.
- ▶ Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



E5025(2 FLUTE) Series

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
11559	11559TN	11559TC	11559TF	11559TE	1/8	3/8	3/8	3-1/16
11563	11563TN	11563TC	11563TF	11563TE	5/32	3/8	7/16	3-1/8
11567	11567TN	11567TC	11567TF	11567TE	3/16	3/8	1/2	3-1/4
11571	11571TN	11571TC	11571TF	11571TE	7/32	3/8	9/16	3-3/8
11574	11574TN	11574TC	11574TF	11574TE	1/4	3/8	5/8	3-3/8
11577	11577TN	11577TC	11577TF	11577TE	9/32	3/8	11/16	3-3/8
11580	11580TN	11580TC	11580TF	11580TE	5/16	3/8	3/4	3-1/2
11582	11582TN	11582TC	11582TF	11582TE	11/32	3/8	3/4	3-1/2
11584	11584TN	11584TC	11584TF	11584TE	3/8	3/8	3/4	3-1/2
11589	11589TN	11589TC	11589TF	11589TE	7/16	1/2	7/8	4
11593	11593TN	11593TC	11593TF	11593TE	1/2	1/2	1	4

E5024(4 FLUTE) Series

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
13559	13559TN	13559TC	13559TF	13559TE	1/8	3/8	3/8	3-1/16
13563	13563TN	13563TC	13563TF	13563TE	5/32	3/8	7/16	3-1/8
13567	13567TN	13567TC	13567TF	13567TE	3/16	3/8	1/2	3-1/4
13571	13571TN	13571TC	13571TF	13571TE	7/32	3/8	9/16	3-3/8
13574	13574TN	13574TC	13574TF	13574TE	1/4	3/8	5/8	3-3/8
13577	13577TN	13577TC	13577TF	13577TE	9/32	3/8	11/16	3-3/8
13580	13580TN	13580TC	13580TF	13580TE	5/16	3/8	3/4	3-1/2
13582	13582TN	13582TC	13582TF	13582TE	11/32	3/8	3/4	3-1/2
13584	13584TN	13584TC	13584TF	13584TE	3/8	3/8	3/4	3-1/2
13589	13589TN	13589TC	13589TF	13589TE	7/16	1/2	7/8	4
13593	13593TN	13593TC	13593TF	13593TE	1/2	1/2	1	4

Mill Dia. Tolerance (inch)	
0~-.0012	* * 0~-.0020

**The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

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



CARBIDE, 2 FLUTE REGULAR LENGTH BALL NOSE

► Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



E5249(2 FLUTE) Series

Unit : Inch

EDP No.					Radius of Ball Nose R (±.0008)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E					
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 R (±.0008)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E					
43558	43558TN	43558TC	43558TF	43558TE	R1/16	1/8	1/8	1/2	1-1/2
43561	43561TN	43561TC	43561TF	43561TE	R5/64	5/32	3/16	9/16	2
43565	43565TN	43565TC	43565TF	43565TE	R3/32	3/16	3/16	5/8	2
43570	43570TN	43570TC	43570TF	43570TE	R7/64	7/32	1/4	5/8	2-1/2
43573	43573TN	43573TC	43573TF	43573TE	R1/8	1/4	1/4	3/4	2-1/2
43579	43579TN	43579TC	43579TF	43579TE	R5/32	5/16	5/16	13/16	2-1/2
43584	43584TN	43584TC	43584TF	43584TE	R3/16	3/8	3/8	1	2-1/2
43588	43588TN	43588TC	43588TF	43588TE	R7/32	7/16	7/16	1	2-3/4
43593	43593TN	43593TC	43593TF	43593TE	R1/4	1/2	1/2	1	3
43595	43595TN	43595TC	43595TF	43595TE	R5/16	5/8	5/8	1-1/4	3-1/2
43598	43598TN	43598TC	43598TF	43598TE	R3/8	3/4	3/4	1-1/2	4
43600	43600TN	43600TC	43600TF	43600TE	R1/2	1	1	1-1/2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005

◎ : Excellent ○ : Good

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

CARBIDE, 2&4 FLUTE LONG LENGTH BALL NOSE

► Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



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E5014(2 FLUTE) Series

Unit : Inch

EDP No.					Radius of Ball Nose R (±.0008)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E					
50558	50558TN	50558TC	50558TF	50558TE	R1/16	1/8	1/8	3/4	2-1/4
50565	50565TN	50565TC	50565TF	50565TE	R3/32	3/16	3/16	3/4	2-1/2
50573	50573TN	50573TC	50573TF	50573TE	R1/8	1/4	1/4	1-1/8	3
50579	50579TN	50579TC	50579TF	50579TE	R5/32	5/16	5/16	1-1/8	3
50584	50584TN	50584TC	50584TF	50584TE	R3/16	3/8	3/8	1-1/8	3
50588	50588TN	50588TC	50588TF	50588TE	R7/32	7/16	7/16	2	4
50593	50593TN	50593TC	50593TF	50593TE	R1/4	1/2	1/2	2	4
50595	50595TN	50595TC	50595TF	50595TE	R5/16	5/8	5/8	2-1/4	5
50598	50598TN	50598TC	50598TF	50598TE	R3/8	3/4	3/4	2-1/4	5
50600	50600TN	50600TC	50600TF	50600TE	R1/2	1	1	2-1/4	5

E5060(4 FLUTE) Series

Unit : Inch

EDP No.					Radius of Ball Nose R (±.0008)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E					
51558	51558TN	51558TC	51558TF	51558TE	R1/16	1/8	1/8	3/4	2-1/4
51565	51565TN	51565TC	51565TF	51565TE	R3/32	3/16	3/16	3/4	2-1/2
51573	51573TN	51573TC	51573TF	51573TE	R1/8	1/4	1/4	1-1/8	3
51579	51579TN	51579TC	51579TF	51579TE	R5/32	5/16	5/16	1-1/8	3
51584	51584TN	51584TC	51584TF	51584TE	R3/16	3/8	3/8	1-1/8	3
51588	51588TN	51588TC	51588TF	51588TE	R7/32	7/16	7/16	2	4
51593	51593TN	51593TC	51593TF	51593TE	R1/4	1/2	1/2	2	4
51595	51595TN	51595TC	51595TF	51595TE	R5/16	5/8	5/8	2-1/4	5
51598	51598TN	51598TC	51598TF	51598TE	R3/8	3/4	3/4	2-1/4	5
51600	51600TN	51600TC	51600TF	51600TE	R1/2	1	1	2-1/4	5

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005

◎ : Excellent ○ : Good

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



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.



CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

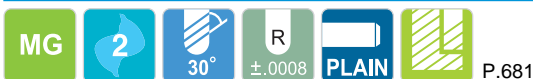
D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA



Unit : Inch

EDP No.					Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	R (±.0008)				
52558	52558TN	52558TC	52558TF	52558TE	R1/16	1/8	1/8	1	3
52565	52565TN	52565TC	52565TF	52565TE	R3/32	3/16	3/16	1-1/8	3
52904	52904TN	52904TC	52904TF	52904TE	R3/32	3/16	3/16	1	4
52573	52573TN	52573TC	52573TF	52573TE	R1/8	1/4	1/4	1-1/2	4
52901	52901TN	52901TC	52901TF	52901TE	R1/8	1/4	1/4	1-1/2	6
52579	52579TN	52579TC	52579TF	52579TE	R5/32	5/16	5/16	1-5/8	4
52584	52584TN	52584TC	52584TF	52584TE	R3/16	3/8	3/8	1-3/4	4
52902	52902TN	52902TC	52902TF	52902TE	R3/16	3/8	3/8	1-1/2	6
52588	52588TN	52588TC	52588TF	52588TE	R7/32	7/16	7/16	3	6
52903	52903TN	52903TC	52903TF	52903TE	R1/4	1/2	1/2	1-1/2	6
52593	52593TN	52593TC	52593TF	52593TE	R1/4	1/2	1/2	3	6
52595	52595TN	52595TC	52595TF	52595TE	R5/16	5/8	5/8	3	6
52598	52598TN	52598TC	52598TF	52598TE	R3/8	3/4	3/4	3	6
52600	52600TN	52600TC	52600TF	52600TE	R1/2	1	1	3	6

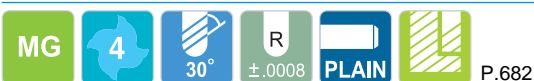
Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005

◎ : Excellent ○ : Good

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

CARBIDE, 4 FLUTE EXTRA LONG LENGTH BALL NOSE

► Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



Unit : Inch

EDP No.					Radius of Ball Nose	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

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

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



CARBIDE, 2&4 FLUTE STUB LENGTH DOUBLE BALL NOSE

- ▶ Same construction features as single end mill in a more economical version.
- ▶ Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



P.681, 682

E5251 Series ■ 2 FLUTE

Unit : Inch

EDP No.					Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	R (±.0008)				
47570	47570TN	47570TC	47570TF	47570TE	R7/64	7/32	1/4	1/2	2-1/2
47573	47573TN	47573TC	47573TF	47573TE	R1/8	1/4	1/4	1/2	2-1/2
47579	47579TN	47579TC	47579TF	47579TE	R5/32	5/16	5/16	1/2	2-1/2
47584	47584TN	47584TC	47584TF	47584TE	R3/16	3/8	3/8	9/16	2-1/2
47588	47588TN	47588TC	47588TF	47588TE	R7/32	7/16	7/16	9/16	2-3/4
47593	47593TN	47593TC	47593TF	47593TE	R1/4	1/2	1/2	5/8	3

E5252 Series ■ 4 FLUTE

Unit : Inch

EDP No.					Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	R (±.0008)				
48570	48570TN	48570TC	48570TF	48570TE	R7/64	7/32	1/4	1/2	2-1/2
48573	48573TN	48573TC	48573TF	48573TE	R1/8	1/4	1/4	1/2	2-1/2
48579	48579TN	48579TC	48579TF	48579TE	R5/32	5/16	5/16	1/2	2-1/2
48584	48584TN	48584TC	48584TF	48584TE	R3/16	3/8	3/8	9/16	2-1/2
48588	48588TN	48588TC	48588TF	48588TE	R7/32	7/16	7/16	9/16	2-3/4
48593	48593TN	48593TC	48593TF	48593TE	R1/4	1/2	1/2	5/8	3

Mill Dia. Tolerance (inch)	
0~-.0012	* * 0~-.0020

**The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

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

CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS

► Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	YG:TYLON F	R				
07558-015R	07558TF-015R	R.015	1/8	1/8	1/2	1-1/2
07558-030R	07558TF-030R	R.030	1/8	1/8	1/2	1-1/2
07565-015R	07565TF-015R	R.015	3/16	3/16	5/8	2
07565-030R	07565TF-030R	R.030	3/16	3/16	5/8	2
07573-015R	07573TF-015R	R.015	1/4	1/4	3/4	2-1/2
07573-030R	07573TF-030R	R.030	1/4	1/4	3/4	2-1/2
07573-045R	07573TF-045R	R.045	1/4	1/4	3/4	2-1/2
07579-015R	07579TF-015R	R.015	5/16	5/16	13/16	2-1/2
07579-030R	07579TF-030R	R.030	5/16	5/16	13/16	2-1/2
07579-045R	07579TF-045R	R.045	5/16	5/16	13/16	2-1/2
07584-015R	07584TF-015R	R.015	3/8	3/8	1	2-1/2
07584-030R	07584TF-030R	R.030	3/8	3/8	1	2-1/2
07584-045R	07584TF-045R	R.045	3/8	3/8	1	2-1/2
07584-060R	07584TF-060R	R.060	3/8	3/8	1	2-1/2
07588-015R	07588TF-015R	R.015	7/16	7/16	1	2-3/4
07588-030R	07588TF-030R	R.030	7/16	7/16	1	2-3/4
07588-045R	07588TF-045R	R.045	7/16	7/16	1	2-3/4
07588-060R	07588TF-060R	R.060	7/16	7/16	1	2-3/4
07588-090R	07588TF-090R	R.090	7/16	7/16	1	2-3/4
07593-015R	07593TF-015R	R.015	1/2	1/2	1	3
07593-030R	07593TF-030R	R.030	1/2	1/2	1	3
07593-045R	07593TF-045R	R.045	1/2	1/2	1	3
07593-060R	07593TF-060R	R.060	1/2	1/2	1	3
07593-090R	07593TF-090R	R.090	1/2	1/2	1	3
07593-125R	07593TF-125R	R.125	1/2	1/2	1	3
07595-015R	07595TF-015R	R.015	5/8	5/8	1-1/4	3-1/2
07595-030R	07595TF-030R	R.030	5/8	5/8	1-1/4	3-1/2
07595-045R	07595TF-045R	R.045	5/8	5/8	1-1/4	3-1/2

◎ : Excellent ○ : Good

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



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.



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

MG 4 30° ±.001 PLAIN P.680

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	YG:TYLON F	R				
07595-060R	07595TF-060R	R.060	5/8	5/8	1-1/4	3-1/2
07595-090R	07595TF-090R	R.090	5/8	5/8	1-1/4	3-1/2
07595-125R	07595TF-125R	R.125	5/8	5/8	1-1/4	3-1/2
07598-015R	07598TF-015R	R.015	3/4	3/4	1-1/2	4
07598-030R	07598TF-030R	R.030	3/4	3/4	1-1/2	4
07598-045R	07598TF-045R	R.045	3/4	3/4	1-1/2	4
07598-060R	07598TF-060R	R.060	3/4	3/4	1-1/2	4
07598-090R	07598TF-090R	R.090	3/4	3/4	1-1/2	4
07598-125R	07598TF-125R	R.125	3/4	3/4	1-1/2	4
07600-015R	07600TF-015R	R.015	1	1	1-1/2	4
07600-030R	07600TF-030R	R.030	1	1	1-1/2	4
07600-045R	07600TF-045R	R.045	1	1	1-1/2	4
07600-060R	07600TF-060R	R.060	1	1	1-1/2	4
07600-090R	07600TF-090R	R.090	1	1	1-1/2	4
07600-125R	07600TF-125R	R.125	1	1	1-1/2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~- .0012	0~- .0005

◎ : Excellent ○ : Good

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

CARBIDE, 5 FLUTE 45° HELIX REGULAR LENGTH CORNER RADIUS

- ▶ Designed to machine stainless steels, Inconols and other alloys.
- ▶ 5 Flute and 45° medium helix allow harmonic balance and smooth cutting.



Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R				
86573TF-03OR	R.030	1/4	1/4	3/4	2-1/2
86584TF-03OR	R.030	3/8	3/8	1	2-1/2
86584TF-06OR	R.060	3/8	3/8	1	2-1/2
86593TF-03OR	R.030	1/2	1/2	1-1/4	3
86593TF-06OR	R.060	1/2	1/2	1-1/4	3
86593TF-09OR	R.090	1/2	1/2	1-1/4	3
86595TF-03OR	R.030	5/8	5/8	1-5/8	3-1/2
86595TF-06OR	R.060	5/8	5/8	1-5/8	3-1/2
86595TF-09OR	R.090	5/8	5/8	1-5/8	3-1/2
86595TF-125R	R.125	5/8	5/8	1-5/8	3-1/2
86598TF-03OR	R.030	3/4	3/4	1-5/8	4
86598TF-06OR	R.060	3/4	3/4	1-5/8	4
86598TF-09OR	R.090	3/4	3/4	1-5/8	4
86598TF-125R	R.125	3/4	3/4	1-5/8	4
86598TF-156R	R.156	3/4	3/4	1-5/8	4
86598TF-187R	R.187	3/4	3/4	1-5/8	4
86600TF-03OR	R.030	1	1	2	4
86600TF-06OR	R.060	1	1	2	4
86600TF-09OR	R.090	1	1	2	4
86600TF-125R	R.125	1	1	2	4
86600TF-156R	R.156	1	1	2	4
86600TF-187R	R.187	1	1	2	4

Any non stocked radius available in 1 week for uncoated tools

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005

◎ : Excellent ○ : Good

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



E5243 SERIES PLAIN SHANK
FLAT SHANK

CARBIDE, 3 FLUTE 45° HELIX REGULAR LENGTH

- ▶ Designed to machine stainless steel, inconel, titanium and other hard to machine materials.
- ▶ It's 3 flute design gives high stability and allows good chip removal in plunging & slotting operations.
- ▶ The normal rake angle and 45° medium helix allows an extremely wide range of application.
- ▶ YG:TYLON super TiAlN coating are recommended for maximum performance.



CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA



Ø1/8-Ø5/16 Ø3/8-Ø1

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
34558	34558TN	34558TC	34558TF	34558TE	1/8	1/8	3/8	1-1/2
34565	34565TN	34565TC	34565TF	34565TE	3/16	3/16	9/16	2
34573	34573TN	34573TC	34573TF	34573TE	1/4	1/4	3/4	2-1/2
34579	34579TN	34579TC	34579TF	34579TE	5/16	5/16	13/16	2-1/2
34584	34584TN	34584TC	34584TF	34584TE	3/8	3/8	7/8	2-1/2
34593	34593TN	34593TC	34593TF	34593TE	1/2	1/2	1	3
34594	34594TN	34594TC	34594TF	34594TE	9/16	9/16	1-1/4	3-1/2
34595	34595TN	34595TC	34595TF	34595TE	5/8	5/8	1-1/4	3-1/2
34598	34598TN	34598TC	34598TF	34598TE	3/4	3/4	1-1/2	4
34600	34600TN	34600TC	34600TF	34600TE	1	1	1-1/2	4

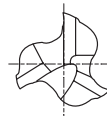
Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~- .0012	0~- .0005

◎ : Excellent ○ : Good

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

CARBIDE, 3 FLUTE 50° HELIX STUB & REGULAR & LONG LENGTH

- ▶ Designed to machine stainless steel, inconel, titanium and other hard to machine materials.
- ▶ It's 3 flute design gives high stability and allows good chip removal in plunging & slotting operations.
- ▶ The high rake angle and 50° helix allows an extremely wide range of application.
- ▶ YG:TYLON super TiAlN coating are recommended for maximum performance.

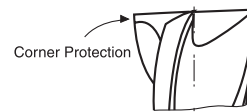


MG
3
50°
PLAIN
P.678

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
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



JET-POWER END MILLS

V7 MILL STEEL END MILLS

V7 MILL INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

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



E5246 SERIES

PLAIN SHANK
FLAT SHANK

CARBIDE, 3 FLUTE 60° HELIX REGULAR LENGTH

- ▶ Excellent shearing and chip ejection due to 60° Helix.
- ▶ 20% ~ 30% increase in chip load recommended over 30° helix tools.



CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA

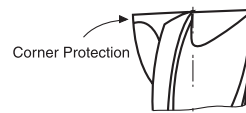


Ø1/8-Ø5/16 Ø3/8-Ø1

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
20558	20558TN	20558TC	20558TF	20558TE	1/8	1/8	3/8	1-1/2
20565	20565TN	20565TC	20565TF	20565TE	3/16	3/16	9/16	2
20573	20573TN	20573TC	20573TF	20573TE	1/4	1/4	3/4	2-1/2
20579	20579TN	20579TC	20579TF	20579TE	5/16	5/16	13/16	2-1/2
20584	20584TN	20584TC	20584TF	20584TE	3/8	3/8	7/8	2-1/2
20593	20593TN	20593TC	20593TF	20593TE	1/2	1/2	1	3
20594	20594TN	20594TC	20594TF	20594TE	9/16	9/16	1-1/4	3-1/2
20595	20595TN	20595TC	20595TF	20595TE	5/8	5/8	1-1/4	3-1/2
20598	20598TN	20598TC	20598TF	20598TE	3/4	3/4	1-1/2	4
20600	20600TN	20600TC	20600TF	20600TE	1	1	1-1/2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0 ~ -.0012	0 ~ -.0005

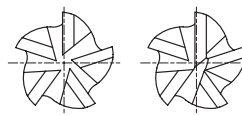


◎ : Excellent ○ : Good

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

CARBIDE, 5 FLUTE 45° HELIX STUB LENGTH

- ▶ Designed to machine stainless steels, inconels and other alloys.
- ▶ The new design of stub length allows cutting at maximum speeds and feeds with minimum deflection
- ▶ 5 Flute and 45° medium helix allow harmonic balance and smooth cutting.


 up to $\varnothing 3/16$ over $\varnothing 3/16$

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
85558	85558TN	85558TC	85558TF	85558TE	1/8	1/8	1/4	1-1/2
85561	85561TN	85561TC	85561TF	85561TE	5/32	3/16	5/16	2
85565	85565TN	85565TC	85565TF	85565TE	3/16	3/16	5/16	2
85570	85570TN	85570TC	85570TF	85570TE	7/32	1/4	3/8	2
85573	85573TN	85573TC	85573TF	85573TE	1/4	1/4	3/8	2
85579	85579TN	85579TC	85579TF	85579TE	5/16	5/16	7/16	2
85584	85584TN	85584TC	85584TF	85584TE	3/8	3/8	1/2	2
85588	85588TN	85588TC	85588TF	85588TE	7/16	7/16	9/16	2-1/2
85593	85593TN	85593TC	85593TF	85593TE	1/2	1/2	5/8	2-1/2
85595	85595TN	85595TC	85595TF	85595TE	5/8	5/8	3/4	3
85598	85598TN	85598TC	85598TF	85598TE	3/4	3/4	1	3
85600	85600TN	85600TC	85600TF	85600TE	1	1	1-1/4	3

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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

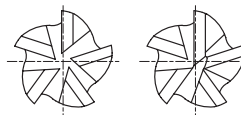
TECHNICAL DATA

◎ : Excellent ○ : Good

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

CARBIDE, 5 FLUTE 45° HELIX 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 $\varnothing 3/16$ over $\varnothing 3/16$

MG 5 45° PLAIN P.678

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
86558	86558TN	86558TC	86558TF	86558TE	1/8	1/8	1/2	1-1/2
86561	86561TN	86561TC	86561TF	86561TE	5/32	3/16	9/16	2
86565	86565TN	86565TC	86565TF	86565TE	3/16	3/16	9/16	2
86570	86570TN	86570TC	86570TF	86570TE	7/32	1/4	3/4	2-1/2
86573	86573TN	86573TC	86573TF	86573TE	1/4	1/4	3/4	2-1/2
86579	86579TN	86579TC	86579TF	86579TE	5/16	5/16	13/16	2-1/2
86584	86584TN	86584TC	86584TF	86584TE	3/8	3/8	1	2-1/2
86588	86588TN	86588TC	86588TF	86588TE	7/16	7/16	1	2-3/4
86593	86593TN	86593TC	86593TF	86593TE	1/2	1/2	1-1/4	3
86595	86595TN	86595TC	86595TF	86595TE	5/8	5/8	1-5/8	3-1/2
86598	86598TN	86598TC	86598TF	86598TE	3/4	3/4	1-5/8	4
86599	86599TN	86599TC	86599TF	86599TE	7/8	7/8	2	4
86600	86600TN	86600TC	86600TF	86600TE	1	1	2	4

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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

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

CARBIDE, 5 FLUTE 45° HELIX MEDIUM & LONG LENGTH

- ▶ Designed to machine stainless steel, inconels and other alloys.
- ▶ The new design of stub length allows cutting at maximum speeds and feeds with minimum deflection
- ▶ 5 Flute and 45° medium helix allow harmonic balance and smooth cutting.



P.678

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
58573	58573TN	58573TC	58573TF	58573TE	1/4	1/4	1-1/4	4
58579	58579TN	58579TC	58579TF	58579TE	5/16	5/16	1-1/4	4
58584	58584TN	58584TC	58584TF	58584TE	3/8	3/8	1-1/2	4
58588	58588TN	58588TC	58588TF	58588TE	7/16	7/16	2	4
58593	58593TN	58593TC	58593TF	58593TE	1/2	1/2	2	4
58595	58595TN	58595TC	58595TF	58595TE	5/8	5/8	2-1/2	5
58598	58598TN	58598TC	58598TF	58598TE	3/4	3/4	3-1/4	6
58901	58901TN	58901TC	58901TF	58901TE	3/4	3/4	2-1/4	5
58600	58600TN	58600TC	58600TF	58600TE	1	1	3-1/4	6
58902	58902TN	58902TC	58902TF	58902TE	1	1	2-5/8	6

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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			~HRc20	HRc20~30								
◎	◎	◎	○			○		○		◎	○	○



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.



CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA



Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
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

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

CARBIDE, 6 FLUTE 40° HELIX REGULAR LENGTH

- ▶ For finishing in most materials.
- ▶ 20 ~40% increase in inches per minute over 4 flute tools.
- ▶ YG:TYLON SUPER TiAlN coating recommended for maximum performance.



MG
6
40°
PLAIN
P.678

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
84565	84565TN	84565TC	84565TF	84565TE	3/16	3/16	5/8	2
84573	84573TN	84573TC	84573TF	84573TE	1/4	1/4	3/4	2-1/2
84579	84579TN	84579TC	84579TF	84579TE	5/16	5/16	7/8	2-1/2
84584	84584TN	84584TC	84584TF	84584TE	3/8	3/8	7/8	2-1/2
84588	84588TN	84588TC	84588TF	84588TE	7/16	7/16	1	2-1/2
84593	84593TN	84593TC	84593TF	84593TE	1/2	1/2	1	3
84595	84595TN	84595TC	84595TF	84595TE	5/8	5/8	1-1/4	3-1/2
84598	84598TN	84598TC	84598TF	84598TE	3/4	3/4	1-1/2	4

MATERIAL HARDNESS

Recommended Coating	Under 45 Rc F	Over 45 Rc E
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Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

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



CARBIDE, 5 FLUTE 45° HELIX STUB & REGULAR LENGTH FINE PITCH ROUGHING CORNER RADIUS

- ▶ 5 flute design gives minimum harmonic vibration.
- ▶ Stub tools for minimum deflection and maximum rigidity.
- ▶ Ideal for profile milling.
- ▶ Not recommended for slotting.



E5056 Series ■ STUB LENGTH

Unit : Inch

EDP No.					Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	R				
81584	81584TN	81584TC	81584TF	81584TE	.040	3/8	3/8	1/2	2
81593	81593TN	81593TC	81593TF	81593TE	.040	1/2	1/2	5/8	2-1/2
81595	81595TN	81595TC	81595TF	81595TE	.060	5/8	5/8	3/4	3
81598	81598TN	81598TC	81598TF	81598TE	.060	3/4	3/4	1	3
81600	81600TN	81600TC	81600TF	81600TE	.060	1	1	1-1/4	3

E5057 Series ■ REGULAR LENGTH

Unit : Inch

EDP No.					Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	R				
82584	82584TN	82584TC	82584TF	82584TE	.040	3/8	3/8	1	2-1/2
82593	82593TN	82593TC	82593TF	82593TE	.040	1/2	1/2	1-1/4	3
82595	82595TN	82595TC	82595TF	82595TE	.060	5/8	5/8	1-5/8	3-1/2
82598	82598TN	82598TC	82598TF	82598TE	.060	3/4	3/4	1-5/8	4
82600	82600TN	82600TC	82600TF	82600TE	.060	1	1	2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.003	0~-.0005

◎ : Excellent ○ : Good

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

CARBIDE, 3 FLUTE TAPER

- ▶ Designed for milling die cavity.
- ▶ Many different center line angles are available on your job requirement.



MG
3
30°
PLAIN
P.678

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'
Ø1/64 ~ Ø1	0~- .0030		

◎ : Excellent ○ : Good

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



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.



- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- 4G MILLS END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

MG 3 30° ±.0008 PLAIN P.678

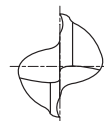
Unit : Inch

EDP No.					TIP Radius	Cutting Small Diameter	Shank Diameter	Length of Cut	Overall Length	Center Ling Angle
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	R (±.0008)					
88552	88552TN	88552TC	88552TF	88552TE	.062	1/8	1/4	1-1/2	3	1°
88553	88553TN	88553TC	88553TF	88553TE	.062	1/8	1/4	1-1/2	3	1.5°
88554	88554TN	88554TC	88554TF	88554TE	.062	1/8	1/4	1-1/4	3	2°
88556	88556TN	88556TC	88556TF	88556TE	.062	1/8	1/4	1	3	3°
88560	88560TN	88560TC	88560TF	88560TE	.062	1/8	1/4	3/4	3	5°
88564	88564TN	88564TC	88564TF	88564TE	.062	1/8	1/4	1/2	3	7°
88570	88570TN	88570TC	88570TF	88570TE	.047	3/32	1/4	1/2	3	10°
88572	88572TN	88572TC	88572TF	88572TE	.093	3/16	3/8	1-3/4	3-1/2	1°
88573	88573TN	88573TC	88573TF	88573TE	.093	3/16	3/8	1-3/4	3-1/2	1.5°
88574	88574TN	88574TC	88574TF	88574TE	.093	3/16	3/8	1-3/4	3-1/2	2°
88576	88576TN	88576TC	88576TF	88576TE	.078	5/32	3/8	1-3/4	3-1/2	3°
88580	88580TN	88580TC	88580TF	88580TE	.062	1/8	3/8	1-1/2	3-1/2	5°
88584	88584TN	88584TC	88584TF	88584TE	.062	1/8	3/8	1	3-1/2	7°
88590	88590TN	88590TC	88590TF	88590TE	.062	1/8	3/8	3/4	3-1/2	10°
88592	88592TN	88592TC	88592TF	88592TE	.125	1/4	1/2	2	4	1°
88594	88594TN	88594TC	88594TF	88594TE	.125	1/4	1/2	2	4	2°
88596	88596TN	88596TC	88596TF	88596TE	.125	1/4	1/2	2	4	3°
88600	88600TN	88600TC	88600TF	88600TE	.125	1/4	1/2	1-1/4	4	5°
88902	88902TN	88902TC	88902TF	88902TE	.093	3/16	1/2	1-1/4	4	7°
88903	88903TN	88903TC	88903TF	88903TE	.062	1/8	1/2	1	4	10°

Cutting Small Dia. Tolerance(mm)		Shank Dia. Tolerance	Center Line Angle Tolerance
Ø1/16 ~ Ø1/4	0~- .0020	0~- .0005	±5'
Ø17/64 ~ Ø1	0~- .0030		

◎ : Excellent ○ : Good

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

CARBIDE, 2 FLUTE LONG LENGTH - TiAlN 'F' Coated


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

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

CARBIDE

HSS



EH540 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG LENGTH - TiAIN 'F' Coated

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

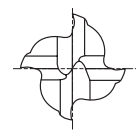
D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA



MG DIN 6528 N 4 $\approx 30^\circ$ DIN 6535HA P.683

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	Metric	Inch			
	h10		h6		
EH540035	3.5	.1378	3.5	10	50
EH540040	4.0	.1575	4	11	50
EH540045	4.5	.1772	4.5	11	50
EH540050	5.0	.1969	5	13	50
EH540055	5.5	.2165	5.5	13	57
EH540060	6.0	.2362	6	13	57
EH540065	6.5	.2559	6.5	16	60
EH540070	7.0	.2756	7	16	60
EH540075	7.5	.2953	7.5	19	63
EH540080	8.0	.3150	8	19	63
EH540085	8.5	.3346	8.5	19	67
EH540090	9.0	.3543	9	19	67
EH540095	9.5	.3740	9.5	22	72
EH540100	10.0	.3937	10	22	72
EH540110	11.0	.4330	11	26	83
EH540120	12.0	.4724	12	26	83
EH540130	13.0	.5118	13	26	83
EH540140	14.0	.5512	14	26	83
EH540150	15.0	.5905	15	32	92
EH540160	16.0	.6299	16	32	92
EH540180	18.0	.7087	18	32	92
EH540200	20.0	.7874	20	38	104

Tolerances according to DIN 7160 & 7161

Tolerance range in μm					
Nominal-Diameter in mm					
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
h10	0 - 40	0 - 48	0 - 58	0 - 70	0 - 84
h6	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13

⊙ : Excellent ○ : Good

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

CARBIDE, 3 FLUTE 35° HELIX CORNER RADIUS - TiAIN 'F' Coated


Unit : mm

EDP No.	Corner Radius R	Mill Diameter		Shank Diameter h6	Length of Cut	Overall Length
		Metric h10	Inch			
EH882030	0.20-0.25	3.0	.1181	3	4	38
EH882040	0.20-0.25	4.0	.1575	6	5	54
EH882050	0.20-0.25	5.0	.1969	6	6	54
EH882060	0.40-0.50	6.0	.2362	6	7	54
EH882080	0.40-0.50	8.0	.3150	8	9	58
EH882100	0.40-0.50	10.0	.3937	10	11	66
EH882120	0.75-0.85	12.0	.4724	12	12	73
EH882160	0.75-0.85	16.0	.6299	16	16	82
EH882200	0.75-0.85	20.0	.7874	20	20	92

▶TiN & TiCN-COATING are available on your request.

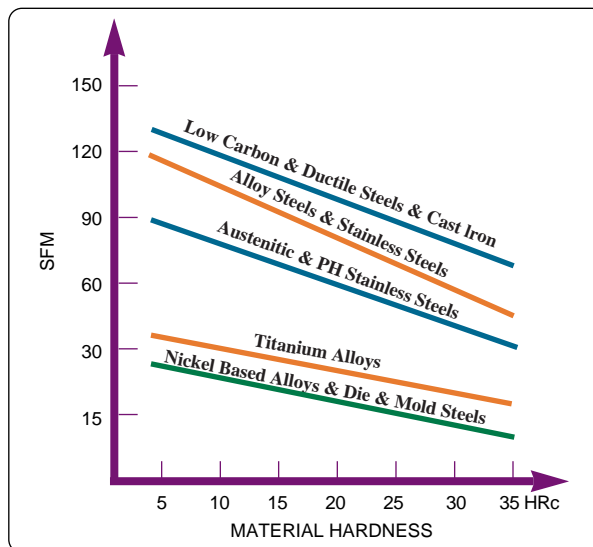
Tolerances according to DIN 7160 & 7161

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



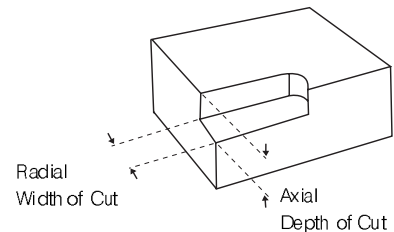
◎ : Excellent ○ : Good

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

SPEED & FEED RECOMMENDATIONS

Material	Speed	Chip Load per Tooth by End Mill Diameter			Recommended Coating
		Up to 1/4"	Up to 1/2"	Up to 1"	
Carbon + Alloy Steel <45Rc	100-700	.0002-.002	.001-.003	.003-.007	TF
Carbon + Alloy Steel >45Rc	50-400	.0002-.001	.0005-.0015	.001-.003	TE
Stainless Steels Non-Hardenable 200-300 Series	150-500	.0002-.001	.001-.002	.002-.006	TF
Stainless Steels Hardenable 400 Series Martensitic and PH Series	100-450	.0002-.0005	.0005-.001	.001-.005	TF
Cast+Ductile Iron	100-800	.0002-.0015	.002-.003	.003-.008	TF or TE
Nickel+Cobalt Based Alloys	20-200	.0003-.0008	.0008-.001	.001-.002	TE
Titanium	30-200	.0002-.0008	.0008-.002	.002-.004	TE
Aluminum	600-2000	.0002-.002	.002-.004	.004-.008	TiCN
Copper	300-1000	.0005-.002	.002-.003	.003-.006	CrN
Brass+ Bronze Alloys	600-1000	.0005-.002	.002-.003	.003-.006	TiCN
Graphite	600-1000	.0005-.005	.001-.008	.002-.010	D
Plastic	600-1200	.0006-.003	.003-.006	.006-.012	TF

TF = YG:TYLON F
TE = YG:TYLON E
D = DIAMOND
CrN = CROME NITRIDE



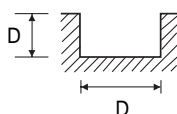
SPEED & FEED DETERMINANTS

1. MATERIAL HARDNESS
2. MACHINE RIGIDITY
3. TYPE OF COATING
4. TOOL GEOMETRY
5. FINISH REQUIREMENTS
6. DEPTH & WIDTH OF CUT

CARBIDE, 2 FLUTE - SLOTTING

E5020, E5244, E5011, E5026, E5022, E5025 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS TITANIUM ALLOYS		CAST IRON		ALUMINUM ALLOYS		COPPER. BRASS NON-FERROUS METALS	
	HARDNESS	~ HRc 20	HRc 20 ~ HRc 30	HRc 30 ~ HRc 40										
STRENGTH	500 ~ 800N/mm ²		800 ~ 1000N/mm ²		1000 ~ 1300N/mm ²									
DIAMETER	RPM	FEED	RPM	FEED	RPM	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



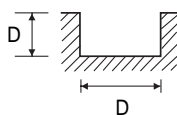
※ The Feed, in long & extra long types, should be reduced by around 50%.

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

CARBIDE, 2 FLUTE TiAIN "F" COATED - SLOTTING

EH020, EH244, EH011, EH026, EH022, EH025 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS TITANIUM ALLOYS		CAST IRON		ALUMINUM ALLOYS		COPPER. BRASS NON-FERROUS METALS	
	HARDNESS	~ HRc 20	HRc 20 ~ HRc 30	HRc 30 ~ HRc 40										
STRENGTH	500 ~ 800N/mm ²		800 ~ 1000N/mm ²		1000 ~ 1300N/mm ²									
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%.

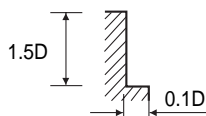
RPM = rev./min. FEED = inch/min.



CARBIDE, 4 FLUTE - SIDE CUTTING

E5021, E5245, E5012, E5065, E5023, E5024, E5216 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS TITANIUM ALLOYS		CAST IRON		ALUMINUM ALLOYS		COPPER. BRASS NON-FERROUS METALS	
HARDNESS	~ HRc 20		HRc 20 ~ HRc 30		HRc 30 ~ HRc 40									
STRENGTH	500 ~ 800N/mm ²		800 ~ 1000N/mm ²		1000 ~ 1300N/mm ²									
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



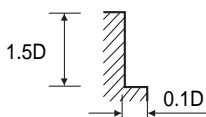
※ The Feed, in long & extra long types, should be reduced by around 50%.

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

CARBIDE, 4 FLUTE TiAlN "F" COATED - SIDE CUTTING

EH021, EH245, EH012, EH065, EH023, EH024, EH216 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS TITANIUM ALLOYS		CAST IRON		ALUMINUM ALLOYS		COPPER. BRASS NON-FERROUS METALS	
HARDNESS	~ HRc 20		HRc 20 ~ HRc 30		HRc 30 ~ HRc 40									
STRENGTH	500 ~ 800N/mm ²		800 ~ 1000N/mm ²		1000 ~ 1300N/mm ²									
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	8640	14.7	7440	12.8	6240	9.9	12000	12.3	10200	27.4	24000	56.7	18000	44.4
1/8	5760	16.5	5040	14.6	4080	10.9	8280	12.3	6600	27.4	16800	56.7	12000	44.4
5/32	4370	16.5	3720	14.6	3120	10.9	6240	12.3	5040	27.4	12000	56.7	9600	44.4
3/16	3430	16.5	3000	14.6	2400	10.9	5040	12.3	3960	27.4	9960	56.7	7440	44.4
1/4	2880	16.5	2400	14.6	2040	10.9	4080	12.3	3240	33.1	8280	61.4	6240	47.2
5/16	2160	16.5	1800	14.6	1560	10.9	3120	12.3	2400	35.0	6240	61.4	4800	47.2
3/8	1680	16.5	1440	14.6	1200	10.9	2400	12.3	2040	36.9	5040	61.4	3720	47.2
1/2	1440	16.5	1200	14.6	1030	10.9	2040	12.3	1560	38.8	4080	61.4	3120	47.2
9/16	1200	16.5	1080	14.6	890	10.9	1680	12.3	1440	40.6	3600	61.4	2640	47.2
5/8	1080	18.4	960	16.1	780	13.7	1560	13.7	1200	41.6	3120	61.4	2400	47.2
13/16	880	18.4	740	16.1	620	13.7	1200	14.6	1000	36.9	2400	61.4	1870	47.2



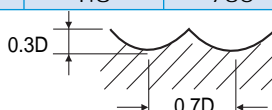
※ The Feed, in long & extra long types, should be reduced by around 50%.

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

CARBIDE, 2 FLUTE BALL NOSE

E5249, E5014, E5018, E5251 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CAST IRON		ALUMINUM ALLOYS	
HARDNESS	~ HRC30		HRC30 ~ HRC40					
STRENGTH	~ 1000N/mm ²		1000 ~ 1300N/mm ²					
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



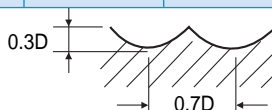
※ The Feed, in long & extra long types, should be reduced by around 50%.

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

CARBIDE, 2 FLUTE BALL NOSE TiAlN "F" COATED

EH249, EH014, EF018, EF251 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CAST IRON		ALUMINUM ALLOYS	
HARDNESS	~ HRC30		HRC30 ~ HRC40					
STRENGTH	~ 1000N/mm ²		1000 ~ 1300N/mm ²					
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%.

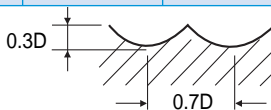
RPM = rev./min. FEED = inch/min.



CARBIDE, 4 FLUTE BALL NOSE

E5250, E5060, E5062, E5252 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CAST IRON		ALUMINUM ALLOYS	
HARDNESS	~ HRC30		HRC30 ~ HRC40					
STRENGTH	~ 1000N/mm ²		1000 ~ 1300N/mm ²					
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



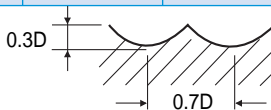
※ The Feed, in long & extra long types, should be reduced by around 50%.

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

CARBIDE, 4 FLUTE BALL NOSE TiAIN "F" COATED

EH250, EH060, EH062, EH252 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CAST IRON		ALUMINUM ALLOYS	
HARDNESS	~ HRC30		HRC30 ~ HRC40					
STRENGTH	~ 1000N/mm ²		1000 ~ 1300N/mm ²					
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



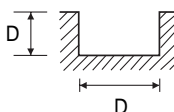
※ The Feed, in long & extra long types, should be reduced by around 50%.

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

CARBIDE, 2 FLUTE TiAlN-COATED - SLOTTING

EH527 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS TITANIUM ALLOYS		CAST IRON		ALUMINUM ALLOYS		COPPER, BRASS NON-FERROUS METALS	
HARDNESS	~ Hrc 20		HRc 20 ~ HRc 30		HRc 30 ~ HRc 40									
STRENGTH	500 ~ 800N/mm ²		800 ~ 1000N/mm ²		1000 ~ 1300N/mm ²									
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



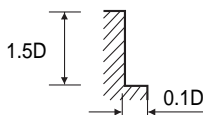
※The FEED, in long & extra long types, should be reduced by around 50%

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

CARBIDE, 4 FLUTE TiAlN-COATED - SIDE CUTTING

EH540 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS TITANIUM ALLOYS		CAST IRON		ALUMINUM ALLOYS		COPPER, BRASS NON-FERROUS METALS	
HARDNESS	~ Hrc 20		HRc 20 ~ HRc 30		HRc 30 ~ HRc 40									
STRENGTH	500 ~ 800N/mm ²		800 ~ 1000N/mm ²		1000 ~ 1300N/mm ²									
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0	7700	13.2	6720	11.6	5600	8.9	11200	11.0	9100	24.8	22400	53.0	16800	39.8
3.0	5180	15.0	4480	13.2	3640	9.8	7420	11.0	5880	24.8	15400	53.0	11200	39.8
4.0	3920	15.0	3360	13.2	2800	9.8	5600	11.0	4480	24.8	11200	53.0	8400	39.8
5.0	3080	15.0	2660	13.2	2240	9.8	4480	11.0	3500	24.8	8960	53.0	6720	39.8
6.0	2520	15.0	2240	13.2	1820	9.8	3640	11.0	2940	29.7	7420	56.3	5600	42.9
8.0	1960	15.0	1680	13.2	1400	9.8	2800	11.0	2240	31.5	5600	56.3	4200	42.9
10.0	1540	15.0	1330	13.2	1120	9.8	2240	11.0	1820	33.1	4480	56.3	3360	42.9
12.0	1260	15.0	1120	13.2	920	9.8	1820	11.0	1400	34.7	3640	56.3	2800	42.9
14.0	1120	15.0	980	13.2	800	9.8	1540	11.0	1260	36.4	3220	56.3	2380	42.9
16.0	980	16.5	840	14.4	700	12.2	1400	12.4	1120	37.4	2800	56.3	2100	42.9
20.0	770	16.5	670	14.4	560	12.2	1120	13.2	900	39.8	2240	56.3	1680	42.9



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

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


PROPERTIES AND APPLICATIONS OF COATINGS

	Titanium Nitride	Titanium Carbonitride	Super TiAlN "F" Coatings	Super TiAlN "E" Coatings
Hardness	82 Rc	92 Rc	92 Rc	95 Rc
Coefficient of Friction Against Dry Steel (.8)	.4	.4	.4	.4
Coating Thickness 3 Microns = .0001	1- 4	1- 4	1- 5	1- 3
Maximum Working Temperature	1100 F	750 F	1470 F	1470 F
Coating Color	Gold	Blue - Gray	Violet - Gray	Violet - Gray
Key Characteristics	Good General Purpose	Good Wear Resistance Good Toughness Moderate Heat Resistance	Enhanced Toughness High Heat Resistance	High Hardness Enhanced Toughness High Heat Resistance
Primary Applications	Machining of Iron Based Materials	General Machining of Various Materials	Steel, Cast Iron, Stainless, Nickel Based Alloys, High Temp and Titanium Alloys, High Speed Machining Wet, Dry, or Semi Dry Condition	Hardened Workpieces, Steel, Cast Iron, Stainless, Nickel Based Alloys, High Temp and Titanium Alloys, Machining Wet, Dry, or Semi Dry Condition
YG:TYLON SUPER TiAlN COATED TOOLS CAN BE RUN 20% - 50% FASTER THAN TiN or TiCN ON MOST MATERIALS				

CBN
END MILLi-Xmill
END MILLX5070
END MILLS4G MILLS
END MILLSX-SPEED
ROUGHER
END MILLSX-POWER
END MILLSJET-POWER
END MILLSV7 Mill STEEL
END MILLSV7 Mill INOX
END MILLSALU-POWER
END MILLSD-POWER
END MILLSSTANDARD
CARBIDE
END MILLSTANK-POWER
END MILLSSTANDARD
COBALT
& HSS
END MILLSTECHNICAL
DATA

HSS














Being the best through innovation



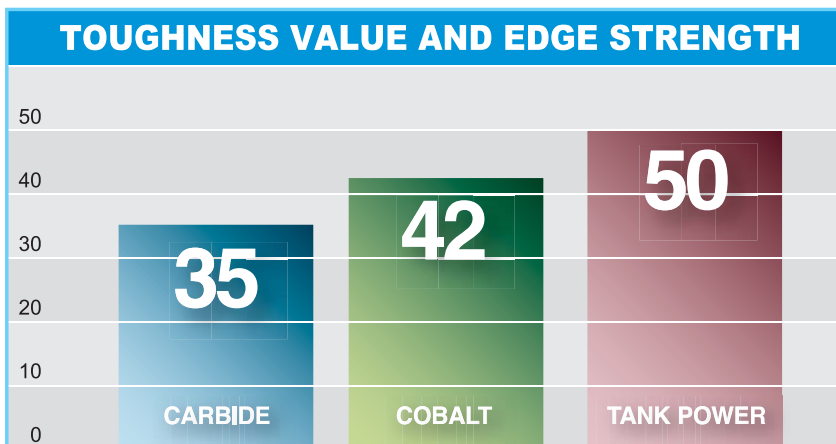
TANK-POWER

- Next Generation of Powdered Metal End Mills
Higher Edge Strength & Feed Rates

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE	
			MIN	MAX		
INCH						
E9983		PREMIUM HSS-PM, 2 FLUTE REGULAR LENGTH	◆	D1/8	D1	688
E9984		PREMIUM HSS-PM, 2 FLUTE REGULAR LENGTH DOUBLE	◆	D1/8	D1	689
E9985		PREMIUM HSS-PM, 4 FLUTE REGULAR LENGTH	◆	D1/8	D1	690
E9986		PREMIUM HSS-PM, 4 FLUTE REGULAR LENGTH DOUBLE	◆	D1/8	D1	691
E9988		PREMIUM HSS-PM, 3&4 FLUTE 60°HELIX REGULAR LENGTH	◆	D1/4	D1	692
E9992		PREMIUM HSS-PM, 2 FLUTE REGULAR LENGTH BALL NOSE	◆	R1/16	R1/2	693
E9990		PREMIUM HSS-PM, MULTI FLUTE REGULAR LENGTH FINE PITCH ROUGHING	◆	D1/4	D1-1/4	694
E9991		PREMIUM HSS-PM, MULTI FLUTE REGULAR LENGTH COARSE PITCH ROUGHING	◆	D1/4	D1-1/4	695
E9A86		PREMIUM HSS-PM, MULTI FLUTE LONG LENGTH FINE PITCH ROUGHING	◆	D5/16	D1-1/4	696
E9A87		PREMIUM HSS-PM, MULTI FLUTE LONG LENGTH COARSE PITCH ROUGHING	◆	D5/16	D1-1/4	697
E9921		PREMIUM HSS-PM, MULTI FLUTE FINE PITCH ROUGHING EXTENDED NECK CENTER CUTTING	◆	D1/2	D1-1/4	698
RECOMMENDED CUTTING CONDITIONS						699

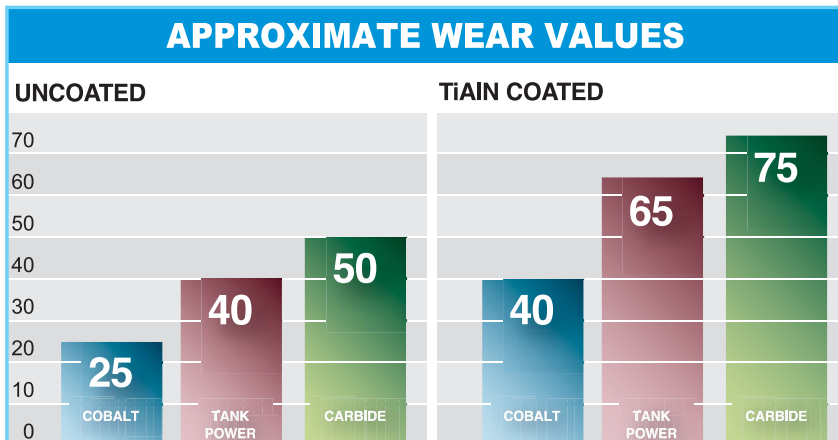
◆ U.S.A Stock



TANK-POWER END MILLS

⊙ : Excellent
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			HRc40~45	HRc45~55								
-HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	○	○				○		○		○		
○	○	○				○		○		○		
○	○	○				○		○		○		
○	○	○				○		○		○		
○	○	○				○		○		○		
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CARBIDE

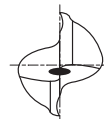
HSS

**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.



P.699

◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TANK-POWER COATED				
E9983008	E9983008TF	1/8	3/8	3/8	2-5/16
E9983012	E9983012TF	3/16	3/8	7/16	2-5/16
E9983016	E9983016TF	1/4	3/8	1/2	2-5/16
E9983020	E9983020TF	5/16	3/8	9/16	2-5/16
E9983024	E9983024TF	3/8	3/8	9/16	2-5/16
E9983032	E9983032TF	1/2	1/2	1	3
E9983040	E9983040TF	5/8	5/8	1-5/16	3-7/16
E9983048	E9983048TF	3/4	3/4	1-5/16	3-7/16
E9983056	E9983056TF	7/8	7/8	1-1/2	3-3/4
E9983064	E9983064TF	1	1	1-5/8	4-1/8

Mill Dia. Tolerance (inch)	
0~+.0010	* *0~+.0015

**The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

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

PREMIUM HSS-PM, 2 FLUTE REGULAR LENGTH 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.



◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TANK-POWER COATED				
E9984008	E9984008TF	1/8	3/8	3/8	3-1/16
E9984012	E9984012TF	3/16	3/8	7/16	3-1/8
E9984016	E9984016TF	1/4	3/8	1/2	3-1/8
E9984020	E9984020TF	5/16	3/8	9/16	3-1/8
E9984024	E9984024TF	3/8	3/8	9/16	3-1/8
E9984032	E9984032TF	1/2	1/2	13/16	3-3/4
E9984040	E9984040TF	5/8	5/8	1-1/8	4-1/2
E9984048	E9984048TF	3/4	3/4	1-5/16	5
E9984056	E9984056TF	7/8	7/8	1-9/16	5-1/2
E9984064	E9984064TF	1	1	1-5/8	5-7/8

Mill Dia. Tolerance (inch)	
0~-.0010	* * 0~-.0020

**The shank of end mills is the same diameter as the cutting portion.

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

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

CARBIDE

HSS

**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.



P.699

◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TANK-POWER COATED				
E9985008	E9985008TF	1/8	3/8	3/8	2-5/16
E9985012	E9985012TF	3/16	3/8	1/2	2-3/8
E9985016	E9985016TF	1/4	3/8	5/8	2-7/16
E9985020	E9985020TF	5/16	3/8	3/4	2-1/2
E9985024	E9985024TF	3/8	3/8	3/4	2-1/2
E9985032	E9985032TF	1/2	1/2	1-1/4	3-1/4
E9985040	E9985040TF	5/8	5/8	1-5/8	3-3/4
E9985048	E9985048TF	3/4	3/4	1-5/8	3-7/8
E9985056	E9985056TF	7/8	7/8	1-7/8	4-1/8
E9985064	E9985064TF	1	1	2	4-1/2

Mill Dia. Tolerance (inch)	
0~+.0010	* *0~+.0015

**The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

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

PREMIUM HSS-PM, 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.



◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TANK-POWER COATED				
E9986008	E9986008TF	1/8	3/8	3/8	3-1/16
E9986012	E9986012TF	3/16	3/8	1/2	3-1/4
E9986016	E9986016TF	1/4	3/8	5/8	3-3/8
E9986020	E9986020TF	5/16	3/8	3/4	3-1/2
E9986024	E9986024TF	3/8	3/8	3/4	3-1/2
E9986032	E9986032TF	1/2	1/2	1	4-1/8
E9986040	E9986040TF	5/8	5/8	1-3/8	5
E9986048	E9986048TF	3/4	3/4	1-5/8	5-5/8
E9986056	E9986056TF	7/8	7/8	1-7/8	6-1/8
E9986064	E9986064TF	1	1	1-7/8	6-3/8

Mill Dia. Tolerance (inch)	
0~-.0010	* * 0~-.0015

**The shank of end mills is the same diameter as the cutting portion.

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

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

CARBIDE

HSS

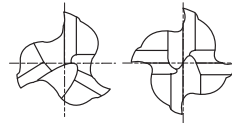
TANK-POWER
END MILLS

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.



◆ 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.

◎ : Excellent ○ : Good

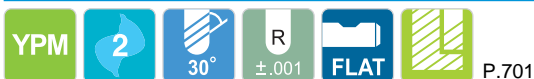
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎				○		◎		◎		

800 • phone:+1-800-765-8665, fax:+1-866-941-8665, Technical Support : 888-868-5988, www.yg1usa.com

CBN
END MILLi-Xmill
END MILLX5070
END MILLS4G MILLS
END MILLSX-SPEED
ROUGHER
END MILLSX-POWER
END MILLSJET-POWER
END MILLSV7 Mill STEEL
END MILLSV7 Mill INOX
END MILLSALU-POWER
END MILLSD-POWER
END MILLSSTANDARD
CARBIDE
END MILLSTANK-POWER
END MILLSSTANDARD
COBALT
& HSS
END MILLSTECHNICAL
DATA

PREMIUM HSS-PM, 2 FLUTE REGULAR LENGTH BALL NOSE

► The two flute ball end mills are designed for milling of radius bottom slots, fillets and special contours. The end teeth are cut to center allowing these end mills to drill into material at the beginning of a slotting cut. The two flute design provides good chip removal ability in slotting.



◆ U.S.A Stock

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TANK-POWER COATED	R (±.001)				
E9992008	E9992008TF	R1/16	1/8	3/8	3/8	2-5/16
E9992012	E9992012TF	R3/32	3/16	3/8	1/2	2-3/8
E9992016	E9992016TF	R1/8	1/4	3/8	5/8	2-7/16
E9992020	E9992020TF	R5/32	5/16	3/8	3/4	2-1/2
E9992024	E9992024TF	R3/16	3/8	3/8	3/4	2-1/2
E9992032	E9992032TF	R1/4	1/2	1/2	1	3
E9992040	E9992040TF	R5/16	5/8	5/8	1-3/8	3-1/2
E9992048	E9992048TF	R3/8	3/4	3/4	1-5/8	3-7/8
E9992056	E9992056TF	R7/16	7/8	7/8	2	4-1/4
E9992064	E9992064TF	R1/2	1	1	2-1/4	4-3/4

Mill Dia. Tolerance (inch)
0~- .0015

◎ : Excellent ○ : Good

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

 CBN
END MILL

 i-Xmill
END MILL

 X5070
END MILLS

 4G MILLS
END MILLS

 X-SPEED
ROUGHER
END MILLS

 X-POWER
END MILLS

 JET-POWER
END MILLS

 V7 Mill STEEL
END MILLS

 V7 Mill INOX
END MILLS

 ALU-POWER
END MILLS

 D-POWER
END MILLS

 STANDARD
CARBIDE
END MILLS

 TANK-POWER
END MILLS

 STANDARD
COBALT
& HSS
END MILLS

 TECHNICAL
DATA

CARBIDE

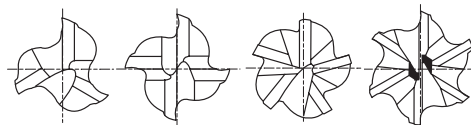
HSS

**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.700

◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
UNCOATED	TANK-POWER COATED					
E9990016	E9990016TF	1/4	3/8	5/8	2-7/16	3
E9990907	E9990907TF	1/4	3/8	1-1/8	2-15/16	3
E9990020	E9990020TF	5/16	3/8	3/4	2-1/2	3
E9990024	E9990024TF	3/8	3/8	3/4	2-1/2	4
E9990028	E9990028TF	7/16	3/8	1	2-11/16	4
E9990032	E9990032TF	1/2	1/2	1-1/4	3-1/4	4
E9990908	E9990908TF	1/2	1/2	1-5/8	3-5/8	4
E9990036	E9990036TF	9/16	1/2	1-3/8	3-3/8	4
E9990040	E9990040TF	5/8	5/8	1-5/8	3-3/4	4
E9990048	E9990048TF	3/4	3/4	1-5/8	3-7/8	4
E9990948	E9990948TF	3/4	5/8	1-5/8	3-7/8	4
E9990909	E9990909TF	3/4	3/4	2-1/2	4-3/4	4
E9990056	E9990056TF	7/8	7/8	1-7/8	4-1/8	5
E9990901	E9990901TF	7/8	3/4	1-7/8	4-1/8	5
E9990064	E9990064TF	1	1	2	4-1/2	5
E9990905	E9990905TF	1	1	3	5-1/2	5
E9990108	E9990108TF	1-1/8	1	2	4-1/2	6
E9990116	E9990116TF	1-1/4	1-1/4	2	4-1/2	6
E9990906	E9990906TF	1-1/4	1-1/4	3	5-1/2	6

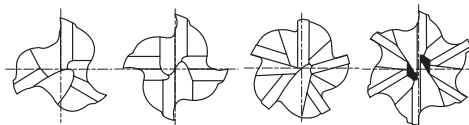
Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

◎ : Excellent ○ : Good

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

PREMIUM HSS-PM, MULTI FLUTE REGULAR LENGTH COARSE PITCH ROUGHING

► This TANK-POWER rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths.



◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
UNCOATED	TANK-POWER COATED					
E9991016	E9991016TF	1/4	3/8	5/8	2-7/16	3
E9991902	E9991902TF	1/4	3/8	1-1/8	2-15/16	3
E9991020	E9991020TF	5/16	3/8	3/4	2-1/2	3
E9991024	E9991024TF	3/8	3/8	3/4	2-1/2	4
E9991028	E9991028TF	7/16	3/8	1	2-11/16	4
E9991032	E9991032TF	1/2	1/2	1-1/4	3-1/4	4
E9991903	E9991903TF	1/2	1/2	1-5/8	3-5/8	4
E9991036	E9991036TF	9/16	1/2	1-3/8	3-3/8	4
E9991040	E9991040TF	5/8	5/8	1-5/8	3-3/4	4
E9991048	E9991048TF	3/4	3/4	1-5/8	3-7/8	4
E9991948	E9991948TF	3/4	5/8	1-5/8	3-7/8	4
E9991904	E9991904TF	3/4	3/4	2-1/2	4-3/4	4
E9991056	E9991056TF	7/8	7/8	1-7/8	4-1/8	5
E9991901	E9991901TF	7/8	3/4	1-7/8	4-1/8	5
E9991064	E9991064TF	1	1	2	4-1/2	5
E9991905	E9991905TF	1	1	3	5-1/2	5
E9991108	E9991108TF	1-1/8	1	2	4-1/2	6
E9991116	E9991116TF	1-1/4	1-1/4	2	4-1/2	6
E9991906	E9991906TF	1-1/4	1-1/4	3	5-1/2	6

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

◎ : Excellent ○ : Good

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

 CBN
END MILL

 i-Xmill
END MILL

 X5070
END MILLS

 4G MILLS
END MILLS

 X-SPEED
ROUGHER
END MILLS

 X-POWER
END MILLS

 JET-POWER
END MILLS

 V7 Mill STEEL
END MILLS

 V7 Mill INOX
END MILLS

 ALU-POWER
END MILLS

 D-POWER
END MILLS

 STANDARD
CARBIDE
END MILLS

 TANK-POWER
END MILLS

 STANDARD
COBALT
& HSS
END MILLS

 TECHNICAL
DATA

CARBIDE

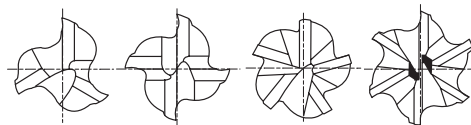
HSS

**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.



◆ 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

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

◎ : Excellent ○ : Good

PREMIUM HSS-PM, MULTI FLUTE LONG LENGTH COARSE PITCH ROUGHING

► This TANK-POWER rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths.



◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
UNCOATED	TANK-POWER COATED					
E9A87020	E9A87020TF	5/16	3/8	1-3/8	3-3/16	3
E9A87024	E9A87024TF	3/8	3/8	1-1/2	3-1/4	4
E9A87924	E9A87924TF	3/8	3/8	1-1/2	4	4
E9A87032	E9A87032TF	1/2	1/2	2	4	4
E9A87040	E9A87040TF	5/8	5/8	2-1/2	4-5/8	4
E9A87048	E9A87048TF	3/4	5/8	3	5-1/8	4
E9A87948	E9A87948TF	3/4	3/4	3	5-1/4	4
E9A87056	E9A87056TF	7/8	3/4	3-1/2	5-3/4	5
E9A87956	E9A87956TF	7/8	7/8	3-1/2	5-3/4	5
E9A87064	E9A87064TF	1	1	4	6-1/2	5
E9A87116	E9A87116TF	1-1/4	3/4	4	6-1/4	6
E9A87917	E9A87917TF	1-1/4	1-1/4	4	6-1/2	6

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

◎ : Excellent ○ : Good

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

CARBIDE

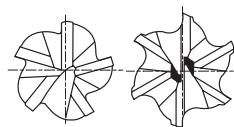
HSS

**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.



◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Reach Extended Neck	Overall Length	No. of Flute
UNCOATED	TiAIN COATED						
EP20322	EP20322F	1/2	1/2	1-1/4	3	5	5
EP20402	EP20402F	5/8	5/8	1-5/8	4	6-1/8	5
EP20482	EP20482F	3/4	3/4	1-5/8	4	6-1/4	5
EP20484	EP20484F	3/4	3/4	1-5/8	6	8-1/4	5
EP20642	EP20642F	1	1	2	4	6-1/2	6
EP20643	EP20643F	1	1	2	6	8-1/2	6
EP21161	EP21161F	1-1/4	1 1/4	2	4	6-1/2	6
EP21162	EP21162F	1-1/4	1 1/4	2	6	8-1/2	6

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

CBN
END MILLi-Xmill
END MILLX5070
END MILLS4G MILLS
END MILLSX-SPEED
ROUGHER
END MILLSX-POWER
END MILLSJET-POWER
END MILLSV7 Mill STEEL
END MILLSV7 Mill INOX
END MILLSALU-POWER
END MILLSD-POWER
END MILLSSTANDARD
CARBIDE
END MILLSTANK-POWER
END MILLSSTANDARD
COBALT
& HSS
END MILLSTECHNICAL
DATA

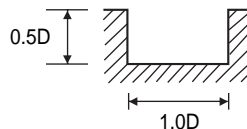
◎ : Excellent ○ : Good

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

PREMIUM HSS-PM, 2 FLUTE FINISH - SLOTTING

E9983, E9984 SERIES

MATERIAL	STRUCTURAL STEELS, CARBON STEELS		STRUCTURAL STEELS, CARBON STEELS, CAST IRONS		CARBON STEELS, ALLOY STEELS, TOOL STEELS		PREHARDENED STEELS, ALLOY STEELS, TOOL STEELS		ALLOY STEELS, TOOL STEELS AUSTENITIC STAINLESS STEELS	
HARDNESS			~HRc20		HRc20-HRc30		HRc30-HRc35		HRc35-HRc40	
STRENGTH	~ 500N/mm ²		500~800N/mm ²		800~1000N/mm ²		1000~1100N/mm ²		1100~1300N/mm ²	
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



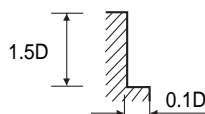
※ The Feed, in long & extra long types, should be reduced by around 50%.

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

PREMIUM HSS-PM, 4 FLUTE FINISH - SIDE CUTTING

E9985, E9986 SERIES

MATERIAL	STRUCTURAL STEELS, CARBON STEELS		STRUCTURAL STEELS, CARBON STEELS, CAST IRONS		CARBON STEELS, ALLOY STEELS, TOOL STEELS		PREHARDENED STEELS, ALLOY STEELS, TOOL STEELS		ALLOY STEELS, TOOL STEELS AUSTENITIC STAINLESS STEELS	
HARDNESS			~HRc20		HRc20-HRc30		HRc30-HRc35		HRc35-HRc40	
STRENGTH	~ 500N/mm ²		500~800N/mm ²		800~1000N/mm ²		1000~1100N/mm ²		1100~1300N/mm ²	
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%.

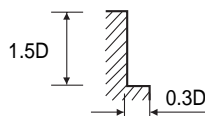
RPM = rev./min. FEED = inch/min.



PREMIUM HSS-PM, 3&4 FLUTE 60° HELIX - SIDE CUTTING

E9988 SERIES

MATERIAL	STRUCTURAL STEELS, CARBON STEELS, CAST IRONS		CARBON STEELS, ALLOY STEELS, TOOL STEELS		ALLOY STEELS, TOOL STEELS AUSTENITIC STAINLESS STEELS	
HARDNESS	~HRC20		HRC20 ~ HRC30		HRC30 ~ HRC40	
STRENGTH	500 ~ 800N/mm ²		800 ~ 1000N/mm ²		1000 ~ 1300N/mm ²	
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



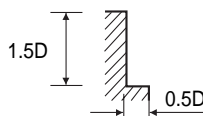
※ The Feed, in long & extra long types, should be reduced by around 50%.

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

PREMIUM HSS-PM, MULTI FLUTE ROUGHING - SIDE CUTTING

E9990, E9991, E9A86, E9A87, E9921 SERIES

MATERIAL	STRUCTURAL STEELS, CARBON STEELS		STRUCTURAL STEELS, CARBON STEELS, CAST IRONS		CARBON STEELS, ALLOY STEELS, TOOL STEELS		PREHARDENED STEELS, ALLOY STEELS, TOOL STEELS		STAINLESS STEELS	
HARDNESS	~HRC20		HRC20 ~ HRC30		HRC30 ~ HRC35		HRC35 ~ HRC40			
STRENGTH	~800N/mm ²		800 ~ 1000N/mm ²		1000 ~ 1100N/mm ²		1100 ~ 1300N/mm ²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	2650	7.8	2050	6.3	1450	4.4	1200	3.4	1900	5.6
3/8	1900	13.1	1500	10.1	1050	6.4	885	5.2	1270	8.6
1/2	1450	14.2	1100	11.4	805	7.9	665	6.1	950	9.3
5/8	1150	14.2	905	11.4	630	7.9	525	6.1	760	9.7
3/4	960	14.4	780	11.4	540	7.9	445	6.1	630	9.5
7/8	845	14.5	615	11.4	445	7.8	375	6.1	540	9.3
1	740	14.0	560	10.6	395	7.4	315	6.0	470	9.0



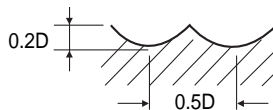
※ The Feed, in long & extra long types, should be reduced by around 50%.

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

PREMIUM HSS-PM, 2 FLUTE BALL NOSE PROFILING

E9992 SERIES

MATERIAL	STRUCTURAL STEELS, CARBON STEELS		STRUCTURAL STEELS, CARBON STEELS, CAST IRONS		CARBON STEELS, ALLOY STEELS, TOOL STEELS		PREHARDENED STEELS, ALLOY STEELS, TOOL STEELS	
HARDNESS			~HRc20		HRc20 ~ HRc30		HRc30 ~ HRc40	
STRENGTH	~500N/mm ²		500 ~ 800N/mm ²		800 ~ 1000N/mm ²		1000 ~ 1300N/mm ²	
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.

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA



Global Cutting Tool Leader **YG-1**



HSS









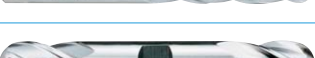
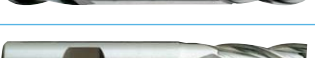

Being the best through innovation














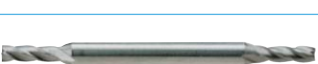


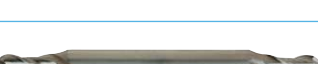


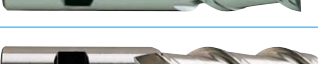
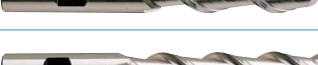


COBALT & HSS

- General Purpose, Non-coated, Many Coatings Available

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
INCH					
E2030 E1030		HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH	D1/8	D2	711
E2080 E1080		HSSCo8 & HSS, 2 FLUTE LONG LENGTH	D1/4	D2	713
E2033 E1033		HSSCo8 & HSS, 2 FLUTE EXTENDED LENGTH	D1/8	D1-1/4	714
E2050 E1050		HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH DOUBLE	D1/8	D1	715
E2110 E1110		HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH BALL NOSE	R1/16	R1	717
E2111 E1111		HSSCo8 & HSS, 2 FLUTE EXTENDED LENGTH BALL NOSE	R1/16	R1/2	718
E2112 E1112		HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH BALL NOSE DOUBLE	R1/16	R1/2	719
E2031 E1031		HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH	D1/8	D1	720
E2032 E1032		HSSCo8 & HSS, 6 FLUTE REGULAR LENGTH	D5/8	D2	722
E2034 E1034		HSSCo8 & HSS, 4 FLUTE LONG LENGTH	D1/4	D1	723
E2035 E1035		HSSCo8 & HSS, 6 FLUTE LONG LENGTH	D1-1/8	D2	723
E2036 E1036		HSSCo8 & HSS, 4 FLUTE EXTRA LONG LENGTH	D1/4	D1	724
E2037 E1037		HSSCo8 & HSS, 6 FLUTE EXTRA LONG LENGTH	D1-1/4	D2	724
E2051 E1051		HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH DOUBLE	D1/8	D1	725
E2031 E1031		HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH 3/4 SHANK	D3/4	D1	727
E2032 E1032		HSSCo8 & HSS, 6&8 FLUTE REGULAR LENGTH 3/4 SHANK	D1-1/8	D2	727
E2020		HSSCo8, 4 FLUTE REGULAR LENGTH BALL NOSE	R1/16	R1	728
E2021		HSSCo8, 4 FLUTE LONG LENGTH BALL NOSE	R1/8	R1/2	729
E2069		HSSCo8, 4 FLUTE REGULAR LENGTH BALL NOSE DOUBLE	R1/16	R1/2	730
E2039 E1039		HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH CENTER CUTTING	D1/8	D1-1/2	731
E2042 E1042		HSSCo8 & HSS, 6 FLUTE REGULAR LENGTH CENTER CUTTING	D1/2	D2	733

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
INCH					
E 2039 E 2042		HSSCo8, MULTI FLUTE MEDIUM LENGTH CENTER CUTTING	D1	D2	734
E 2040 E 1040		HSSCo8 & HSS, 4 FLUTE LONG LENGTH CENTER CUTTING	D1/4	D1-1/2	735
E 2162 E 1162		HSSCo8 & HSS, 6 FLUTE LONG LENGTH CENTER CUTTING	D1/2	D2	735
E 2041 E 1041		HSSCo8 & HSS, 4 FLUTE EXTRA LONG LENGTH CENTER CUTTING	D1/4	D1-1/4	736
E 2175 E 1175		HSSCo8 & HSS, 6 FLUTE EXTRA LONG LENGTH CENTER CUTTING	D1/2	D2	736
E 2053 E 1053		HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH DOUBLE CENTER CUTTING	D1/8	D1	737
E 2100 E 1100		HSSCo8 & HSS, 6 FLUTE REGULAR with COMBINATION 2" SHANK CENTER CUTTING	D2	D2	739
E 2001 E 1001		HSSCo8 & HSS, 2 FLUTE MINIATURE STUB LENGTH DOUBLE	D1/32	D3/16	740
E 2003 E 1003		HSSCo8 & HSS, 2 FLUTE MINIATURE REGULAR LENGTH DOUBLE	D1/32	D3/16	741
E 2005 E 1005		HSSCo8 & HSS, 2 FLUTE MINIATURE LONG LENGTH DOUBLE	D1/16	D3/16	742
E 2002 E 1002		HSSCo8 & HSS, 4 FLUTE MINIATURE STUB LENGTH DOUBLE	D1/16	D3/16	743
E 2004 E 1004		HSSCo8 & HSS, 4 FLUTE MINIATURE REGULAR LENGTH DOUBLE	D1/16	D3/16	744
E 2006 E 1006		HSSCo8 & HSS, 4 FLUTE MINIATURE LONG LENGTH DOUBLE	D1/16	D3/16	745
E 2008 E 1008		HSSCo8 & HSS, 2 FLUTE MINIATURE STUB LENGTH BALL NOSE DOUBLE	R1/32	R3/32	746
E 2013 E 1013		HSSCo8 & HSS, 2 FLUTE MINIATURE REGULAR LENGTH BALL NOSE DOUBLE	R1/64	R3/32	747
E 2015 E 1015		HSSCo8 & HSS, 2 FLUTE MINIATURE LONG LENGTH BALL NOSE DOUBLE	R1/32	R3/32	748
E 1070		HSS, 2 FLUTE 42° HELIX REGULAR & MEDIUM LENGTH for ALUMINUM	D1/4	D2	749
E 1071		HSS, 2 FLUTE 42° HELIX LONG LENGTH for ALUMINUM	D1/4	D2	750
E 1072		HSS, 2 FLUTE 42° HELIX EXTRA LONG LENGTH for ALUMINUM	D1/4	D1-1/2	750
E 2086		HSSCo8, MULTI FLUTE STUB LENGTH FINE PITCH ROUGHING CENTER CUTTING	D1/4	D1	751
E 2085		HSSCo8, MULTI FLUTE REGULAR LENGTH FINE PITCH ROUGHING CENTER CUTTING	D1/4	D1	752

STANDARD COBALT & HSS END MILLS

⊙ : Excellent
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			HRc40~45	HRc45~55								
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
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SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
INCH					
E2079		HSSCo8, MULTI FLUTE REGULAR LENGTH FINE PITCH ROUGHING	D1/4	D2	753
E2077		HSSCo8, MULTI FLUTE LONG LENGTH FINE PITCH ROUGHING	D1/2	D2	754
E2086		HSSCo8, 3 FLUTE STUB LENGTH FINE PITCH ROUGHING CENTER CUTTING	D1/4	D1	755
E2170		HSSCo8, MULTI FLUTE REGULAR LENGTH COARSE PITCH ROUGHING	D1/4	D2	756
E2171		HSSCo8, MULTI FLUTE MEDIUM LENGTH COARSE PITCH ROUGHING	D1	D2	757
E2172		HSSCo8, MULTI FLUTE LONG LENGTH COARSE PITCH ROUGHING	D1/2	D2	758
E2241		HSSCo8, 3 FLUTE STUB LENGTH COARSE PITCH ROUGHING CENTER CUTTING	D1/4	D1	759
E2195		HSSCo8, MULTI FLUTE REGULAR LENGTH COARSE PITCH ROUGHING CENTER CUTTING	D1/2	D1-1/2	760
E2197		HSSCo8, MULTI FLUTE LONG LENGTH COARSE PITCH ROUGHING CENTER CUTTING	D1/2	D1-1/2	760
E2193 E2125		HSSCo8, MULTI FLUTE REGULAR & LONG LENGTH COARSE PITCH ROUGHING BALL NOSE	R1/8	R3/4	761
E2248		HSSCo8, MULTI FLUTE REGULAR LENGTH ROUGHING & FINISHING	D1/4	D2	762
E2191		HSSCo8, 3 FLUTE 37° HELIX REGULAR LENGTH ROUGHING for ALUMINUM	D1/4	D1-1/2	763
E2226 E2192		HSSCo8, 3 FLUTE 37° HELIX MEDIUM & LONG LENGTH ROUGHING for ALUMINUM	D1/2	D1-1/2	764
E2163 E1163		HSSCo8 & HSS, 2 FLUTE 15° HELIX for KEYWAY CUTTING	D1/8	D1	765
E2120 E2121		HSSCo8, 3&4 FLUTE 60° HELIX REGULAR LENGTH	D1/4 D7/8	D3/4 D2	766
E2160		HSSCo8, 3 FLUTE SHORT LENGTH THROW AWAY	D1/16	D1/4	767
E2161		HSSCo8, 3 FLUTE LONG LENGTH THROW AWAY	D1/16	D1/4	767
E2237 E1237		HSSCo8 & HSS, 4 FLUTE CORNER ROUNDING	D1/4	D5/8	768
METRIC					
E2482 E1482		HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH - METRIC	D2.0 (.0787)	D45.0 (1.772)	769
E2483 E1483		HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH - METRIC	D2.0 (.0787)	D45.0 (1.772)	770
END MILL SET SERIES / RECOMMENDED CUTTING CONDITIONS					773


SUPER CUTTING END MILLS
CBN
END MILLi-Xmill
END MILLX5070
END MILLS4G MILLS
END MILLSX-SPEED
ROUGHER
END MILLSX-POWER
END MILLSJET-POWER
END MILLSV7 Mill STEEL
END MILLSV7 Mill INOX
END MILLSALU-POWER
END MILLSD-POWER
END MILLSSTANDARD
CARBIDE
END MILLSTANK-POWER
END MILLSSTANDARD
COBALT
& HSS
END MILLSTECHNICAL
DATA

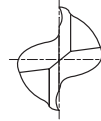
DESCRIPTION				YG-1	**ANSI	REMARK
TYPE	NO. OF FLUTE	LENGTH OF CUT	TYPE OF END			
SINGLE END	2	REGULAR LONG EX. LONG	ALL	+ .0010 .0000 * (+ .0015) .0000	+ .0030 .0000	
	MULTIPLE	ALL	ALL	+ .0010 .0000 * (+ .0015) .0000	+ .0030 .0000	
KEY WAY	2	ALL	CENTER CUTTING	+ .0000 - .0015	+ .0000 - .0015	
DOUBLE END	2	REGULAR	ALL	.0000 - .0010 * (- .0020)	.0000 - .0015	
	4	ALL	CENTER CUTTING	.0000 - .0010 * (.0000) - .0020	.0000 - .0015	
	4	ALL	NON CENTER CUTTING	+ .0010 .0000 * (.0000) - .0020	+ .0030 .0000 * (.0000) - .0025	
3/16 SHANK DOUBLE END	2	STUB REGULAR	ALL	.0000 - .0010 * (.0000) - .0020	.0000 - .0015	
		LONG	ALL	+ .0010 .0000 * (.0000) - .0020	+ .0030 .0000 * (.0000) - .0025	
	4	ALL	ALL	+ .0010 .0000 * (.0000) - .0020	+ .0030 .0000 * (.0000) - .0025	
ROUGHING	MULTIPLE	ALL	ALL	+ .0060 .0000	+ .025 - .005	
ROUGHING & FINISHING	MULTIPLE	REGULAR	ALL	+ .0025 + .0005		
HELICAL 60°	3.4	REGULAR	CENTER CUTTING	+ .0010 .0000 * (+ .0015) .0000		
THROW AWAY 1/4 SHANK	3	ALL	CENTER CUTTING	- .0005 - .0013		

* The shank of End Mills is the same diameter as the cutting portion.

** ANSI B94-19-1977 published by the American Society of Mechanical Engineers.

HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH

► These end mills are furnished as regular with right-hand cutting and right-hand helical flutes. All shanks are flatted for holder set screw. These are designed for slotting, drilling, pocketing and general-purpose operation.



P.773, 779, 783

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
01289	01039	1/8	3/8	3/8	2-5/16
01291	01041	5/32	3/8	7/16	2-5/16
01293	01043	3/16	3/8	7/16	2-5/16
01295	01045	7/32	3/8	1/2	2-5/16
01297	01047	1/4	3/8	1/2	2-5/16
01299	01049	9/32	3/8	9/16	2-5/16
01301	01051	5/16	3/8	9/16	2-5/16
01303	01053	11/32	3/8	9/16	2-5/16
01305	01055	3/8	3/8	9/16	2-5/16
01308	01058	13/32	3/8	13/16	2-1/2
01312	01062	7/16	3/8	13/16	2-1/2
01316	01066	15/32	3/8	13/16	2-1/2
01320	01070	1/2	3/8	13/16	2-1/2
01321	01071	1/2	1/2	1	3
01328	01078	9/16	1/2	1-1/8	3-1/8
01336	01086	5/8	1/2	1-1/8	3-1/8
01337	01087	5/8	5/8	1-5/16	3-7/16
01348	01098	11/16	5/8	1-5/16	3-7/16
01357	01107	3/4	1/2	1-5/16	3-5/16
01358	01108	3/4	5/8	1-5/16	3-7/16
01359	01109	3/4	3/4	1-5/16	3-7/16
01373	01123	13/16	5/8	1-1/2	3-5/8
01391	01141	7/8	3/4	1-1/2	3-3/4
01394	01144	7/8	7/8	1-1/2	3-3/4
01409	01159	15/16	7/8	1-1/2	3-3/4
01420	01170	1	5/8	1-1/2	3-5/8
01422	01172	1	3/4	1-1/2	3-3/4
01426	01176	1	1	1-5/8	4-1/8

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

◎ : Excellent ○ : Good

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

CARBIDE

HSS

COBALT & HSS
END MILLS

E2030 SERIES

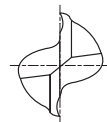
8% COBALT (M42)
FLAT SHANK

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.773, 779, 783

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
01435	01185	1-1/8	1	1-5/8	4-1/8
01445	01195	1-1/4	1-1/4	1-5/8	4-1/8
01451	01201	1-3/8	1	1-5/8	4-1/8
01453	01203	1-3/8	1-1/4	1-5/8	4-1/8
01459	01209	1-1/2	1	1-5/8	4-1/8
01461	01211	1-1/2	1-1/4	1-5/8	4-1/8
01469	01219	1-3/4	1-1/4	1-5/8	4-1/8
01477	01227	2	1-1/4	1-5/8	4-1/8
* 01480	* 01230	2	2	2	5-3/4

- The TiN coated, TiCN coated or TiAlN coated is available on your request.

*Combination Shank

- 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

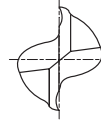
**The shank of end mills is the same diameter as the cutting portion.

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

◎ : Excellent ○ : Good

HSSCo8 & HSS, 2 FLUTE LONG LENGTH

► Longer flute length than E2030 type and allows deeper cutting.



P.773, 779, 783

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
02297	02047	1/4	3/8	1-1/4	3-1/8
02301	02051	5/16	3/8	1-3/8	3-1/8
02305	02055	3/8	3/8	1-1/2	3-1/4
02321	02071	1/2	1/2	2	4
02337	02087	5/8	5/8	2	4-1/8
02359	02109	3/4	3/4	2-1/4	4-1/2
02394	02144	7/8	7/8	2-1/2	4-3/4
02426	02176	1	1	3	5-1/2
02435	02185	1-1/8	1	3	5-1/2
02443	02193	1-1/4	1	3	5-1/2
02445	02195	1-1/4	1-1/4	3	5-1/2
02461	02211	1-1/2	1-1/4	3	5-1/2
02469	02219	1-3/4	1-1/4	3	5-1/2
02477	02227	2	1-1/4	3	5-1/2
* 02482	* 02232	2	2	3	6-3/4

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.

■ Coating Codes for Cobalt

Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)

■ Coating Codes for HSS

Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)

► Coated Price Shown in Price List. Call for Availability.

*Combination Shank

Mill Dia. Tolerance (inch)	
0~+.0010	* * 0~+.0015

**The shank of end mills is the same diameter as the cutting portion.

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

◎ : Excellent ○ : Good



E2033 SERIES 8% COBALT (M42) FLAT SHANK
E1033 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 2 FLUTE EXTENDED LENGTH

► Provided with the longest flute length and suitable for high accuracy machining of deep step.



HSS Co8
HSS
2
30°
FLAT
P.773, 779, 783

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length
8% COBALT (M42)	HSS (M2)					
03289	03039	1/8	3/8	3/8	-	2-3/8
03293	03043	3/16	3/8	1/2	1-1/8	2-11/16
03297	03047	1/4	3/8	5/8	1-1/2	3-1/16
03301	03051	5/16	3/8	3/4	1-3/4	3-5/16
03305	03055	3/8	3/8	3/4	1-3/4	3-5/16
03321	03071	1/2	1/2	1	2-7/32	4
03337	03087	5/8	5/8	1-3/8	2-23/32	4-5/8
03359	03109	3/4	3/4	1-5/8	3-11/32	5-3/8
03394	03144	7/8	7/8	2	4	6
03426	03176	1	1	2-1/2	4-31/32	7-1/4
03445	03195	1-1/4	1-1/4	3	4-31/32	7-1/4

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	* *0~+.0015

**The shank of end mills is the same diameter as the cutting portion.

- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- 4G MILLS END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

◎ : Excellent ○ : Good

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

HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH DOUBLE

► Series E2050 two flute end mills are the double-end version of E2030 single-end tools. Same excellent tool geometry for slotting, keying and general purpose milling, plus the added economy offered by the double-end design.



P.773, 779, 783

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
11289	11039	1/8	3/8	3/8	3-1/16
11290	11040	9/64	3/8	7/16	3-1/8
11291	11041	5/32	3/8	7/16	3-1/8
11292	11042	11/64	3/8	7/16	3-1/8
11293	11043	3/16	3/8	7/16	3-1/8
11294	11044	13/64	3/8	1/2	3-1/8
11295	11045	7/32	3/8	1/2	3-1/8
11296	11046	15/64	3/8	1/2	3-1/8
11297	11047	1/4	3/8	1/2	3-1/8
11298	11048	17/64	3/8	9/16	3-1/8
11299	11049	9/32	3/8	9/16	3-1/8
11300	11050	19/64	3/8	9/16	3-1/8
11301	11051	5/16	3/8	9/16	3-1/8
11302	11052	21/64	3/8	9/16	3-1/8
11303	11053	11/32	3/8	9/16	3-1/8
11304	11054	23/64	3/8	9/16	3-1/8
11305	11055	3/8	3/8	9/16	3-1/8
11307	11057	25/64	1/2	13/16	3-3/4
11309	11059	13/32	1/2	13/16	3-3/4
11311	11061	27/64	1/2	13/16	3-3/4
11313	11063	7/16	1/2	13/16	3-3/4
11315	11065	29/64	1/2	13/16	3-3/4
11317	11067	15/32	1/2	13/16	3-3/4
11319	11069	31/64	1/2	13/16	3-3/4
11321	11071	1/2	1/2	13/16	3-3/4
11326	11076	17/32	5/8	1-1/8	4-1/2
11330	11080	9/16	5/8	1-1/8	4-1/2
11334	11084	19/32	5/8	1-1/8	4-1/2

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

◎ : Excellent ○ : Good

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



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.773, 779, 783

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
11337	11087	5/8	5/8	1-1/8	4-1/2
11344	11094	21/32	3/4	1-5/16	5
11350	11100	11/16	3/4	1-5/16	5
11354	11104	23/32	3/4	1-5/16	5
11359	11109	3/4	3/4	1-5/16	5
11368	11118	25/32	7/8	1-9/16	5-1/2
11377	11127	13/16	7/8	1-9/16	5-1/2
11384	11134	27/32	7/8	1-9/16	5-1/2
11394	11144	7/8	7/8	1-9/16	5-1/2
11402	11152	29/32	1	1-5/8	5-7/8
11410	11160	15/16	1	1-5/8	5-7/8
11417	11167	31/32	1	1-5/8	5-7/8
11426	11176	1	1	1-5/8	5-7/8

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~-.0010	* * 0~-.0020

**The shank of end mills is the same diameter as the cutting portion.

- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- 4G MILLS END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

◎ : Excellent ○ : Good

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

HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH BALL NOSE

► The two flute ball end mills are designed for milling of radius bottom slots, fillets and special contours. The end teeth are cut to center allowing these end mills to drill into material at the beginning of a slotting cut. The two flute design provides good chip removal ability in slotting.



P.776, 781, 785

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)	R				
41289	41039	R1/16	1/8	3/8	3/8	2-5/16
41293	41043	R3/32	3/16	3/8	1/2	2-3/8
41297	41047	R1/8	1/4	3/8	5/8	2-7/16
41301	41051	R5/32	5/16	3/8	3/4	2-1/2
41305	41055	R3/16	3/8	3/8	3/4	2-1/2
41313	41063	R7/32	7/16	1/2	1	3
41321	41071	R1/4	1/2	1/2	1	3
41328	41078	R9/32	9/16	1/2	1-1/8	3-1/8
41336	41086	R5/16	5/8	1/2	1-1/8	3-1/8
41337	41087	R5/16	5/8	5/8	1-3/8	3-1/2
41357	41107	R3/8	3/4	1/2	1-5/16	3-5/16
41359	41109	R3/8	3/4	3/4	1-5/8	3-7/8
41391	41141	R7/16	7/8	3/4	2	4-1/4
41394	41144	R7/16	7/8	7/8	2	4-1/4
41422	41172	R1/2	1	3/4	2-1/4	4-1/2
41426	41176	R1/2	1	1	2-1/4	4-3/4
41431	41181	R9/16	1-1/8	3/4	1-5/8	3-7/8
41435	41185	R9/16	1-1/8	1	2-1/4	4-3/4
41439	41189	R5/8	1-1/4	3/4	1-5/8	3-7/8
41445	41195	R5/8	1-1/4	1-1/4	2-1/2	5
41449	41199	R11/16	1-3/8	3/4	1-5/8	4-1/8
41453	41203	R11/16	1-3/8	1-1/4	2-1/2	5
41457	41207	R3/4	1-1/2	3/4	1-5/8	4-1/8
41461	41211	R3/4	1-1/2	1-1/4	2-1/2	5
41478	41227	R1	2	1-1/4	2-1/2	5

Mill Dia. Tolerance (inch)	
0~+.0010	* * 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

◎ : Excellent ○ : Good

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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

CARBIDE

HSS

COBALT & HSS
END MILLS

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.776, 781, 785

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length
8% COBALT (M42)	HSS (M2)	R					
42289	42039	R1/16	1/8	3/8	3/8	-	2-3/8
42293	42043	R3/32	3/16	3/8	1/2	1-1/8	2-11/16
42297	42047	R1/8	1/4	3/8	5/8	1-1/2	3-1/16
42301	42051	R5/32	5/16	3/8	3/4	1-3/4	3-5/16
42305	42055	R3/16	3/8	3/8	3/4	1-3/4	3-5/16
42313	42063	R7/32	7/16	1/2	1	1-7/8	3-11/16
42321	42071	R1/4	1/2	1/2	1	2-1/4	4
42337	42087	R5/16	5/8	5/8	1-3/8	2-3/4	4-5/8
42359	42109	R3/8	3/4	3/4	1-5/8	3-3/8	5-3/8
42426	42176	R1/2	1	1	2-1/2	5	7-1/4

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.

■ Coating Codes for Cobalt

Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)

■ Coating Codes for HSS

Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)

▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	* *0~+.0015

**The shank of end mills is the same diameter as the cutting portion.

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

◎ : Excellent ○ : Good

HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH BALL NOSE DOUBLE

► Same construction features as E2110 end mill in a more economical version. Removes more material per grind. Machine ground notch assures positive anchorage in tool holder.



P.776, 781, 785

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)	R				
45289	45039	R1/16	1/8	3/8	3/8	3-1/16
45293	45043	R3/32	3/16	3/8	7/16	3-1/8
45297	45047	R1/8	1/4	3/8	1/2	3-1/8
45301	45051	R5/32	5/16	3/8	9/16	3-1/8
45305	45055	R3/16	3/8	3/8	9/16	3-1/8
45313	45063	R7/32	7/16	1/2	13/16	3-3/4
45321	45071	R1/4	1/2	1/2	13/16	3-3/4
45337	45087	R5/16	5/8	5/8	1-1/8	4-1/2
45359	45109	R3/8	3/4	3/4	1-5/16	5
45426	45176	R1/2	1	1	1-5/8	5-7/8

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~—.0010	* * 0~—.0020

**The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

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



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.775, 780, 784

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
04289	04039	1/8	3/8	3/8	2-5/16
04290	04040	9/64	3/8	7/16	2-3/8
04291	04041	5/32	3/8	7/16	2-3/8
04292	04042	11/64	3/8	1/2	2-3/8
04293	04043	3/16	3/8	1/2	2-3/8
04294	04044	13/64	3/8	9/16	2-7/16
04295	04045	7/32	3/8	9/16	2-7/16
04296	04046	15/64	3/8	5/8	2-7/16
04297	04047	1/4	3/8	5/8	2-7/16
04298	04048	17/64	3/8	11/16	2-1/2
04299	04049	9/32	3/8	11/16	2-1/2
04300	04050	19/64	3/8	3/4	2-1/2
04301	04051	5/16	3/8	3/4	2-1/2
04302	04052	21/64	3/8	3/4	2-1/2
04303	04053	11/32	3/8	3/4	2-1/2
04304	04054	23/64	3/8	3/4	2-1/2
04305	04055	3/8	3/8	3/4	2-1/2
04306	04056	25/64	3/8	1	2-11/16
04308	04058	13/32	3/8	1	2-11/16
04310	04060	27/64	3/8	1	2-11/16
04312	04062	7/16	3/8	1	2-11/16
04315	04065	29/64	1/2	1-1/4	3-1/4
04317	04067	15/32	1/2	1-1/4	3-1/4
04319	04069	31/64	1/2	1-1/4	3-1/4
04320	04070	1/2	3/8	1	2-11/16
04321	04071	1/2	1/2	1-1/4	3-1/4
04324	04074	17/32	1/2	1-3/8	3-3/8
04328	04078	9/16	1/2	1-3/8	3-3/8

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

◎ : Excellent ○ : Good

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

HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH

► Possible for high-speed cutting, suitable for high efficiency machining. Easy to regrind.



P.775, 780, 784

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
04332	04082	19/32	1/2	1-3/8	3-3/8
04336	04086	5/8	1/2	1-3/8	3-3/8
04337	04087	5/8	5/8	1-5/8	3-3/4
04340	04090	21/32	1/2	1-5/8	3-5/8
04348	04098	11/16	5/8	1-5/8	3-3/4
04352	04102	23/32	1/2	1-5/8	3-5/8
04357	04107	3/4	1/2	1-5/8	3-5/8
04358	04108	3/4	5/8	1-5/8	3-3/4
04359	04109	3/4	3/4	1-5/8	3-7/8
04364	04114	25/32	5/8	1-7/8	4
04375	04125	13/16	3/4	1-7/8	4-1/8
04380	04130	27/32	5/8	1-7/8	4
04391	04141	7/8	3/4	1-7/8	4-1/8
04394	04144	7/8	7/8	1-7/8	4-1/8
04399	04149	29/32	3/4	1-7/8	4-1/8
04407	04157	15/16	3/4	1-7/8	4-1/8
04414	04164	31/32	3/4	1-7/8	4-1/8
04420	04170	1	5/8	1-7/8	4
04422	04172	1	3/4	1-7/8	4-1/8
04426	04176	1	1	2	4-1/2

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	* * 0~+.0015

**The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

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



E2032 SERIES

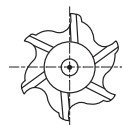
8% COBALT (M42)
FLAT SHANK

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.775, 780, 784

Unit : Inch

EDP No.	8% COBALT (M42)		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	HSS (M2)					
04338	04088		5/8	5/8	1-5/8	3-3/4
04360	04110		3/4	3/4	1-5/8	3-7/8
04376	04126		13/16	3/4	1-7/8	4-1/8
04390	04140		7/8	5/8	1-7/8	4
04395	04145		7/8	7/8	1-7/8	4-1/8
04405	04155		15/16	5/8	1-7/8	4
04421	04171		1	5/8	1-7/8	4
04427	04177		1	1	2	4-1/2
04432	04182		1-1/8	3/4	2	4-1/4
04436	04186		1-1/8	1	2	4-1/2
04440	04190		1-1/4	3/4	2	4-1/4
04444	04194		1-1/4	1	2	4-1/2
04446	04196		1-1/4	1-1/4	2	4-1/2
04452	04202		1-3/8	1	2	4-1/2
04460	04210		1-1/2	1	2	4-1/2
04462	04212		1-1/2	1-1/4	2	4-1/2
04470	04220		1-3/4	1-1/4	2	4-1/2
04478	04228		2	1-1/4	2	4-1/2
04481	04231		2	2	2	5-3/4

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	* * 0~+.0015

**The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

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

HSSCo8 & HSS, 4&6 FLUTE LONG LENGTH

► Longer flute length than E2031 type and allows deeper cutting. Easy to regrind.



HSS Co8
HSS
4&6
30°
FLAT
P.775, 780, 784

E2034(8% COBALT) , E1034(HSS) Series ■ 4 FLUTE

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
05297	05047	1/4	3/8	1-1/4	3-1/16
05301	05051	5/16	3/8	1-3/8	3-1/8
05305	05055	3/8	3/8	1-1/2	3-1/4
05313	05063	7/16	1/2	1-3/4	3-3/4
05321	05071	1/2	1/2	2	4
05337	05087	5/8	5/8	2-1/2	4-5/8
05359	05109	3/4	3/4	3	5-1/4
05394	05144	7/8	7/8	3-1/2	5-3/4
05426	05176	1	1	4	6-1/2

E2035(8% COBALT) , E1035(HSS) Series ■ 6 FLUTE

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
05436	05186	1-1/8	1	4	6-1/2
05444	05194	1-1/4	1	4	6-1/2
05446	05196	1-1/4	1-1/4	4	6-1/2
05460	05210	1-1/2	1	4	6-1/2
05462	05212	1-1/2	1-1/4	4	6-1/2
05470	05220	1-3/4	1-1/4	4	6-1/2
05478	05228	2	1-1/4	4	6-1/2
* 05485	* 05235	2	2	4	7-3/4

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.

*Combination Shank

- Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	* * 0~+.0015

**The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

Series	Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
	~HRC20	HRC20~30	HRC30~40	HRC40~45	HRC45~55	HRC55~70							
E1034 E2034	◎	◎	○				○			○			
E1035 E2035	◎	◎	○				○						

CARBIDE

HSS



**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.775, 780, 784

E2036(8% COBALT) , E1036(HSS) Series ■ 4 FLUTE

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
06297	06047	1/4	3/8	1-3/4	3-9/16
06301	06051	5/16	3/8	2	3-3/4
06305	06055	3/8	3/8	2-1/2	4-1/4
06321	06071	1/2	1/2	3	5
06337	06087	5/8	5/8	4	6-1/8
06359	06109	3/4	3/4	4	6-1/4
06394	06144	7/8	7/8	5	7-1/4
06426	06176	1	1	6	8-1/2

E2037(8% COBALT) , E1037(HSS) Series ■ 6 FLUTE

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
06446	06196	1-1/4	1-1/4	6	8-1/2
06462	06212	1-1/2	1-1/4	8	10-1/2
* 06491	* 06241	2	2	8	11-3/4

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.

*Combination Shank

■ Coating Codes for Cobalt

Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)

■ Coating Codes for HSS

Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)

► Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	* * 0~+.0015

**The shank of end mills is the same diameter as the cutting portion.

CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA

◎ : Excellent ○ : Good

Series	Carbon Steels ~HRc20	Alloy Steels HRc20~30	Prehardened Steels HRc30~40	Hardened Steels HRc40~45 HRc45~55		High Hardened Steels HRc55~70	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
E1036 E2036	◎	◎	○				○			○			
E1037 E2037	◎	◎	○				○						

YG COBALT & HSS END MILLS

E2051 SERIES
E1051 SERIES

**8% COBALT (M42)
 FLAT SHANK**
**HSS (M2)
 FLAT SHANK**

CARBIDE

HSS

► Series E2051 four flute end mills are the double-end version of E2031 four flute tools and are used for the same type of finishing operation. Two tools on one shank saves on sharpening set-up as well as on initial tool costs. Easy to regrind.



P.775, 780, 784

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
12289	12039	1/8	3/8	3/8	3-1/16
12290	12040	9/64	3/8	7/16	3-1/8
12291	12041	5/32	3/8	7/16	3-1/8
12292	12042	11/64	3/8	1/2	3-1/4
12293	12043	3/16	3/8	1/2	3-1/4
12294	12044	13/64	3/8	9/16	3-1/4
12295	12045	7/32	3/8	9/16	3-1/4
12296	12046	15/64	3/8	5/8	3-3/8
12297	12047	1/4	3/8	5/8	3-3/8
12298	12048	17/64	3/8	11/16	3-3/8
12299	12049	9/32	3/8	11/16	3-3/8
12300	12050	19/64	3/8	3/4	3-1/2
12301	12051	5/16	3/8	3/4	3-1/2
12302	12052	21/64	3/8	3/4	3-1/2
12303	12053	11/32	3/8	3/4	3-1/2
12304	12054	23/64	3/8	3/4	3-1/2
12305	12055	3/8	3/8	3/4	3-1/2
12307	12057	25/64	1/2	1	4-1/8
12309	12059	13/32	1/2	1	4-1/8
12311	12061	27/64	1/2	1	4-1/8
12313	12063	7/16	1/2	1	4-1/8
12315	12065	29/64	1/2	1	4-1/8
12317	12067	15/32	1/2	1	4-1/8
12319	12069	31/64	1/2	1	4-1/8

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
 Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coating Codes for HSS
 Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

◎ : Excellent ○ : Good

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

CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA

CARBIDE

HSS

COBALT & HSS
END MILLS

E2051 SERIES

8% COBALT (M42)
FLAT SHANK

E1051 SERIES

HSS (M2)
FLAT SHANK

HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH DOUBLE

► Series E2051 four flute end mills are the double-end version of E2031 four flute tools and are used for the same type of finishing operation. Two tools on one shank saves on sharpening set-up as well as on initial tool costs. Easy to regrind.

HSS
Co8

HSS

4

30°

FLAT



P.775, 780, 784

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
12321	12071	1/2	1/2	1	4-1/8
12330	12080	9/16	5/8	1-3/8	5
12337	12087	5/8	5/8	1-3/8	5
12350	12100	11/16	3/4	1-5/8	5-5/8
12359	12109	3/4	3/4	1-5/8	5-5/8
12377	12127	13/16	7/8	1-7/8	6-1/8
12394	12144	7/8	7/8	1-7/8	6-1/8
12410	12160	15/16	1	1-7/8	6-3/8
12426	12176	1	1	1-7/8	6-3/8

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.

■ Coating Codes for Cobalt

Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)

■ Coating Codes for HSS

Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)

► Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~.0010	* * 0~.0020

**The shank of end mills is the same diameter as the cutting portion.

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

◎ : Excellent ○ : Good

HSSCo8 & HSS, 4, 6&8 FLUTE REGULAR LENGTH 3/4" SHANK

► E2031(3/4" shank, multi flute, general purpose end mills) are recommended for finishing operations for Bridgeport machines and other similar operations. Easy to regrind.



P.775, 780, 784

E2031(8% COBALT) , E1031(HSS) Series ■ 4 FLUTE

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
04359	04109	3/4	3/4	1-5/8	3-7/8
04375	04125	13/16	3/4	1-7/8	4-1/8
04391	04141	7/8	3/4	1-7/8	4-1/8
04407	04157	15/16	3/4	1-7/8	4-1/8
04422	04172	1	3/4	1-7/8	4-1/8

E2032(8% COBALT) , E1032(HSS) Series ■ 6&8 FLUTE

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
8% COBALT (M42)	HSS (M2)					
04432	04182	1-1/8	3/4	2	4-1/4	6
04440	04190	1-1/4	3/4	2	4-1/4	6
04458	04208	1-1/2	3/4	2	4-1/4	6
04468	04218	1-3/4	3/4	2	4-1/2	6
04476	04226	2	3/4	2	4-1/2	8

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.

■ Coating Codes for Cobalt
 Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)

■ Coating Codes for HSS
 Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)

► Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	* * 0~+.0015

**The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

Series	Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
	~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
E1031 E2031	◎	◎	○				○			○			
E1032 E2032	◎	◎	○				○						

HSSCo8, 4 FLUTE REGULAR LENGTH BALL NOSE

► The four flute ball end mills are designed for milling of radius bottom slots fillets and special contours. The end teeth are cut to center allowing these end mills to drill into material at the beginning of a slotting cut.



HSS Co8
4
30°
FLAT
P.776, 781, 785

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)		R			
43289	R1/16	1/8	3/8	3/8	2-5/16
43293	R3/32	3/16	3/8	1/2	2-3/8
43297	R1/8	1/4	3/8	5/8	2-7/16
43301	R5/32	5/16	3/8	3/4	2-1/2
43305	R3/16	3/8	3/8	3/4	2-1/2
43312	R7/32	7/16	3/8	1	2-11/16
43321	R1/4	1/2	1/2	1-1/4	3-1/4
43337	R5/16	5/8	5/8	1-5/8	3-3/4
43350	R11/32	11/16	5/8	1-5/8	3-3/4
43359	R3/8	3/4	3/4	1-5/8	3-7/8
43394	R7/16	7/8	7/8	1-7/8	4-1/8
43426	R1/2	1	1	2	4-1/2
43435	R9/16	1-1/8	1	2	4-1/2
43445	R5/8	1-1/4	1-1/4	2	4-1/2
43461	R3/4	1-1/2	1-1/4	2	4-1/2
43477	R1	2	1-1/4	2	4-1/2

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	* *0~+.0015

**The shank of end mills is the same diameter as the cutting portion.

- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- 4G MILLS END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

◎ : Excellent ○ : Good

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

HSSCo8, 4 FLUTE LONG LENGTH BALL NOSE

► Longer flute length than E2020 type and suitable for high efficient copying process and deep cutting of die mold corner radius.



HSS Co8
4
30°
FLAT
P.776, 781, 785

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	R				
44297	R1/8	1/4	3/8	1-1/4	3-1/16
44301	R5/32	5/16	3/8	1-3/8	3-1/8
44305	R3/16	3/8	3/8	1-1/2	3-1/4
44321	R1/4	1/2	1/2	2	4
44337	R5/16	5/8	5/8	2-1/2	4-5/8
44359	R3/8	3/4	3/4	3	5-1/4
44394	R7/16	7/8	7/8	3-1/2	5-3/4
44426	R1/2	1	1	4	6-1/2

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardstick)
- Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

**The shank of end mills is the same diameter as the cutting portion.

CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA

◎ : Excellent ○ : Good

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

HSSCo8, 4 FLUTE REGULAR LENGTH BALL NOSE DOUBLE

► Same construction features as E2020 end mill in a more economical version. Removes more material per grind. Machine ground notch assures positive anchorage in tool holder.



HSS Co8
4
30°
FLAT
P.776, 781, 785

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)		R			
46289	R1/16	1/8	3/8	3/8	3-1/16
46293	R3/32	3/16	3/8	1/2	3-1/4
46297	R1/8	1/4	3/8	5/8	3-3/8
46301	R5/32	5/16	3/8	3/4	3-1/2
46305	R3/16	3/8	3/8	3/4	3-1/2
46313	R7/32	7/16	1/2	1	4-1/8
46321	R1/4	1/2	1/2	1	4-1/8
46337	R5/16	5/8	5/8	1-3/8	5
46359	R3/8	3/4	3/4	1-5/8	5-5/8
46426	R1/2	1	1	1-7/8	6-3/8

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~.0010	* * 0~.0020

**The shank of end mills is the same diameter as the cutting portion.

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

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

HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH CENTER CUTTING

► Center cutting allows these end mills to drill into the part for the beginning of a slot. These center cutting end mills are recommended for pocketing, tracer milling, cam milling, die sinking and slotting.



P.775, 780, 784

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
07289	07039	1/8	3/8	3/8	2-5/16
07291	07041	5/32	3/8	7/16	2-3/8
07293	07043	3/16	3/8	1/2	2-3/8
07295	07045	7/32	3/8	9/16	2-7/16
07297	07047	1/4	3/8	5/8	2-7/16
07299	07049	9/32	3/8	11/16	2-1/2
07301	07051	5/16	3/8	3/4	2-1/2
07303	07053	11/32	3/8	3/4	2-1/2
07305	07055	3/8	3/8	3/4	2-1/2
07308	07058	13/32	3/8	1	2-11/16
07312	07062	7/16	3/8	1	2-11/16
07316	07066	15/32	3/8	1	2-11/16
07320	07070	1/2	3/8	1	2-11/16
07321	07071	1/2	1/2	1-1/4	3-1/4

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	* * 0~+.0015

**The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

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

CARBIDE

HSS

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.775, 780, 784

Unit : Inch

EDP No.	8% COBALT (M42)		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	8% COBALT (M42)	HSS (M2)				
07336		07086	5/8	1/2	1-3/8	3-3/8
07337		07087	5/8	5/8	1-5/8	3-3/4
07348		07098	11/16	5/8	1-5/8	3-3/4
07357		07107	3/4	1/2	1-5/8	3-5/8
07358		07108	3/4	5/8	1-5/8	3-3/4
07359		07109	3/4	3/4	1-5/8	3-7/8
07391		07141	7/8	3/4	1-7/8	4-1/8
07394		07144	7/8	7/8	1-7/8	4-1/8
07420		07170	1	5/8	1-7/8	4
07422		07172	1	3/4	1-7/8	4-1/8
07426		07176	1	1	2	4-1/2
07435		07185	1-1/8	1	2	4-1/2
07445		07195	1-1/4	1-1/4	2	4-1/2
07461		07211	1-1/2	1-1/4	2	4-1/2

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.

■ Coating Codes for Cobalt

Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)

■ Coating Codes for HSS

Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)

► Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	* * 0~+.0015

**The shank of end mills is the same diameter as the cutting portion.

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

◎ : Excellent ○ : Good

HSSCo8 & HSS, 6 FLUTE REGULAR LENGTH CENTER CUTTING

► Center cutting allows these end mills to drill into the part for the beginning of a slot. These center cutting end mills are recommended for pocketing, tracer milling, cam milling, die sinking and slotting.



HSS Co8
HSS
6
30°
FLAT
P.775, 780, 784

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
07322	07072	1/2	1/2	1-1/4	3-1/4
07338	07088	5/8	5/8	1-5/8	3-3/4
07349	07099	11/16	5/8	1-5/8	3-3/4
07360	07110	3/4	3/4	1-5/8	3-7/8
07395	07145	7/8	7/8	1-7/8	4-1/8
07427	07177	1	1	2	4-1/2
07436	07186	1-1/8	1	2	4-1/2
07446	07196	1-1/4	1-1/4	2	4-1/2
07448		1-5/16	3/4	2	4-1/4
07462	07212	1-1/2	1-1/4	2	4-1/2
07478	07228	2	1-1/4	2	4-1/2
* 07481	* 07231	2	2	2	5-3/4

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

*Combination Shank

Mill Dia. Tolerance (inch)	
0~+.0010	* *0~+.0015

**The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

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

CARBIDE

HSS

COBALT & HSS
END MILLS

E2039 SERIES

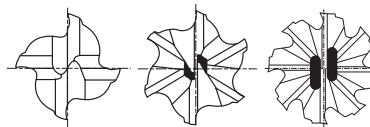
8% COBALT (M42)
FLAT SHANK

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.775, 780, 784

E2039(4 FLUTE), E2042(6&8 FLUTE) Series

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
07901	1	1	3	5-1/2	4
07902	1-1/4	1-1/4	3	5-1/2	4
07903	1-1/2	1-1/4	3	5-1/2	4
07094	1	1	3	5-1/2	6
07095	1-1/4	1-1/4	3	5-1/2	6
07096	1-1/2	1-1/4	3	5-1/2	6
07097	1-3/4	1-1/4	3	5-1/2	6
99098	2	1-1/4	3	5-1/2	8

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.

■ Coating Codes for Cobalt

Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)

► Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	* * 0~+.0015

**The shank of end mills is the same diameter as the cutting portion.

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

◎ : Excellent ○ : Good

HSSCo8 & HSS, 4&6 FLUTE LONG LENGTH CENTER CUTTING

► Longer flute length than E2039 type, E2042 and allows deeper cutting.



P.775, 780, 784

E2040(8% COBALT) , E1040(HSS) Series ■ 4 FLUTE

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
08297	08047	1/4	3/8	1-1/4	3-1/16
08301	08051	5/16	3/8	1-3/8	3-1/8
08305	08055	3/8	3/8	1-1/2	3-1/4
08321	08071	1/2	1/2	2	4
08337	08087	5/8	5/8	2-1/2	4-5/8
08359	08109	3/4	3/4	3	5-1/4
08394	08144	7/8	7/8	3-1/2	5-3/4
08426	08176	1	1	4	6-1/2
08445	08195	1-1/4	1-1/4	4	6-1/2
08461	08211	1-1/2	1-1/4	4	6-1/2

E2162(8% COBALT) , E1162(HSS) Series ■ 6 FLUTE

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
08322	08072	1/2	1/2	2	4
08338	08088	5/8	5/8	2-1/2	4-5/8
08360	08110	3/4	3/4	3	5-1/4
08395	08145	7/8	7/8	3-1/2	5-3/4
08427	08177	1	1	4	6-1/2
08446	08196	1-1/4	1-1/4	4	6-1/2
08462	08212	1-1/2	1-1/4	4	6-1/2
08478	08228	2	1-1/4	4	6-1/2
* 08485	* 08235	2	2	4	7-3/4
* 08489	* 08239	2	2	6	9-3/4

* Combination Shank

Mill Dia. Tolerance (inch)	
0~+.0010	* * 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

◎ : Excellent ○ : Good

Series	Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
	~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
E1040 E2040	◎	◎	○				○			○			
E1162 E2162	◎	◎	○				○						

CARBIDE

HSS



**COBALT & HSS
END MILLS**

E2041 / E2175 SERIES

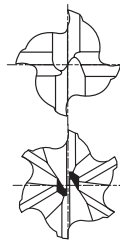
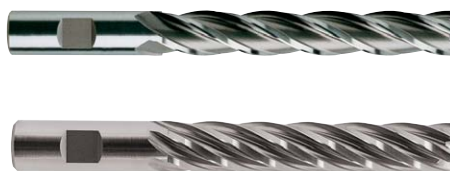
**8% COBALT (M42)
FLAT SHANK**

E1041 / E1175 SERIES

**HSS (M2)
FLAT SHANK**

HSSCo8 & HSS, 4&6 FLUTE EXTRA LONG LENGTH CENTER CUTTING

► Provided with longest flute length and suitable for high accuracy machining of deep step.



HSS Co8
HSS
4&6
30°
FLAT
P.775, 780, 784

E2041(8% COBALT) , E1041(HSS) Series ■ 4 FLUTE

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
09297	09047	1/4	3/8	1-3/4	3-9/16
09301	09051	5/16	3/8	2	3-3/4
09305	09055	3/8	3/8	2-1/2	4-1/4
09321	09071	1/2	1/2	3	5
09337	09087	5/8	5/8	4	6-1/8
09359	09109	3/4	3/4	4	6-1/4
09394	09144	7/8	7/8	5	7-1/4
09426	09176	1	1	6	8-1/2
09445	09195	1-1/4	1-1/4	6	8-1/2

E2175(8% COBALT) , E1175(HSS) Series ■ 6 FLUTE

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
09322	09072	1/2	1/2	3	5
09338	09088	5/8	5/8	4	6-1/8
09360	09110	3/4	3/4	4	6-1/4
09395	09145	7/8	7/8	5	7-1/4
09427	09177	1	1	6	8-1/2
09446	09196	1-1/4	1-1/4	6	8-1/2
09462	09212	1-1/2	1-1/4	8	10-1/2
* 09491	* 09241	2	2	8	11-3/4

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.

* Combination Shank

■ Coating Codes for Cobalt

Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)

■ Coating Codes for HSS

Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)

► Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	* * 0~+.0015

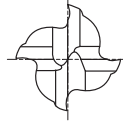
**The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

Series	Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
	~HRc20	HRc20-30	HRc30-40	HRc40-45	HRc45-55	HRc55-70							
E1041 E2041	◎	◎	○				○			○			
E1175 E2175	◎	◎	○				○						

HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH DOUBLE CENTER CUTTING

► Series E2053 end mills are the double-end version of E2039 center cutting single-end tools. They are used for slotting, shallow pocketing, tracer milling or die sinking and similar operation.



P.775, 780, 784

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
13289	13039	1/8	3/8	3/8	3-1/16
13290	13040	9/64	3/8	7/16	3-1/8
13291	13041	5/32	3/8	7/16	3-1/8
13292	13042	11/64	3/8	1/2	3-1/4
13293	13043	3/16	3/8	1/2	3-1/4
13294	13044	13/64	3/8	9/16	3-1/4
13295	13045	7/32	3/8	9/16	3-1/4
13296	13046	15/64	3/8	5/8	3-3/8
13297	13047	1/4	3/8	5/8	3-3/8
13298	13048	17/64	3/8	11/16	3-3/8
13299	13049	9/32	3/8	11/16	3-3/8
13300	13050	19/64	3/8	3/4	3-1/2
13301	13051	5/16	3/8	3/4	3-1/2
13302	13052	21/64	3/8	3/4	3-1/2
13303	13053	11/32	3/8	3/4	3-1/2
13304	13054	23/64	3/8	3/4	3-1/2
13305	13055	3/8	3/8	3/4	3-1/2
13307	13057	25/64	1/2	1	4-1/8
13309	13059	13/32	1/2	1	4-1/8
13311	13061	27/64	1/2	1	4-1/8
13313	13063	7/16	1/2	1	4-1/8
13315	13065	29/64	1/2	1	4-1/8
13317	13067	15/32	1/2	1	4-1/8

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

◎ : Excellent ○ : Good

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

CARBIDE

HSS

COBALT & HSS
END MILLS

E2053 SERIES

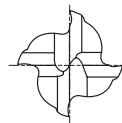
8% COBALT (M42)
FLAT SHANK

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.775, 780, 784

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
13319	13069	31/64	1/2	1	4-1/8
13321	13071	1/2	1/2	1	4-1/8
13330	13080	9/16	5/8	1-3/8	5
13337	13087	5/8	5/8	1-3/8	5
13350	13100	11/16	3/4	1-5/8	5-5/8
13359	13109	3/4	3/4	1-5/8	5-5/8
13377	13127	13/16	7/8	1-7/8	6-1/8
13394	13144	7/8	7/8	1-7/8	6-1/8
13426	13176	1	1	1-7/8	6-3/8

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.

■ Coating Codes for Cobalt

Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)

■ Coating Codes for HSS

Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)

► Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~.0010	* * 0~.0020

**The shank of end mills is the same diameter as the cutting portion.

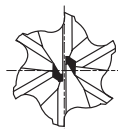
CBN
END MILLi-Xmill
END MILLX5070
END MILLS4G MILLS
END MILLSX-SPEED
ROUGHER
END MILLSX-POWER
END MILLSJET-POWER
END MILLSV7 Mill STEEL
END MILLSV7 Mill INOX
END MILLSALU-POWER
END MILLSD-POWER
END MILLSSTANDARD
CARBIDE
END MILLSTANK-POWER
END MILLSSTANDARD
COBALT
& HSS
END MILLSTECHNICAL
DATA

◎ : Excellent ○ : Good

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

HSSCo8 & HSS, 6 FLUTE REGULAR with COMBINATION 2" SHANK CENTER CUTTING

► These are to be used for heavy hogging cuts in die-sinking, tape & tracer controlled milling and similar work. The Heavy-Duty end mills are made with toughened Combination shank, heavy web construction, accurate machine-ground end-teeth notching and a special surface treatment to reduce cutting-edge wear.



P.775, 780, 784

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
10481	10231	2	2	2	5-3/4
10485	10235	2	2	4	7-3/4
10487	10237	2	2	5	8-3/4
10489	10239	2	2	6	9-3/4
10491	10241	2	2	8	11-3/4

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)
0~+.0030

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

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



E2001 SERIES 8% COBALT (M42) PLAIN SHANK
E1001 SERIES HSS (M2) PLAIN SHANK

HSSCo8 & HSS, 2 FLUTE MINIATURE STUB LENGTH DOUBLE

► Tools under Miniature end mills have 3/16" shank diameter without flats. They are designed with positive rake angle geometry and a high helix angle to insure free cutting action. The flute design provides good strength behind the cutting edge. Suitable for finishing of precision components such as watch, camera, electronic apparatus molds, etc.



- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- 4G MILLS END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

HSS Co8
HSS
2
39°
30°
PLAIN
P.778
 -Ø3/32 Ø7/64-

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
49252	49002	1/32	3/16	3/64	2
49254	49004	3/64	3/16	1/16	2
49256	49006	1/16	3/16	3/32	2
49258	49008	5/64	3/16	1/8	2
49260	49010	3/32	3/16	9/64	2
49262	49012	7/64	3/16	5/32	2
49264	49014	1/8	3/16	3/16	2
49266	49016	9/64	3/16	7/32	2
49268	49018	5/32	3/16	15/64	2
49270	49020	11/64	3/16	1/4	2
49272	49022	3/16	3/16	9/32	2

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
 Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coating Codes for HSS
 Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~.0010	* * 0~.0020

**The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

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

HSSCo8 & HSS, 2 FLUTE MINIATURE REGULAR LENGTH DOUBLE

► Suitable for finishing of precision components such as watch, camera electronic apparatus molds, etc.



HSS Co8
HSS
2
39°
30°
PLAIN
P.778

-Ø3/32 Ø7/64-

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
50252	50002	1/32	3/16	3/32	2-1/4
50254	50004	3/64	3/16	9/64	2-1/4
50256	50006	1/16	3/16	3/16	2-1/4
50258	50008	5/64	3/16	15/64	2-1/4
50260	50010	3/32	3/16	9/32	2-1/4
50262	50012	7/64	3/16	21/64	2-1/4
50264	50014	1/8	3/16	3/8	2-1/4
50266	50016	9/64	3/16	13/32	2-1/4
50268	50018	5/32	3/16	7/16	2-1/4
50270	50020	11/64	3/16	1/2	2-1/4
50272	50022	3/16	3/16	1/2	2-1/4

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~—.0010	* * 0~—.0020

**The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

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

CARBIDE

HSS

COBALT & HSS
END MILLS

E2005 SERIES

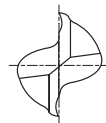
8% COBALT (M42)
PLAIN SHANK

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.



-Ø3/32 Ø7/64-

Unit : Inch

EDP No.	EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	8% COBALT (M42)	HSS (M2)				
51256		51006	1/16	3/16	7/32	2-1/2
51258		51008	5/64	3/16	1/4	2-1/2
51260		51010	3/32	3/16	9/32	2-5/8
51262		51012	7/64	3/16	9/32	2-5/8
51264		51014	1/8	3/16	3/4	3-1/8
51266		51016	9/64	3/16	3/4	3-1/8
51268		51018	5/32	3/16	7/8	3-1/4
51270		51020	11/64	3/16	7/8	3-1/4
51272		51022	3/16	3/16	1	3-3/8

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.

■ Coating Codes for Cobalt

Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)

■ Coating Codes for HSS

Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)

► Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~.0010	* * 0~.0020

**The shank of end mills is the same diameter as the cutting portion.

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

◎ : Excellent ○ : Good

HSSCo8 & HSS, 4FLUTE MINIATURE STUB LENGTH DOUBLE

► Suitable for finishing of precision components such as watch, camera electronic apparatus molds, etc.



HSS Co8
HSS
4
39°
30°
PLAIN
P.778

-Ø3/32 Ø7/64-

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
52256	52006	1/16	3/16	3/32	2
52258	52008	5/64	3/16	1/8	2
52260	52010	3/32	3/16	9/64	2
52262	52012	7/64	3/16	5/32	2
52264	52014	1/8	3/16	3/16	2
52266	52016	9/64	3/16	7/32	2
52268	52018	5/32	3/16	15/64	2
52270	52020	11/64	3/16	1/4	2
52272	52022	3/16	3/16	9/32	2

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	* * 0~-.0020

**The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

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

CARBIDE

HSS

COBALT & HSS
END MILLS

E2004 SERIES

8% COBALT (M42)
PLAIN SHANK

E1004 SERIES

HSS (M2)
PLAIN SHANK

HSSCo8 & HSS, 4FLUTE MINIATURE REGULAR LENGTH DOUBLE

► Suitable for finishing of precision components such as watch, camera electronic apparatus molds, etc.

HSS
Co8

HSS

4

39°

30°

PLAIN



P.778

-Ø3/32 Ø7/64-

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
53256	53006	1/16	3/16	3/16	2-1/4
53258	53008	5/64	3/16	15/64	2-1/4
53260	53010	3/32	3/16	9/32	2-1/4
53262	53012	7/64	3/16	21/64	2-1/4
53264	53014	1/8	3/16	3/8	2-1/4
53266	53016	9/64	3/16	13/32	2-1/4
53268	53018	5/32	3/16	7/16	2-1/4
53270	53020	11/64	3/16	1/2	2-1/4
53272	53022	3/16	3/16	1/2	2-1/4

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.

■ Coating Codes for Cobalt

Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)

■ Coating Codes for HSS

Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)

► Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	* * 0~-.0020

**The shank of end mills is the same diameter as the cutting portion.

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

◎ : Excellent ○ : Good

CBN
END MILLi-Xmill
END MILLX5070
END MILLS4G MILLS
END MILLSX-SPEED
ROUGHER
END MILLSX-POWER
END MILLSJET-POWER
END MILLSV7 Mill STEEL
END MILLSV7 Mill INOX
END MILLSALU-POWER
END MILLSD-POWER
END MILLSSTANDARD
CARBIDE
END MILLSTANK-POWER
END MILLSSTANDARD
COBALT
& HSS
END MILLSTECHNICAL
DATA

HSSCo8 & HSS, 4FLUTE MINIATURE LONG LENGTH DOUBLE

► Suitable for finishing of precision components such as watch, camera electronic apparatus molds, etc.



HSS Co8
HSS
4
39°
30°
PLAIN
P.778

-Ø3/32 Ø7/64-

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
54256	54006	1/16	3/16	7/32	2-1/2
54258	54008	5/64	3/16	1/4	2-1/2
54260	54010	3/32	3/16	9/32	2-5/8
54262	54012	7/64	3/16	9/32	2-5/8
54264	54014	1/8	3/16	3/4	3-1/8
54266	54016	9/64	3/16	3/4	3-1/8
54268	54018	5/32	3/16	7/8	3-1/4
54270	54020	11/64	3/16	7/8	3-1/4
54272	54022	3/16	3/16	1	3-3/8

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	* * 0~-.0020

**The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

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



E2008 SERIES 8% COBALT (M42) PLAIN SHANK
E1008 SERIES HSS (M2) PLAIN SHANK

HSSCo8 & HSS, 2 FLUTE MINIATURE STUB LENGTH BALL NOSE DOUBLE

► Helical flute in the nose radius.
 Suitable for high efficient copying process and cutting of die mold corner radius.



HSS Co8
HSS
2
39°
30°
PLAIN
P.778

-Ø3/32 Ø7/64-

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)	R				
55256	55006	R1/32	1/16	3/16	3/32	2
55260	55010	R3/64	3/32	3/16	9/64	2
55264	55014	R1/16	1/8	3/16	3/16	2
55268	55018	R5/64	5/32	3/16	15/64	2
55272	55022	R3/32	3/16	3/16	9/32	2

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
 Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coating Codes for HSS
 Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~.0010	* * 0~.0020

**The shank of end mills is the same diameter as the cutting portion.

- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- 4G MILLS END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

◎ : Excellent ○ : Good

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

HSSCo8 & HSS, 2 FLUTE MINIATURE REGULAR LENGTH BALL NOSE DOUBLE

- ▶ Helical flute in the nose radius.
Suitable for high efficient copying process and cutting of die mold corner radius.



HSS Co8
HSS
2
39°
30°
PLAIN
P.778

-Ø3/32 Ø7/64-

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)	R				
56252	56002	R1/64	1/32	3/16	3/32	2-1/4
56254	56004	R3/128	3/64	3/16	9/64	2-1/4
56256	56006	R1/64	1/16	3/16	3/16	2-1/4
56258	56008	R5/128	5/64	3/16	15/64	2-1/4
56260	56010	R3/64	3/32	3/16	9/32	2-1/4
56262	56012	R7/128	7/64	3/16	21/64	2-1/4
56264	56014	R1/16	1/8	3/16	3/8	2-1/4
56266	56016	R9/128	9/64	3/16	13/32	2-1/4
56268	56018	R5/64	5/32	3/16	7/16	2-1/4
56270	56020	R11/128	11/64	3/16	1/2	2-1/4
56272	56022	R3/32	3/16	3/16	1/2	2-1/4

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
- ▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~—.0010	* * 0~—.0020

**The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

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

CARBIDE

HSS

COBALT & HSS
END MILLS

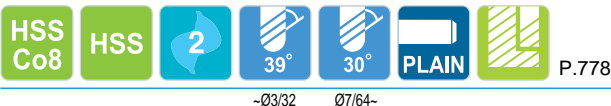
E2015 SERIES

8% COBALT (M42)
PLAIN SHANK

E1015 SERIES

HSS (M2)
PLAIN SHANKHSSCo8 & 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.



Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)	R				
57256	57006	R1/32	1/16	3/16	7/32	2-1/2
57260	57010	R3/64	3/32	3/16	9/32	2-5/8
57264	57014	R1/16	1/8	3/16	3/4	3-1/8
57268	57018	R5/64	5/32	3/16	7/8	3-1/4
57272	57022	R3/32	3/16	3/16	1	3-3/8

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
- ▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	* * 0~- .0020

**The shank of end mills is the same diameter as the cutting portion.

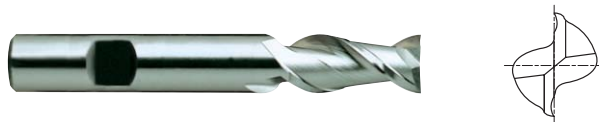
CBN
END MILLi-Xmill
END MILLX5070
END MILLS4G MILLS
END MILLSX-SPEED
ROUGHER
END MILLSX-POWER
END MILLSJET-POWER
END MILLSV7 Mill STEEL
END MILLSV7 Mill INOX
END MILLSALU-POWER
END MILLSD-POWER
END MILLSSTANDARD
CARBIDE
END MILLSTANK-POWER
END MILLSSTANDARD
COBALT
& HSS
END MILLSTECHNICAL
DATA

◎ : Excellent ○ : Good

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

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.



REGULAR LENGTH

Unit : Inch

EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
17047	1/4	3/8	5/8	2-7/16
17051	5/16	3/8	3/4	2-1/2
17055	3/8	3/8	3/4	2-1/2
17062	7/16	3/8	1	2-11/16
17071	1/2	1/2	1-1/4	3-1/4
17087	5/8	5/8	1-5/8	3-3/4
17109	3/4	3/4	1-5/8	3-7/8
17141	7/8	3/4	1-7/8	4-1/8
17144	7/8	7/8	1-7/8	4-1/8
17172	1	3/4	1-7/8	4-1/8
17176	1	1	2	4-1/2
17195	1-1/4	1-1/4	2	4-1/2
17211	1-1/2	1-1/4	2	4-1/2
17219	1-3/4	1-1/4	2	4-1/2
17227	2	1-1/4	2	4-1/2

MEDIUM LENGTH

Unit : Inch

EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
99089	1	1	3	5-1/2
99090	1-1/4	1-1/4	3	5-1/2
99091	1-1/2	1-1/4	3	5-1/2
99092	1-3/4	1-1/4	3	5-1/2
99093	2	1-1/4	3	5-1/2

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.

■ Coating Codes for HSS

Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)

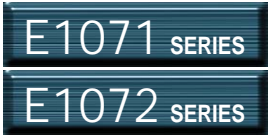
► Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	* * 0~+.0015

**The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

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



HSS (M2)
FLAT SHANK

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.



- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- 4G MILLS END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS

HSS
2
42°
FLAT
P.773

LONG LENGTH Unit : Inch

EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
18047	1/4	3/8	1-1/4	3-1/16
18051	5/16	3/8	1-3/8	3-1/8
18055	3/8	3/8	1-1/2	3-1/4
18063	7/16	1/2	1-3/4	3-3/4
18071	1/2	1/2	2	4
18087	5/8	5/8	2-1/2	4-5/8
18109	3/4	3/4	3	5-1/4
18176	1	1	4	6-1/2
18195	1-1/4	1-1/4	4	6-1/2
18211	1-1/2	1-1/4	4	6-1/2
18227	2	1-1/4	4	6-1/2

EXTRA LONG LENGTH Unit : Inch

EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
19047	1/4	3/8	1-3/4	3-9/16
19051	5/16	3/8	2	3-3/4
19055	3/8	3/8	2-1/2	4-1/4
19071	1/2	1/2	3	5
19087	5/8	5/8	4	6-1/8
19109	3/4	3/4	4	6-1/4
19176	1	1	6	8-1/2
19195	1-1/4	1-1/4	6	8-1/2
19211	1-1/2	1-1/4	8	10-1/2

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	* * 0~+.0015

**The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

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

HSSCo8, MULTI FLUTE STUB LENGTH FINE PITCH ROUGHING CENTER CUTTING

► This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths. In many cases, the milled surfaces are of acceptable quality.



P.777, 782, 786

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
75297	1/4	3/8	1/4	2-1/16	4
75305	3/8	3/8	3/8	2-5/32	4
75313	7/16	1/2	1/2	2-1/2	4
75321	1/2	1/2	1/2	2-1/2	4
75337	5/8	5/8	5/8	2-3/4	4
75359	3/4	3/4	3/4	2-7/8	4
75391	7/8	3/4	7/8	3-1/8	5
75426	1	1	1	3-1/2	5

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

◎ : Excellent ○ : Good

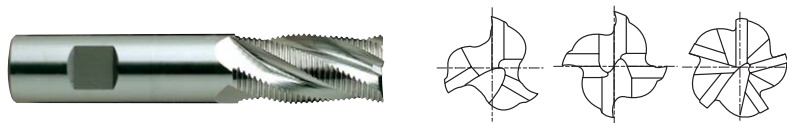
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
-HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			



E2085 SERIES 8% COBALT (M42)
FLAT SHANK

HSSCo8, MULTI FLUTE REGULAR LENGTH FINE PITCH ROUGHING CENTER CUTTING

► This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths. In many cases, the milled surfaces are of acceptable quality.



CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA

HSS Co8
FINE
3-5
30°
FLAT
P.777, 782, 786

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
76297	1/4	3/8	5/8	2-7/16	3
76301	5/16	3/8	3/4	2-1/2	3
76305	3/8	3/8	3/4	2-1/2	4
76312	7/16	3/8	1	2-11/16	4
76321	1/2	1/2	1-1/4	3-1/4	4
76328	9/16	1/2	1-3/8	3-3/8	4
76337	5/8	5/8	1-5/8	3-3/4	4
76359	3/4	3/4	1-5/8	3-7/8	4
76391	7/8	3/4	1-7/8	4-1/8	5
76394	7/8	7/8	1-7/8	4-1/8	5
76422	1	3/4	2	4-1/4	5
76426	1	1	2	4-1/2	5

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

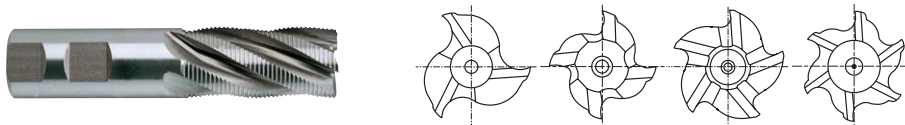
Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

◎ : Excellent ○ : Good

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

HSSCo8, MULTI FLUTE REGULAR LENGTH FINE PITCH ROUGHING

► This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths. In many cases, the milled surfaces are of acceptable quality.



HSS Co8

FINE

3-6

30°

FLAT

P.777, 782, 786

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
70297	1/4	3/8	5/8	2-7/16	3
70301	5/16	3/8	3/4	2-1/2	3
70305	3/8	3/8	3/4	2-1/2	4
70312	7/16	3/8	1	2-11/16	4
70321	1/2	1/2	1-1/4	3-1/4	4
70328	9/16	1/2	1-3/8	3-3/8	4
70337	5/8	5/8	1-5/8	3-3/4	4
70358	3/4	5/8	1-5/8	3-3/4	4
70359	3/4	3/4	1-5/8	3-7/8	4
70391	7/8	3/4	1-7/8	4-1/8	5
70394	7/8	7/8	1-7/8	4-1/8	5
70422	1	3/4	2	4-1/4	5
70426	1	1	2	4-1/2	5
70431	1-1/8	3/4	2	4-1/4	6
70435	1-1/8	1	2	4-1/2	6
70439	1-1/4	3/4	2	4-1/4	6
70445	1-1/4	1-1/4	2	4-1/2	6
70449	1-3/8	3/4	2	4-1/4	6
70457	1-1/2	3/4	2	4-1/4	6
70461	1-1/2	1-1/4	2	4-1/2	6
70469	1-3/4	1-1/4	2	4-1/2	6
70475	2	3/4	2	4-1/4	6
70477	2	1-1/4	2	4-1/2	6

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

◎ : Excellent ○ : Good

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

- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- 4G MILLS END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

HSSCo8, MULTI FLUTE LONG LENGTH FINE PITCH ROUGHING

► This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths. In many cases, the milled surfaces are of acceptable quality.



HSS Co8
FINE
4-6
30°
FLAT
P.777, 782, 786

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
71321	1/2	1/2	2	4	4
71337	5/8	5/8	2-1/2	4-5/8	4
71358	3/4	5/8	3	5-1/4	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

- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- 4G MILLS END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

◎ : Excellent ○ : Good

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

HSSCo8, 3 FLUTE STUB LENGTH FINE PITCH ROUGHING CENTER CUTTING

► This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths. In many cases, the milled surfaces are of acceptable quality.



HSS
Co8

FINE

3

30°

FLAT

P.777, 782, 786

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
72297	1/4	3/8	1/4	2-1/16
72305	3/8	3/8	3/8	2-5/32
72321	1/2	1/2	1/2	2-1/2
72337	5/8	5/8	5/8	2-3/4
72359	3/4	3/4	3/4	2-7/8
72391	7/8	3/4	7/8	3-1/8
72422	1	3/4	1	3-1/4
72426	1	1	1	3-1/2

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

 CBN
END MILL

 i-Xmill
END MILL

 X5070
END MILLS

 4G MILLS
END MILLS

 X-SPEED
ROUGHER
END MILLS

 X-POWER
END MILLS

 JET-POWER
END MILLS

 V7 Mill STEEL
END MILLS

 V7 Mill INOX
END MILLS

 ALU-POWER
END MILLS

 D-POWER
END MILLS

 STANDARD
CARBIDE
END MILLS

 TANK-POWER
END MILLS

 STANDARD
COBALT
& HSS
END MILLS

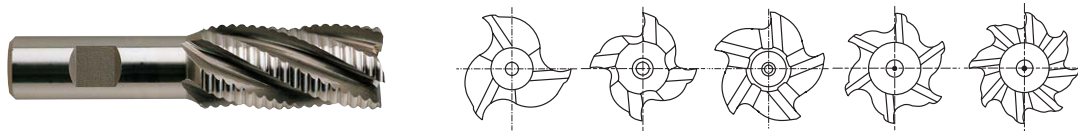
 TECHNICAL
DATA

◎ : Excellent ○ : Good

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

HSSCo8, MULTI FLUTE REGULAR LENGTH COARSE PITCH ROUGHING

► This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is recommended for cutting steel grades and many non-ferrous materials. The end tooth of this tool has a center hole design for many accurate resharpenings between centers.



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

HSS Co8
COARSE
3-8
30°
FLAT
P.777, 782, 786

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
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

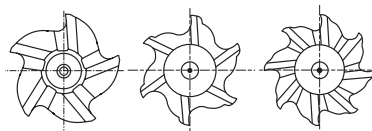
- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

◎ : Excellent ○ : Good

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

HSSCo8, MULTI FLUTE MEDIUM LENGTH COARSE PITCH ROUGHING

► This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is recommended for cutting steel grades and many non-ferrous materials. The end tooth of this tool has a center hole design for many accurate resharpenings between centers.



P.777, 782, 786

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
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

 CBN
END MILL

 i-Xmill
END MILL

 X5070
END MILLS

 4G MILLS
END MILLS

 X-SPEED
ROUGHER
END MILLS

 X-POWER
END MILLS

 JET-POWER
END MILLS

 V7 Mill STEEL
END MILLS

 V7 Mill INOX
END MILLS

 ALU-POWER
END MILLS

 D-POWER
END MILLS

 STANDARD
CARBIDE
END MILLS

 TANK-POWER
END MILLS

 STANDARD
COBALT
& HSS
END MILLS

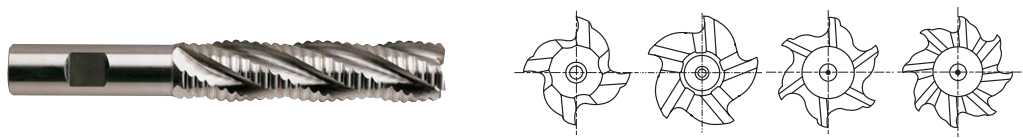
 TECHNICAL
DATA

◎ : Excellent ○ : Good

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

HSSCo8, MULTI FLUTE LONG LENGTH COARSE PITCH ROUGHING

► This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is recommended for cutting steel grades and many non-ferrous materials. The end tooth of this tool has a center hole design for many accurate resharpenings between centers.



HSS Co8
COARSE
4-8
30°
FLAT
P.777, 782, 786

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
62321	1/2	1/2	2	4	4
62337	5/8	5/8	2-1/2	4-5/8	4
62358	3/4	5/8	3	5-1/8	4
62359	3/4	3/4	3	5-1/4	4
62391	7/8	3/4	3-1/2	5-3/4	5
62422	1	3/4	4	6-1/4	5
62426	1	1	4	6-1/2	5
62439	1-1/4	3/4	4	6-1/4	6
62445	1-1/4	1-1/4	4	6-1/2	6
62457	1-1/2	3/4	4	6-1/4	6
62461	1-1/2	1-1/4	4	6-1/2	6
62469	1-3/4	1-1/4	4	6-1/2	6
62477	2	1-1/4	4	6-1/2	6
* 62490	2	2	8	11-3/4	8

* Combination Shank

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

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

◎ : Excellent ○ : Good

- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- 4G MILLS END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

HSSCo8, 3FLUTE STUB LENGTH COARSE PITCH ROUGHING CENTER CUTTING

► This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is recommended for cutting steel grades and many non-ferrous materials. The end tooth of this tool has a center hole design for many accurate resharpenings between centers.



HSS Co8

COARSE

3

30°

FLAT

P.777, 782, 786

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
63297	1/4	3/8	1/4	2-1/16
63305	3/8	3/8	3/8	2-5/32
63321	1/2	1/2	1/2	2-1/2
63337	5/8	5/8	5/8	2-3/4
63359	3/4	3/4	3/4	2-7/8
63426	1	1	1	3-1/2

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

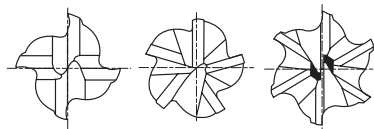
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
-HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

CARBIDE

HSS

**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.777, 782, 786

E2195 Series ■ REGULAR LENGTH

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
64321	1/2	1/2	1-1/4	3-1/4	4
64337	5/8	5/8	1-5/8	3-3/4	4
64359	3/4	3/4	1-5/8	3-7/8	4
64426	1	1	2	4-1/2	5
64445	1-1/4	1-1/4	2	4-1/2	6
64461	1-1/2	1-1/4	2	4-1/2	6

E2197 Series ■ LONG LENGTH

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
65321	1/2	1/2	2	4	4
65337	5/8	5/8	2-1/2	4-5/8	4
65359	3/4	3/4	3	5-1/4	4
65426	1	1	4	6-1/2	5
65445	1-1/4	1-1/4	4	6-1/2	6
65461	1-1/2	1-1/4	4	6-1/2	6

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.

■ Coating Codes for Cobalt

Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)

► Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

CBN
END MILLi-Xmill
END MILLX5070
END MILLS4G MILLS
END MILLSX-SPEED
ROUGHER
END MILLSX-POWER
END MILLSJET-POWER
END MILLSV7 Mill STEEL
END MILLSV7 Mill INOX
END MILLSALU-POWER
END MILLSD-POWER
END MILLSSTANDARD
CARBIDE
END MILLSTANK-POWER
END MILLSSTANDARD
COBALT
& HSS
END MILLSTECHNICAL
DATA

◎ : Excellent ○ : Good

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

HSSCo8, MULTI FLUTE REGULAR & LONG LENGTH COARSE PITCH ROUGHING BALL NOSE

► This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is recommended for cutting steel grades and many non-ferrous materials.



P.777, 782, 786

E2193 Series ■ REGULAR LENGTH

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
8% COBALT (M42)	R					
68297	R1/8	1/4	3/8	5/8	2-7/16	3
68301	R5/32	5/16	3/8	3/4	2-1/2	3
68305	R3/16	3/8	3/8	3/4	2-1/2	4
68321	R1/4	1/2	1/2	1-1/4	3-1/4	4
68337	R5/16	5/8	5/8	1-5/8	3-3/4	4
68359	R3/8	3/4	3/4	1-3/4	4	4
68422	R1/2	1	3/4	2	4-1/2	5
68426	R1/2	1	1	2	4-1/2	5
68439	R5/8	1-1/4	3/4	2	4-1/2	6
68445	R5/8	1-1/4	1-1/4	2	4-1/2	6
68457	R3/4	1-1/2	3/4	2	4-1/2	6
68461	R3/4	1-1/2	1-1/4	2	4-1/2	6

E2125 Series ■ LONG LENGTH

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
8% COBALT (M42)	R					
69321	R1/4	1/2	1/2	2-1/2	4-1/2	4
69337	R5/16	5/8	5/8	2-1/2	4-5/8	4
69359	R3/8	3/4	3/4	3	5-1/4	4
69426	R1/2	1	1	4	6-1/2	5
69445	R5/8	1-1/4	1-1/4	4	6-1/2	6
69461	R3/4	1-1/2	1-1/4	4	6-1/2	6

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.

■ Coating Codes for Cobalt

Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)

► Coated Price Shown in Price List. Call for Availability.

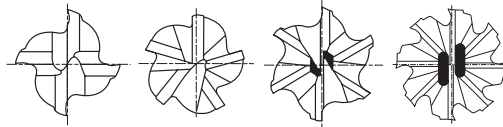
Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

◎ : Excellent ○ : Good

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

HSSCo8, MULTI FLUTE REGULAR LENGTH ROUGHING & FINISHING

► This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths. In many cases, the milled surfaces are of acceptable quality.



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

HSS Co8
NF
4-8
30°
FLAT
P.777, 782, 786

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
73297	1/4	3/8	5/8	2-7/16	4
73301	5/16	3/8	3/4	2-1/2	4
73305	3/8	3/8	3/4	2-1/2	4
73312	7/16	3/8	1	2-11/16	4
73321	1/2	1/2	1-1/4	3-1/4	4
73328	9/16	1/2	1-3/8	3-3/8	4
73337	5/8	5/8	1-5/8	3-3/4	4
73348	11/16	5/8	1-5/8	3-3/4	4
73358	3/4	5/8	1-5/8	3-3/4	4
73359	3/4	3/4	1-5/8	3-3/4	4
73391	7/8	3/4	1-7/8	4-1/8	5
73394	7/8	7/8	1-7/8	4-1/8	5
73422	1	3/4	2	4-1/4	5
73426	1	1	2	4-1/2	5
73431	1-1/8	3/4	2	4-1/4	6
73435	1-1/8	1	2	4-1/2	6
73439	1-1/4	3/4	2	4-1/4	6
73445	1-1/4	1-1/4	2	4-1/2	6
73457	1-1/2	3/4	2	4-1/4	6
73461	1-1/2	1-1/4	2	4-1/2	6
73467	1-3/4	3/4	2	4-1/4	6
73469	1-3/4	1-1/4	2	4-1/2	6
73475	2	3/4	2	4-1/4	6
73477	2	1-1/4	2	4-1/2	6
* 73480	2	2	2	5-3/4	8
* 73482	2	2	3	6-3/4	8
* 73484	2	2	4	7-3/4	8

* Combination Shank

Mill Dia. Tolerance (inch)
+ .0025
+ .0005

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

◎ : Excellent ○ : Good

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

**HSSCo8, 3 FLUTE 37° HELIX REGULAR LENGTH ROUGHING
for ALUMINUM**

► This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths. In many cases, the milled surfaces are of acceptable quality.



HSS Co8
ALU
3
37°
FLAT
P.777, 782, 786

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
66297	1/4	3/8	5/8	2-7/16
66301	5/16	3/8	3/4	2-1/2
66305	3/8	3/8	3/4	2-1/2
66321	1/2	1/2	1-1/4	3-1/4
66337	5/8	5/8	1-5/8	3-3/4
66359	3/4	3/4	1-5/8	3-7/8
66391	7/8	3/4	1-7/8	4-1/8
66426	1	1	2	4-1/2
66445	1-1/4	1-1/4	2	4-1/2
66461	1-1/2	1-1/4	2	4-1/2

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardstick)
- Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

◎ : Excellent ○ : Good

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

CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA

CARBIDE

HSS

COBALT & HSS
END MILLS

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.777, 782, 786

E2226 Series ■ MEDIUM LENGTH

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
66901	1	1	3	5-1/2
66902	1-1/4	1-1/4	3	5-1/2

E2192 Series ■ LONG LENGTH

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
67321	1/2	1/2	2	4
67337	5/8	5/8	2-1/2	4-5/8
67359	3/4	3/4	3	5-1/4
67426	1	1	4	6-1/2
67445	1-1/4	1-1/4	4	6-1/2
67461	1-1/2	1-1/4	4	6-1/2

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.

■ Coating Codes for Cobalt

Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)

► Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

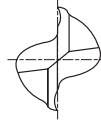
CBN
END MILLi-Xmill
END MILLX5070
END MILLS4G MILLS
END MILLSX-SPEED
ROUGHER
END MILLSX-POWER
END MILLSJET-POWER
END MILLSV7 Mill STEEL
END MILLSV7 Mill INOX
END MILLSALU-POWER
END MILLSD-POWER
END MILLSSTANDARD
CARBIDE
END MILLSTANK-POWER
END MILLSSTANDARD
COBALT
& HSS
END MILLSTECHNICAL
DATA

◎ : Excellent ○ : Good

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

HSSCo8 & HSS, 2 FLUTE 15° HELIX for KEYWAY CUTTING

► E2163(E1163) are keyway cutting end mills that have the same design as the general purpose of two flute single end mill, but are held to a mill diameter tolerance of +.0000 -.0015. These close tolerance end mills are recommended for cutting keyway which must be held close to nominal size.



P.773, 779, 783

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
14289	14039	1/8	3/8	3/8	2-5/16
14293	14043	3/16	3/8	7/16	2-5/16
14297	14047	1/4	3/8	1/2	2-5/16
14301	14051	5/16	3/8	9/16	2-5/16
14305	14055	3/8	3/8	9/16	2-5/16
14312	14062	7/16	3/8	13/16	2-1/2
14321	14071	1/2	1/2	1	3
14337	14087	5/8	5/8	1-5/16	3-7/16
14359	14109	3/4	3/4	1-5/16	3-9/16
14394	14144	7/8	7/8	1-1/2	3-3/4
14426	14176	1	1	1-5/8	4-1/8

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)
0~-.0015

CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA

◎ : Excellent ○ : Good

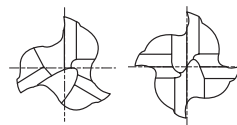
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
-HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

CARBIDE

HSS

**COBALT & HSS
END MILLS****E2120 SERIES****8% COBALT (M42)
FLAT SHANK****E2121 SERIES****8% COBALT (M42)
FLAT SHANK****HSSCo8, 3&4 FLUTE 60° HELIX REGULAR LENGTH**

- Provided with high helix angle(60°).
Smooth cutting and small cutting resistance.
Suitable for machining of difficult-to-cut materials.

**HSS
Co8****3&4****60°****FLAT**

P.775

E2120 Series ■ 3 FLUTE

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
20297	1/4	3/8	5/8	2-7/16
20301	5/16	3/8	3/4	2-1/2
20305	3/8	3/8	3/4	2-1/2
20312	7/16	3/8	1	2-11/16
20321	1/2	1/2	1-1/4	3-1/4
20337	5/8	5/8	1-5/8	3-3/4
20359	3/4	3/4	1-5/8	3-7/8

E2121 Series ■ 4 FLUTE

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
20394	7/8	7/8	1-7/8	4-1/8
20426	1	1	2	4-1/2
20445	1-1/4	1-1/4	2	4-1/2
20461	1-1/2	1-1/4	2	4-1/2
20477	2	1-1/4	2	4-1/2

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.

■ Coating Codes for Cobalt

Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)

► Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	* *0~+.0015

**The shank of end mills is the same diameter as the cutting portion.

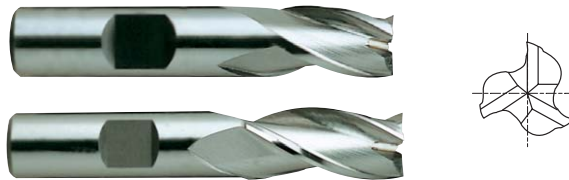
CBN
END MILLi-Xmill
END MILLX5070
END MILLS4G MILLS
END MILLSX-SPEED
ROUGHER
END MILLSX-POWER
END MILLSJET-POWER
END MILLSV7 Mill STEEL
END MILLSV7 Mill INOX
END MILLSALU-POWER
END MILLSD-POWER
END MILLSSTANDARD
CARBIDE
END MILLSTANK-POWER
END MILLSSTANDARD
COBALT
& HSS
END MILLSTECHNICAL
DATA

◎ : Excellent ○ : Good

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

HSSCo8, 3 FLUTE SHORT & LONG LENGTH THROW AWAY

► Well balanced web design to minimize deflection & chattering. High accuracy for O.D. is guaranteed under the strict tolerance control. Much higher(50%) table speed than 2 Flute is allowed.


E2160 Series ■ SHORT LENGTH

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
22257	1/16	1/4	3/32	31/32
22261	3/32	1/4	5/32	1-1/64
22265	1/8	1/4	3/16	1-3/32
22269	5/32	1/4	1/4	1-9/32
22273	3/16	1/4	9/32	1-11/32
22277	7/32	1/4	5/16	1-13/32
22281	1/4	1/4	3/8	1-13/32

E2161 Series ■ LONG LENGTH

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
23257	1/16	1/4	5/32	1-3/32
23261	3/32	1/4	1/4	1-1/4
23265	1/8	1/4	5/16	1-11/32
23269	5/32	1/4	3/8	1-17/32
23273	3/16	1/4	7/16	1-21/32
23277	7/32	1/4	1/2	1-3/4
23281	1/4	1/4	5/8	1-3/4

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.

■ Coating Codes for Cobalt

Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)

► Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)
— .0005
— .0013

◎ : Excellent ○ : Good

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



E2237 SERIES 8% COBALT (M42)
FLAT SHANK

E1237 SERIES HSS (M2)
FLAT SHANK

HSSCo8 & HSS, 4 FLUTE CORNER ROUNDING

► This general corner rounding end mills are designed for machining fillets on work piece.



HSS Co8 **HSS** **4** **FLAT**

- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- 4G MILLS END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

Unit : Inch

EDP No.		Radius	Pilot Diameter	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

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

YG COBALT & HSS END MILLS

E2482 SERIES
E1482 SERIES

**8% COBALT (M42)
FLAT SHANK**
**HSS (M2)
FLAT SHANK**

CARBIDE

HSS

CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA

► Two flute end mills with metric cutting diameter are especially recommended for slotting operation, pocketing keyway cutting and other general purpose work including plunge cutting.



HSS Co8 HSS 2 30° FLAT

Unit : Inch

EDP No.		Mill Diameter		Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)	Metric	Inch			
15252	15002	2.0	.0787	3/8	5/16	2-5/16
15253	15003	2.5	.0984	3/8	5/16	2-5/16
15254	15004	3.0	.1181	3/8	5/16	2-5/16
15255	15005	3.5	.1378	3/8	7/16	2-5/16
15256	15006	4.0	.1575	3/8	7/16	2-5/16
15257	15007	4.5	.1772	3/8	1/2	2-5/16
15258	15008	5.0	.1969	3/8	1/2	2-5/16
15259	15009	5.5	.2165	3/8	1/2	2-5/16
15260	15010	6.0	.2362	3/8	1/2	2-5/16
15261	15011	7.0	.2756	3/8	9/16	2-5/16
15262	15012	8.0	.3150	3/8	9/16	2-5/16
15263	15013	9.0	.3543	3/8	9/16	2-5/16
15264	15014	10.0	.3937	3/8	13/16	2-1/2
15265	15015	11.0	.4330	3/8	13/16	2-1/2
15266	15016	12.0	.4724	3/8	13/16	2-1/2
15267	15017	12.5	.4921	1/2	1-1/8	3-1/8
15268	15018	13.0	.5118	1/2	1-1/8	3-1/8
15270	15020	14.0	.5512	1/2	1-1/8	3-1/8
15276	15026	16.0	.6299	5/8	1-5/16	3-7/16
15280	15030	18.0	.7087	5/8	1-5/16	3-7/16
15282	15032	20.0	.7874	5/8	1-1/2	3-3/4
15284	15034	22.0	.8661	3/4	1-1/2	3-3/4
15288	15038	24.0	.9449	3/4	2	4-1/2
15290	15040	25.0	.9843	1	2	4-1/2
15296	15046	32.0	1.2598	1	2	4-1/2
15298	15048	36.0	1.4173	1	2	4-1/2
15300	15050	40.0	1.5748	1-1/4	2	4-1/2
15302	15052	45.0	1.7717	1-1/4	2	4-1/2

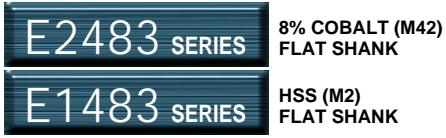
Mill Dia. Tolerance (inch)	
0~+.0010	* * 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

◎ : Excellent ○ : Good

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



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.



Unit : Inch

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	8% COBALT (M42)	HSS (M2)			
16252	16002	2.0	.0787	3/8	2-5/16
16253	16003	2.5	.0984	3/8	2-5/16
16254	16004	3.0	.1181	3/8	2-5/16
16255	16005	3.5	.1378	3/8	2-3/8
16256	16006	4.0	.1575	3/8	2-3/8
16257	16007	4.5	.1772	3/8	2-1/2
16258	16008	5.0	.1969	3/8	2-1/2
16259	16009	5.5	.2165	3/8	2-1/2
16260	16010	6.0	.2362	3/8	2-1/2
16261	16011	7.0	.2756	3/8	2-1/2
16262	16012	8.0	.3150	3/8	2-1/2
16263	16013	9.0	.3543	3/8	2-1/2
16264	16014	10.0	.3937	3/8	2-11/16
16265	16015	11.0	.4330	3/8	2-11/16
16266	16016	12.0	.4724	3/8	2-11/16
16267	16017	12.5	.4921	1/2	3-1/4
16268	16018	13.0	.5118	1/2	3-1/4
16270	16020	14.0	.5512	1/2	3-3/8
16276	16026	16.0	.6299	5/8	3-3/4
16280	16030	18.0	.7087	5/8	3-3/4
16282	16032	20.0	.7874	5/8	4-1/8
16284	16034	22.0	.8661	3/4	4-1/8
16288	16038	24.0	.9449	3/4	4-1/2
16290	16040	25.0	.9843	1	4-1/2
16296	16046	32.0	1.2598	1	4-1/2
16298	16048	36.0	1.4173	1	4-1/2
16300	16050	40.0	1.5748	1-1/4	4-1/2
16302	16052	45.0	1.7717	1-1/4	4-1/2

Mill Dia. Tolerance (inch)	
0~+.0010	* * 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

◎ : Excellent ○ : Good

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



END MILL SET SERIES

► Various range of sizes in these end mill sets gives you plenty of opportunities to reduce manufacturing costs and improve productivity.

■ SET OF MINIATURE, (3/16" SHANK) DOUBLE

EDP No.	ITEM No.	EDP No.	ITEM No.	Type	Length	Mill Diameter	No. of Flute
8% COBALT (M42)		HSS (M2)					
96002	CMR211	96001	MR211	Sq. END (11PCS.)	REGULAR	1/32, 3/64, 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 11/64, 3/16	2
96004	CMR409	96003	MR409	Sq. END (9PCS.)	REGULAR	1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 11/64, 3/16	4
96006	CMS211	96005	MS211	Sq. END (11PCS.)	STUB	1/32, 3/64, 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 11/64, 3/16	2
96008	CMS409	96007	MS409	Sq. END (9PCS.)	STUB	1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 11/64, 3/16	4

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.

* WITH TRANSPARENT PLASTIC CASE

■ Coating Codes for Cobalt

Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)

■ Coating Codes for HSS

Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)

► Coated Price Shown in Price List. Call for Availability.

■ SET OF 3/8" SHANK, (WELDON) SINGLE

EDP No.	ITEM No.	EDP No.	ITEM No.	Type	Length	Mill Diameter	No. of Flute
8% COBALT (M42)		HSS (M2)					
96010	CWR205	96009	WR205	Sq. END (5PCS.)	REGULAR	1/8, 3/16, 1/4, 5/16, 3/8	2
96012	CWR405	96011	WR405	Sq. END (5PCS.)	REGULAR	1/8, 3/16, 1/4, 5/16, 3/8	4
96014	CWRC05	96013	WRC05	CENTER CUT (5PCS.)	REGULAR	1/8, 3/16, 1/4, 5/16, 3/8	04

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.

* WITH TRANSPARENT PLASTIC CASE

■ Coating Codes for Cobalt

Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)

■ Coating Codes for HSS

Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)

► Coated Price Shown in Price List. Call for Availability.

CBN
END MILLi-Xmill
END MILLX5070
END MILLS4G MILLS
END MILLSX-SPEED
ROUGHER
END MILLSX-POWER
END MILLSJET-POWER
END MILLSV7 Mill STEEL
END MILLSV7 Mill INOX
END MILLSALU-POWER
END MILLSD-POWER
END MILLSSTANDARD
CARBIDE
END MILLSTANK-POWER
END MILLSSTANDARD
COBALT
& HSS
END MILLSTECHNICAL
DATA



END MILL SET SERIES

► Various range of sizes in these end mill sets gives you a plenty of opportunities to reduce manufacturing costs and improve productivity.

■ SET OF 3/8" SHANK, (WELDON) DOUBLE

EDP No.	ITEM No.	EDP No.	ITEM No.	Type	Length	Mill Diameter	No. of Flute
8% COBALT (M42)		HSS (M2)					
96016	CDR209	96015	DR209	Sq. END (9PCS.)	REGULAR	1/8, 5/32, 3/16, 7/32, 1/4, 9/32, 5/16, 11/32, 3/8	2
96018	CDR409	96017	DR409	Sq. END (9PCS.)	REGULAR	1/8, 5/32, 3/16, 7/32, 1/4, 9/32, 5/16, 11/32, 3/8	4
96020	CDRC09	96019	DRC09	CENTER CUT (9PCS.)	REGULAR	1/8, 5/32, 3/16, 7/32, 1/4, 9/32, 5/16, 11/32, 3/8	4

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.

* WITH TRANSPARENT PLASTIC CASE

■ Coating Codes for Cobalt

Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)

■ Coating Codes for HSS

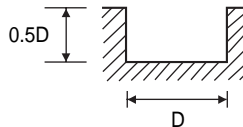
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)

► Coated Price Shown in Price List. Call for Availability.

CBN
END MILLi-Xmill
END MILLX5070
END MILLS4G MILLS
END MILLSX-SPEED
ROUGHER
END MILLSX-POWER
END MILLSJET-POWER
END MILLSV7 Mill STEEL
END MILLSV7 Mill INOX
END MILLSALU-POWER
END MILLSD-POWER
END MILLSSTANDARD
CARBIDE
END MILLSTANK-POWER
END MILLSSTANDARD
COBALT
& HSS
END MILLSTECHNICAL
DATA

HSSCo8 & HSS, 2 FLUTE FINISH - SLOTTING

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm ²		500~800N/mm ²		800~1000N/mm ²		1000~1300N/mm ²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	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

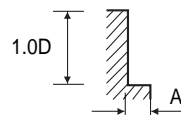
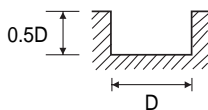


※ The Feed, in long & extra long types, should be reduced by around 50%.

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

HSS, 2 FLUTE, 42° HELIX FINISH for ALUMINUM

MATERIAL	ALUMINUM NONFERROUS METALS		NON-ALLOYED STEELS ALLOY STEELS CAST IRON	
DIAMETER	RPM	FEED	RPM	FEED
1/8	8000	22.5	8000	29.0
3/16	7400	25.0	7400	32.5
1/4	6800	28.5	6800	37.0
5/16	5200	43.5	5200	55.0
7/16	5000	47.0	5000	47.0
1/2	4500	47.0	4500	61.0
9/16	3500	49.0	3500	63.0
5/8	3500	49.0	3500	63.0
3/4	2300	51.0	2300	67.0
13/16	2000	51.0	2000	67.0



A : $\varnothing 1/8 \sim \varnothing 5/16 = 0.25 \times D$
 $\varnothing 7/16 \sim \varnothing 13/16 = 0.5 \times D$

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

CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

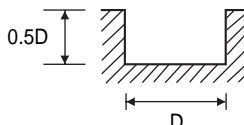
TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA

HSSCo8, 3 FLUTE FINISH - SLOTING

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm ²		500~800N/mm ²		800~1000N/mm ²		1000~1300N/mm ²			
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

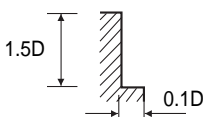


※ The Feed, in long & extra long types, should be reduced by around 50%.

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

HSSCo8, 3 FLUTE FINISH - SIDE CUTTING

MATERIAL	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
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

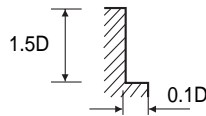


※ The Feed, in long & extra long types, should be reduced by around 50%.

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

HSSCo8 & HSS, MULTI FLUTE FINISH - SIDE CUTTING

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
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
1/8	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

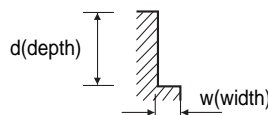


※ The Feed, in long & extra long types, should be reduced by around 50%.

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

HSSCo8, MULTI FLUTE 60° HELIX FINISH - SIDE CUTTING

MATERIAL		MILD STEELS		ALLOY STEELS		TOOL STEELS STAINLESS STEELS		CAST IRON	
HARDNESS		~HRc13		HRc13~HRc32		HRc25~HRc35		~HRc20	
DIAMETER	w x 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.

CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

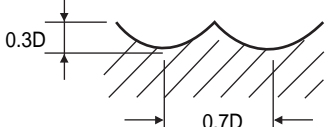
TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA

HSSCo8 & HSS, 2 FLUTE BALL NOSE

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm 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

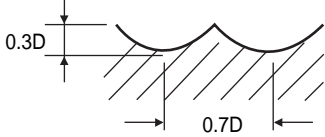


※ The Feed, in long & extra long types, should be reduced by around 50%.

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

HSSCo8 & HSS, MULTI FLUTE BALL NOSE

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm ²		500~800N/mm ²		800~1000N/mm ²		1000~1300N/mm ²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1/8 × 1/4	2200	7.9	1700	5.3	1000	2.8	700	1.6	5600	16.5
R5/32 × 5/16	1600	9.4	1200	6.3	700	3.0	500	1.8	4000	20.9
R3/16 × 3/8	1300	10.6	1000	7.1	560	3.5	400	2.0	3200	21.3
R1/4 × 1/2	1000	10.2	800	6.3	450	3.1	320	2.0	2500	20.1
R5/16 × 5/8	800	9.1	600	6.0	350	3.1	250	2.0	2000	17.7
R3/32 × 3/16	600	8.3	500	5.1	300	3.0	200	2.0	1600	16.5
R1/2 × 1	500	7.9	400	4.1	220	2.4	160	1.8	1300	15.0

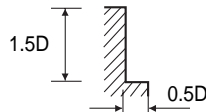


※ The Feed, in long & extra long types, should be reduced by around 50%.

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

HSSCo8, MULTI FLUTE ROUGHING - SIDE CUTTING

MATERIAL	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

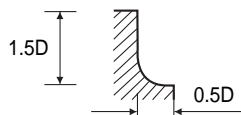


※ The Feed, in long & extra long types, should be reduced by around 50%.

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

HSSCo8, MULTI FLUTE BALL NOSE ROUGHING - SIDE CUTTING

MATERIAL	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.



HSSCo8 & HSS, MULTI FLUTE ROUGHING & FINISHING - SIDE CUTTING

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

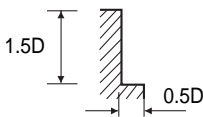
STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
	~ 500N/mm ²		500~800N/mm ²		800~1000N/mm ²		1000~1300N/mm ²		RPM	FEED
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH										
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	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	

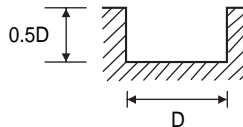
NOTES :

- (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 conditions.
- (2) Use a holder of strong gripping force and machine of high stiffness

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

HSSCo8 & HSS, 2 FLUTE FINISH TiN-COATED - SLOTTING

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~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
1/8	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

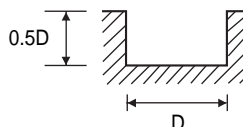


※ The Feed, in long & extra long types, should be reduced by around 50%.

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

HSSCo8 & HSS, 3 FLUTE FINISH TiN-COATED - SLOTTING

MATERIAL	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
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.

CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

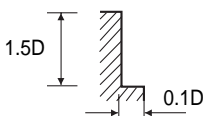
TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA


HSSCo8 & HSS, 3 FLUTE FINISH TiN-COATED - SIDE CUTTING

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
	~ 500N/mm ²		500~800N/mm ²		800~1000N/mm ²		1000~1300N/mm ²		RPM	FEED
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH										
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

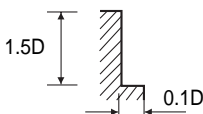


※ The Feed, in long & extra long types, should be reduced by around 50%.

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

HSSCo8 & HSS, MULTI FLUTE FINISH TiN-COATED - SIDE CUTTING

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
	~ 500N/mm ²		500~800N/mm ²		800~1000N/mm ²		1000~1300N/mm ²		RPM	FEED
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH										
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	4200	5.2	3840	3.7	3000	2.9	1920	1.4	13200	18.0
1/4	2640	8.5	1920	6.8	1440	4.2	960	2.9	6720	22.2
3/8	1320	9.5	1080	7.6	960	5.6	540	3.1	3700	28.3
1/2	1080	10.4	960	8.5	756	5.6	480	3.6	3000	26.9
5/8	840	10.4	672	7.6	540	4.9	336	3.1	2400	25.1
3/4	756	9.5	600	7.6	480	4.9	300	3.1	2160	25.1
7/8	600	9.5	540	7.6	420	4.9	264	3.1	1680	21.2
15/16	600	9.5	540	7.6	420	4.9	264	3.1	1680	21.2
1	540	8.5	480	6.8	372	4.2	216	2.4	1440	19.8
1-1/2	372	5.6	300	4.2	240	2.9	144	1.7	1080	15.6
1-3/4	336	5.6	264	4.2	216	2.9	132	1.7	960	14.2
2	336	5.6	264	4.2	168	2.2	96	1.2	960	14.2

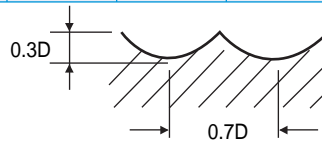


※ The Feed, in long & extra long types, should be reduced by around 50%.

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

HSSCo8 & HSS, 2 FLUTE BALL NOSE TiN-COATED

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
	~ 500N/mm ²		500~800N/mm ²		800~1000N/mm ²		1000~1300N/mm ²			
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH			~HRc20		HRc20~HRc30		HRc30~HRc40			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	5400	4.4	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

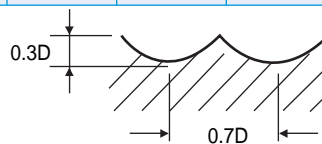


※ The Feed, in long & extra long types, should be reduced by around 50%.

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

HSSCo8 & HSS, MULTI FLUTE BALL NOSE TiN-COATED

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
	~ 500N/mm ²		500~800N/mm ²		800~1000N/mm ²		1000~1300N/mm ²			
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH			~HRc20		HRc20~HRc30		HRc30~HRc40			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1/8 × 1/4	2640	9.5	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



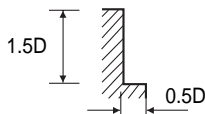
※ The Feed, in long & extra long types, should be reduced by around 50%.

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



HSSCo8, MULTI FLUTE ROUGHING TiN-COATED - SIDE CUTTING

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
	~ 500N/mm ²		500~800N/mm ²		800~1000N/mm ²		1000~1300N/mm ²		RPM	FEED
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH										
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

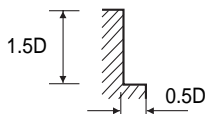


※ The Feed, in long & extra long types, should be reduced by around 50%.

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

HSSCo8, MULTI FLUTE ROUGHING & FINISHING TiN-COATED - SIDE CUTTING

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
	~ 500N/mm ²		500~800N/mm ²		800~1000N/mm ²		1000~1300N/mm ²		RPM	FEED
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH										
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	2160	3.0	1920	2.4	1440	2.2	960	1.2	5400	7.6
5/16	1680	4.0	1320	2.9	1080	2.4	672	1.4	3720	8.8
3/8	1320	5.6	1080	4.4	960	4.2	540	2.4	3000	13.2
1/2	1080	6.8	960	5.2	756	4.2	480	2.6	2400	15.1
5/8	840	6.8	672	5.2	540	4.2	336	2.6	1920	17.6
11/16	756	6.8	600	5.2	480	4.2	300	2.6	1680	18.0
7/8	600	8.3	540	6.4	420	5.2	264	3.4	1320	18.0
1	540	8.3	480	6.4	372	5.2	216	3.4	1200	17.6
1-1/4	420	8.0	336	6.1	264	4.9	168	3.4	960	19.0
1-3/8	372	8.0	300	6.1	240	4.9	144	3.4	840	18.0
2	288	6.4	228	4.8	192	4.1	132	3.1	600	13.4

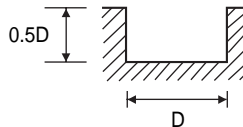


※ The Feed, in long & extra long types, should be reduced by around 50%.

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

HSSCo8 & HSS, 2 FLUTE FINISH TiCN-COATED - SLOTTING

MATERIAL	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
1/8	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

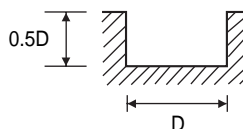


※ The Feed, in long & extra long types, should be reduced by around 50%.

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

HSSCo8, 3 FLUTE FINISH TiCN-COATED - SLOTTING

MATERIAL	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
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

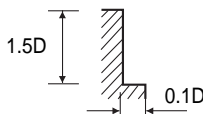


※ The Feed, in long & extra long types, should be reduced by around 50%.

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


HSSCo8 & HSS, 3 FLUTE FINISH TiCN-COATED - SIDE CUTTING

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
	~ 500N/mm ²		500~800N/mm ²		800~1000N/mm ²		1000~1300N/mm ²		RPM	FEED
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH										
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

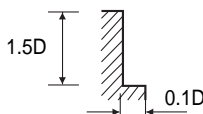


※ The Feed, in long & extra long types, should be reduced by around 50%.

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

HSSCo8 & HSS, MULTI FLUTE FINISH TiCN-COATED - SIDE CUTTING

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
	~ 500N/mm ²		500~800N/mm ²		800~1000N/mm ²		1000~1300N/mm ²		RPM	FEED
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH										
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	4550	5.6	4160	4.0	3250	3.1	22080	1.6	14300	19.5
1/4	2340	9.2	2090	8.4	1560	4.6	1040	3.1	7280	24.1
3/8	1430	10.3	1170	8.2	1040	6.1	585	3.4	4030	30.7
1/2	1170	11.3	1040	9.2	818	6.1	520	3.9	3250	29.1
5/8	910	11.3	728	8.2	585	5.3	364	3.4	2600	27.2
3/4	819	10.3	650	8.2	520	5.3	325	3.4	2340	27.2
7/8	650	10.3	585	8.2	455	5.3	286	3.4	1820	23.0
15/16	650	10.3	585	8.2	455	5.3	234	3.4	1820	23.0
1	585	9.2	520	8.4	403	4.6	208	2.6	1560	21.9
1-1/2	403	6.1	325	4.6	260	3.1	156	1.8	1170	16.9
1-3/4	364	6.1	286	4.6	234	3.1	143	1.8	1040	15.3
2	364	6.1	286	4.6	182	2.3	104	1.3	1040	15.3

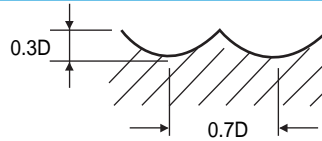


※ The Feed, in long & extra long types, should be reduced by around 50%.

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

HSSCo8 & HSS, 2 FLUTE BALL NOSE TiCN-COATED

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
	~ 500N/mm ²		500~800N/mm ²		800~1000N/mm ²		1000~1300N/mm ²			
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH			~HRc20		HRc20~HRc30		HRc30~HRc40			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	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

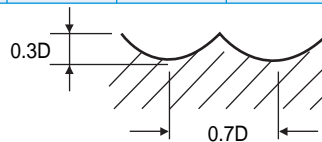


※ The Feed, in long & extra long types, should be reduced by around 50%.

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

HSSCo8 & HSS, MULTI FLUTE BALL NOSE TiCN-COATED

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
	~ 500N/mm ²		500~800N/mm ²		800~1000N/mm ²		1000~1300N/mm ²			
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH			~HRc20		HRc20~HRc30		HRc30~HRc40			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1/8 × 1/4	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%.

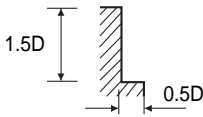
RPM = rev./min.
FEED = inch/min.



HSSCo8, MULTI FLUTE ROUGHING TiCN-COATED - SIDE CUTTING

- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- 4G MILLS END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

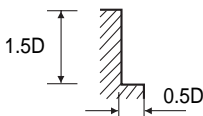
MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
	~ 500N/mm ²		500~800N/mm ²		800~1000N/mm ²		1000~1300N/mm ²		RPM	FEED
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH										
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	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
	~ 500N/mm ²		500~800N/mm ²		800~1000N/mm ²		1000~1300N/mm ²		RPM	FEED
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH										
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



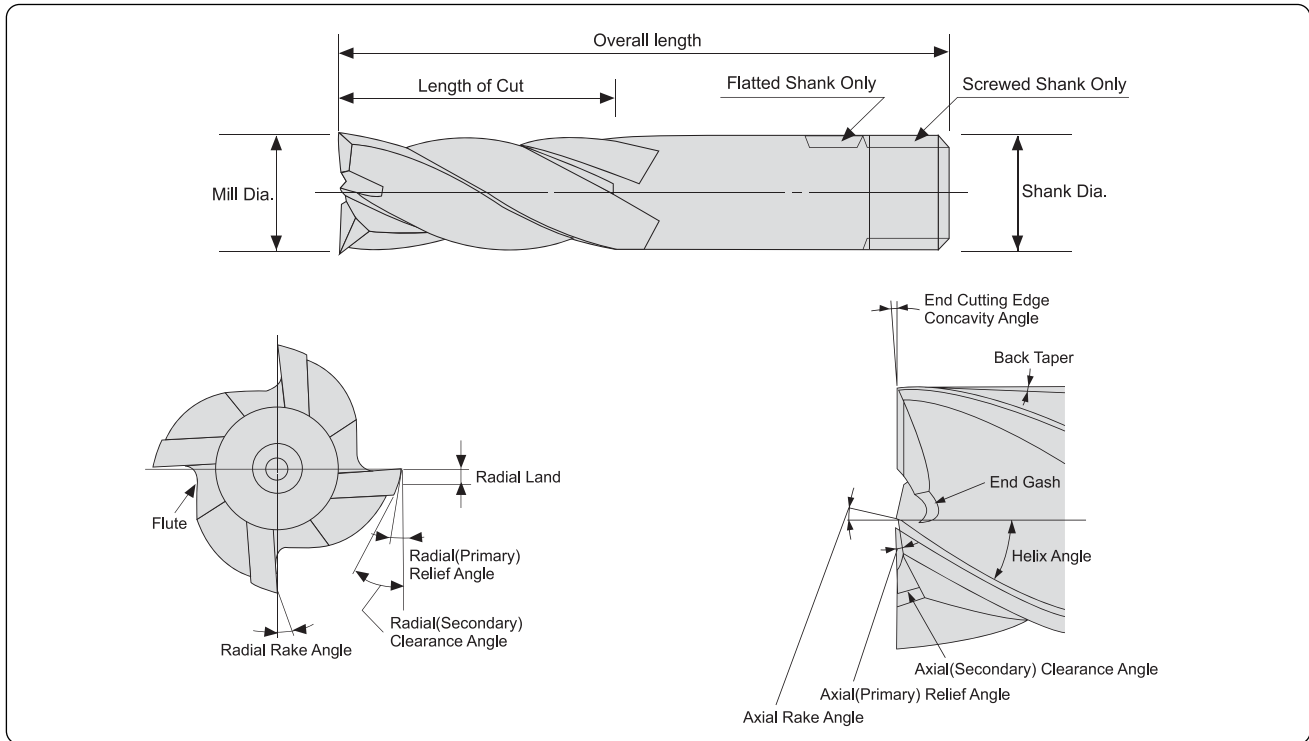
Being the best through innovation



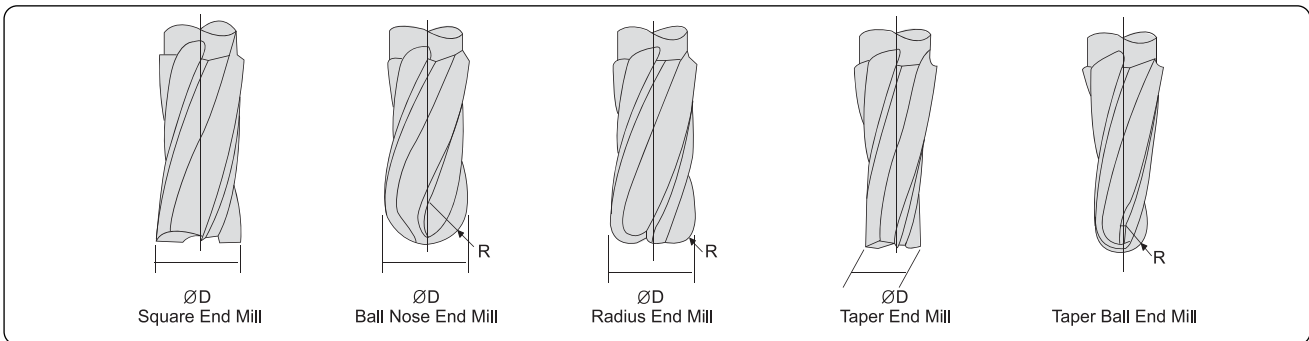
TECHNICAL DATA



Names of End Mill Parts

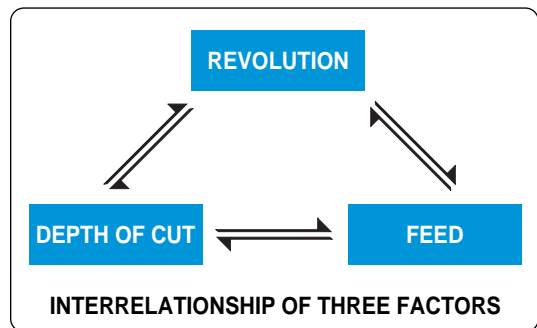


Type of End Mill



Speed, feed and depth of cut are the most important factors to consider for best results in milling. Improper feeds and speeds often cause low production, poor work quality and unnecessary damage to the cutter.

This section covers the basic principles of speed and feed selection for milling cutters and end mills. It will serve as a guide in setting-up new milling jobs.





Speeds

In milling, Speed is measured in peripheral feet per minute.(revolution per minute × cutter circumference in feet) This is frequently referred to as “peripheral speed” “cutting speed” or “surface speed”.

$$\text{Revolutions per Minute} \quad N = \frac{1000V}{\pi \times D}$$

V : Cutting Speed(m/min)

D : Diameter of Tool(mm)

N : Revolution per minute(rev/min)

π : 3.1416

They will have to be tempered to suit the conditons ON THE JOB. For example:

Use Lower Speed Ranges for	Use Higher Speed Ranges for
<ul style="list-style-type: none"> Hard materials Tough materials Abrasive materials Heavy cuts Minimum tool wear Maximum cutter life 	<ul style="list-style-type: none"> Softer materials Better finishes Smaller diameter cutters Light cuts Frail work pieces or set-ups Hand feed operations Maximum production rates Non-metallics



Feeds

Feed is usually measured in millimeters per minute. It is the product of feed per tooth times revolution per minute times the number of teeth in the cutter. Due to variations in cutter sizes, numbers of teeth and revolutions per minute, all feed rates should be calculated from feed per tooth. Feed per tooth is the basis of all feed rates per minute, whether the cutters are large or small, fine or coarse tooth, and are run at high or low peripheral speed. Because feed per tooth affects chip thickness. It is a very important factor in cutter life.

Highest possible feed per tooth will usually give longer cutter life between grinds and greater production per grind. Excessive feeds may over load the cutter teeth and cause breakage or chipping of the cutting edges. The following factors should be kept in mind when using the recommended starting feed per tooth.

Feed in milimeters per Minute

$$F.M = F.R. \times R.P.M$$

F.R. : Feed per Revolutions in milimeters

R.P.M .: Revolutions per Minutes

The following factors should be kept in mind when using the recommended stating feed per tooth.

Use Higher Feeds For	Use Lower Feeds For
<ul style="list-style-type: none"> Heavy, roughing cuts Rigid set-ups Easy-to-machine work materials Rugged cutters Slab milling cuts Low tensile strength materials Coarse tooth cutters Abrasive materials 	<ul style="list-style-type: none"> Light, and finishing cuts Frail set-ups Hard to machine work materials Frail and small cutters Deep slots High tensile strength materials Fine tooth cutters



SPEED AND FEED CALCULATIONS FOR MILLING CUTTERS AND OTHER ROTATING TOOLS

TO FIND	HAVING	FORMULA
Surface(or Periphery) Speed in meter Per Minute=S.P.M.	Diameter of Tool in millimeters =D Revolutions per Minute =R.P.M.	$V = \frac{D \times 3.1416 \times R.P.M.}{1000}$
Revolutions Per Minute=R.P.M.	Surface Speed in meter per Minute =S.P.M. Diameter of Tool in millimeters =D	$R.P.M. = \frac{V \times 1000}{D \times 3.1416}$
Feed per Revolution in millimeters-F.R.	Feed in millimeters per Minute =F.M. Revolution per Minute =R.P.M.	$F.R. = \frac{F.M.}{R.P.M.}$
Feed in millimeters Per Minute-F.M.	Feed per Revolution in millimeters =F.R. Revolution per Minute =R.P.M.	$F.M. = F.R. \times R.P.M.$
Number of Cutting Teeth per Minute=T.M.	Number of Teeth in Tool =T Revolution per Minute =R.P.M.	$T.M. = T \times R.P.M.$
Feed per tooth=F.T.	Number of Teeth in Tool =T Feed per Revolution in millimeters =R.P.M.	$F.T. = \frac{F.R.}{T}$
Feed per Tooth=F.T.	Number of Teeth in Tool =T Feed in millimeters per Minute =F.M. Speed in Revolution per Minute =R.P.M.	$F.T. = \frac{F.M.}{T \times R.P.M.}$



Case of Resharpener

When the product finish become worse, the cutting edge must get dulled, chips become smaller and the cutting sound gets louder. In such cases, an end mill must be resharpened. The following are the damages of end mills when the resharpening is required.

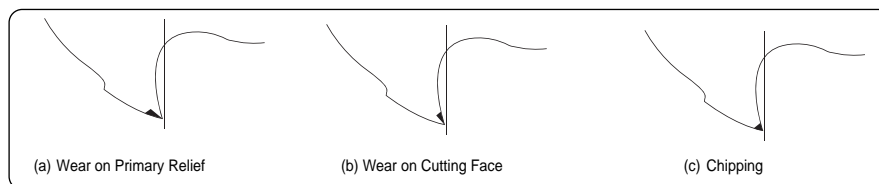


Fig. 1. Damages of Cutting Edge



Sharpen at Predetermined Wear Land

Cutters should be sharpened as soon as the wear land(Fig. 2.) reaches a predetermined width. This width should permit sharpening without excessive loss of tool life. It may vary from a few hundredths to some tenth of a millimeter, depending on the type of cutter and the finish required on the product. This method is used on production runs where uneven amounts of stock is removed or where the material varies in machinability. It is also used on small quantity product lots.

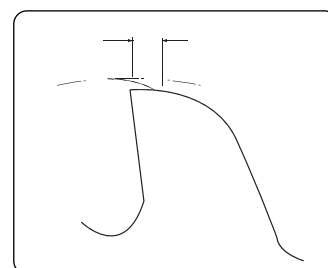


Fig. 2. Wear Land



Resharpener Peripheral Cutting Edge

1 RESHARPENING PERIPHERAL CUTTING EDGE

The geometry of relief angle in an end mill consists of three methods as shown in Fig.3 concave, flat, and eccentric. Recently, most end mills have the eccentric relief(eccentric sharpening). In this method, since the relief is formed an eccentric are surface in cylindrical grinding method, the roughness of the finished surface of the relief improves and the strength of cutting edge increase at the same time.(Fig.4) As a result, the tool life is improved.

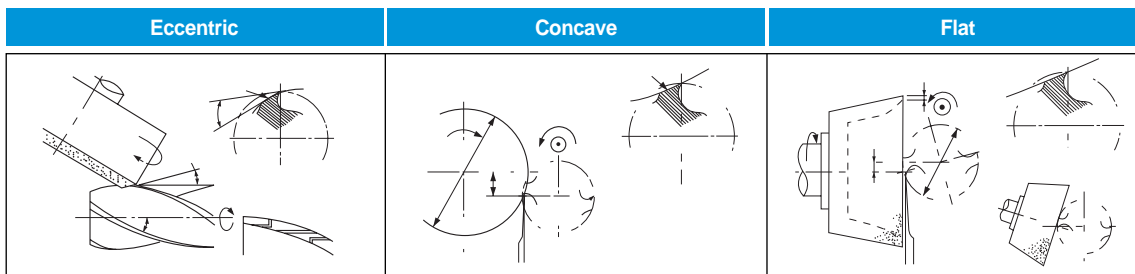


Fig. 3. Three Types of Primary Relief

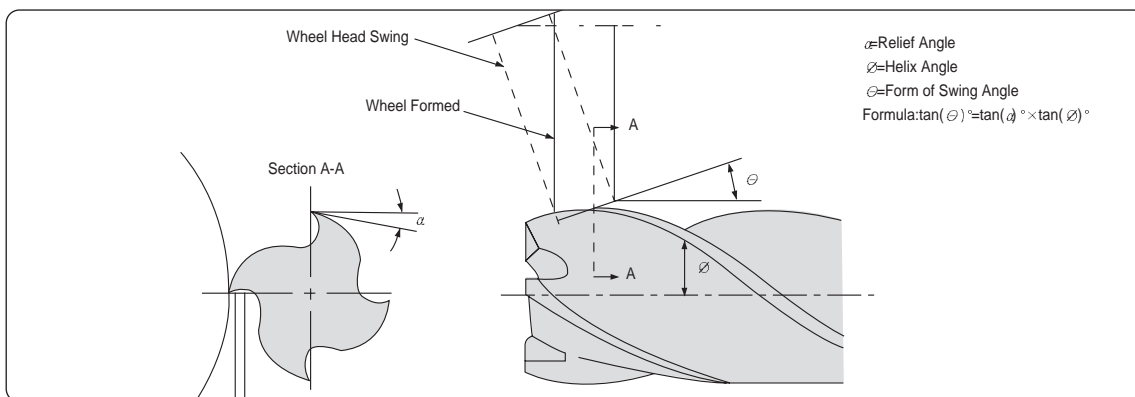


Fig. 4. Tothing of Eccentric Relief Angle

2 ANGLE OF WHEEL INCLINATION

Eccentric relief is produced with a plain wheel positioned with its axis parallel or at a slight angle with the cutter axis. The degree of relief is varied by changing the angle of wheel inclination.

Table 1. RECOMMENDED RELIEF ON END MILLS

Mill Diameter (inches)	Eccentric relief indicator drop for relief Angles shown		Checking Distance	Wheel Angles(Deg.) θ			Radial Relief Angles(α 1)	Clearance Angles(α 2)
	Min	Max.		15° Helix	30° Helix	60° Helix		
-			-	*Angle	*Angle	*Angle	*Angle	*Angle
1/8	.0040	.0052	.015	4°42'	10°02'	27°58'	17°03'	25°
1/4	.0035	.0050	.020	3°15'	6°59'	20°12'	12°00'	25°
1/2	.0040	.0053	.025	2°51'	6°07'	17°51'	10°32'	25°
1	.0038	.0055	1/32	2°16'	4°54'	14°27'	8°27'	25°
1-1/2	.0033	.0050	1/32	2°02'	4°22'	12°57'	7°33'	25°
2	.0033	.0050	1/32	2°02'	4°22'	12°57'	7°33'	25°

The actual at the radial relief angle is normally kept within the range shown but may be varied to suit the cutter material, the work material and the operating conditions.

* Angle is calculated from the basic mean at the radical angle.



Resharpener End Teeth

The three necessary operations and one option feature, along with setup suggestions are shown in Fig.5 A to D in each drawing, the shaded area indicates the surface being ground.

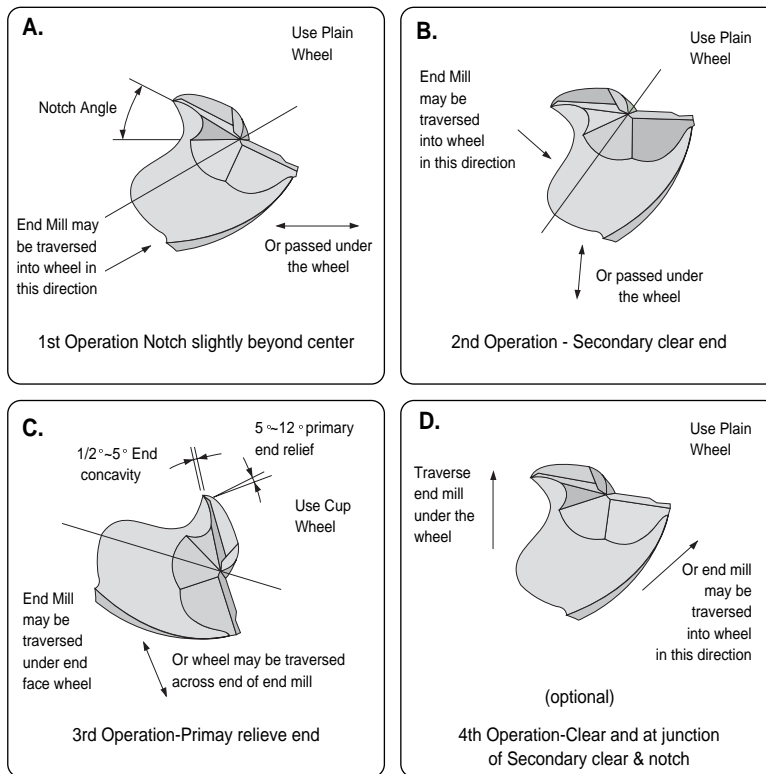


Fig 5. PROCEDURE FOR SHARPENING END OF 2 FLUTE SQUARE END MILLS



Inspection

The inspection is calculated by using the formula shown in Table1.

Procedure To Check Radial Relief Angles With Indicators.

1. Mount the cutter to rotate freely with no end movement.
2. Adjust the sharp pointed indicator to bear at the very tip of the cutting edge, pointing in a radial line, shown in Figure6
3. Roll the cutter the tabulated amount gives under "checking distance" using the second indicator as control.
4. Consult chart for amount of drop for the particular diameter and relief angle.

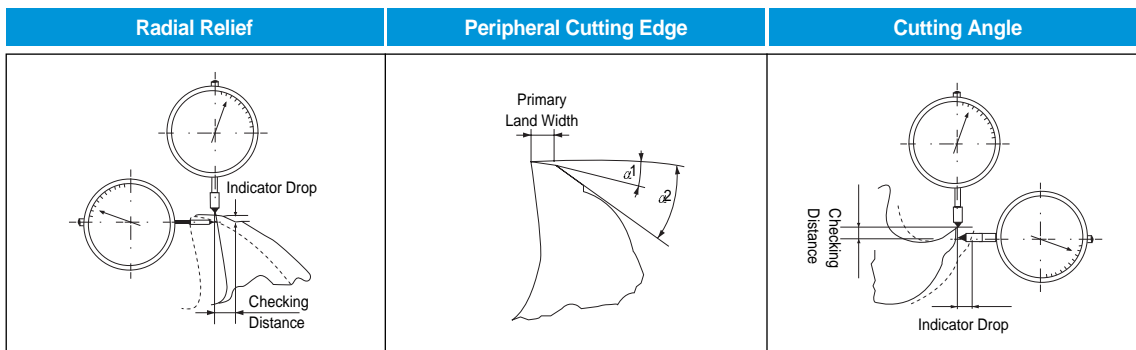
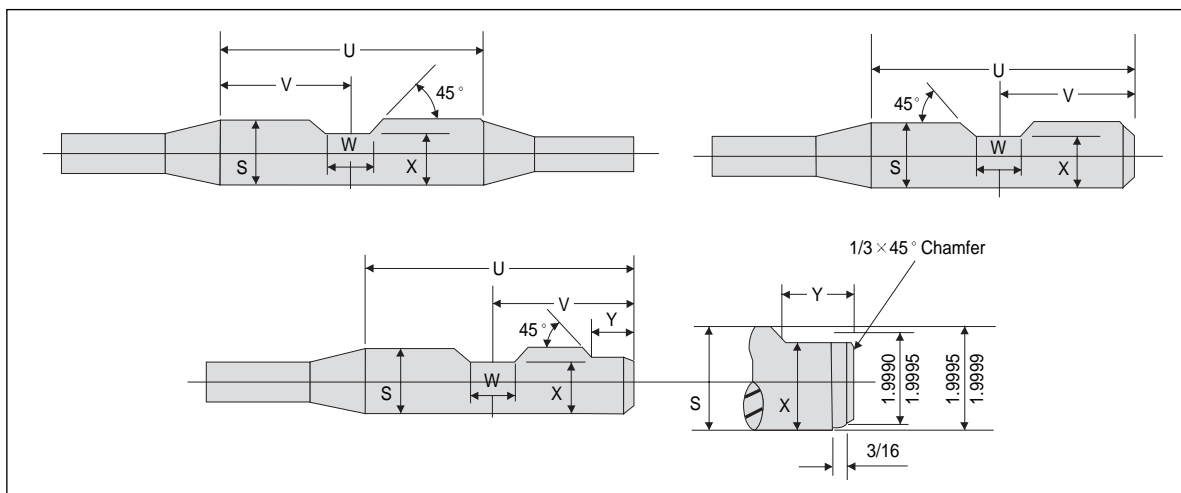


Fig. 6. Indicator Set-Up for Checking

10

Standard Weldon Shanks



11

Dimensions

All dimensions are given in inches.

Diameter of Shank S	Length of Shank U	V	W		X	Y
			Min.	Max.		
3/8	1-9/16	25/32	0.280	0.282	0.325	-
1/2	1-25/32	57/64	0.330	0.332	0.440	-
5/8	1-29/32	61/64	0.400	0.402	0.560	-
3/4	2-1/32	1-1/64	0.455	0.457	0.675	-
7/8	2-1/32	1-1/64	0.455	0.457	0.810	1/2
1	2-9/32	1-9/64	0.515	0.517	0.925	1/2
1-1/4	2-9/32	1-9/64	0.515	0.517	1.156	1/2
1-1/2	2-11/16	1-3/16	0.515	0.517	1.406	9/16
2	3-1/4	1-27/32	0.700	0.702	1.900	27/32
2-1/2	3-1/2	1-15/16	0.700	0.702	2.400	27/32

12

Tolerances

Element	Range	Direction	Tolerance
Diameter of Shank, S	All Sizes	minus	.0001 to .0005
Length of Shank, U	All Sizes	plus or minus	1/32
Dimension, V	All Sizes	plus or minus	1/64
Dimension, X	All Sizes	minus	1/64
Dimension, Y	7/8 to 2-1/2 inc.	plus or minus	1/32

Extracted from Milling Cutters and End Mills. MCTI 1989.

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

4G MILLS END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

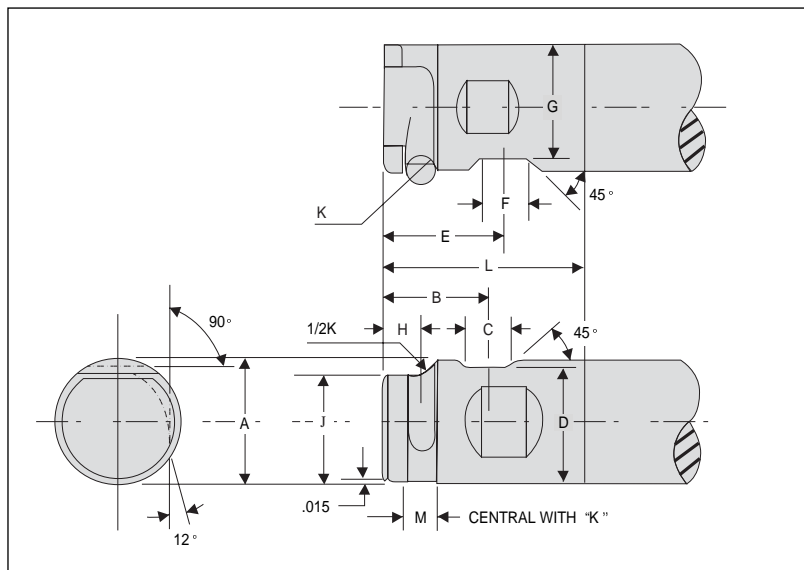
STANDARD COBALT & HSS END MILLS

TECHNICAL DATA



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	<ul style="list-style-type: none"> · At time of engaging with work material · When ending cut 	<ol style="list-style-type: none"> 1. Decrease feed rate. 2. Decrease projection amount 3. Shorten cutting edge length to required minimum limit
	<ul style="list-style-type: none"> · During normal cutting 	<ol style="list-style-type: none"> 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.
	<ul style="list-style-type: none"> · When changing direction of feed 	<ol style="list-style-type: none"> 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	<ul style="list-style-type: none"> · Fracture of corners 	<ol style="list-style-type: none"> 1. Carry out chamfering or nose with hand lapper. 2. Down cut → Up cut
	<ul style="list-style-type: none"> · Fracture at boundary of depth of cut 	<ol style="list-style-type: none"> 1. Down cut → Up cut 2. Reduce cutting speed
	<ul style="list-style-type: none"> · Chipping at center part or overall 	<ol style="list-style-type: none"> 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
	<ul style="list-style-type: none"> · Large fracturing of cutting edge 	<ol style="list-style-type: none"> 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		<ol style="list-style-type: none"> 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.

CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA



Trouble	Occurrences of trouble	Countermeasures
Inferior finished surface	· Surface is good but rough	<ol style="list-style-type: none"> 1. Decrease feed 2. In case using 2 flute, increase to 4 flute
	· Small chip welding	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 1. Carry out fine honing 2. Use water insoluble cutting fluid 3. Down cut → Up cut
	· Signs of excessive cutting	<ol style="list-style-type: none"> 1. Reduce finishing depth of cut 2. Increase cutting speed 3. Reduce feed
Poor machining accuracy	· Finish dimensions are on minus side	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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		<ol style="list-style-type: none"> 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