YU-TP16
AMERICA

Registered
ISO 9001:2008 / ISO 14001:2004

BEST VALUE IN THE WORLD OF CUTTING TOOLS

TitaNox Power

Y-COATED SOLID CARBIDE END MILLS

YG-1 CO., LTD.

YG-1 Korea
211, Sewolcheon-ro, Bupyeong-gu, Incheon, Korea
PHONE: +82-32-526-0909
http://www.yg1.kr
E-mail:yg1@yg1.kr

Note The new address above has currently been updated since Korean new postal standard was valid from 2014.
Be noticed that the physical Headquarter location is NOT changed.

YG-1 USA
730 Corporate Woods Parkway Vernon Hills, IL 60061 U.S.A
PHONE: 800-765-8665
Technical Assistance: 888-868-5988
http://www.yg1usa.com

Tool specifications are subject to change without prior notice.

YG1YUTP160628001

TitaNox Power

Y-COATED SOLID CARBIDE END MILLS

▶ *High Speed Machining for Exotic Materials:*
Titanium, Inconel and Stainless Steels

YG-1 CO., LTD.

MADE IN USA

TitaNox Power

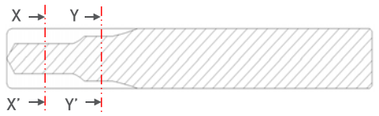
Y-COATED SOLID CARBIDE END MILLS

"High Speed Machining for Exotic Materials: Titanium, Inconel & Stainless Steels"

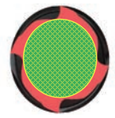
- Excellent tools for Aerospace Industry, Energy & Power generation.
- For Roughing and Semi-finishing for universal use, also for Finishing difficult-to-machine materials.
- YG-1's advanced coating technology makes it possible to have better Wear resistance, Oxidation resistance and better Thermal stability.

"Offer a high performance metal removal rate with secured and chatter free machining in semi-finishing and finishing."

1 Y-Coated Solid Carbide 4 Flutes with Double Core End Mills



<SECTION X-X'>
Excellent chip evacuation



<SECTION Y-Y'>
Higher rigidity

- Double core geometry reduces tool deflection and improves dimensional stability.
- Optimized edge preparation protects chipping problems in high speed machining.
- Variable flute design brings out perfect performance in slotting operation.

2 Y-Coated Solid Carbide 5 Flutes with Multiple helix

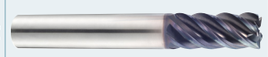
- Multiple helix geometry delivers silent cutting and reduce chattering.
- Optimized edge preparation increases tool life make heavy cutting possible.

YG-1 CO., LTD. phone:+82-32-526-0909, www.yg1.kr, E-mail:yg1@yg1.kr
phone:+1-800-765-8665, www.yg1usa.com

TitaNox Power
Y-COATED SOLID CARBIDE END MILLS

SELECTION GUIDE

◎:Excellent ○:Good

ITEM	MODEL	DESCRIPTION	SIZE Min.	SIZE Max.	P Carbon Steels ~HB225	P Alloy Steels HB225~352	P Prehardened Steels HRc30~40	P Hardened Steels HRc40~45	M Stainless Steels	K Cast Iron	N Aluminum	S Titanium	S High Temperature Alloys	PAGE
INCH														
UGMG42		4 FLUTE CORNER RADIUS with DOUBLE CORE ◆	D1/4"	D1"	○	○	○		◎			◎	○	5
UGMG32		5 FLUTE ◆	D1/8"	D1"	○	○	○		◎			◎	○	7
UGMG34		5 FLUTE CORNER RADIUS ◆	D1/8"	D1"	○	○	○		◎			◎	○	8
METRIC														
GMG40		4 FLUTE CORNER RADIUS with DOUBLE CORE ◇	D6.0	D25.0	○	○	○		◎			◎	○	10
GMG24		5 FLUTE SHORT LENGTH ◇	D6.0	D25.0	○	○	○		◎			◎	○	12
GMG26		5 FLUTE LONG LENGTH ◇	D6.0	D25.0	○	○	○		◎			◎	○	13
GMG28		5 FLUTE SHORT LENGTH CORNER RADIUS ◇	D6.0	D25.0	○	○	○		◎			◎	○	14
GMG30		5 FLUTE LONG LENGTH CORNER RADIUS ◇	D6.0	D25.0	○	○	○		◎			◎	○	15

◆ U.S.A. Stock

◇ Call for Availability

ICON GUIDE

MG HM	The tool is made of Micro grain carbide.
4 5	No. of Flute
M-Helix	Helix Angle
PLAIN	Type of Shank
C x 45°	Chamfer Angle
	Cutting condition of tool see the page 000

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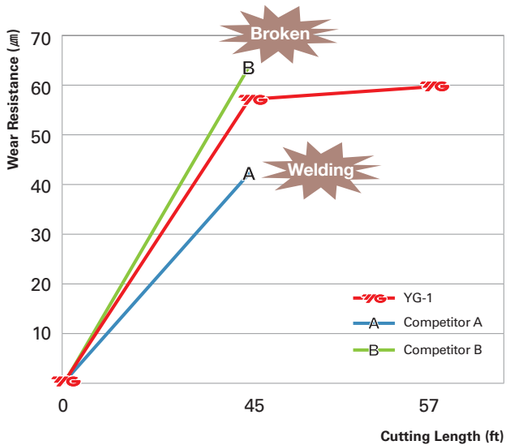
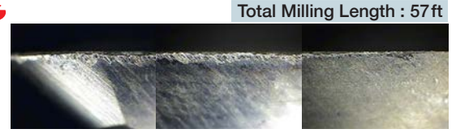
CASE STUDY

Test Report-1 ♦ Y-Coated Solid Carbide 4 Flutes with Double Core End Mills



Cutting Edges

YG — Total Milling Length : 57ft

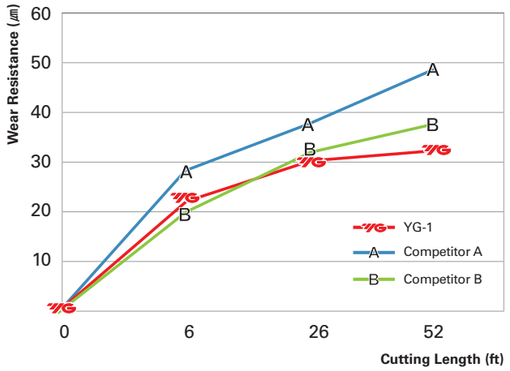


Competitor A — Total Milling Length : 53ft

Competitor B — Total Milling Length : 53ft

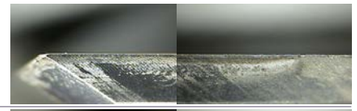
Cutting Conditions			
Milling Method	Slotting	Feed	10 inch/min.
Work Material	- DIN : Ti6Al4V (Titanium) - WR : 3.7165.1	Cutting Depth	.470" (Axial Depth)
		Coolant	Wet Cut
Size	Ø12(R1) x Ø12 x 26 x 80	Overhang	1.41"
RPM	1591 rev./min.	Machine	Machining Center

Test Report-2 ♦ Y-Coated Solid Carbide 5 Flutes End Mills

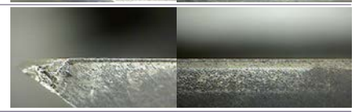


Cutting Edges

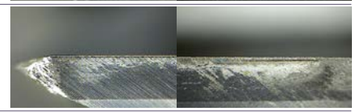
YG



Competitor A



Competitor B



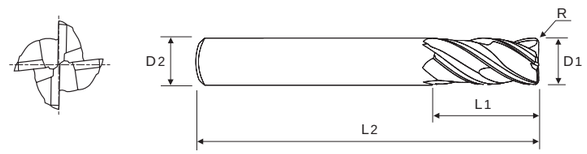
Cutting Conditions			
Milling Method	Down & Side Cutting	Feed	15.669 inch/min.
Work Material	- DIN : Ti6Al4V (Titanium) - WR : 3.7165.1	Axial Depth	.710"
		Radial Depth	.141"
Size	Ø12 × Ø12 × 26 × 83	Coolant	Wet Cut
RPM	1591 rev./min.	Machine	Machining Center

TitaNox Power

Y-COATED SOLID CARBIDE END MILLS 4 FLUTE CORNER RADIUS with DOUBLE CORE

UGMG42 SERIES

- Double Core E/M has a Unique Flute Design for excellent chip evacuation and higher rigidity
- The double core adds stability and aids chip flow, reducing tool deflection, improving dimensional stability and workpiece accuracy



MG HM | 4 | M-Helix | PLAIN

P. 17~18

MADE IN USA

Unit : inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D1	D2	L1	L2
UGMG42016	R.015	1/4	1/4	9/16	2-1/2
UGMG42901	R.030		1/4	9/16	2-1/2
UGMG42902	R.060		1/4	9/16	2-1/2
UGMG42020	R.015	5/16	5/16	11/16	2-1/2
UGMG42903	R.030		5/16	11/16	2-1/2
UGMG42904	R.060		5/16	11/16	2-1/2
UGMG42024	R.020	3/8	3/8	13/16	2-1/2
UGMG42905	R.030		3/8	13/16	2-1/2
UGMG42906	R.060		3/8	13/16	2-1/2
UGMG42907	R.090		3/8	13/16	2-1/2
UGMG42032	R.020	1/2	1/2	1	3
UGMG42908	R.030		1/2	1	3
UGMG42909	R.060		1/2	1	3
UGMG42910	R.090		1/2	1	3
UGMG42911	R.125		1/2	1	3
UGMG42912	R.030		1/2	1-1/4	3-1/2
UGMG42040	R.030	5/8	5/8	1-1/4	3-1/2
UGMG42913	R.060		5/8	1-1/4	3-1/2
UGMG42914	R.090		5/8	1-1/4	3-1/2
UGMG42915	R.125		5/8	1-1/4	3-1/2
UGMG42048	R.030	3/4	3/4	1-1/2	4
UGMG42916	R.060		3/4	1-1/2	4
UGMG42917	R.090		3/4	1-1/2	4
UGMG42918	R.125		3/4	1-1/2	4
UGMG42919	R.190		3/4	1-1/2	4

▶ Other shank types are available on your request.

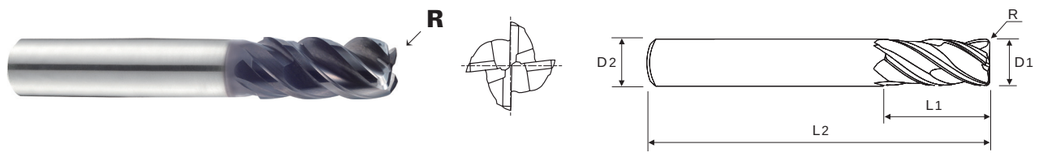
▶ NEXT PAGE

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

Y-COATED SOLID CARBIDE END MILLS
4 FLUTE CORNER RADIUS with DOUBLE CORE

UGMG42 SERIES

- Double Core E/M has a Unique Flute Design for excellent chip evacuation and higher rigidity
- The double core adds stability and aids chip flow, reducing tool deflection, improving dimensional stability and workpiece accuracy



MG HM | 4 | M-Helix | PLAIN

P. 17~18

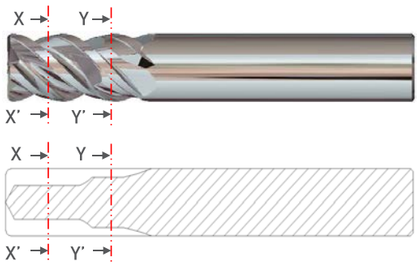
MADE IN USA

Unit : inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D1	D2	L1	L2
UGMG42064	R.030	1	1	2	5
UGMG42920	R.060		1	2	5
UGMG42921	R.090		1	2	5
UGMG42922	R.125		1	2	5
UGMG42923	R.190		1	2	5

▶ Other shank types are available on your request.

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



◆ **2 STEP CORE**

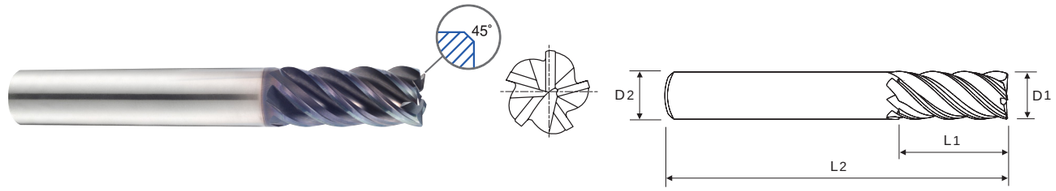
<SECTION X-X'>
Excellent chip evacuation

<SECTION Y-Y'>
Higher rigidity

Y-COATED SOLID CARBIDE END MILLS
5 FLUTE

UGMG32 SERIES

- Excellent performance results and long tool life when machining Titanium and other tough materials
- This tool has high rigidity of flute so that is possible to use for heavy profile and high speed milling
- For protecting Corner chipping of end teeth, Corner Radius & Chamfer are adopted



MG HM | 5 | M-Helix | PLAIN | C x 45°

P. 19

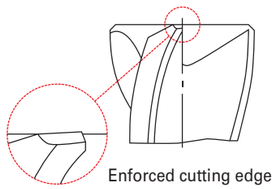
MADE IN USA

Unit : inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Chamfer Size
	D1	D2	L1	L2	
UGMG32008	1/8	1/8	1/4	1-1/2	.004
UGMG32901		1/8	3/8	1-1/2	.004
UGMG32012	3/16	3/16	5/16	2	.006
UGMG32902		3/16	9/16	2	.006
UGMG32016	1/4	1/4	3/8	2	.007
UGMG32903		1/4	3/4	2-1/2	.007
UGMG32020	5/16	5/16	7/16	2	.007
UGMG32904		5/16	13/16	2-1/2	.007
UGMG32024	3/8	3/8	1/2	2-1/2	.011
UGMG32905		3/8	1	3	.011
UGMG32032	1/2	1/2	5/8	2-1/2	.013
UGMG32906		1/2	1	3	.013
UGMG32907		1/2	1-1/4	3-1/2	.013
UGMG32040	5/8	5/8	3/4	3	.015
UGMG32908		5/8	1-1/4	3-1/2	.015
UGMG32048	3/4	3/4	1	3-1/2	.019
UGMG32909		3/4	1-1/2	4	.019
UGMG32064	1	1	1-1/8	4	.019
UGMG32910		1	1-1/2	4	.019
UGMG32911		1	2	5	.019

▶ Other shank types are available on your request.

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

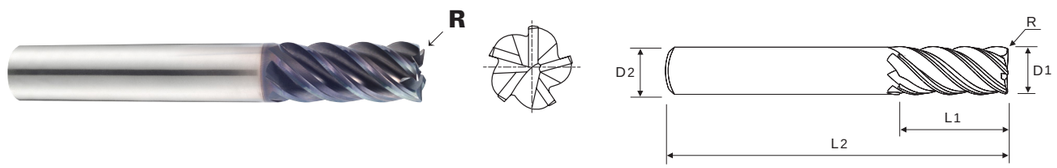


Enforced cutting edge

TitaNox Power Y-COATED SOLID CARBIDE END MILLS 5 FLUTE CORNER RADIUS

UGMG34 SERIES

- Excellent performance results and long tool life when machining Titanium and other tough materials
- This tool has high rigidity of flute so that is possible to use for heavy profile and high speed milling
- For protecting Corner chipping of end teeth, Corner Radius & Chamfer are adopted



MG HM | 5 | M-Helix | PLAIN

P. 19

MADE IN USA

Unit : inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D_1	D_2	L_1	L_2
UGMG34008	R.015	1/8	1/8	1/4	1-1/2
UGMG34901	R.015		1/8	3/8	1-1/2
UGMG34012	R.015	3/16	3/16	5/16	2
UGMG34902	R.015		3/16	9/16	2
UGMG34016	R.030	1/4	1/4	3/8	2
UGMG34903	R.015		1/4	3/4	2-1/2
UGMG34904	R.030		1/4	3/4	2-1/2
UGMG34905	R.060		1/4	3/4	2-1/2
UGMG34020	R.030	5/16	5/16	7/16	2
UGMG34906	R.015		5/16	13/16	2-1/2
UGMG34907	R.030		5/16	13/16	2-1/2
UGMG34908	R.060		5/16	13/16	2-1/2
UGMG34024	R.030	3/8	3/8	1/2	2-1/2
UGMG34909	R.060		3/8	1/2	2-1/2
UGMG34910	R.015		3/8	1	3
UGMG34911	R.030		3/8	1	3
UGMG34912	R.060		3/8	1	3
UGMG34032	R.015	1/2	1/2	5/8	2-1/2
UGMG34913	R.030		1/2	5/8	2-1/2
UGMG34914	R.060		1/2	5/8	2-1/2
UGMG34915	R.015		1/2	1	3
UGMG34916	R.030		1/2	1	3
UGMG34917	R.060		1/2	1	3
UGMG34918	R.090		1/2	1	3
UGMG34919	R.125		1/2	1	3
UGMG34920	R.015		1/2	1-1/4	3-1/2
UGMG34921	R.030		1/2	1-1/4	3-1/2
UGMG34922	R.060		1/2	1-1/4	3-1/2
UGMG34923	R.090		1/2	1-1/4	3-1/2
UGMG34924	R.125		1/2	1-1/4	3-1/2

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

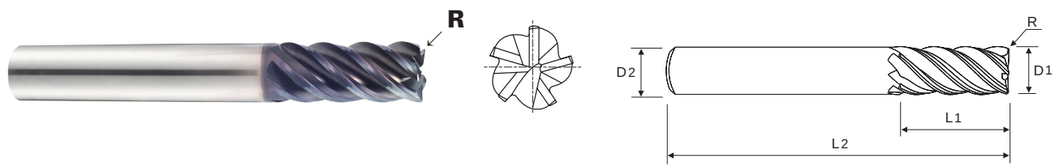
▶ Other shank types are available on your request.

▶ NEXT PAGE

TitaNox Power Y-COATED SOLID CARBIDE END MILLS 5 FLUTE CORNER RADIUS

UGMG34 SERIES

- Excellent performance results and long tool life when machining Titanium and other tough materials
- This tool has high rigidity of flute so that is possible to use for heavy profile and high speed milling
- For protecting Corner chipping of end teeth, Corner Radius & Chamfer are adopted



MG HM | 5 | M-Helix | PLAIN

P. 19

MADE IN USA

Unit : inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D_1	D_2	L_1	L_2
UGMG34040	R.030	5/8	5/8	3/4	3
UGMG34925	R.060		5/8	3/4	3
UGMG34926	R.015		5/8	1-1/4	3-1/2
UGMG34927	R.030		5/8	1-1/4	3-1/2
UGMG34928	R.060		5/8	1-1/4	3-1/2
UGMG34929	R.090		5/8	1-1/4	3-1/2
UGMG34930	R.125		5/8	1-1/4	3-1/2
UGMG34048	R.030	3/4	3/4	1	3-1/2
UGMG34931	R.060		3/4	1	3-1/2
UGMG34932	R.090		3/4	1	3-1/2
UGMG34933	R.015		3/4	1-1/2	4
UGMG34934	R.030		3/4	1-1/2	4
UGMG34935	R.060		3/4	1-1/2	4
UGMG34936	R.090		3/4	1-1/2	4
UGMG34937	R.125		3/4	1-1/2	4
UGMG34938	R.190		3/4	1-1/2	4
UGMG34064	R.030	1	1	1-1/8	4
UGMG34939	R.060		1	1-1/8	4
UGMG34940	R.090		1	1-1/8	4
UGMG34941	R.015		1	1-1/2	4
UGMG34942	R.030		1	1-1/2	4
UGMG34943	R.060		1	1-1/2	4
UGMG34944	R.090		1	1-1/2	4
UGMG34945	R.125		1	1-1/2	4
UGMG34946	R.190		1	1-1/2	4
UGMG34947	R.030		1	2	5
UGMG34948	R.060		1	2	5
UGMG34949	R.090		1	2	5

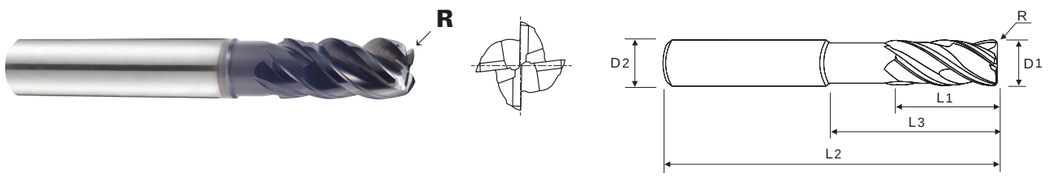
▶ Other shank types are available on your request.

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

TitaNox Power Y-COATED SOLID CARBIDE END MILLS 4 FLUTE CORNER RADIUS with DOUBLE CORE

GMG40 SERIES

- Double Core E/M has a Unique Flute Design for excellent chip evacuation and higher rigidity
- The double core adds stability and aids chip flow, reducing tool deflection, improving dimensional stability and workpiece accuracy



MG HM | 4 | M-Helix | PLAIN

◇ Call for Availability

P. 20~21

Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length
	R	METRIC	INCH	D2	L1	L3	L2
GMG40060	R0.5	6.0	.2362	6	13	20	57
GMG40901	R1.0			6	13	20	57
GMG40080	R0.5	8.0	.3150	8	19	25	63
GMG40902	R1.0			8	19	25	63
GMG40903	R1.5			8	19	25	63
GMG40904	R2.0			8	19	25	63
GMG40100	R0.5	10.0	.3937	10	22	30	72
GMG40905	R1.0			10	22	30	72
GMG40906	R1.5			10	22	30	72
GMG40907	R2.0			10	22	30	72
GMG40120	R0.5	12.0	.4724	12	26	35	83
GMG40908	R1.0			12	26	35	83
GMG40909	R1.5			12	26	35	83
GMG40910	R2.0			12	26	35	83
GMG40911	R3.0			12	26	35	83
GMG40140	R1.0	14.0	.5512	14	26	35	83
GMG40912	R2.0			14	26	35	83
GMG40160	R1.0	16.0	.6299	16	35	43	92
GMG40913	R1.5			16	35	43	92
GMG40914	R2.0			16	35	43	92
GMG40915	R3.0			16	35	43	92
GMG40916	R4.0			16	35	43	92
GMG40200	R1.0	20.0	.7874	20	44	56	110
GMG40917	R1.5			20	44	56	110
GMG40918	R2.0			20	44	56	110
GMG40919	R3.0			20	44	56	110
GMG40920	R3.5			20	44	56	110
GMG40921	R4.0			20	44	56	110

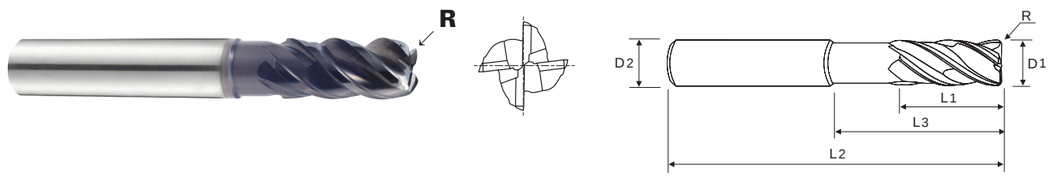
▶ NEXT PAGE

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

TitaNox Power Y-COATED SOLID CARBIDE END MILLS 4 FLUTE CORNER RADIUS with DOUBLE CORE

GMG40 SERIES

- Double Core E/M has a Unique Flute Design for excellent chip evacuation and higher rigidity
- The double core adds stability and aids chip flow, reducing tool deflection, improving dimensional stability and workpiece accuracy



MG HM | 4 | M-Helix | PLAIN

◇ Call for Availability

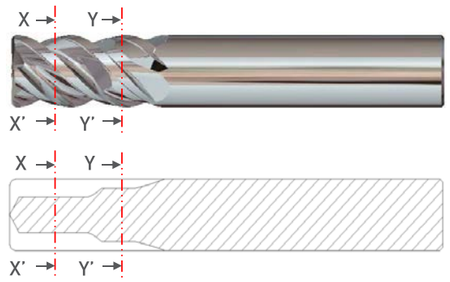
P. 20~21

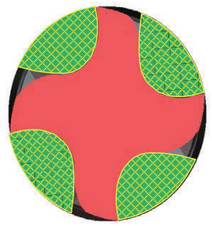
Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length
	R	METRIC	INCH	D2	L1	L3	L2
GMG40250	R1.0	25.0	.9843	25	55	70	130
GMG40922	R1.5			25	55	70	130
GMG40923	R2.0			25	55	70	130
GMG40924	R3.0			25	55	70	130
GMG40925	R4.0			25	55	70	130

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

◆ 2 STEP CORE





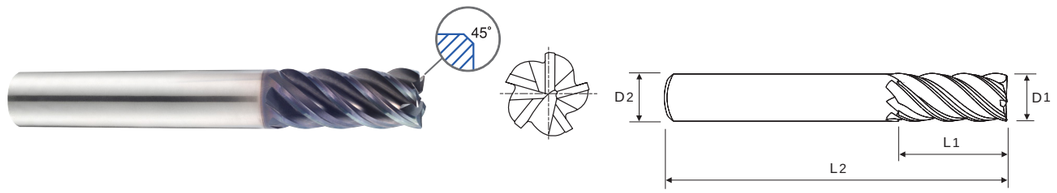
<SECTION X-X'>
Excellent chip evacuation

<SECTION Y-Y'>
Higher rigidity

Y-COATED SOLID CARBIDE END MILLS
5 FLUTE SHORT LENGTH

GMG24 SERIES

- Excellent performance results and long tool life when machining Titanium and other tough materials
- This tool has high rigidity of flute so that is possible to use for heavy profile and high speed milling
- For protecting Corner chipping of end teeth, Corner Radius & Chamfer are adopted



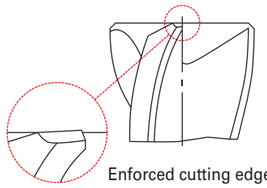
MG HM | 5 | M-Helix | PLAIN | C x 45° | P. 22

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	Chamfer Size
	METRIC	INCH	D2	L1	L2	
GMG24060	6.0	.2362	6	10	54	0.2
GMG24080	8.0	.3150	8	12	58	0.2
GMG24100	10.0	.3937	10	14	66	0.3
GMG24120	12.0	.4724	12	16	73	0.35
GMG24160	16.0	.6299	16	22	82	0.4
GMG24200	20.0	.7874	20	26	92	0.5
GMG24250	25.0	.9843	25	29	100	0.5

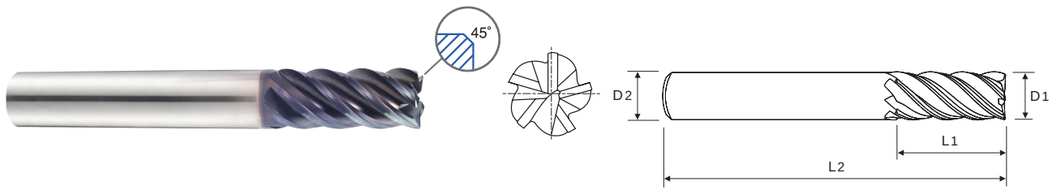
Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	h6


Enforced cutting edge

Y-COATED SOLID CARBIDE END MILLS
5 FLUTE LONG LENGTH

GMG26 SERIES

- Excellent performance results and long tool life when machining Titanium and other tough materials
- This tool has high rigidity of flute so that is possible to use for heavy profile and high speed milling
- For protecting Corner chipping of end teeth, Corner Radius & Chamfer are adopted



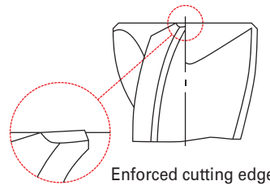
MG HM | 5 | M-Helix | PLAIN | C x 45° | P. 22

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	Chamfer Size
	METRIC	INCH	D2	L1	L2	
GMG26060	6.0	.2362	6	13	57	0.2
GMG26080	8.0	.3150	8	19	63	0.2
GMG26100	10.0	.3937	10	22	72	0.3
GMG26120	12.0	.4724	12	26	83	0.35
GMG26160	16.0	.6299	16	36	92	0.4
GMG26200	20.0	.7874	20	44	104	0.5
GMG26250	25.0	.9843	25	54	121	0.5

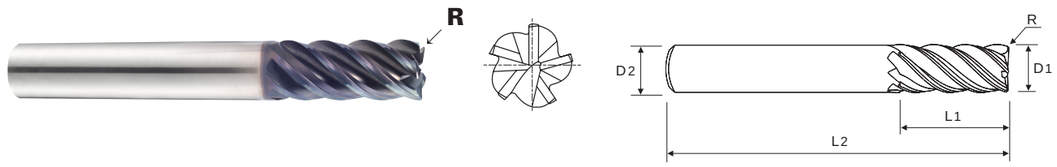
Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	h6


Enforced cutting edge

Y-COATED SOLID CARBIDE END MILLS 5 FLUTE SHORT LENGTH CORNER RADIUS

GMG28 SERIES

- Excellent performance results and long tool life when machining Titanium and other tough materials
- This tool has high rigidity of flute so that is possible to use for heavy profile and high speed milling
- For protecting Corner chipping of end teeth, Corner Radius & Chamfer are adopted



MG HM | 5 | M-Helix | PLAIN

P. 22

◇ Call for Availability

Unit : mm

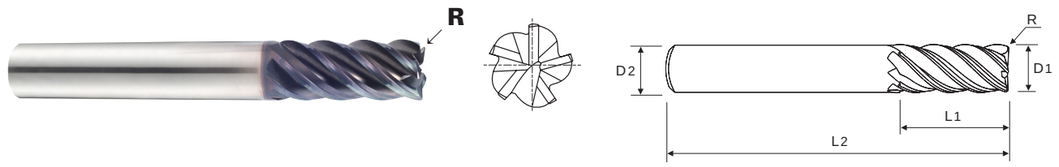
EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	R	METRIC	INCH	D2	L1	L2
GMG28060	R0.5	6.0	.2362	6	10	54
GMG28080	R0.5	8.0	.3150	8	12	58
GMG28100	R0.5	10.0	.3937	10	14	66
GMG28120	R0.5	12.0	.4724	12	16	73
GMG28160	R1.0	16.0	.6299	16	22	82
GMG28200	R1.0	20.0	.7874	20	26	92
GMG28250	R1.0	25.0	.9843	25	29	100

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

Y-COATED SOLID CARBIDE END MILLS 5 FLUTE LONG LENGTH CORNER RADIUS

GMG30 SERIES

- Excellent performance results and long tool life when machining Titanium and other tough materials
- This tool has high rigidity of flute so that is possible to use for heavy profile and high speed milling
- For protecting Corner chipping of end teeth, Corner Radius & Chamfer are adopted



MG HM | 5 | M-Helix | PLAIN

P. 22

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	R	METRIC	INCH	D2	L1	L2
GMG30060	R0.3	6.0	.2362	6	13	57
GMG30901	R0.5			6	13	57
GMG30902	R1.0			6	13	57
GMG30080	R0.5	8.0	.3150	8	19	63
GMG30903	R1.0			8	19	63
GMG30904	R1.5			8	19	63
GMG30905	R2.0			8	19	63
GMG30100	R0.5	10.0	.3937	10	22	72
GMG30906	R1.0			10	22	72
GMG30907	R1.5			10	22	72
GMG30908	R2.0			10	22	72
GMG30120	R0.5	12.0	.4724	12	26	83
GMG30909	R1.0			12	26	83
GMG30910	R1.5			12	26	83
GMG30911	R2.0			12	26	83
GMG30912	R2.5			12	26	83
GMG30913	R3.0			12	26	83
GMG30160	R1.0	16.0	.6299	16	36	92
GMG30914	R1.5			16	36	92
GMG30915	R2.0			16	36	92
GMG30916	R2.5			16	36	92
GMG30917	R3.0			16	36	92
GMG30918	R4.0			16	36	92

▶ NEXT PAGE

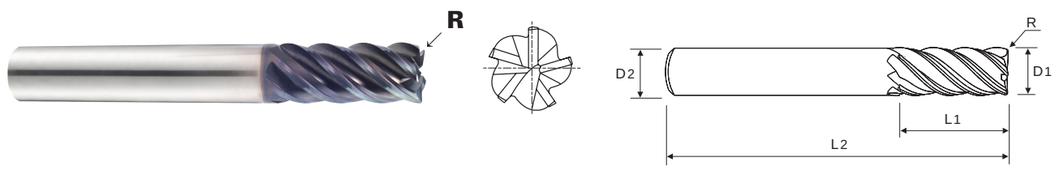
Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	h6

TitaNox Power

Y-COATED SOLID CARBIDE END MILLS 5 FLUTE LONG LENGTH CORNER RADIUS

GMG30 SERIES

- Excellent performance results and long tool life when machining Titanium and other tough materials
- This tool has high rigidity of flute so that is possible to use for heavy profile and high speed milling
- For protecting Corner chipping of end teeth, Corner Radius & Chamfer are adopted



MG HM | 5 | M-Helix | PLAIN

P. 22

◇ Call for Availability

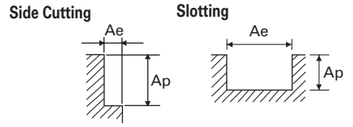
Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	R	METRIC	INCH	D2	L1	L2
GMG30200	R1.0	20.0	.7874	20	44	104
GMG30919	R1.5			20	44	104
GMG30920	R2.0			20	44	104
GMG30921	R2.5			20	44	104
GMG30922	R3.0			20	44	104
GMG30923	R4.0			20	44	104
GMG30924	R5.0			20	44	104
GMG30250	R1.0	25.0	.9843	25	54	121
GMG30925	R1.5			25	54	121
GMG30926	R2.0			25	54	121
GMG30927	R2.5			25	54	121
GMG30928	R3.0			25	54	121
GMG30929	R4.0			25	54	121
GMG30930	R5.0			25	54	121

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

UGMG42 SERIES

CUTTING CONDITIONS

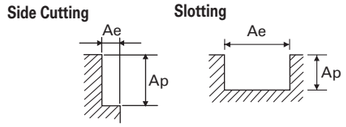


RPM = rev./min.
FEED = inch/min.
SFM = ft/min.
Fz = inch/tooth

Speed and Feed Recommendations							Diameter (inch)						
ISO Hardness (Brinell)	Work Materials	Type of Cut	Ap x D1	Ae x D1	Vc (SFM)	Parameters	1/4	5/16	3/8	1/2	5/8	3/4	1
P < 300	CARBON STEELS 10**, 11**, 12**, 12L**, 15**	Side Cutting	1	0.4	525 (420-630)	RPM	8021	6417	5347	4010	3208	2674	2005
						Fz	.0011	.0014	.0017	.0021	.0025	.0030	.0033
						FEED(IPM)	34.11	35.37	35.37	33.47	31.83	32.42	26.53
		Slotting	1	1	410 (328-492)	RPM	6266	5013	4178	3133	2507	2089	1567
						Fz	.0010	.0013	.0017	.0019	.0025	.0028	.0033
						FEED(IPM)	24.67	26.84	27.63	24.18	24.87	23.03	20.72
P > 300 P < 380	ALLOY STEELS 41**, 43**, 51**, 86**	Side Cutting	1	0.4	492 (394-591)	RPM	7520	6016	5013	3760	3008	2507	1880
						Fz	.0010	.0014	.0017	.0019	.0025	.0028	.0033
						FEED(IPM)	29.61	33.16	33.16	29.01	29.84	27.63	24.87
		Slotting	1	1	394 (315-472)	RPM	6016	4813	4010	3008	2406	2005	1504
						Fz	.0010	.0013	.0017	.0019	.0025	.0028	.0030
						FEED(IPM)	23.68	25.77	26.53	23.21	23.87	22.11	18.24
P < 380	TOOL STEELS A2, D2, H13, P20, T15	Side Cutting	1	0.4	492 (394-591)	RPM	7520	6016	5013	3760	3008	2507	1880
						Fz	.0011	.0014	.0018	.0021	.0026	.0030	.0033
						FEED(IPM)	31.97	33.16	36.32	31.38	31.74	30.39	24.87
		Slotting	1	1	394 (315-472)	RPM	6016	4813	4010	3008	2406	2005	1504
						Fz	.0011	.0014	.0017	.0021	.0025	.0030	.0033
						FEED(IPM)	25.58	26.53	26.53	25.11	23.87	24.32	19.89
K < 260	CAST IRON Gray, Mallable, Ductile	Side Cutting	1	0.4	574 (459-689)	RPM	8773	7018	5849	4386	3509	2924	2193
						Fz	.0008	.0011	.0014	.0017	.0021	.0024	.0028
						FEED(IPM)	29.01	30.95	32.24	29.01	29.29	27.63	24.18
		Slotting	1	1	459 (367-551)	RPM	7018	5615	4679	3509	2807	2339	1755
						Fz	.0008	.0011	.0014	.0017	.0021	.0024	.0026
						FEED(IPM)	23.21	24.76	25.79	23.21	23.43	22.11	18.51
M	STAINLESS STEELS 300 304, 316, 304L, 316L, SUS316	Side Cutting	1	0.4	344 (276-413)	RPM	5264	4211	3509	2632	2106	1755	1316
						Fz	.0010	.0013	.0016	.0019	.0024	.0028	.0032
						FEED(IPM)	20.47	22.68	23.10	19.69	20.47	19.69	16.73
		Slotting	1	1	279 (223-335)	RPM	4261	3409	2841	2131	1704	1420	1065
						Fz	.0010	.0013	.0016	.0019	.0024	.0028	.0032
						FEED(IPM)	16.57	18.36	18.70	15.94	16.57	15.94	13.55

Note
* Maximum recommended depth shown
* Finish cuts typically require reduced feed rates and/or higher spindle speed, with radial width of 2% x D1 or less
* Reduce speed and feed recommendations for materials harder than listed
* Above recommendations are based on ideal conditions. Adjust parameters accordingly for smaller taper machining centers or less rigid conditions

CUTTING CONDITIONS

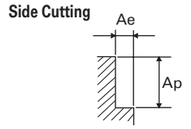


RPM = rev./min.
FEED = inch/min.
SFM = ft/min.
Fz = inch/tooth

Speed and Feed Recommendations							Diameter (inch)						
ISO Hardness (Brinell)	Work Materials	Type of Cut	Ap x D1	Ae x D1	Vc (SFM)	Parameters	1/4	5/16	3/8	1/2	5/8	3/4	1
M	STAINLESS STEELS 400 416, 420F, 430F, 440F	Side Cutting	1	0.4	509 (407-610)	RPM	7770	6216	5180	3885	3108	2590	1943
						Fz	.0013	.0018	.0022	.0026	.0034	.0037	.0045
						FEED(IPM)	41.85	44.64	46.50	40.69	41.85	38.75	34.87
		Slotting	1	1	410 (328-492)	RPM	6266	5013	4178	3133	2507	2089	1567
						Fz	.0013	.0018	.0022	.0026	.0032	.0037	.0041
						FEED(IPM)	33.75	36.00	37.50	32.81	31.87	31.25	25.78
M	STAINLESS STEELS(PH) 17-4PH, 15-5PH, 13-8PH	Side Cutting	0.6	0.4	144 (115-173)	RPM	2206	1765	1471	1103	882	735	551
						Fz	.0006	.0008	.0010	.0013	.0016	.0018	.0021
						FEED(IPM)	5.61	5.81	6.16	5.61	5.54	5.28	4.54
		Slotting	0.5	1	118 (94-142)	RPM	1805	1444	1203	902	722	602	451
						Fz	.0006	.0008	.0010	.0013	.0016	.0018	.0021
						FEED(IPM)	4.59	4.75	5.04	4.59	4.54	4.32	3.71
S	TITANIUM Ti6Al4V Ti5Al5V5Mo Ti7Al4Mo	Side Cutting	1	0.4	230 (184-276)	RPM	3509	2807	2339	1755	1404	1170	877
						Fz	.0013	.0019	.0022	.0026	.0034	.0037	.0045
						FEED(IPM)	18.90	21.00	21.00	18.37	18.90	17.50	15.75
		Slotting	1	1	180 (144-217)	RPM	2757	2206	1838	1379	1103	919	689
						Fz	.0013	.0018	.0022	.0026	.0034	.0037	.0041
						FEED(IPM)	14.85	15.84	16.50	14.44	14.85	13.75	11.34
S	HIGH TEMPERATURE ALLOYS RENE INCONEL WASPALOY HASTELLOY	Side Cutting	0.6	0.3	105 (84-126)	RPM	1604	1283	1069	802	642	535	401
						Fz	.0008	.0010	.0013	.0015	.0019	.0022	.0026
						FEED(IPM)	5.05	5.25	5.39	4.80	4.85	4.63	4.11
		Slotting	0.4	1	82 (66-98)	RPM	1253	1003	836	627	501	418	313
						Fz	.0007	.0009	.0012	.0014	.0017	.0020	.0022
						FEED(IPM)	3.55	3.79	3.95	3.55	3.47	3.29	2.71

Note
* Maximum recommended depth shown
* Finish cuts typically require reduced feed rates and/or higher spindle speed, with radial width of 2% x D1 or less
* Reduce speed and feed recommendations for materials harder than listed
* Above recommendations are based on ideal conditions.
  Adjust parameters accordingly for smaller taper machining centers or less rigid conditions

CUTTING CONDITIONS



RPM = rev./min.
FEED = inch/min.
SFM = ft/min.
Fz = inch/tooth

Speed and Feed Recommendations							Diameter (inch)								
ISO Hardness (Brinell)	Work Materials	Type of Cut	Ap x D1	Ae x D1	Vc (SFM)	Parameters	1/4	5/16	3/8	1/2	9/16	5/8	11/16	3/4	1
P < 300	CARBON STEELS 10**, 11**, 12**, 12L**, 15**	Side Cutting	1.5	0.3	472 (378-567)	RPM	7219	5775	4813	3609	3208	2888	2625	2406	1805
						Fz	.0013	.0015	.0020	.0025	.0027	.0030	.0033	.0035	.0040
						FEED(IPM)	48.32	43.20	47.37	44.76	43.58	43.20	42.89	42.16	35.88
P > 300 P < 380	ALLOY STEELS 41**, 43**, 51**, 86**	Side Cutting	1.5	0.3	331 (265-398)	RPM	5063	4051	3376	2532	2250	2025	1841	1688	1266
						Fz	.0013	.0015	.0020	.0025	.0027	.0030	.0033	.0035	.0040
						FEED(IPM)	33.89	30.30	33.22	31.40	30.57	30.30	30.08	29.57	25.17
P < 380	TOOL STEELS A2, D2, H13, P20, T15	Side Cutting	1.5	0.3	197 (157-236)	RPM	3008	2406	2005	1504	1337	1203	1094	1003	752
						Fz	.0009	.0011	.0014	.0017	.0019	.0021	.0023	.0024	.0028
						FEED(IPM)	14.21	12.79	13.82	13.03	12.89	12.79	12.49	12.24	10.51
K < 260	CAST IRON Gray, Mallable, Ductile	Side Cutting	1.5	0.3	348 (278-417)	RPM	5314	4251	3543	2657	2362	2126	1932	1771	1328
						Fz	.0017	.0019	.0025	.0031	.0034	.0038	.0041	.0044	.0050
						FEED(IPM)	44.98	40.17	43.93	41.32	40.45	40.17	39.18	38.70	32.95
M	STAINLESS STEELS 300 304, 316, 304L, 316L, SUS316	Side Cutting	1.5	0.3	269 (215-323)	RPM	4111	3289	2741	2055	1827	1644	1495	1370	1028
						Fz	.0012	.0013	.0015	.0025	.0026	.0027	.0028	.0030	.0035
						FEED(IPM)	24.28	20.72	20.50	25.49	23.38	22.33	20.60	20.50	17.80
M	STAINLESS STEELS 400 416, 420F, 430F, 440F	Side Cutting	1.5	0.3	384 (307-461)	RPM	5865	4692	3910	2933	2607	2346	2133	1955	1466
						Fz	.0009	.0010	.0012	.0018	.0020	.0021	.0022	.0024	.0028
						FEED(IPM)	27.71	23.09	23.09	26.56	26.17	24.94	23.93	23.48	20.49
M	STAINLESS STEELS(PH) 17-4PH, 15-5PH, 13-8PH	Side Cutting	1.5	0.3	194 (155-232)	RPM	2958	2366	1972	1479	1315	1183	1076	986	739
						Fz	.0012	.0013	.0015	.0025	.0026	.0027	.0028	.0030	.0035
						FEED(IPM)	17.47	14.91	14.75	18.34	16.82	16.07	14.82	14.75	12.81
S	TITANIUM Ti6Al4V Ti5Al5V5Mo Ti7Al4Mo	Side Cutting	1.5	0.3	226 (181-272)	RPM	3459	2767	2306	1730	1537	1384	1258	1153	865
						Fz	.0011	.0011	.0013	.0022	.0023	.0024	.0025	.0027	.0031
						FEED(IPM)	18.38	15.80	15.43	19.41	17.86	16.89	15.60	15.66	13.45
S	HIGH TEMPERATURE ALLOYS RENE, INCONEL WASPALOY HASTELLOY	Side Cutting	1.5	0.1	102 (81-122)	RPM	1554	1243	1036	777	691	622	565	518	389
						Fz	.0008	.0009	.0011	.0017	.0018	.0019	.0019	.0021	.0024
						FEED(IPM)	6.42	5.38	5.51	6.73	6.25	5.87	5.45	5.40	4.74

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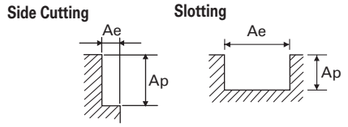
CUTTING CONDITIONS



RPM = rev./min.
FEED = inch/min.
SFM = ft/min.
Fz = inch/tooth

Speed and Feed Recommendations							Diameter (mm)							
ISO Hardness (Brinell)	Work Materials	Type of Cut	Ap x D1	Ae x D1	Vc (SFM)	Parameters	6	8	10	12	14	16	20	25
P < 300	CARBON STEELS 10**, 11**, 12**, 12L**, 15**	Side Cutting	1	0.4	525 (420-630)	RPM	8488	6366	5093	4244	3638	3183	2546	2037
						Fz	.0011	.0014	.0017	.0021	.0023	.0025	.0030	.0033
						FEED(IPM)	36.09	35.09	33.69	35.42	33.23	31.58	30.88	26.95
		Slotting	1	1	410 (328-492)	RPM	6631	4974	3979	3316	2842	2487	1989	1592
						Fz	.0010	.0013	.0017	.0019	.0022	.0025	.0028	.0033
						FEED(IPM)	26.11	26.63	26.32	25.59	25.06	24.67	21.93	21.05
P > 300 P < 380	ALLOY STEELS 41**, 43**, 51**, 86**	Side Cutting	1	0.4	492 (394-591)	RPM	7958	5968	4775	3979	3410	2984	2387	1910
						Fz	.0010	.0014	.0017	.0019	.0022	.0025	.0028	.0033
						FEED(IPM)	31.33	32.90	31.58	30.70	30.08	29.61	26.32	25.26
		Slotting	1	1	394 (315-472)	RPM	6366	4775	3820	3183	2728	2387	1910	1528
						Fz	.0010	.0013	.0017	.0019	.0022	.0025	.0028	.0030
						FEED(IPM)	25.06	25.57	25.26	24.56	24.06	23.69	21.05	18.53
P < 380	TOOL STEELS A2, D2, H13, P20, T15	Side Cutting	1	0.4	492 (394-591)	RPM	7958	5968	4775	3979	3410	2984	2387	1910
						Fz	.0011	.0014	.0018	.0021	.0024	.0026	.0030	.0033
						FEED(IPM)	33.84	32.90	34.59	33.21	32.22	31.49	28.95	25.26
		Slotting	1	1	394 (315-472)	RPM	6366	4775	3820	3183	2728	2387	1910	1528
						Fz	.0011	.0014	.0017	.0021	.0023	.0025	.0030	.0033
						FEED(IPM)	27.07	26.32	25.26	26.57	24.92	23.69	23.16	20.21
K < 260	CAST IRON Gray, Malleable, Ductile	Side Cutting	1	0.4	574 (459-689)	RPM	9284	6963	5570	4642	3979	3482	2785	2228
						Fz	.0008	.0011	.0014	.0017	.0019	.0021	.0024	.0028
						FEED(IPM)	30.70	30.70	30.70	30.70	30.08	29.06	26.32	24.56
		Slotting	1	1	459 (367-551)	RPM	7427	5570	4456	3714	3183	2785	2228	1783
						Fz	.0008	.0011	.0014	.0017	.0019	.0021	.0024	.0026
						FEED(IPM)	24.56	24.56	24.56	24.56	24.06	23.25	21.05	18.81
M	STAINLESS STEELS 300 304, 316, 304L, 316L, SUS316	Side Cutting	1	0.4	344 (276-413)	RPM	5570	4178	3342	2785	2387	2089	1671	1337
						Fz	.0010	.0013	.0016	.0019	.0022	.0024	.0028	.0032
						FEED(IPM)	21.67	22.50	22.00	20.83	20.68	20.31	18.75	17.00
		Slotting	1	1	279 (223-335)	RPM	4509	3382	2706	2255	1933	1691	1353	1082
						Fz	.0010	.0013	.0016	.0019	.0022	.0024	.0028	.0032
						FEED(IPM)	17.54	18.22	17.81	16.87	16.74	16.44	15.18	13.76

Note
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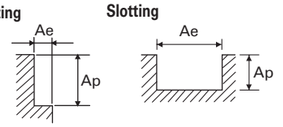
GMG40 SERIES

CUTTING CONDITIONS



RPM = rev./min.
FEED = inch/min.
SFM = ft/min.
Fz = inch/tooth

Speed and Feed Recommendations							Diameter (mm)							
ISO Hardness (Brinell)	Work Materials	Type of Cut	Ap x D1	Ae x D1	Vc (SFM)	Parameters	6	8	10	12	14	16	20	25
M	STAINLESS STEELS 400 416, 420F, 430F, 440F	Side Cutting	1	0.4	509 (407-610)	RPM	8223	6167	4934	4112	3524	3084	2467	1974
						Fz	.0013	.0018	.0022	.0026	.0030	.0034	.0037	.0045
						FEED(IPM)	44.29	44.29	44.29	43.06	42.18	41.52	36.91	35.43
		Slotting	1	1	410 (328-492)	RPM	6631	4974	3979	3316	2842	2487	1989	1592
						Fz	.0013	.0018	.0022	.0026	.0029	.0032	.0037	.0041
						FEED(IPM)	35.72	35.72	35.72	34.72	33.12	31.62	29.76	26.19
M	STAINLESS STEELS (PH) 17-4PH, 15-5PH, 13-8PH	Side Cutting	0.6	0.4	144 (115-173)	RPM	2334	1751	1401	1167	1000	875	700	560
						Fz	.0006	.0008	.0010	.0013	.0014	.0016	.0018	.0021
						FEED(IPM)	5.94	5.76	5.87	5.94	5.67	5.50	5.03	4.61
		Slotting	0.5	1	118 (94-142)	RPM	1910	1432	1146	955	819	716	573	458
						Fz	.0006	.0008	.0010	.0013	.0014	.0016	.0018	.0021
						FEED(IPM)	4.86	4.71	4.80	4.86	4.64	4.50	4.11	3.77
S	TITANIUM Ti6Al4V Ti5Al5V5Mo Ti7Al4Mo	Side Cutting	1	0.4	230 (184-276)	RPM	3714	2785	2228	1857	1592	1393	1114	891
						Fz	.0013	.0019	.0022	.0026	.0030	.0034	.0037	.0045
						FEED(IPM)	20.00	20.83	20.00	19.45	19.05	18.75	16.67	16.00
		Slotting	1	1	180 (144-217)	RPM	2918	2188	1751	1459	1251	1094	875	700
						Fz	.0013	.0018	.0022	.0026	.0030	.0034	.0037	.0041
						FEED(IPM)	15.71	15.71	15.71	15.28	14.97	14.73	13.10	11.52
S	HIGH TEMPERATURE ALLOYS RENE INCONEL WASPALOY HASTELLOY	Side Cutting	0.6	0.3	105 (84-126)	RPM	1698	1273	1019	849	728	637	509	407
						Fz	.0008	.0010	.0013	.0015	.0017	.0019	.0022	.0026
						FEED(IPM)	5.35	5.21	5.13	5.08	5.04	4.81	4.41	4.17
		Slotting	0.4	1	82 (66-98)	RPM	1326	995	796	663	568	497	398	318
						Fz	.0007	.0009	.0012	.0014	.0016	.0017	.0020	.0022
						FEED(IPM)	3.76	3.76	3.76	3.76	3.58	3.45	3.13	2.76

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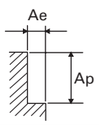
CUTTING CONDITIONS

Side Cutting



RPM = rev./min.
FEED = inch/min.
SFM = ft/min.
Fz = inch/tooth

Speed and Feed Recommendations							Diameter (mm)								
ISO Hardness (Brinell)	Work Materials	Type of Cut	Ap x D1	Ae x D1	Vc (SFM)	Parameters	6	8	10	12	14	16	18	20	25
P < 300	CARBON STEELS 10**, 11**, 12**, 12L**, 15**	Side Cutting	1.5	0.3	472 (378-567)	RPM	7639	5730	4584	3820	3274	2865	2546	2292	1833
						Fz	.0013	.0015	.0020	.0025	.0027	.0030	.0033	.0035	.0040
						FEED(IPM)	51.13	42.86	45.11	47.37	44.47	42.86	41.61	40.15	36.45
P > 300 P < 380	ALLOY STEELS 41**, 43**, 51**, 86**	Side Cutting	1.5	0.3	331 (265-398)	RPM	5358	4019	3215	2679	2296	2009	1786	1607	1286
						Fz	.0013	.0015	.0020	.0025	.0027	.0030	.0033	.0035	.0040
						FEED(IPM)	35.86	30.06	31.64	33.23	31.19	30.06	29.18	28.16	25.57
P < 380	TOOL STEELS A2, D2, H13, P20, T15	Side Cutting	1.5	0.3	197 (157-236)	RPM	3183	2387	1910	1592	1364	1194	1061	955	764
						Fz	.0009	.0011	.0014	.0017	.0019	.0021	.0023	.0024	.0028
						FEED(IPM)	15.04	12.69	13.16	13.79	13.16	12.69	12.11	11.65	10.68
K < 260	CAST IRON Gray, Mallable, Ductile	Side Cutting	1.5	0.3	348 (278-417)	RPM	5623	4218	3374	2812	2410	2109	1874	1687	1350
						Fz	.0017	.0019	.0025	.0031	.0034	.0038	.0041	.0044	.0050
						FEED(IPM)	47.60	39.85	41.84	43.73	41.27	39.85	38.01	36.86	33.48
M	STAINLESS STEELS 300 304, 316, 304L, 316L, SUS316	Side Cutting	1.5	0.3	269 (215-323)	RPM	4350	3263	2610	2175	1864	1631	1450	1305	1044
						Fz	.0012	.0013	.0015	.0025	.0026	.0027	.0028	.0030	.0035
						FEED(IPM)	25.69	20.55	19.52	26.97	23.86	22.16	19.98	19.52	18.09
M	STAINLESS STEELS 400 416, 420F, 430F, 440F	Side Cutting	1.5	0.3	384 (307-461)	RPM	6207	4655	3724	3104	2660	2328	2069	1862	1490
						Fz	.0009	.0010	.0012	.0018	.0020	.0021	.0022	.0024	.0028
						FEED(IPM)	29.32	22.91	21.99	28.10	26.71	24.74	23.22	22.36	20.82
M	STAINLESS STEELS(PH) 17-4PH, 15-5PH, 13-8PH	Side Cutting	1.5	0.3	194 (155-232)	RPM	3130	2348	1878	1565	1341	1174	1043	939	751
						Fz	.0012	.0013	.0015	.0025	.0026	.0027	.0028	.0030	.0035
						FEED(IPM)	18.48	14.79	14.05	19.41	17.16	15.94	14.38	14.05	13.01
S	TITANIUM Ti6Al4V Ti5Al5V5Mo Ti7Al4Mo	Side Cutting	1.5	0.3	226 (181-272)	RPM	3661	2745	2196	1830	1569	1373	1220	1098	879
						Fz	.0011	.0011	.0013	.0022	.0023	.0024	.0025	.0027	.0031
						FEED(IPM)	19.46	15.67	14.70	20.54	18.22	16.75	15.13	14.92	13.66
S	HIGH TEMPERATURE ALLOYS RENE, INCONEL WASPALOY HASTELLOY	Side Cutting	1.5	0.1	102 (81-122)	RPM	1645	1233	987	822	705	617	548	493	395
						Fz	.0008	.0009	.0011	.0017	.0018	.0019	.0019	.0021	.0024
						FEED(IPM)	6.80	5.34	5.24	7.12	6.38	5.83	5.29	5.15	4.82

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