Registered
ISO 9001:2015 / ISO 14001:2015
GLOBAL BRAND 2012 kotra

YG-1 CO., LTD.

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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.

YouTube

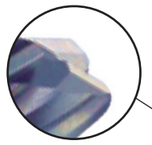
Search 'YG-1' on social media outlets

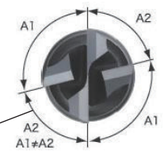
YG1YEVP180918003

PRODUCT FEATURES

- Chatter and Harmonics Reduced for Improved Stability and Better Finishing
- Special Design of Flute Geometry for Optimal Chip Formation and Chip Evacuation
- Engineered Coating Technology to Reduced Wear and Increase Heat Resistance
- Enhanced Corner Geometry for Longer Tool Life

PRODUCT GEOMETRY



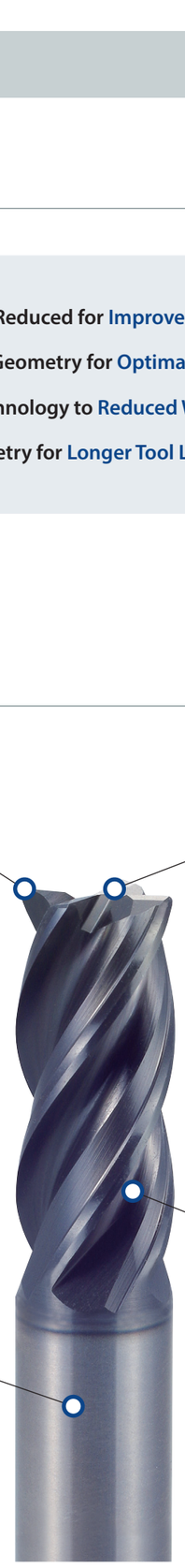


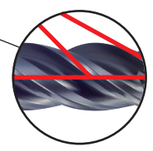
Corner Geometries

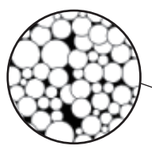
YG-1's High Performance
Corner Geometries Including Corner Radius,
applied for Longer Tool Life
with Higher Cutting Speed and Heavy Cutting

Unequal Index

Exclusively Designed Unique Geometry
applied to Reduce Vibration
and also to achieve Excellent Chip Evacuation
with Better Surface Finish







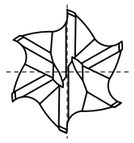
Multiple Helix

Multiple Helix Designed for
Optimal Chip Formation and Chip Evacuation
Concluding a Faster and Heavier Cutting
making Higher Productivity

Ultra Micro grain Carbide

Premium Carbide Substrate
Achieving Exceptional Wear Resistance

THE NEW V7 PLUS 6 FLUTE END MILLS

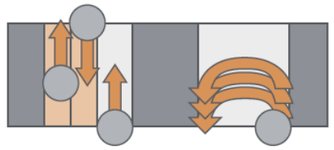


UNEQUAL INDEX
WITH HIGH PERFORMANCE CORNER GEOMETRIES
INCLUDING CORNER RADIUS

THE BEST CHATTER FREE TOOL FOR HIGH SPEED

- Unique geometry of the variable pitch provides the best chatter free tool for high speed and also trochoidal milling
- Several slot widths can be used with the same tool diameter in an efficient way
- Provides long tool life and high productivity on most materials
- Trochoidal milling is a programming technique applying a small radial width of cut with also high cutting speed and feed per tooth

Trochoidal Milling performs better than conventional ways because it has..,



- Lower Cutting Force
  from smaller arc engagement
- Longer Tool Life
  from more flutes, and deeper cutting depth
- Higher Stability, Lower Vibration and Excellent Chip Evacuation

GUIDE LINE TO ICONS

Tool Raw Material

MG HM — Micro Grain Carbide

No. of Flutes

4 6

Helix Angle

35°/37° 45° 35°/37°

Type of Shank

PLAIN FLAT

Tolerance of Ball Radius

R ±0.02

Chamfer Angle

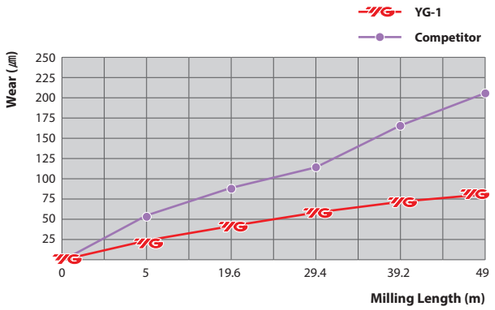
C x 45°

Cutting Condition Pages

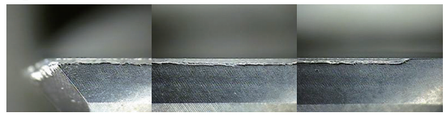
CASE STUDY

V7 Plus 4 Flute vs Competitor

	V7 Plus	Competitor
Wear(㎛)	**83.518**	**203.381**
Milling Length(m)	49	49
Size(mm)	Ø10 x Ø10 x 22 x 72	
Work Material	- JIS: S45C(HRc30) - DIN: C45 - WR: 1.0503	
Cutting Speed	230.09 m/min.	
RPM	7,324 rev./min.	
Feed	1,464 mm/min.	
Feed per tooth	0.05 mm/tooth	
Milling Method	Down & Side Cutting	
Milling Depth	Axial: 10 mm, Radial: 3 mm	
Coolant	Wet Cut	
Overhang	34 mm	
Machine	Machining Center	



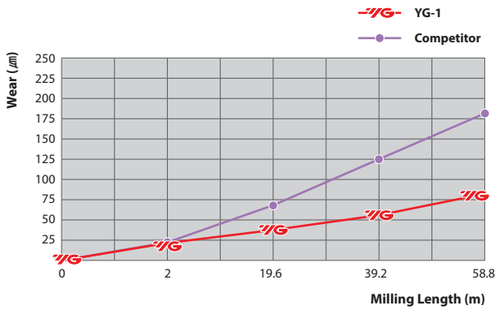
V7 Plus



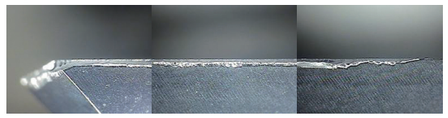
Competitor

V7 Plus 4 Flute vs Competitor

	V7 Plus	Competitor
Wear(㎛)	**81.485**	**183.296**
Milling Length(m)	58.8	58.8
Size(mm)	Ø16 x Ø16 x 32 x 92	
Work Material	- JIS: S45C(HRc30) - DIN: C45 - WR: 1.0503	
Cutting Speed	160.00 m/min.	
RPM	3,183 rev./min.	
Feed	573 mm/min.	
Feed per tooth	0.05 mm/tooth	
Milling Method	Down & Side Cutting	
Milling Depth	Axial: 14 mm, Radial: 3 mm	
Coolant	Wet Cut	
Overhang	45 mm	
Machine	Machining Center	



V7 Plus

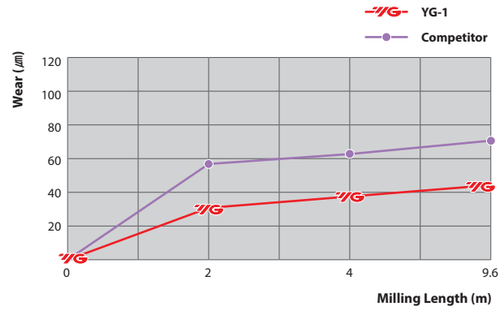


Competitor

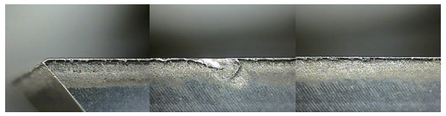
CASE STUDY

V7 Plus 4 Flute vs Competitor

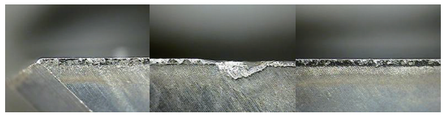
	V7 Plus	Competitor
Wear(㎛)	**43.535**	**72.683**
Milling Length(m)	9.6	9.6
Size(mm)	Ø16 x Ø16 x 32 x 92	
Work Material	- JIS: SUS304 - DIN: X5CrNi18 10 (X4CrNi18-10) - WR: 1.4303	
Cutting Speed	100.03 m/min.	
RPM	1,990 rev./min.	
Feed	557 mm/min.	
Feed per tooth	0.02 mm/tooth	
Milling Method	Slotting	
Milling Depth	Axial: 16 mm	
Coolant	Wet Cut	
Overhang	45 mm	
Machine	Machining Center	



V7 Plus

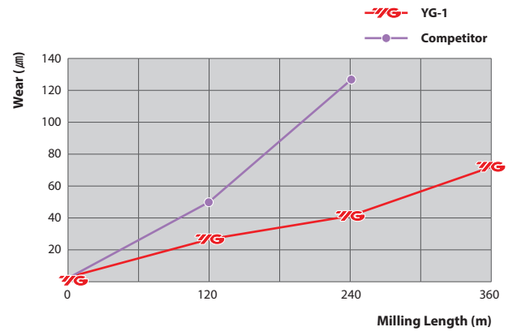


Competitor

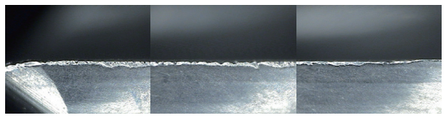


V7 Plus 6 Flute vs Competitor

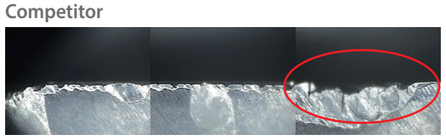
	V7 Plus	Competitor
Milling Length(m)	360	300
Size(mm)	Ø12(R1) x Ø12 x 26 x 83	
Work Material	- JIS: S45C(HRc30) - DIN: C45 - WR: 1.0503	
Cutting Speed	278.67 m/min.	
RPM	7,392 rev./min.	
Feed	7,495 mm/min.	
Feed per tooth	0.17 mm/tooth	
Milling Method	Trochoidal Cutting	
Milling Depth	Axial: 24 mm(2D), Radial: 0.6 mm(0.05D)	
Coolant	Wet Cut	
Overhang	36 mm	
Machine	Machining Center	



V7 Plus



Competitor



SELECTION GUIDE

V7 Plus

HIGH PERFORMANCE SOLID CARBIDE END MILLS

◎ : Excellent ○ : Good

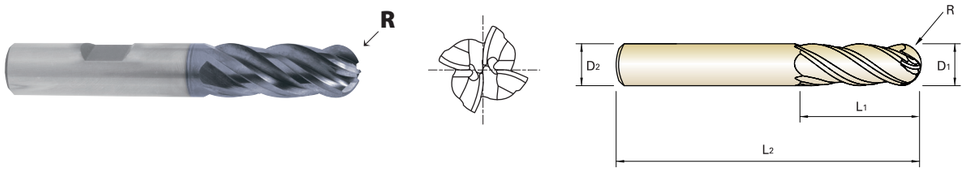
ITEM	MODEL	DESCRIPTION	SIZE Min.	SIZE Max.	PAGE	P Carbon Steels ~HB225	P Alloy Steels HB225~325	P Prehardened Steels HRc30~40	P Hardened Steels HRc40~45	P Hardened Steels HRc45~55	H High Hardened Steels HRc55~70	M Stainless Steels	K Cast Iron	N Copper	N Graphite	N Aluminum	N Acrylic	N CFRP	S Titanium	S High Temperature Alloy
GMG55 GMG56		4 FLUTE BALL NOSE	R1.5	R12.5	8	◎	◎	◎	○	○		◎	◎						○	○
GMF54 GMF55		4 FLUTE CORNER RADIUS SHORT LENGTH	D3.0	D20.0	9	◎	◎	◎	○	○		◎	◎						○	○
GMF58 GMF59		4 FLUTE CORNER RADIUS LONG LENGTH	D3.0	D25.0	10	◎	◎	◎	○	○		◎	◎						○	○
GMF62 GMF63		4 FLUTE CORNER RADIUS WITH NECK	D3.0	D20.0	11	◎	◎	◎	○	○		◎	◎						○	○
GMF52 GMF53		4 FLUTE SHORT LENGTH			13	◎	◎	◎	○	○		◎	◎						○	○
GMF56 GMF57		4 FLUTE LONG LENGTH	D3.0	D25.0	14	◎	◎	◎	○	○		◎	◎						○	○
GMF60 GMF61		4 FLUTE WITH NECK	D3.0	D20.0	15	◎	◎	◎	○	○		◎	◎						○	○
GMG16 GMG17		6 FLUTE CORNER RADIUS LONG LENGTH	D6.0	D25.0	17	◎	◎	◎	○	○		◎	◎						○	○
GMG18 GMG19		6 FLUTE CORNER RADIUS EXTRA LONG LENGTH			18	◎	◎	◎	○	○		◎	◎						○	○
GMG12 GMG13		6 FLUTE LONG LENGTH	D6.0	D25.0	20	◎	◎	◎	○	○		◎	◎						○	○
GMG14 GMG15		6 FLUTE EXTRA LONG LENGTH			20	◎	◎	◎	○	○		◎	◎						○	○
		RECOMMENDED CUTTING CONDITIONS			21															

HIGH PERFORMANCE SOLID CARBIDE END MILLS

4 FLUTE BALL NOSE

GMG55 PLAIN SHANK
GMG56 FLAT SHANK

▶ Special flute geometry and multiple helix eliminate vibrations
▶ Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40



MG HM | 4 | 35°/37° | R ±0.02 | PLAIN | FLAT | P.21

Unit : mm

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R (±0.02)	D1	D2	L1	L2
GMG55030	**GMG56030**	R1.5	**3.0**	6	8	57
GMG55040	**GMG56040**	R2.0	**4.0**	6	11	57
GMG55050	**GMG56050**	R2.5	**5.0**	6	13	57
GMG55060	**GMG56060**	R3.0	**6.0**	6	13	57
GMG55080	**GMG56080**	R4.0	**8.0**	8	19	63
GMG55100	**GMG56100**	R5.0	**10.0**	10	22	72
GMG55120	**GMG56120**	R6.0	**12.0**	12	26	83
GMG55160	**GMG56160**	R8.0	**16.0**	16	32	92
GMG55200	**GMG56200**	R10.0	**20.0**	20	38	104
GMG55250	**GMG56250**	R12.5	**25.0**	25	38	104

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

◎ : Excellent ○ : Good

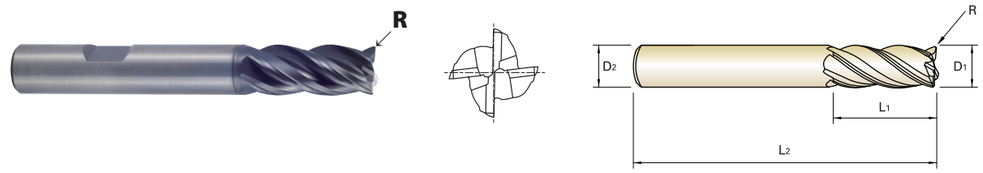
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○	○		◎	◎						○	○

HIGH PERFORMANCE SOLID CARBIDE END MILLS

4 FLUTE CORNER RADIUS SHORT LENGTH

GMF54 PLAIN SHANK
GMF55 FLAT SHANK

▶ Special flute geometry and multiple helix eliminate vibrations
▶ Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40



MG HM | 4 | 35°/37° | PLAIN | FLAT | P.22~23

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R	D1	D2	L1	L2
GMF54030	**GMF55030**	R0.3	**3.0**	6	7	54
GMF54901	**GMF55901**	R0.5	**3.0**	6	7	54
GMF54040	**GMF55040**	R0.3	**4.0**	6	8	54
GMF54902	**GMF55902**	R0.5	**4.0**	6	8	54
GMF54050	**GMF55050**	R0.3	**5.0**	6	10	54
GMF54903	**GMF55903**	R0.5	**5.0**	6	10	54
GMF54060	**GMF55060**	R0.3	**6.0**	6	10	54
GMF54904	**GMF55904**	R0.5	**6.0**	6	10	54
GMF54905	**GMF55905**	R1.0	**6.0**	6	10	54
GMF54080	**GMF55080**	R0.5	**8.0**	8	12	58
GMF54906	**GMF55906**	R1.0	**8.0**	8	12	58
GMF54100	**GMF55100**	R0.5	**10.0**	10	14	66
GMF54907	**GMF55907**	R1.0	**10.0**	10	14	66
GMF54120	**GMF55120**	R0.5	**12.0**	12	16	73
GMF54908	**GMF55908**	R1.0	**12.0**	12	16	73
GMF54909	**GMF55909**	R2.0	**12.0**	12	16	73
GMF54140	**GMF55140**	R0.5	**14.0**	14	18	75
GMF54160	**GMF55160**	R1.0	**16.0**	16	22	82
GMF54912	**GMF55912**	R2.0	**16.0**	16	22	82
GMF54913	**GMF55913**	R3.0	**16.0**	16	22	82
GMF54180	**GMF55180**	R1.0	**18.0**	18	24	84
GMF54200	**GMF55200**	R1.0	**20.0**	20	26	92
GMF54916	**GMF55916**	R2.0	**20.0**	20	26	92
GMF54917	**GMF55917**	R3.0	**20.0**	20	26	92

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

◎ : Excellent ○ : Good

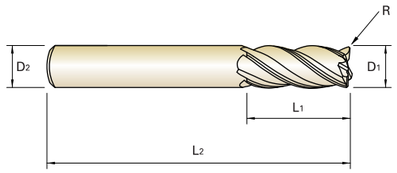
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○	○		◎	◎						○	○

HIGH PERFORMANCE SOLID CARBIDE END MILLS

4 FLUTE CORNER RADIUS LONG LENGTH

GMF58 PLAIN SHANK
GMF59 FLAT SHANK

▶ Special flute geometry and multiple helix eliminate vibrations
▶ Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40



MG HM | 4 | 35°/37° | PLAIN | FLAT | P.22~23

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R	D1	D2	L1	L2
GMF58030	**GMF59030**	R0.3	**3.0**	6	8	57
GMF58901	**GMF59901**	R0.5	**3.0**	6	8	57
GMF58040	**GMF59040**	R0.3	**4.0**	6	11	57
GMF58902	**GMF59902**	R0.5	**4.0**	6	11	57
GMF58050	**GMF59050**	R0.3	**5.0**	6	13	57
GMF58903	**GMF59903**	R0.5	**5.0**	6	13	57
GMF58060	**GMF59060**	R0.3	**6.0**	6	13	57
GMF58904	**GMF59904**	R0.5	**6.0**	6	13	57
GMF58905	**GMF59905**	R1.0	**6.0**	6	13	57
GMF58080	**GMF59080**	R0.5	**8.0**	8	19	63
GMF58906	**GMF59906**	R1.0	**8.0**	8	19	63
GMF58100	**GMF59100**	R0.5	**10.0**	10	22	72
GMF58907	**GMF59907**	R1.0	**10.0**	10	22	72
GMF58120	**GMF59120**	R0.5	**12.0**	12	26	83
GMF58908	**GMF59908**	R1.0	**12.0**	12	26	83
GMF58909	**GMF59909**	R2.0	**12.0**	12	26	83
GMF58140	**GMF59140**	R0.5	**14.0**	14	26	83
GMF58160	**GMF59160**	R1.0	**16.0**	16	32	92
GMF58912	**GMF59912**	R2.0	**16.0**	16	32	92
GMF58913	**GMF59913**	R3.0	**16.0**	16	32	92
GMF58180	**GMF59180**	R1.0	**18.0**	18	32	92
GMF58200	**GMF59200**	R1.0	**20.0**	20	38	104
GMF58916	**GMF59916**	R2.0	**20.0**	20	38	104
GMF58917	**GMF59917**	R3.0	**20.0**	20	38	104
GMF58250	**GMF59250**	R1.0	**25.0**	25	38	104

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

◎ : Excellent ○ : Good

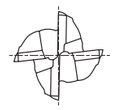
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○	○		◎	◎						○	○

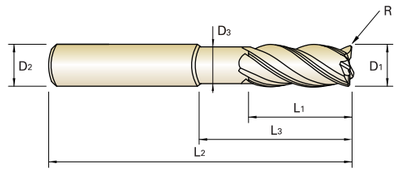
HIGH PERFORMANCE SOLID CARBIDE END MILLS

4 FLUTE CORNER RADIUS WITH NECK

GMF62 PLAIN SHANK
GMF63 FLAT SHANK

▶ Special flute geometry and multiple helix eliminate vibrations
▶ Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40





MG HM | 4 | 35°/37° | PLAIN | FLAT | P.22~23

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Neck Diameter	Overall Length
PLAIN	FLAT	R	D1	D2	L1	L3	D3	L2
GMF62030	**GMF63030**	R0.3	**3.0**	6	7	12	2.7	54
GMF62901	**GMF63901**	R0.5	**3.0**	6	7	12	2.7	54
GMF62902	**GMF63902**	R0.3	**3.0**	6	7	17	2.7	57
GMF62903	**GMF63903**	R0.5	**3.0**	6	7	17	2.7	57
GMF62040	**GMF63040**	R0.3	**4.0**	6	8	15	3.7	57
GMF62904	**GMF63904**	R0.5	**4.0**	6	8	15	3.7	57
GMF62905	**GMF63905**	R0.3	**4.0**	6	8	22	3.7	63
GMF62906	**GMF63906**	R0.5	**4.0**	6	8	22	3.7	63
GMF62050	**GMF63050**	R0.3	**5.0**	6	10	17	4.7	57
GMF62907	**GMF63907**	R0.5	**5.0**	6	10	17	4.7	57
GMF62908	**GMF63908**	R0.3	**5.0**	6	10	27	4.7	67
GMF62909	**GMF63909**	R0.5	**5.0**	6	10	27	4.7	67
GMF62060	**GMF63060**	R0.3	**6.0**	6	10	15	5.5	57
GMF62910	**GMF63910**	R0.5	**6.0**	6	10	15	5.5	57
GMF62911	**GMF63911**	R1.0	**6.0**	6	10	15	5.5	57
GMF62912	**GMF63912**	R0.3	**6.0**	6	10	20	5.5	62
GMF62913	**GMF63913**	R0.5	**6.0**	6	10	20	5.5	62
GMF62914	**GMF63914**	R1.0	**6.0**	6	10	20	5.5	62
GMF62915	**GMF63915**	R0.3	**6.0**	6	10	32	5.5	74
GMF62916	**GMF63916**	R0.5	**6.0**	6	10	32	5.5	74
GMF62917	**GMF63917**	R1.0	**6.0**	6	10	32	5.5	74
GMF62080	**GMF63080**	R0.5	**8.0**	8	12	20	7.5	63
GMF62918	**GMF63918**	R1.0	**8.0**	8	12	20	7.5	63
GMF62919	**GMF63919**	R0.5	**8.0**	8	12	30	7.5	73
GMF62920	**GMF63920**	R1.0	**8.0**	8	12	30	7.5	73
GMF62921	**GMF63921**	R0.5	**8.0**	8	12	46	7.5	90
GMF62922	**GMF63922**	R1.0	**8.0**	8	12	46	7.5	90
GMF62100	**GMF63100**	R0.5	**10.0**	10	14	25	9.2	72
GMF62923	**GMF63923**	R1.0	**10.0**	10	14	25	9.2	72
GMF62924	**GMF63924**	R0.5	**10.0**	10	14	35	9.2	82

▶ NEXT PAGE

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

◎ : Excellent ○ : Good

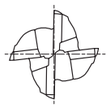
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○	○		◎	◎						○	○

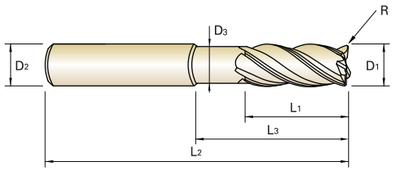
HIGH PERFORMANCE SOLID CARBIDE END MILLS

4 FLUTE CORNER RADIUS WITH NECK

GMF62 PLAIN SHANK
GMF63 FLAT SHANK

▶ Special flute geometry and multiple helix eliminate vibrations
▶ Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40





MG HM | 4 | 35°/37° | PLAIN | FLAT | P.22~23

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Neck Diameter	Overall Length
PLAIN	FLAT	R	D_1	D_2	L_1	L_3	D_3	L_2
GMF62925	**GMF63925**	R1.0	**10.0**	10	14	35	9.2	82
GMF62926	**GMF63926**	R0.5	**10.0**	10	14	55	9.2	102
GMF62927	**GMF63927**	R1.0	**10.0**	10	14	55	9.2	102
GMF62120	**GMF63120**	R0.5	**12.0**	12	16	30	11.0	83
GMF62928	**GMF63928**	R1.0	**12.0**	12	16	30	11.0	83
GMF62929	**GMF63929**	R2.0	**12.0**	12	16	30	11.0	83
GMF62930	**GMF63930**	R0.5	**12.0**	12	16	40	11.0	93
GMF62931	**GMF63931**	R1.0	**12.0**	12	16	40	11.0	93
GMF62932	**GMF63932**	R2.0	**12.0**	12	16	40	11.0	93
GMF62933	**GMF63933**	R0.5	**12.0**	12	16	64	11.0	117
GMF62934	**GMF63934**	R1.0	**12.0**	12	16	64	11.0	117
GMF62935	**GMF63935**	R2.0	**12.0**	12	16	64	11.0	117
GMF62160	**GMF63160**	R1.0	**16.0**	16	22	38	15.0	92
GMF62936	**GMF63936**	R2.0	**16.0**	16	22	38	15.0	92
GMF62937	**GMF63937**	R3.0	**16.0**	16	22	38	15.0	92
GMF62938	**GMF63938**	R1.0	**16.0**	16	22	55	15.0	109
GMF62939	**GMF63939**	R2.0	**16.0**	16	22	55	15.0	109
GMF62940	**GMF63940**	R3.0	**16.0**	16	22	55	15.0	109
GMF62941	**GMF63941**	R1.0	**16.0**	16	22	87	15.0	141
GMF62942	**GMF63942**	R2.0	**16.0**	16	22	87	15.0	141
GMF62943	**GMF63943**	R3.0	**16.0**	16	22	87	15.0	141
GMF62200	**GMF63200**	R1.0	**20.0**	20	26	50	19.0	104
GMF62944	**GMF63944**	R2.0	**20.0**	20	26	50	19.0	104
GMF62945	**GMF63945**	R3.0	**20.0**	20	26	50	19.0	104
GMF62946	**GMF63946**	R1.0	**20.0**	20	26	70	19.0	124
GMF62947	**GMF63947**	R2.0	**20.0**	20	26	70	19.0	124
GMF62948	**GMF63948**	R3.0	**20.0**	20	26	70	19.0	124
GMF62949	**GMF63949**	R1.0	**20.0**	20	26	110	19.0	164
GMF62950	**GMF63950**	R2.0	**20.0**	20	26	110	19.0	164
GMF62951	**GMF63951**	R3.0	**20.0**	20	26	110	19.0	164

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

◎ : Excellent ○ : Good

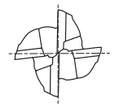
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○	○		◎	◎						○	○

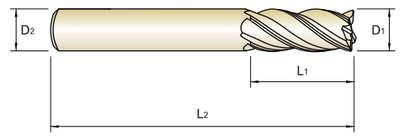
HIGH PERFORMANCE SOLID CARBIDE END MILLS

4 FLUTE SHORT LENGTH

GMF52 PLAIN SHANK
GMF53 FLAT SHANK

▶ Special flute geometry and multiple helix eliminate vibrations
▶ Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40



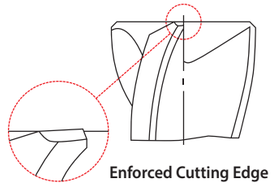


MG HM | 4 | 35°/37° | PLAIN | FLAT | C x 45° | P.22~23

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Chamfer
PLAIN	FLAT	D_1	D_2	L_1	L_2	
GMF52030	**GMF53030**	**3.0**	6	7	54	0.10
GMF52040	**GMF53040**	**4.0**	6	8	54	0.15
GMF52050	**GMF53050**	**5.0**	6	10	54	0.15
GMF52060	**GMF53060**	**6.0**	6	10	54	0.20
GMF52080	**GMF53080**	**8.0**	8	12	58	0.20
GMF52100	**GMF53100**	**10.0**	10	14	66	0.30
GMF52120	**GMF53120**	**12.0**	12	16	73	0.35
GMF52140	**GMF53140**	**14.0**	14	18	75	0.40
GMF52160	**GMF53160**	**16.0**	16	22	82	0.40
GMF52180	**GMF53180**	**18.0**	18	24	84	0.50
GMF52200	**GMF53200**	**20.0**	20	26	92	0.50

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



◎ : Excellent ○ : Good

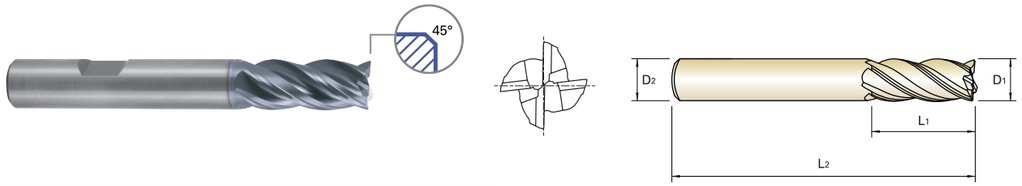
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○	○		◎	◎						○	○

HIGH PERFORMANCE SOLID CARBIDE END MILLS

4 FLUTE LONG LENGTH

GMF56 PLAIN SHANK
GMF57 FLAT SHANK

▶ Special flute geometry and multiple helix eliminate vibrations
▶ Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40

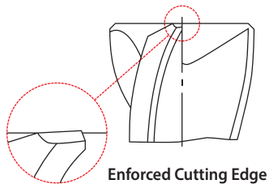


MG HM | 4 | 35°/37° | PLAIN | FLAT | C x 45° | P.22~23

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Chamfer
PLAIN	FLAT	D_1	D_2	L_1	L_2	
GMF56030	**GMF57030**	**3.0**	6	8	57	0.10
GMF56040	**GMF57040**	**4.0**	6	11	57	0.15
GMF56050	**GMF57050**	**5.0**	6	13	57	0.15
GMF56060	**GMF57060**	**6.0**	6	13	57	0.20
GMF56080	**GMF57080**	**8.0**	8	19	63	0.20
GMF56100	**GMF57100**	**10.0**	10	22	72	0.30
GMF56120	**GMF57120**	**12.0**	12	26	83	0.35
GMF56140	**GMF57140**	**14.0**	14	26	83	0.40
GMF56160	**GMF57160**	**16.0**	16	32	92	0.40
GMF56180	**GMF57180**	**18.0**	18	32	92	0.50
GMF56200	**GMF57200**	**20.0**	20	38	104	0.50
GMF56250	**GMF57250**	**25.0**	25	38	104	0.50

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



◎ : Excellent ○ : Good

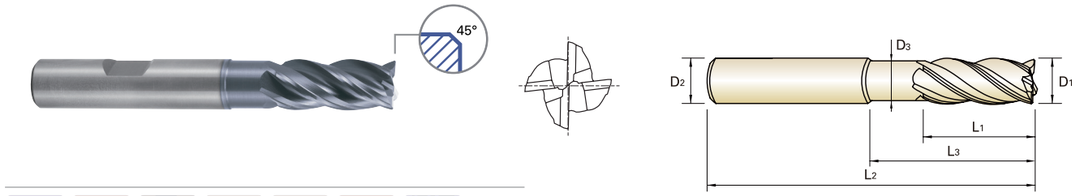
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○	○		◎	◎						○	○

HIGH PERFORMANCE SOLID CARBIDE END MILLS

4 FLUTE WITH NECK

GMF60 PLAIN SHANK
GMF61 FLAT SHANK

▶ Special flute geometry and multiple helix eliminate vibrations
▶ Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40



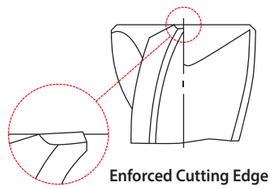
MG HM | 4 | 35°/37° | PLAIN | FLAT | C x 45° | P.22~23

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Chamfer
PLAIN	FLAT	D_1	D_2	L_1	L_3	L_2	D_3	
GMF60030	**GMF61030**	**3.0**	6	7	12	54	2.7	0.10
GMF60901	**GMF61901**	**3.0**	6	7	17	57	2.7	0.10
GMF60902	**GMF61902**	**3.0**	6	8	14	57	2.7	0.10
GMF60040	**GMF61040**	**4.0**	6	8	15	57	3.7	0.15
GMF60903	**GMF61903**	**4.0**	6	8	22	63	3.7	0.15
GMF60904	**GMF61904**	**4.0**	6	11	16	57	3.7	0.15
GMF60050	**GMF61050**	**5.0**	6	10	17	57	4.7	0.15
GMF60905	**GMF61905**	**5.0**	6	10	27	67	4.7	0.15
GMF60906	**GMF61906**	**5.0**	6	13	18	57	4.7	0.15
GMF60060	**GMF61060**	**6.0**	6	10	15	57	5.5	0.20
GMF60907	**GMF61907**	**6.0**	6	10	20	62	5.5	0.20
GMF60908	**GMF61908**	**6.0**	6	10	32	74	5.5	0.20
GMF60909	**GMF61909**	**6.0**	6	13	21	57	5.5	0.20
GMF60080	**GMF61080**	**8.0**	8	12	20	63	7.5	0.20
GMF60910	**GMF61910**	**8.0**	8	12	30	73	7.5	0.20
GMF60911	**GMF61911**	**8.0**	8	12	46	90	7.5	0.20
GMF60912	**GMF61912**	**8.0**	8	19	27	63	7.5	0.20
GMF60100	**GMF61100**	**10.0**	10	14	25	72	9.2	0.30
GMF60913	**GMF61913**	**10.0**	10	14	35	82	9.2	0.30
GMF60914	**GMF61914**	**10.0**	10	14	55	102	9.2	0.30
GMF60915	**GMF61915**	**10.0**	10	22	32	72	9.2	0.30
GMF60120	**GMF61120**	**12.0**	12	16	30	83	11.0	0.35

▶ NEXT PAGE

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



◎ : Excellent ○ : Good

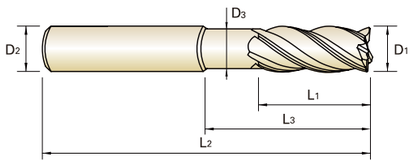
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○	○		◎	◎						○	○

HIGH PERFORMANCE SOLID CARBIDE END MILLS

4 FLUTE WITH NECK

GMF60 PLAIN SHANK
GMF61 FLAT SHANK

▶ Special flute geometry and multiple helix eliminate vibrations
▶ Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40

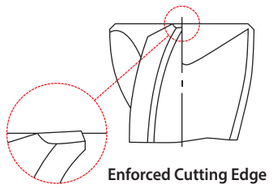


MG HM | 4 | 35°/37° | PLAIN | FLAT | C x 45° | P.22~23

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Chamfer
PLAIN	FLAT	D1	D2	L1	L3	L2	D3	
GMF60916	**GMF61916**	**12.0**	12	16	40	93	11.0	0.35
GMF60917	**GMF61917**	**12.0**	12	16	64	117	11.0	0.35
GMF60918	**GMF61918**	**12.0**	12	26	38	83	11.0	0.35
GMF60160	**GMF61160**	**16.0**	16	22	38	92	15.0	0.40
GMF60919	**GMF61919**	**16.0**	16	22	55	109	15.0	0.40
GMF60920	**GMF61920**	**16.0**	16	22	87	141	15.0	0.40
GMF60921	**GMF61921**	**16.0**	16	32	44	92	15.0	0.40
GMF60200	**GMF61200**	**20.0**	20	26	50	104	19.0	0.50
GMF60922	**GMF61922**	**20.0**	20	26	70	124	19.0	0.50
GMF60923	**GMF61923**	**20.0**	20	26	110	164	19.0	0.50
GMF60924	**GMF61924**	**20.0**	20	38	54	104	19.0	0.50

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



◎ : Excellent ○ : Good

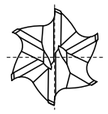
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○	○		◎	◎						○	○

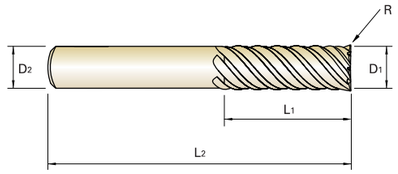
HIGH PERFORMANCE SOLID CARBIDE END MILLS

6 FLUTE CORNER RADIUS LONG LENGTH

GMG16 PLAIN SHANK
GMG17 FLAT SHANK

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





MG HM | 6 | 45° | PLAIN | FLAT | P.24

LONG

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R	D1	D2	L1	L2
GMG16060	**GMG17060**	R0.5	**6.0**	6	13	57
GMG16901	**GMG17901**	R1.0	**6.0**	6	13	57
GMG16080	**GMG17080**	R0.5	**8.0**	8	19	63
GMG16902	**GMG17902**	R1.0	**8.0**	8	19	63
GMG16100	**GMG17100**	R0.5	**10.0**	10	22	72
GMG16903	**GMG17903**	R1.0	**10.0**	10	22	72
GMG16904	**GMG17904**	R1.5	**10.0**	10	22	72
GMG16905	**GMG17905**	R2.0	**10.0**	10	22	72
GMG16120	**GMG17120**	R0.5	**12.0**	12	26	83
GMG16906	**GMG17906**	R1.0	**12.0**	12	26	83
GMG16907	**GMG17907**	R1.5	**12.0**	12	26	83
GMG16908	**GMG17908**	R2.0	**12.0**	12	26	83
GMG16909	**GMG17909**	R3.0	**12.0**	12	26	83
GMG16160	**GMG17160**	R1.0	**16.0**	16	32	92
GMG16910	**GMG17910**	R1.5	**16.0**	16	32	92
GMG16911	**GMG17911**	R2.0	**16.0**	16	32	92
GMG16912	**GMG17912**	R3.0	**16.0**	16	32	92
GMG16200	**GMG17200**	R1.0	**20.0**	20	38	104
GMG16913	**GMG17913**	R1.5	**20.0**	20	38	104
GMG16914	**GMG17914**	R2.0	**20.0**	20	38	104
GMG16915	**GMG17915**	R3.0	**20.0**	20	38	104
GMG16250	**GMG17250**	R1.0	**25.0**	25	44	104
GMG16916	**GMG17916**	R1.5	**25.0**	25	44	104
GMG16917	**GMG17917**	R2.0	**25.0**	25	44	104
GMG16918	**GMG17918**	R3.0	**25.0**	25	44	104

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

◎ : Excellent ○ : Good

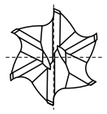
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○	○		◎	◎						○	○

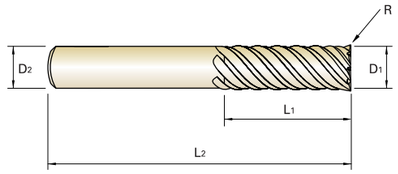
HIGH PERFORMANCE SOLID CARBIDE END MILLS

6 FLUTE CORNER RADIUS EXTRA LONG LENGTH

GMG18 PLAIN SHANK
GMG19 FLAT SHANK

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





MG HM | 6 | 45° | PLAIN | FLAT | P.24

EXTRA LONG

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R	D1	D2	L1	L2
GMG18060	**GMG19060**	R0.5	**6.0**	6	24	75
GMG18901	**GMG19901**	R1.0	**6.0**	6	24	75
GMG18080	**GMG19080**	R0.5	**8.0**	8	32	75
GMG18902	**GMG19902**	R1.0	**8.0**	8	32	75
GMG18903	**GMG19903**	R2.0	**8.0**	8	32	75
GMG18100	**GMG19100**	R0.5	**10.0**	10	40	100
GMG18904	**GMG19904**	R1.0	**10.0**	10	40	100
GMG18905	**GMG19905**	R1.5	**10.0**	10	40	100
GMG18906	**GMG19906**	R2.0	**10.0**	10	40	100
GMG18120	**GMG19120**	R0.5	**12.0**	12	48	120
GMG18907	**GMG19907**	R1.0	**12.0**	12	48	120
GMG18908	**GMG19908**	R1.5	**12.0**	12	48	120
GMG18909	**GMG19909**	R2.0	**12.0**	12	48	120
GMG18910	**GMG19910**	R3.0	**12.0**	12	48	120
GMG18160	**GMG19160**	R1.0	**16.0**	16	64	140
GMG18911	**GMG19911**	R1.5	**16.0**	16	64	140
GMG18912	**GMG19912**	R2.0	**16.0**	16	64	140
GMG18913	**GMG19913**	R3.0	**16.0**	16	64	140

▶ NEXT PAGE

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

◎ : Excellent ○ : Good

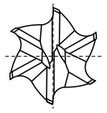
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○	○		◎	◎						○	○

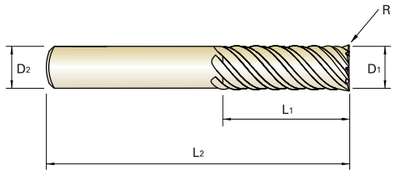
HIGH PERFORMANCE SOLID CARBIDE END MILLS

6 FLUTE CORNER RADIUS EXTRA LONG LENGTH

GMG18 PLAIN SHANK
GMG19 FLAT SHANK

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





MG HM | 6 | 45° | PLAIN | FLAT | P.24

EXTRA LONG

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R	D1	D2	L1	L2
GMG18200	**GMG19200**	R1.0	**20.0**	20	80	150
GMG18914	**GMG19914**	R1.5	**20.0**	20	80	150
GMG18915	**GMG19915**	R2.0	**20.0**	20	80	150
GMG18916	**GMG19916**	R3.0	**20.0**	20	80	150
GMG18917	**GMG19917**	R4.0	**20.0**	20	80	150
GMG18918	**GMG19918**	R5.0	**20.0**	20	80	150
GMG18250	**GMG19250**	R1.0	**25.0**	25	100	170
GMG18919	**GMG19919**	R1.5	**25.0**	25	100	170
GMG18920	**GMG19920**	R2.0	**25.0**	25	100	170
GMG18921	**GMG19921**	R3.0	**25.0**	25	100	170
GMG18922	**GMG19922**	R4.0	**25.0**	25	100	170
GMG18923	**GMG19923**	R5.0	**25.0**	25	100	170

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

◎ : Excellent ○ : Good

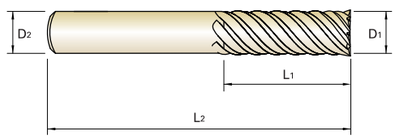
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○	○		◎	◎						○	○

HIGH PERFORMANCE SOLID CARBIDE END MILLS

6 FLUTE LONG & EXTRA LONG LENTH

GMG12, GMG14 PLAIN SHANK
GMG13, GMG15 FLAT SHANK

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



MG HM | 6 | 45° | PLAIN | FLAT | P.24

LONG

Unit : mm

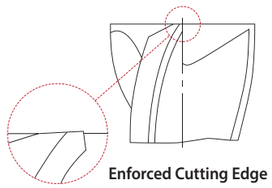
EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	D1	D2	L1	L2
GMG12060	**GMG13060**	**6.0**	6	13	57
GMG12080	**GMG13080**	**8.0**	8	19	63
GMG12100	**GMG13100**	**10.0**	10	22	72
GMG12120	**GMG13120**	**12.0**	12	26	83
GMG12160	**GMG13160**	**16.0**	16	32	92
GMG12200	**GMG13200**	**20.0**	20	38	104
GMG12250	**GMG13250**	**25.0**	25	44	104

EXTRA LONG

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	D1	D2	L1	L2
GMG14060	**GMG15060**	**6.0**	6	24	75
GMG14080	**GMG15080**	**8.0**	8	32	75
GMG14100	**GMG15100**	**10.0**	10	40	100
GMG14120	**GMG15120**	**12.0**	12	48	120
GMG14160	**GMG15160**	**16.0**	16	64	140
GMG14200	**GMG15200**	**20.0**	20	80	150
GMG14250	**GMG15250**	**25.0**	25	100	170

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



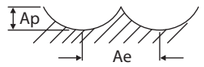
◎ : Excellent ○ : Good

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

GMG55, GMG56 SERIES

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

ISO Hardness (BHN)	Work Materials	Speed and Feed Recommendations				Diameter (mm)										
		Type of cut	Ap x D1	Ae x D1	Parameters	3	4	5	6	8	10	12	16	18	20	25
P < 300	CARBON STEELS 1.1191(C45) 1.0726(35 S 20) 1.0715(9 SMN 28) 1.0718(9 SMNPB 28)		1	0.5	Vc	162 (130-194)										
					RPM	17189	12892	10313	8594	6446	5157	4297	3223	2865	2578	2063
					Fz	0.025	0.027	0.030	0.040	0.060	0.065	0.070	0.075	0.080	0.090	0.099
					Feed	1719	1392	1238	1375	1547	1341	1203	967	917	928	817
P > 300 P < 380	ALLOY STEELS 1.2330(35 CRMO 4) 1.6565(40NICRMO6) 1.7033(34CR4) 1.6523(21 NICRMO2)		1	0.5	Vc	113 (90-136)										
					RPM	11990	8992	7194	5995	4496	3597	2997	2248	1998	1798	1439
					Fz	0.025	0.027	0.030	0.040	0.060	0.065	0.070	0.074	0.079	0.090	0.099
					Feed	1199	971	863	959	1079	935	839	665	631	647	570
P < 380	TOOL STEELS 1.2363(X100 CRMOV 5 1) 1.2379(X155 CRVMO 12 1) 1.2344(X40 CRMOV 5 1) 1.3243(S 6-5-2-5)		1	0.5	Vc	68 (54-82)										
					RPM	7215	5411	4329	3608	2706	2165	1804	1353	1203	1082	866
					Fz	0.017	0.019	0.021	0.028	0.042	0.045	0.049	0.052	0.056	0.063	0.070
					Feed	491	411	364	404	455	390	354	281	269	273	242
K < 260	CAST IRON 0.6020(GG20) 0.8145(GTS-45-06) 0.7060(GGG-60)		1	0.5	Vc	119 (95-143)										
					RPM	12626	9470	7576	6313	4735	3788	3157	2367	2104	1894	1515
					Fz	0.031	0.033	0.037	0.050	0.074	0.081	0.087	0.093	0.099	0.112	0.124
					Feed	1566	1250	1121	1263	1402	1227	1098	881	833	848	752
M	STAINLESS STEELS 300 1.4301(X5 CRNI 18 10) 1.4436(X3 CRNIMO 17 13 3) 1.4306(X2 CRNI 19 11) 1.4435(X2 CRNIMO 18 14 3)		1	0.5	Vc	85 (68-102)										
					RPM	9019	6764	5411	4509	3382	2706	2255	1691	1503	1353	1082
					Fz	0.020	0.020	0.025	0.041	0.045	0.050	0.055	0.060	0.064	0.065	0.068
					Feed	722	541	541	740	609	541	496	406	385	352	294
M	STAINLESS STEELS 400 1.4005(X12 CRS 13) 1.4104(X14 CRMOS 17)		1	0.5	Vc	77 (62-92)										
					RPM	8170	6127	4902	4085	3064	2451	2042	1532	1362	1225	980
					Fz	0.015	0.015	0.025	0.030	0.040	0.045	0.050	0.054	0.059	0.058	0.059
					Feed	490	368	490	490	490	441	408	331	321	284	231
M	STAINLESS STEELS(PH) 1.4594(Z7 CNU 15.05)		1	0.5	Vc	77 (62-92)										
					RPM	8170	6127	4902	4085	3064	2451	2042	1532	1362	1225	980
					Fz	0.020	0.020	0.025	0.041	0.045	0.050	0.055	0.060	0.064	0.065	0.068
					Feed	654	490	490	670	551	490	449	368	349	319	267
S	TITANIUM TI6AL4V TI5AL5V5MO TI7AL4MO		0.3	0.5	Vc	47 (38-56)										
					RPM	4987	3740	2992	2493	1870	1496	1247	935	831	748	598
					Fz	0.018	0.018	0.022	0.037	0.040	0.045	0.049	0.054	0.058	0.058	0.061
					Feed	359	269	263	369	299	269	244	202	193	174	146
S	HIGH TEMPERATURE ALLOYS INCONEL HASTELLOY, RENE		0.3	0.2	Vc	21 (17-25)										
					RPM	2228	1671	1337	1114	836	668	557	418	371	334	267
					Fz	0.014	0.014	0.017	0.028	0.031	0.035	0.038	0.042	0.045	0.045	0.048
					Feed	125	94	91	125	104	94	85	70	67	60	51

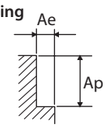


GMF52, GMF53, GMF54, GMF55, GMF56, GMF57, GMF58, GMF59, GMF60, GMF61, GMF62, GMF63 SERIES

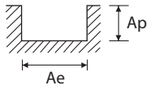
RPM = rev./min. FEED = inch/min.
Vc = ft/min. Fz = inch/tooth

ISO Hardness (BHN)	Work Materials	Speed and Feed Recommendations				Diameter (mm)											
		Type of cut	Ap x D1	Ae x D1	Parameters	3	4	5	6	8	10	12	14	16	18	20	25
P < 300	CARBON STEELS 1.1191(C45) 1.0726(35 S 20) 1.0715(9 SMN 28) 1.0718(9 SMNPB 28)	Side Cutting	1.5 (1.2)	0.5	Vc	152 (122-182)					168 (135-201)						
					RPM	16128	12096	9677	8064	6048	5348	4456	3820	3342	2971	2674	2139
					Fz	0.005	0.008	0.011	0.016	0.027	0.038	0.047	0.049	0.053	0.059	0.065	0.064
					FEED	323	387	426	516	653	813	838	749	709	701	695	548
		Slotting	1 (0.8)	1	Vc	152 (122-182)					168 (135-201)						
					RPM	16128	12096	9677	8064	6048	5348	4456	3820	3342	2971	2674	2139
					Fz	0.005	0.008	0.011	0.016	0.027	0.038	0.047	0.049	0.053	0.059	0.065	0.064
					FEED	323	387	426	516	653	813	838	749	709	701	695	548
P > 300 P < 380	ALLOY STEELS 1.2330(35 CRMO 4) 1.6565(40NICRMO6) 1.7033(34CR4) 1.6523(21 NICRMO2)	Side Cutting	1.5 (1.2)	0.5	Vc	107 (86-128)					117 (94-140)						
					RPM	11353	8515	6812	5677	4257	3724	3104	2660	2328	2069	1862	1490
					Fz	0.005	0.008	0.011	0.016	0.027	0.038	0.047	0.049	0.053	0.059	0.065	0.064
					FEED	227	272	300	363	460	566	583	521	493	488	484	381
		Slotting	1 (0.8)	1	Vc	107 (86-128)					117 (94-140)						
					RPM	11353	8515	6812	5677	4257	3724	3104	2660	2328	2069	1862	1490
					Fz	0.005	0.008	0.011	0.016	0.027	0.038	0.047	0.049	0.053	0.059	0.065	0.064
					FEED	227	272	300	363	460	566	583	521	493	488	484	381
P < 380	TOOL STEELS 1.2363(X100 CRMOV 5 1) 1.2379(X155 CRVMO 12 1) 1.2344(X40 CRMOV 5 1) 1.3243(S 6-5-2-5)	Side Cutting	1.5 (1.2)	0.5	Vc	64 (52-76)					70 (56-84)						
					RPM	6791	5093	4074	3395	2546	2228	1857	1592	1393	1238	1114	891
					Fz	0.003	0.006	0.008	0.011	0.019	0.027	0.032	0.034	0.037	0.041	0.045	0.045
					FEED	81	122	130	149	194	241	238	216	206	203	201	160
		Slotting	1 (0.8)	1	Vc	64 (52-76)					70 (56-84)						
					RPM	6791	5093	4074	3395	2546	2228	1857	1592	1393	1238	1114	891
					Fz	0.003	0.006	0.008	0.011	0.019	0.027	0.032	0.034	0.037	0.041	0.045	0.045
					FEED	81	122	130	149	194	241	238	216	206	203	201	160
K < 260	CAST IRON 0.6020(GG20) 0.8145(GTS-45-06) 0.7060(GGG-60)	Side Cutting	1.5 (1.2)	0.5	Vc	112 (90-134)					123 (99-147)						
					RPM	11884	8913	7130	5942	4456	3915	3263	2797	2447	2175	1958	1566
					Fz	0.006	0.010	0.014	0.020	0.034	0.048	0.058	0.061	0.065	0.073	0.081	0.079
					FEED	285	357	399	475	606	752	757	682	636	635	634	495
		Slotting	1 (0.8)	1	Vc	112 (90-134)					123 (99-147)						
					RPM	11884	8913	7130	5942	4456	3915	3263	2797	2447	2175	1958	1566
					Fz	0.006	0.010	0.014	0.020	0.034	0.048	0.058	0.061	0.065	0.073	0.081	0.079
					FEED	285	357	399	475	606	752	757	682	636	635	634	495

Side cutting



Slotting



Note

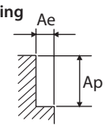
* ( ) : Short length & Neck type
  0.8 x D(Slotting), 1.2 x D(Side Cutting) Axial
* cutting depth should be applied for Short length(GMF52, GMF53, GMF54, GMF55) & Neck type(GMF60, GMF61, GMF62, GMF63) series diameter over 8mm

GMF52, GMF53, GMF54, GMF55, GMF56, GMF57, GMF58, GMF59, GMF60, GMF61, GMF62, GMF63 SERIES

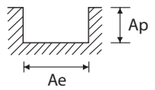
RPM = rev./min. FEED = inch/min.
Vc = ft/min. Fz = inch/tooth

ISO Hardness (BHN)	Work Materials	Speed and Feed Recommendations				Diameter (mm)											
		Type of cut	Ap x D1	Ae x D1	Parameters	3	4	5	6	8	10	12	14	16	18	20	25
M	STAINLESS STEELS 300 1.4301(X5 CRNI 18 10) 1.4436(X3 CRNIMO 17 13 3) 1.4306(X2 CRNI 19 11) 1.4435(X2 CRNIMO 18 14 3)	Side Cutting	1.5 (1.2)	0.5	Vc	106 (85-127)											
					RPM	11247	8435	6748	5623	4218	3374	2812	2410	2109	1874	1687	1350
					Fz	0.005	0.008	0.013	0.018	0.028	0.048	0.055	0.059	0.062	0.070	0.077	0.077
					FEED	225	270	351	405	472	648	619	569	523	525	520	416
		Slotting	1 (0.8)	1	Vc	106 (85-127)											
					RPM	11247	8435	6748	5623	4218	3374	2812	2410	2109	1874	1687	1350
					Fz	0.005	0.008	0.013	0.018	0.028	0.048	0.055	0.059	0.062	0.070	0.077	0.077
					FEED	225	270	351	405	472	648	619	569	523	525	520	416
M	STAINLESS STEELS 400 1.4005(X12 CRS 13) 1.4104(X12 CRMOS 17)	Side Cutting	1.5 (1.2)	0.5	Vc	148 (119-177)											
					RPM	15703	11777	9422	7852	5889	4711	3926	3365	2944	2617	2355	1884
					Fz	0.004	0.006	0.009	0.013	0.022	0.034	0.039	0.042	0.045	0.050	0.055	0.055
					FEED	251	283	339	408	518	641	612	565	530	523	518	415
		Slotting	1 (0.8)	1	Vc	148 (119-177)											
					RPM	15703	11777	9422	7852	5889	4711	3926	3365	2944	2617	2355	1884
					Fz	0.004	0.006	0.009	0.013	0.022	0.034	0.039	0.042	0.045	0.050	0.055	0.055
					FEED	251	283	339	408	518	641	612	565	530	523	518	415
M	STAINLESS STEELS(PH) 1.4594(Z7 CNU 15.05)	Side Cutting	1.5 (1.2)	0.5	Vc	95 (76-114)											
					RPM	10080	7560	6048	5040	3780	3024	2520	2160	1890	1680	1512	1210
					Fz	0.005	0.008	0.013	0.018	0.028	0.048	0.055	0.059	0.062	0.069	0.076	0.076
					FEED	202	242	314	363	423	581	554	510	469	464	460	368
		Slotting	1 (0.8)	1	Vc	95 (76-114)											
					RPM	10080	7560	6048	5040	3780	3024	2520	2160	1890	1680	1512	1210
					Fz	0.005	0.008	0.013	0.018	0.028	0.048	0.055	0.059	0.062	0.069	0.076	0.076
					FEED	202	242	314	363	423	581	554	510	469	464	460	368
S	TITANIUM TI6AL4V TI5AL5V5MO TI7AL4MO	Side Cutting	1	0.35	Vc	58 (47-69)											
					RPM	6154	4615	3692	3077	2308	1846	1538	1319	1154	1026	923	738
					Fz	0.004	0.007	0.011	0.016	0.025	0.042	0.050	0.053	0.055	0.062	0.068	0.069
					FEED	98	129	162	197	231	310	308	280	254	254	251	204
		Slotting	0.5	1	Vc	58 (47-69)											
					RPM	6154	4615	3692	3077	2308	1846	1538	1319	1154	1026	923	738
					Fz	0.004	0.007	0.011	0.016	0.025	0.042	0.050	0.053	0.055	0.062	0.068	0.069
					FEED	98	129	162	197	231	310	308	280	254	254	251	204
S	HIGH TEMPERATURE ALLOYS INCONEL HASTELLOY RENE	Side Cutting	1	0.25	Vc	26 (21-31)											
					RPM	2759	2069	1655	1379	1035	828	690	591	517	460	414	331
					Fz	0.005	0.007	0.008	0.012	0.019	0.033	0.038	0.040	0.043	0.048	0.054	0.052
					FEED	55	58	53	66	79	109	105	95	89	88	89	69
		Slotting	0.5	1	Vc	26 (21-31)											
					RPM	2759	2069	1655	1379	1035	828	690	591	517	460	414	331
					Fz	0.005	0.007	0.008	0.012	0.019	0.033	0.038	0.040	0.043	0.048	0.054	0.052
					FEED	55	58	53	66	79	109	105	95	89	88	89	69

Side cutting



Slotting



Note

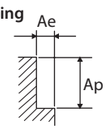
* ( ) : Short length & Neck type
  0.8 x D(Slotting), 1.2 x D(Side Cutting) Axial
* cutting depth should be applied for Short length(GMF52, GMF53, GMF54, GMF55) & Neck type(GMF60, GMF61, GMF62, GMF63) series diameter over 8mm

GMG12, GMG13, GMG14, GMG15, GMG16, GMG17, GMG18, GMG19 SERIES

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

ISO Hardness (BHN)	Work Materials	Speed and Feed Recommendations				Diameter (mm)						
		Type of cut	Ap x D1	Ae x D1	Parameters	6	8	10	12	16	20	25
P < 300	CARBON STEELS 1.1191(C45) 1.0726(35 S 20) 1.0715(9 SMN 28) 1.0718(9 SMNPB 28)	Side Cutting	2 (*)	0.05	Vc	300 (240-360)						
					RPM	15915	11937	9549	7958	5968	4775	3820
					Fz	0.068	0.116	0.144	0.173	0.202	0.225	0.232
					Feed	6494	8308	8251	8260	7234	6446	5317
P > 300 P < 380	ALLOY STEELS 1.2330(35 CRMO 4) 1.6565(40NICRMO6) 1.7033(34CR4) 1.6523(21 NICRMO2)	Side Cutting	2 (*)	0.05	Vc	203 (162-244)						
					RPM	10769	8077	6462	5385	4039	3231	2585
					Fz	0.050	0.085	0.106	0.128	0.149	0.167	0.174
					Feed	3231	4119	4110	4135	3610	3237	2698
P < 380	TOOL STEELS 1.2363(X100 CRMOV 5 1) 1.2379(X155 CRVMO 12 1) 1.2344(X40 CRMOV 5 1) 1.3243(S 6-5-2-5)	Side Cutting	2 (*)	0.05	Vc	100 (80-120)						
					RPM	5305	3979	3183	2653	1989	1592	1273
					Fz	0.041	0.071	0.088	0.105	0.123	0.137	0.144
					Feed	1305	1695	1681	1671	1468	1308	1100
M	STAINLESS STEELS 300 1.4301(X5 CRNI 18 10) 1.4436(X3 CRNIMO 17 13 3) 1.4306(X2 CRNI 19 11) 1.4435(X2 CRNIMO 18 14 3)	Side Cutting	2 (*)	0.05	Vc	147 (118-176)						
					RPM	7799	5849	4679	3899	2924	2340	1872
					Fz	0.041	0.071	0.088	0.105	0.123	0.137	0.143
					Feed	1918	2492	2471	2457	2158	1923	1606
M	STAINLESS STEELS 400 1.4005(X12 CRS 13) 1.4104(X14 CRMOS 17)	Side Cutting	2 (*)	0.05	Vc	213 (170-256)						
					RPM	11300	8475	6780	5650	4238	3390	2712
					Fz	0.049	0.084	0.104	0.125	0.146	0.162	0.168
					Feed	3322	4271	4231	4238	3712	3295	2734
M	STAINLESS STEELS(PH) 1.4594(Z7 CNU 15.05)	Side Cutting	2 (*)	0.05	Vc	134 (107-161)						
					RPM	7109	5332	4265	3554	2666	2133	1706
					Fz	0.041	0.071	0.088	0.105	0.123	0.137	0.142
					Feed	1749	2271	2252	2239	1967	1753	1454
S	TITANIUM TI6AL4V TI5AL5V5MO TI7AL4MO	Side Cutting	2 (*)	0.05	Vc	213 (170-256)						
					RPM	6154	4615	3692	3077	2308	1846	1477
					Fz	0.033	0.055	0.070	0.083	0.097	0.113	0.117
					Feed	1218	1523	1551	1532	1343	1252	1037
S	HIGH TEMPERATURE ALLOYS INCONEL HASTELLOY, RENE	Side Cutting	2 (*)	0.05	Vc	134 (107-161)						
					RPM	1751	1313	1050	875	657	525	420
					Fz	0.033	0.055	0.070	0.082	0.097	0.112	0.115
					Feed	347	433	441	431	382	353	290

Side cutting



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

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