Registered
ISO 9001:2015 / ISO 14001:2015

GLOBAL BRAND 2012

V7 Plus

HIGH PERFORMANCE SOLID CARBIDE END MILLS

For Steels, Cast Iron and Stainless Steels

YG-1 CO., LTD.

HEAD OFFICE

211, Sewolcheon-ro, Bupyeong-gu, Incheon, South Korea
Phone: +82-32-526-0909
Http://www.yg1.kr
E-mail: yg1@yg1.kr

Note The information is provided for reference only. Tool specifications are subject to change without prior notice.
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YouTube

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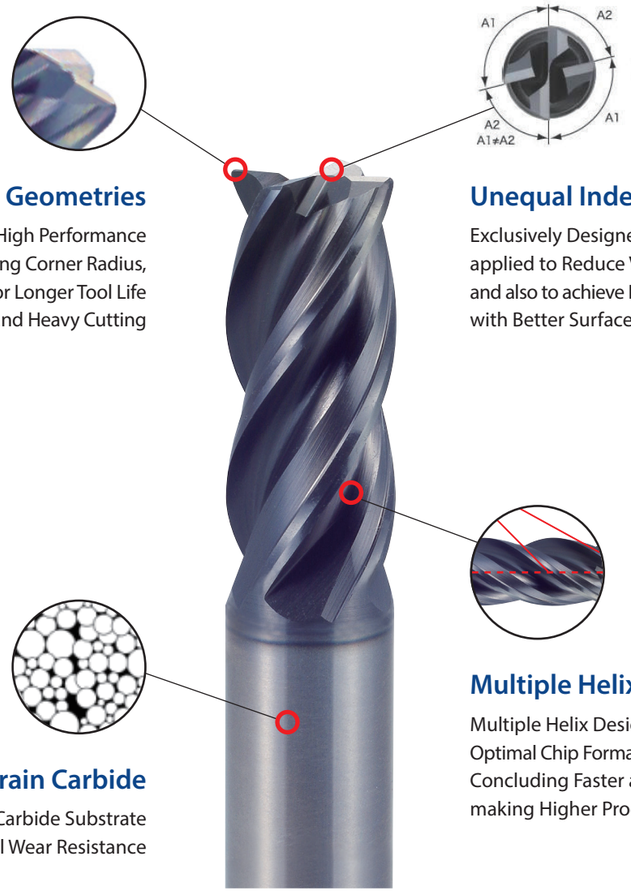
YG1YEVP190826004

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

Ultra Micro grain Carbide

Premium Carbide Substrate
Achieving Exceptional Wear Resistance

Multiple Helix

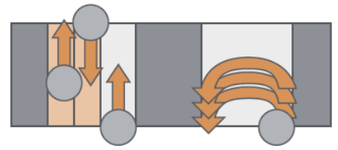
Multiple Helix Designed for
Optimal Chip Formation and Chip Evacuation
Concluding Faster and Heavier Cutting
making Higher Productivity

V7 PLUS 6 FLUTE END MILLS

THE BEST CHATTER FREE TOOL FOR HIGH SPEED

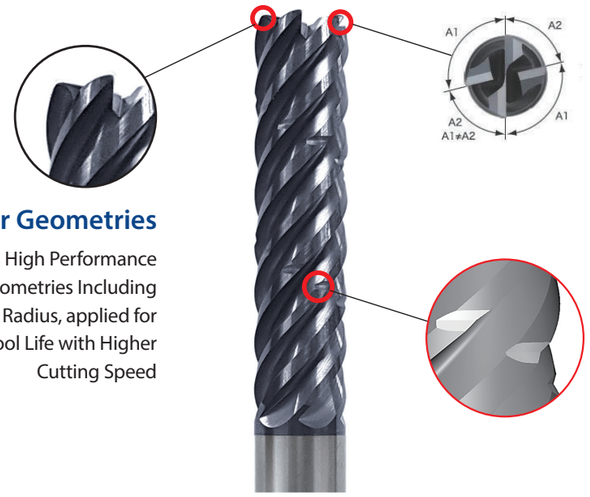
- Unique geometry of the variable pitch provides the best chatter free tool for high speed and also trochoidal milling
- Several slot widths can be used with the same tool diameter in an efficient way
- Provides longer tool life and higher productivity on most materials
- Trochoidal milling is a programming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

V7 PLUS 6 FLUTE CHIP SPLITTER NEW



Corner Geometries

YG-1's High Performance
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Longer Tool Life with Higher
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Exclusively Designed Unique
Geometry applied to Reduce
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Excellent Surface Finish

Chip Splitters

Special Chip Splitter Design
Shorter Chip Length at High Axial
Machining, improving Chip Removal from
both the Component and the Machine

GUIDE LINE TO ICONS

Tool Raw Material
CARBIDE

Helix Angle
35°/37° 35°/37° 41°~45° 45°

No. of Flutes
4 5 6

Tolerance of Ball Radius
R ±0.02

Type of Shank
PLAIN FLAT

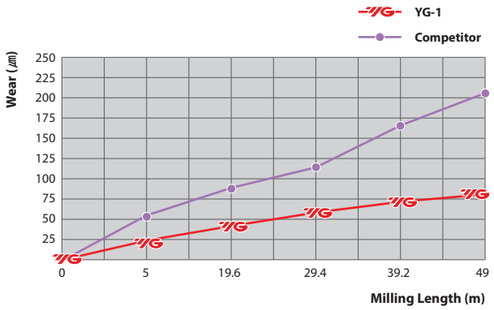
Chamfer Angle
C x 45°

Cutting Condition Pages

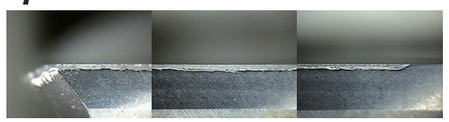
CASE STUDY

V7 Plus 4 Flute vs Competitor

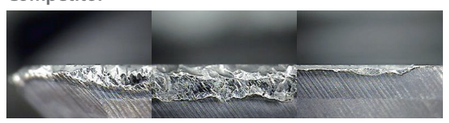
	V7 Plus	Competitor
Wear(㎛)	**83.518**	**203.381**
Milling Length(m)	49	49
Size(mm)	Ø10 x Ø10 x 22 x 72	
Work Material	-DIN: C45 -WR: 1.0503 -JIS: S45C (HRc 30 / HB 286)	
Cutting Speed	230.09 m/min.	
RPM	7,324 rev./min.	
Feed	1,464 mm/min.	
Feed per tooth	0.05 mm/tooth	
Milling Method	Down & Side Cutting	
Milling Depth	Axial: 10 mm, Radial: 3 mm	
Coolant	Wet Cut	
Overhang	34 mm	
Machine	Machining Center	



V7 Plus

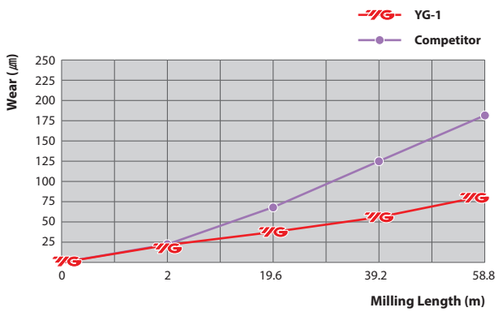


Competitor

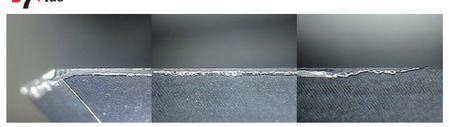


V7 Plus 4 Flute vs Competitor

	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	-DIN: C45 -WR: 1.0503 -JIS: S45C (HRc 30 / HB 286)	
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

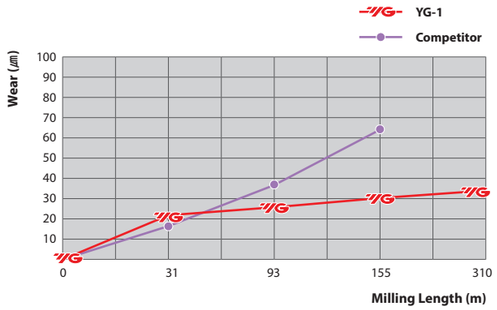


Competitor

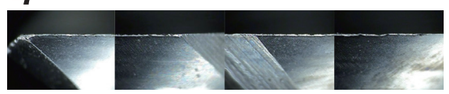
CASE STUDY

V7 Plus 6 Flute Chip Splitter vs Competitor

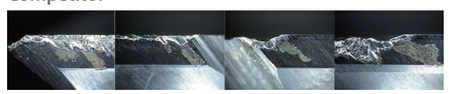
	V7 Plus	Competitor
Wear(㎛)	**32.49**	**88.26**
Milling Length(m)	310	155
Size(mm)	Ø12 x Ø12 x 48 x 120 with chip Splitter	
Work Material	-DIN: C45 -WR: 1.0503 -JIS: S45C (HRc 30 /HB 286)	
Cutting Speed	220.01 m/min.	
RPM	5,836 rev./min.	
Feed	3,151 mm/min.	
Milling Method	Trochoidal Cutting	
Milling Depth	Axial: 36mm, Radial: 0.6 mm	
Coolant	Wet Cut	
Overhang	56 mm	
Machine	Machining Center	



V7 Plus

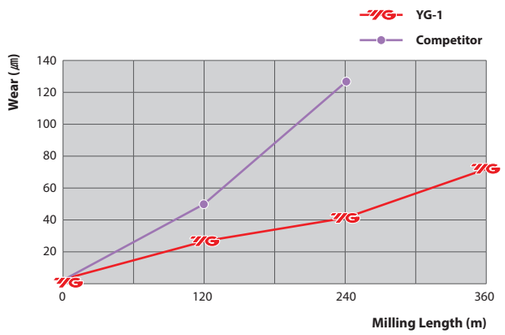


Competitor

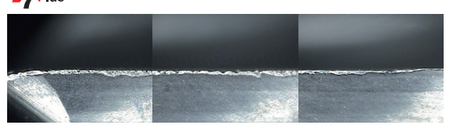


V7 Plus 6 Flute vs Competitor

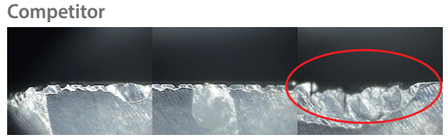
	V7 Plus	Competitor
Milling Length(m)	**360**	**300**
Size(mm)	Ø12(R1) x Ø12 x 26 x 83	
Work Material	-DIN: C45 -WR: 1.0503 -JIS: S45C (HRc 30 / HB 286)	
Cutting Speed	278.67 m/min.	
RPM	7,392 rev./min.	
Feed	7,495 mm/min.	
Feed per tooth	0.17 mm/tooth	
Milling Method	Trochoidal Cutting	
Milling Depth	Axial: 24 mm(2D), Radial: 0.6 mm(0.05D)	
Coolant	Wet Cut	
Overhang	36 mm	
Machine	Machining Center	



V7 Plus



Competitor



SELECTION GUIDE

Please visit
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for material search

V7 Plus

HIGH PERFORMANCE
SOLID CARBIDE END MILLS
For Steels, Cast Iron and Stainless Steels

◎ : Excellent ○ : Good

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRc	GMG55 GMG56	GMF54 GMF55	GMF58 GMF59	GMF62 GMF63
							4	4	4	4
							35°/37°	35°/37°	35°/37°	35°/37°
							BALL NOSE	CORNER RADIUS	CORNER RADIUS	CORNER RADIUS
							R1.5	D3.0	D3.0	D3.0
							R12.5	D20.0	D25.0	D20.0
							8	9	10	11
							LONG LENGTH	SHORT LENGTH	LONG LENGTH	LONG LENGTH with NECK
							Y-Coating	Y-Coating	Y-Coating	Y-Coating
P	1	Non-alloy steel	About 0.15% C	Annealed	125		◎	◎	◎	◎
	2		About 0.45% C	Annealed	190	13	◎	◎	◎	◎
	3		About 0.45% C	Quenched & tempered	250	25	◎	◎	◎	◎
	4		About 0.75% C	Annealed	270	28	◎	◎	◎	◎
	5		About 0.75% C	Quenched & tempered	300	32	◎	◎	◎	◎
	6	Low alloy steel		Annealed	180	10	◎	◎	◎	◎
	7			Quenched & tempered	275	29	◎	◎	◎	◎
	8			Quenched & tempered	300	32	◎	◎	◎	◎
	9			Quenched & tempered	350	38	◎	◎	◎	◎
	10	High alloyed steel, and tool steel		Annealed	200	15	◎	◎	◎	◎
	11			Quenched & Tempered	325	35	◎	◎	◎	◎
M	12	Stainless steel	Ferritic / Martensitic	Annealed	200	15	◎	◎	◎	◎
	13		Martensitic	Quenched & Tempered	240	23	◎	◎	◎	◎
	14			Austenitic	180	10	◎	◎	◎	◎
K	15	Grey cast iron	Pearlitic / ferritic		180	10	◎	◎	◎	◎
	16		Pearlitic (Martensitic)		260	26	◎	◎	◎	◎
	17	Nodular cast iron	Ferritic		160	3	◎	◎	◎	◎
	18		Pearlitic		250	25	◎	◎	◎	◎
	19	Malleable cast iron	Ferritic		130		◎	◎	◎	◎
	20		Pearlitic		230	21	◎	◎	◎	◎
N	21	Aluminum-wrought alloy	Not Curable		60					
	22		Curable	Hardened	100					
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable		75					
	24		≤ 12% Si, Curable	Hardened	90					
	25		> 12% Si, Not Curable		130					
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%		110					
	27		CuZn, CuSnZn (Brass)		90					
	28		CuSn, lead-free copper and electrolytic copper		100					
	29	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic							
	30		Rubber, Wood, etc.							
S	31	Heat Resistant Super Alloys	Fe Based	Annealed	200	15	○	○	○	○
	32			Cured	280	30	○	○	○	○
	33		Ni or Co Based	Annealed	250	25	○	○	○	○
	34			Cured	350	38	○	○	○	○
	35			Cast	320	34	○	○	○	○
	36	Titanium Alloys	Pure Titanium		400 Rm		○	○	○	○
	37		Alpha + Beta Alloys	Hardened	1050 Rm		○	○	○	○
H	38	Hardened steel		Hardened	550	55				
	39			Hardened	630	60				
	40	Chilled Cast Iron		Cast	400	42				
	41	Hardened Cast Iron		Hardened	550	55				

GMF52 GMF53	GMF56 GMF57	GMF60 GMF61	GMG16 GMG17	GMG18 GMG19	GMH58 GMH59	GMG12 GMG13	GMG14 GMG15	GMH56 GMH57	EMB72 EMB73	
4	4	4	6	6	6	6	6	6	5	
35°/37°	35°/37°	35°/37°	45°	45°	45°	45°	45°	45°	41°~45°	
SQUARE	SQUARE	SQUARE	CORNER RADIUS	CORNER RADIUS	CORNER RADIUS	SQUARE	SQUARE	SQUARE	SQUARE	
D3.0	D3.0	D3.0	D6.0	D6.0	D6.0	D6.0	D6.0	D6.0	D6.0	
D20.0	D25.0	D20.0	D25.0	D25.0	D25.0	D25.0	D25.0	D25.0	D25.0	
14	15	16	18	19	21	23	24	25	26	
SHORT LENGTH	LONG LENGTH	LONG LENGTH with NECK	LONG LENGTH	EXTRA LONG LENGTH	EXTRA LONG LENGTH	LONG LENGTH	EXTRA LONG LENGTH	EXTRA LONG LENGTH	LONG LENGTH	
Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	AlTiN	
					CHIP SPLITTER			CHIP SPLITTER	V7 INOX	
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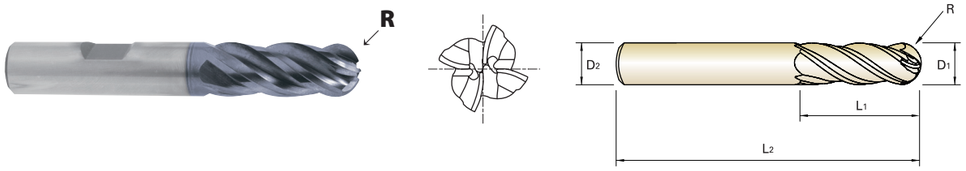
										38
										39
										40
										41

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



CARBIDE | 4 | 35°/37° | R ±0.02 | PLAIN | FLAT P.27

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
Up to Ø12	0 ~ - 0.02	h5
Over Ø12	0 ~ - 0.03	* Shank Dia.≥Ø12: h6

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

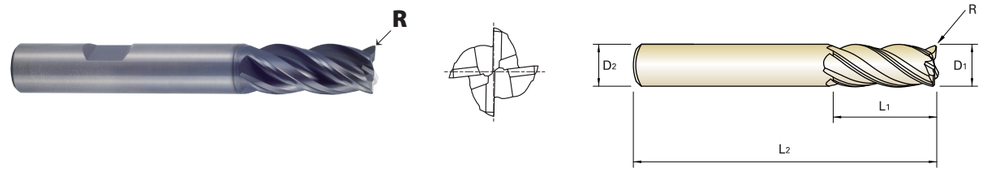
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended											○	○	○	○	○	○	○				

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



CARBIDE | 4 | 35°/37° | PLAIN | FLAT P.28

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
Up to Ø12	0 ~ - 0.02	h5
Over Ø12	0 ~ - 0.03	* Shank Dia.≥Ø12: h6

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

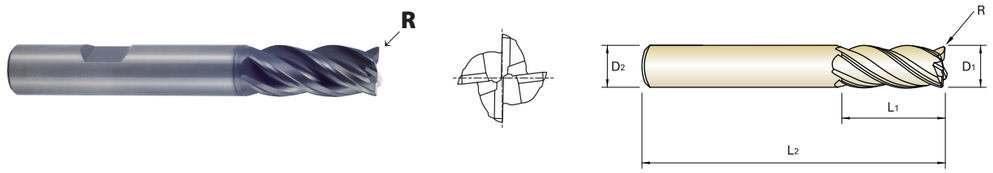
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended											○	○	○	○	○	○	○				

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



CARBIDE | 4 | 35°/37° | PLAIN | FLAT P.28

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
Up to Ø12	0 ~ - 0.02	h5
Over Ø12	0 ~ - 0.03	* Shank Dia.≥Ø12: h6

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

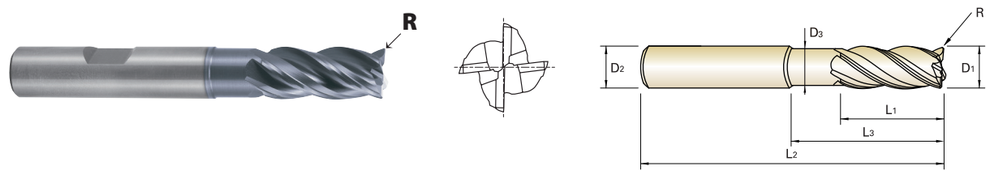
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended											○	○	○	○	○	○	○				

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



CARBIDE | 4 | 35°/37° | PLAIN | FLAT P.28

Unit : mm

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

▶ NEXT PAGE

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

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

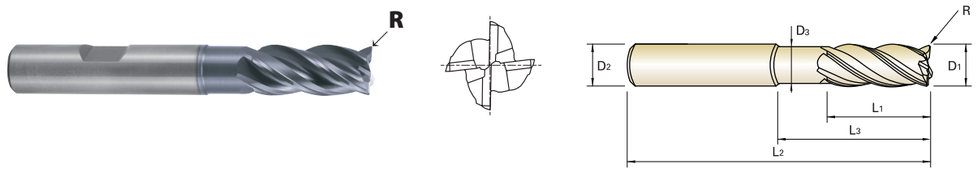
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended											○	○	○	○	○	○	○				

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



CARBIDE | 4 | 35°/37° | PLAIN | FLAT | P.28

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
PLAIN	FLAT	R	D1	D2	L1	L3	L2	D3
GMF62920	**GMF63920**	R1.0	**8.0**	8	12	30	73	7.5
GMF62921	**GMF63921**	R0.5	**8.0**	8	12	46	90	7.5
GMF62922	**GMF63922**	R1.0	**8.0**	8	12	46	90	7.5
GMF62100	**GMF63100**	R0.5	**10.0**	10	14	25	72	9.2
GMF62923	**GMF63923**	R1.0	**10.0**	10	14	25	72	9.2
GMF62924	**GMF63924**	R0.5	**10.0**	10	14	35	82	9.2
GMF62925	**GMF63925**	R1.0	**10.0**	10	14	35	82	9.2
GMF62926	**GMF63926**	R0.5	**10.0**	10	14	55	102	9.2
GMF62927	**GMF63927**	R1.0	**10.0**	10	14	55	102	9.2
GMF62120	**GMF63120**	R0.5	**12.0**	12	16	30	83	11.0
GMF62928	**GMF63928**	R1.0	**12.0**	12	16	30	83	11.0
GMF62929	**GMF63929**	R2.0	**12.0**	12	16	30	83	11.0
GMF62930	**GMF63930**	R0.5	**12.0**	12	16	40	93	11.0
GMF62931	**GMF63931**	R1.0	**12.0**	12	16	40	93	11.0
GMF62932	**GMF63932**	R2.0	**12.0**	12	16	40	93	11.0
GMF62933	**GMF63933**	R0.5	**12.0**	12	16	64	117	11.0
GMF62934	**GMF63934**	R1.0	**12.0**	12	16	64	117	11.0
GMF62935	**GMF63935**	R2.0	**12.0**	12	16	64	117	11.0
GMF62160	**GMF63160**	R1.0	**16.0**	16	22	38	92	15.0
GMF62936	**GMF63936**	R2.0	**16.0**	16	22	38	92	15.0
GMF62937	**GMF63937**	R3.0	**16.0**	16	22	38	92	15.0
GMF62938	**GMF63938**	R1.0	**16.0**	16	22	55	109	15.0
GMF62939	**GMF63939**	R2.0	**16.0**	16	22	55	109	15.0
GMF62940	**GMF63940**	R3.0	**16.0**	16	22	55	109	15.0

▶ NEXT PAGE

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

◎ : Excellent ○ : Good

ISO	P																			
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

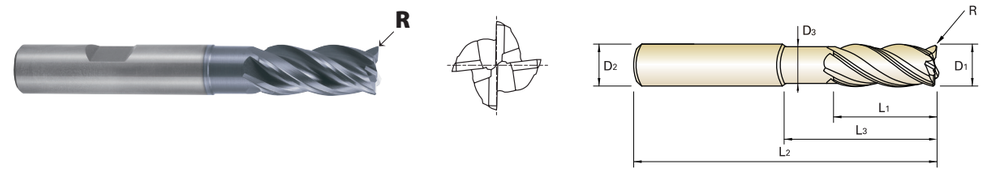
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended											○	○	○	○	○	○	○				

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



CARBIDE | 4 | 35°/37° | PLAIN | FLAT | P.28

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
PLAIN	FLAT	R	D1	D2	L1	L3	L2	D3
GMF62941	**GMF63941**	R1.0	**16.0**	16	22	87	141	15.0
GMF62942	**GMF63942**	R2.0	**16.0**	16	22	87	141	15.0
GMF62943	**GMF63943**	R3.0	**16.0**	16	22	87	141	15.0
GMF62200	**GMF63200**	R1.0	**20.0**	20	26	50	104	19.0
GMF62944	**GMF63944**	R2.0	**20.0**	20	26	50	104	19.0
GMF62945	**GMF63945**	R3.0	**20.0**	20	26	50	104	19.0
GMF62946	**GMF63946**	R1.0	**20.0**	20	26	70	124	19.0
GMF62947	**GMF63947**	R2.0	**20.0**	20	26	70	124	19.0
GMF62948	**GMF63948**	R3.0	**20.0**	20	26	70	124	19.0
GMF62949	**GMF63949**	R1.0	**20.0**	20	26	110	164	19.0
GMF62950	**GMF63950**	R2.0	**20.0**	20	26	110	164	19.0
GMF62951	**GMF63951**	R3.0	**20.0**	20	26	110	164	19.0

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

◎ : Excellent ○ : Good

ISO	P																			
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

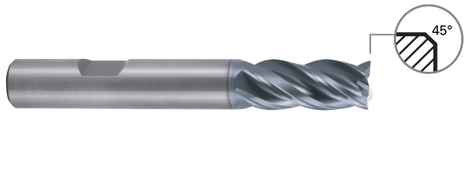
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended											○	○	○	○	○	○	○				

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

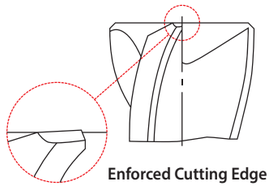


CARBIDE | 4 | 35°/37° | PLAIN | FLAT | C x 45° | P.28

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Chamfer
PLAIN	FLAT	D1	D2	L1	L2	
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
Up to Ø12	0 ~ - 0.02	h5
Over Ø12	0 ~ - 0.03	* Shank Dia.≥Ø12: h6



Enforced Cutting Edge

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

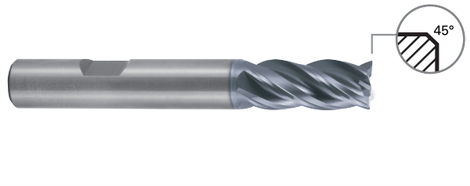
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended											○	○	○	○	○	○	○				

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

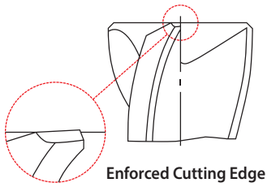


CARBIDE | 4 | 35°/37° | PLAIN | FLAT | C x 45° | P.28

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Chamfer
PLAIN	FLAT	D1	D2	L1	L2	
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
Up to Ø12	0 ~ - 0.02	h5
Over Ø12	0 ~ - 0.03	* Shank Dia.≥Ø12: h6



Enforced Cutting Edge

◎ : Excellent ○ : Good

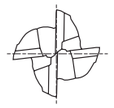
ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

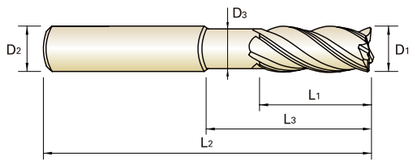
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended											○	○	○	○	○	○	○				

HIGH PERFORMANCE SOLID CARBIDE END MILLS
4 FLUTE with EXTENDED 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





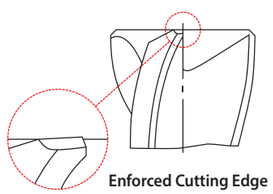
CARBIDE | 4 | 35°/37° | PLAIN | FLAT | C x 45° | P.28

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	
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

▶ NEXT PAGE

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



Enforced Cutting Edge

◎ : Excellent ○ : Good

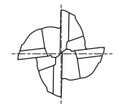
ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

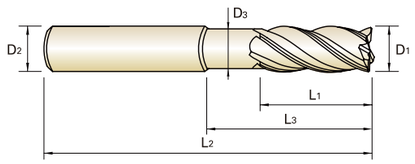
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended											○	○	○	○	○	○	○				

HIGH PERFORMANCE SOLID CARBIDE END MILLS
4 FLUTE with EXTENDED 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



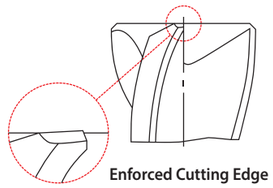


CARBIDE | 4 | 35°/37° | PLAIN | FLAT | C x 45° | P.28

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	
GMF60120	**GMF61120**	**12.0**	12	16	30	83	11.0	0.35
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
Up to Ø12	0 ~ - 0.02	h5
Over Ø12	0 ~ - 0.03	* Shank Dia.≥Ø12: h6



Enforced Cutting Edge

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

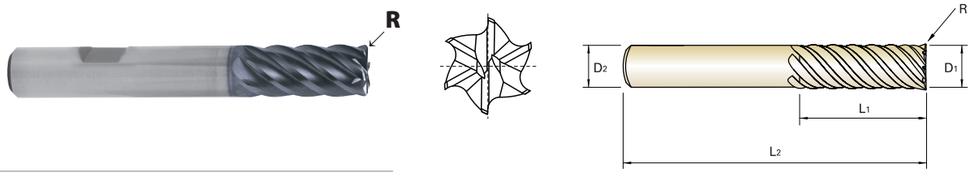
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended											○	○	○	○	○	○	○				

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



CARBIDE | 6 | 45° | PLAIN | FLAT | P.29

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
Up to Ø12	0 ~ - 0.02	h5
Over Ø12	0 ~ - 0.03	* Shank Dia.≥Ø12: h6

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

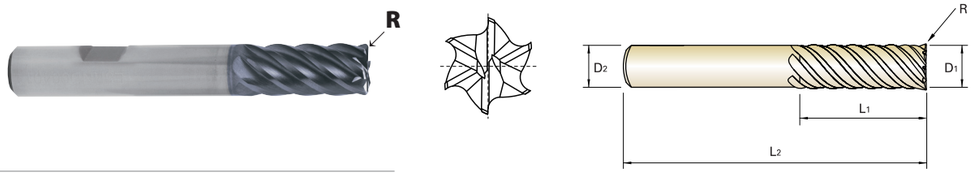
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended											○	○	○	○	○	○	○				

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



CARBIDE | 6 | 45° | PLAIN | FLAT | P.29

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
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

▶ NEXT PAGE

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0 ~ - 0.03	h5 * Shank Dia.≥Ø12: h6

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

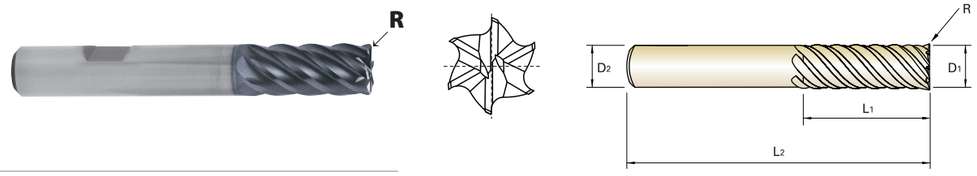
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended											○	○	○	○	○	○	○				

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



CARBIDE | 6 | 45° | PLAIN | FLAT P.29

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R	D1	D2	L1	L2
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	h5 * Shank Dia.≥Ø12: h6

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended											○	○	○	○	○	○	○				

HIGH PERFORMANCE SOLID CARBIDE END MILLS

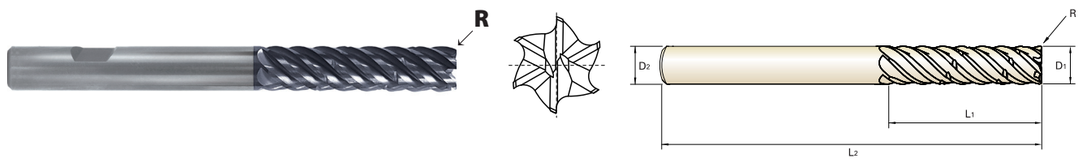
6 FLUTE CORNER RADIUS EXTRA LONG LENGTH CHIP SPLITTER

NEW

GMH58 PLAIN SHANK
GMH59 FLAT SHANK

Launching Jan of 2020

▶ Special chip splitter design for better chip removal shortened chip length at high axial machining
▶ High Performance for Steels, Stainless Steels and Cast Iron



CARBIDE | 6 | 45° | PLAIN | FLAT P.30

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R	D1	D2	L1	L2
GMH58060	**GMH59060**	R0.5	**6.0**	6	24	75
GMH58901	**GMH59901**	R1.0	**6.0**	6	24	75
GMH58080	**GMH59080**	R0.5	**8.0**	8	32	75
GMH58902	**GMH59902**	R1.0	**8.0**	8	32	75
GMH58903	**GMH59903**	R2.0	**8.0**	8	32	75
GMH58100	**GMH59100**	R0.5	**10.0**	10	40	100
GMH58904	**GMH59904**	R1.0	**10.0**	10	40	100
GMH58905	**GMH59905**	R1.5	**10.0**	10	40	100
GMH58906	**GMH59906**	R2.0	**10.0**	10	40	100
GMH58120	**GMH59120**	R0.5	**12.0**	12	48	120
GMH58907	**GMH59907**	R1.0	**12.0**	12	48	120
GMH58908	**GMH59908**	R1.5	**12.0**	12	48	120
GMH58909	**GMH59909**	R2.0	**12.0**	12	48	120
GMH58910	**GMH59910**	R3.0	**12.0**	12	48	120
GMH58160	**GMH59160**	R1.0	**16.0**	16	64	140
GMH58911	**GMH59911**	R1.5	**16.0**	16	64	140
GMH58912	**GMH59912**	R2.0	**16.0**	16	64	140
GMH58913	**GMH59913**	R3.0	**16.0**	16	64	140
GMH58200	**GMH59200**	R1.0	**20.0**	20	80	150
GMH58914	**GMH59914**	R1.5	**20.0**	20	80	150
GMH58915	**GMH59915**	R2.0	**20.0**	20	80	150

▶ NEXT PAGE

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0 ~ - 0.03	h5 * Shank Dia.≥Ø12: h6

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended											○	○	○	○	○	○	○				

HIGH PERFORMANCE SOLID CARBIDE END MILLS

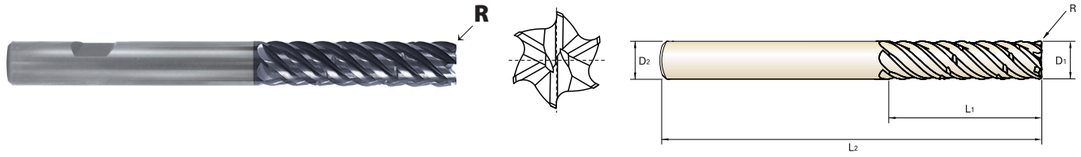
6 FLUTE CORNER RADIUS EXTRA LONG LENGTH CHIP SPLITTER

NEW

GMH58 PLAIN SHANK
GMH59 FLAT SHANK

Launching Jan of 2020

▶ Special chip splitter design for better chip removal shortened chip length at high axial machining
▶ High Performance for Steels, Stainless Steels and Cast Iron



CARBIDE | 6 | 45° | PLAIN | FLAT P.30

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R	D1	D2	L1	L2
GMH58916	**GMH59916**	R3.0	**20.0**	20	80	150
GMH58917	**GMH59917**	R4.0	**20.0**	20	80	150
GMH58918	**GMH59918**	R5.0	**20.0**	20	80	150
GMH58250	**GMH59250**	R1.0	**25.0**	25	100	170
GMH58919	**GMH59919**	R1.5	**25.0**	25	100	170
GMH58920	**GMH59920**	R2.0	**25.0**	25	100	170
GMH58921	**GMH59921**	R3.0	**25.0**	25	100	170
GMH58922	**GMH59922**	R4.0	**25.0**	25	100	170
GMH58923	**GMH59923**	R5.0	**25.0**	25	100	170

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0 ~ - 0.03	h5 * Shank Dia.≥Ø12: h6

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

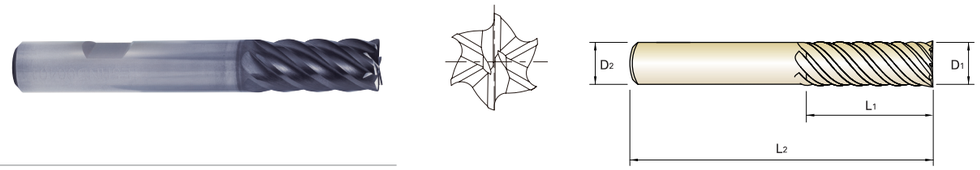
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended											○	○	○	○	○	○	○				

HIGH PERFORMANCE SOLID CARBIDE END MILLS

6 FLUTE LONG LENGTH

GMG12 PLAIN SHANK
GMG13 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

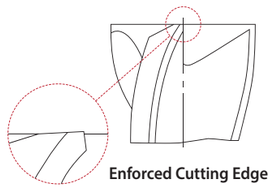


CARBIDE | 6 | 45° | PLAIN | FLAT P.29

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

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



Enforced Cutting Edge

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

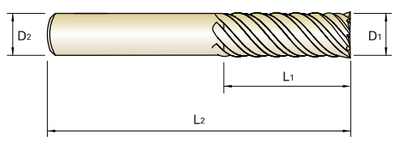
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended											○	○	○	○	○	○	○				

HIGH PERFORMANCE SOLID CARBIDE END MILLS

6 FLUTE EXTRA LONG LENGTH

GMG14 PLAIN SHANK
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

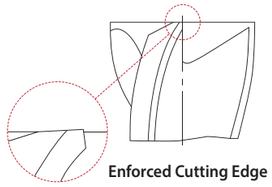


CARBIDE | 6 | 45° | PLAIN | FLAT P.29

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	h5 * Shank Dia.≥Ø12: h6



Enforced Cutting Edge

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended											○	○	○	○	○	○	○				

HIGH PERFORMANCE SOLID CARBIDE END MILLS

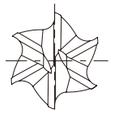
6 FLUTE EXTRA LONG LENGTH CHIP SPLITTER

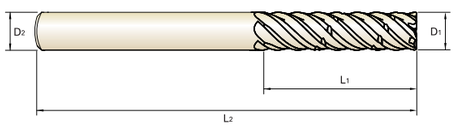
NEW

GMH56 PLAIN SHANK
GMH57 FLAT SHANK

Launching Jan of 2020

▶ Special chip splitter design for better chip removal shortened chip length at high axial machining
▶ High Performance for Steels, Stainless Steels and Cast Iron



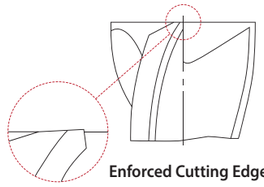


CARBIDE | 6 | 45° | PLAIN | FLAT P.30

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	D1	D2	L1	L2
GMH56060	**GMH57060**	**6.0**	6	24	75
GMH56080	**GMH57080**	**8.0**	8	32	75
GMH56100	**GMH57100**	**10.0**	10	40	100
GMH56120	**GMH57120**	**12.0**	12	48	120
GMH56160	**GMH57160**	**16.0**	16	64	140
GMH56200	**GMH57200**	**20.0**	20	80	150
GMH56250	**GMH57250**	**25.0**	25	100	170

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0 ~ - 0.03	h5 * Shank Dia.≥Ø12: h6



Enforced Cutting Edge

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended											○	○	○	○	○	○	○				

HIGH PERFORMANCE SOLID CARBIDE END MILLS

5 FLUTE LONG LENGTH

EMB72 PLAIN SHANK
EMB73 FLAT SHANK

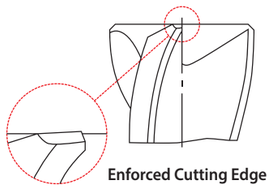
- ▶ Special flute geometry eliminates vibrations
- ▶ Designed for mild steels, stainless steels, cast iron, tool steels, titanium alloys, prehardened steels and low hardness materials under HRc40
- ▶ Excellent finished work piece
- ▶ Higher speeds, deeper cuts and excellent metal removal rates

CARBIDE | 5 | 41°~45° | PLAIN | FLAT | C x 45° | P.31

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Chamfer
PLAIN	FLAT	D1	D2	L1	L2	
EMB72060	**EMB73060**	**6.0**	6	13	57	0.1
EMB72080	**EMB73080**	**8.0**	8	19	63	0.1
EMB72100	**EMB73100**	**10.0**	10	22	72	0.1
EMB72120	**EMB73120**	**12.0**	12	26	83	0.1
EMB72140	**EMB73140**	**14.0**	14	26	83	0.2
EMB72160	**EMB73160**	**16.0**	16	32	92	0.2
EMB72180	**EMB73180**	**18.0**	18	32	92	0.2
EMB72200	**EMB73200**	**20.0**	20	38	104	0.2
EMB72250	**EMB73250**	**25.0**	25	38	104	0.2

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0 ~ - 0.03	h5 * Shank Dia.≥Ø12: h6



Enforced Cutting Edge

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	○	○	○	◎	○	○	○	◎	○	◎	◎	◎	○	○	○	○	○	○

ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended											○	○	○	○	○	◎	◎				

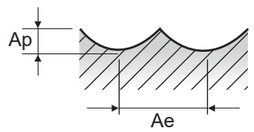
RECOMMENDED CUTTING CONDITIONS

GMG55, GMG56 SERIES

4 FLUTE BALL NOSE

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

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø) 3.0	4.0	5.0	6.0	8.0	10.0	12.0	16.0	18.0	20.0	25.0
P	1-4	Non-alloy steel	0.5D	1.0D	Vc	162	162	162	162	162	162	162	162	162	162	162
					fz	0.025	0.027	0.03	0.04	0.06	0.065	0.07	0.075	0.08	0.09	0.099
					RPM	17189	12892	10313	8594	6446	5157	4297	3223	2865	2578	2063
					FEED	1719	1392	1238	1375	1547	1341	1203	967	917	928	817
	5	Low alloy steel	0.5D	1.0D	Vc	113	113	113	113	113	113	113	113	113	113	113
					fz	0.025	0.027	0.03	0.04	0.06	0.065	0.07	0.074	0.079	0.09	0.099
					RPM	11990	8992	7194	5995	4496	3597	2997	2248	1998	1798	1439
					FEED	1199	971	863	959	1079	935	839	665	631	647	570
	6-7		0.5D	1.0D	Vc	162	162	162	162	162	162	162	162	162	162	162
					fz	0.025	0.027	0.03	0.04	0.06	0.065	0.07	0.075	0.08	0.09	0.099
					RPM	17189	12892	10313	8594	6446	5157	4297	3223	2865	2578	2063
					FEED	1719	1392	1238	1375	1547	1341	1203	967	917	928	817
	8-9		0.5D	1.0D	Vc	113	113	113	113	113	113	113	113	113	113	113
					fz	0.025	0.027	0.03	0.04	0.06	0.065	0.07	0.074	0.079	0.09	0.099
					RPM	11990	8992	7194	5995	4496	3597	2997	2248	1998	1798	1439
					FEED	1199	971	863	959	1079	935	839	665	631	647	570
	10-11.1	High alloyed steel, and tool steel	0.5D	1.0D	Vc	68	68	68	68	68	68	68	68	68	68	68
					fz	0.017	0.019	0.021	0.028	0.042	0.045	0.049	0.052	0.056	0.063	0.07
					RPM	7215	5411	4329	3608	2706	2165	1804	1353	1203	1082	866
					FEED	491	411	364	404	455	390	354	281	269	273	242
M	12-13	Stainless steel	0.5D	1.0D	Vc	77	77	77	77	77	77	77	77	77	77	77
					fz	0.015	0.015	0.025	0.03	0.04	0.045	0.05	0.054	0.059	0.058	0.059
					RPM	8170	6127	4902	4085	3064	2451	2042	1532	1362	1225	980
					FEED	490	368	490	490	490	441	408	331	321	284	231
	14.1		0.5D	1.0D	Vc	85	85	85	85	85	85	85	85	85	85	85
					fz	0.02	0.02	0.025	0.041	0.045	0.05	0.055	0.06	0.064	0.065	0.068
					RPM	9019	6764	5411	4509	3382	2706	2255	1691	1503	1353	1082
					FEED	722	541	541	740	609	541	496	406	385	352	294
	14.2		0.5D	1.0D	Vc	77	77	77	77	77	77	77	77	77	77	77
					fz	0.02	0.02	0.025	0.041	0.045	0.05	0.055	0.06	0.064	0.065	0.068
					RPM	8170	6127	4902	4085	3064	2451	2042	1532	1362	1225	980
					FEED	654	490	490	670	551	490	449	368	349	319	267
K	15-20	Grey cast iron	0.5D	1.0D	Vc	119	119	119	119	119	119	119	119	119	119	119
					fz	0.031	0.033	0.037	0.05	0.074	0.081	0.087	0.093	0.099	0.112	0.124
					RPM	12626	9470	7576	6313	4735	3788	3157	2367	2104	1894	1515
					FEED	1566	1250	1121	1263	1402	1227	1098	881	833	848	752
S	31-35	Heat Resistant Super Alloys	0.2D	0.3D	Vc	21	21	21	21	21	21	21	21	21	21	21
					fz	0.014	0.014	0.017	0.028	0.031	0.035	0.038	0.042	0.045	0.045	0.048
					RPM	2228	1671	1337	1114	836	668	557	418	371	334	267
					FEED	125	94	91	125	104	94	85	70	67	60	51
	36-37	Titanium Alloys	0.5D	0.3D	Vc	47	47	47	47	47	47	47	47	47	47	47
					fz	0.018	0.018	0.022	0.037	0.04	0.045	0.049	0.054	0.058	0.058	0.061
					RPM	4987	3740	2992	2493	1870	1496	1247	935	831	748	598
					FEED	359	269	263	369	299	269	244	202	193	174	146



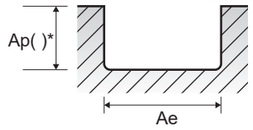
GMF52, GMF54, GMF56, GMF58, GMF60, GMF62, GMF53, GMF55, GMF57, GMF59, GMF61, GMF63 SERIES

4 FLUTE - SIDE & SLOTTING

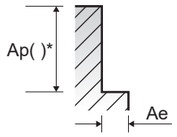
Vc = m/min. fz = mm/tooth
RPM = rev./min. FEED = mm/min.

ISO	VDI 3323	Material Description	Ae		Ap		Parameter	Diameter (Ø)											
			Side	Slotting	Side	Slotting		3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	25.0
P	1-4	Non-alloy steel	0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)	Vc	152	152	152	152	152	168	168	168	168	168	168	168
							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
							RPM	16128	12096	9677	8064	6048	5348	4456	3820	3342	2971	2674	2139
							FEED	323	387	426	516	653	813	838	749	709	701	695	548
	5	Low alloy steel	0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)	Vc	107	107	107	107	107	117	117	117	117	117	117	117
							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
							RPM	11353	8515	6812	5677	4257	3724	3104	2660	2328	2069	1862	1490
							FEED	227	272	300	363	460	566	583	521	493	488	484	381
	6-7		0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)	Vc	152	152	152	152	152	168	168	168	168	168	168	168
							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
							RPM	16128	12096	9677	8064	6048	5348	4456	3820	3342	2971	2674	2139
							FEED	323	387	426	516	653	813	838	749	709	701	695	548
	8-9		0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)	Vc	107	107	107	107	107	117	117	117	117	117	117	117
							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
							RPM	11353	8515	6812	5677	4257	3724	3104	2660	2328	2069	1862	1490
							FEED	227	272	300	363	460	566	583	521	493	488	484	381
	10-11.1	High alloyed steel, and tool steel	0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)	Vc	64	64	64	64	64	70	70	70	70	70	70	70
							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
							RPM	6791	5093	4074	3395	2546	2228	1857	1592	1393	1238	1114	891
							FEED	81	122	130	149	194	241	238	216	206	203	201	160
M	12-13	Stainless steel	0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)	Vc	148	148	148	148	148	148	148	148	148	148	148	148
							fz	0.004	0.006	0.009	0.013	0.022	0.034	0.039	0.042	0.045	0.05	0.055	0.055
							RPM	15703	11777	9422	7852	5889	4711	3926	3365	2944	2617	2355	1884
							FEED	251	283	339	408	518	641	612	565	530	523	518	415
	14.1		0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)	Vc	106	106	106	106	106	106	106	106	106	106	106	106
							fz	0.005	0.008	0.013	0.018	0.028	0.048	0.055	0.059	0.062	0.07	0.077	0.077
							RPM	11247	8435	6748	5623	4218	3374	2812	2410	2109	1874	1687	1350
							FEED	225	270	351	405	472	648	619	569	523	525	520	416
	14.2		0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)	Vc	95	95	95	95	95	95	95	95	95	95	95	95
							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
							RPM	10080	7560	6048	5040	3780	3024	2520	2160	1890	1680	1512	1210
							FEED	202	242	314	363	423	581	554	510	469	464	460	368
K	15-20	Grey cast iron	0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)	Vc	112	112	112	112	112	123	123	123	123	123	123	123
							fz	0.006	0.01	0.014	0.02	0.034	0.048	0.058	0.061	0.065	0.073	0.081	0.079
							RPM	11884	8913	7130	5942	4456	3915	3263	2797	2447	2175	1958	1566
							FEED	285	357	399	475	606	752	757	682	636	635	634	495
S	31-35	Heat Resistant Super Alloys	0.25D	1.0D	1.0D	0.5D	Vc	26	26	26	26	26	26	26	26	26	26	26	26
							fz	0.005	0.007	0.008	0.012	0.019	0.033	0.038	0.04	0.043	0.048	0.054	0.052
							RPM	2759	2069	1655	1379	1035	828	690	591	517	460	414	331
							FEED	55	58	53	66	79	109	105	95	89	88	89	69
	36-37	Titanium Alloys	0.4D	1.0D	1.0D	0.5D	Vc	58	58	58	58	58	58	58	58	58	58	58	58
							fz	0.004	0.007	0.011	0.016	0.025	0.042	0.05	0.053	0.055	0.062	0.068	0.069
							RPM	6154	4615	3692	3077	2308	1846	1538	1319	1154	1026	923	738
							FEED	98	129	162	197	231	310	308	280	254	254	251	204

*( ) : Short length & Neck type



Slotting



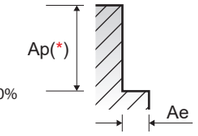
Side Cutting

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

6 FLUTE - SIDE CUTTING

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

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)						
						6.0	8.0	10.0	12.0	16.0	20.0	25.0
P	1-4	Non-alloy steel	0.05D	2.0D	Vc	300	300	300	300	300	300	300
					fz	0.068	0.116	0.144	0.173	0.202	0.225	0.232
					RPM	15915	11937	9549	7958	5968	4775	3820
					FEED	6494	8308	8251	8260	7234	6446	5317
	5	Low alloy steel	0.05D	2.0D	Vc	203	203	203	203	203	203	203
					fz	0.05	0.085	0.106	0.128	0.149	0.167	0.174
					RPM	10769	8077	6462	5385	4039	3231	2585
					FEED	3231	4119	4110	4135	3610	3237	2698
	6-7		0.05D	2.0D	Vc	300	300	300	300	300	300	300
					fz	0.068	0.116	0.144	0.173	0.202	0.225	0.232
					RPM	15915	11937	9549	7958	5968	4775	3820
					FEED	6494	8308	8251	8260	7234	6446	5317
	8-9		0.05D	2.0D	Vc	203	203	203	203	203	203	203
					fz	0.05	0.085	0.106	0.128	0.149	0.167	0.174
					RPM	10769	8077	6462	5385	4039	3231	2585
					FEED	3231	4119	4110	4135	3610	3237	2698
	10-11.1	High alloyed steel, and tool steel	0.05D	2.0D	Vc	100	100	100	100	100	100	100
					fz	0.041	0.071	0.088	0.105	0.123	0.137	0.144
					RPM	5305	3979	3183	2653	1989	1592	1273
					FEED	1305	1695	1681	1671	1468	1308	1100
M	12-13	Stainless steel	0.05D	2.0D	Vc	213	213	213	213	213	213	213
					fz	0.049	0.084	0.104	0.125	0.146	0.162	0.168
					RPM	11300	8475	6780	5650	4238	3390	2712
					FEED	3322	4271	4231	4238	3712	3295	2734
	14.1		0.05D	2.0D	Vc	147	147	147	147	147	147	147
					fz	0.041	0.071	0.088	0.105	0.123	0.137	0.143
					RPM	7799	5849	4679	3899	2924	2340	1872
					FEED	1918	2492	2471	2457	2158	1923	1606
	14.2		0.05D	2.0D	Vc	134	134	134	134	134	134	134
					fz	0.041	0.071	0.088	0.105	0.123	0.137	0.142
					RPM	7109	5332	4265	3554	2666	2133	1706
					FEED	1749	2271	2252	2239	1967	1753	1454
S	31-35	Heat Resistant Super Alloys	0.05D	2.0D	Vc	33	33	33	33	33	33	33
					fz	0.033	0.055	0.07	0.082	0.097	0.112	0.115
					RPM	1751	1313	1050	875	657	525	420
					FEED	347	433	441	431	382	353	290
	36-37	Titanium Alloys	0.05D	2.0D	Vc	116	116	116	116	116	116	116
					fz	0.033	0.055	0.07	0.083	0.097	0.113	0.117
					RPM	6154	4615	3692	3077	2308	1846	1477
					FEED	1218	1523	1551	1532	1343	1252	1037



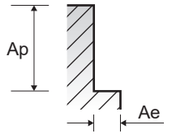
(*) : If product's Length of Cut(L.O.C) is below 2D, it must be applied L.O.C x 90%

GMH58, GMH59, GMH56, GMH57 SERIES

6 FLUTE CHIP SPLITTER - SIDE CUTTING

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

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)						
						6.0	8.0	10.0	12.0	16.0	20.0	25.0
P	1-4	Non-alloy steel	0.05D	3.0D	Vc	270	270	270	270	270	270	270
					fz	0.034	0.058	0.072	0.087	0.101	0.113	0.116
					RPM	14324	10743	8594	7162	5371	4297	3438
					FEED	2922	3739	3713	3717	3255	2901	2393
	5	Low alloy steel	0.05D	3.0D	Vc	182.7	182.7	182.7	182.7	182.7	182.7	182.7
					fz	0.025	0.043	0.053	0.064	0.075	0.084	0.087
					RPM	9693	7269	5816	4846	3635	2908	2326
					FEED	1454	1854	1849	1861	1625	1457	1214
	6-7		0.05D	3.0D	Vc	270	270	270	270	270	270	270
					fz	0.034	0.058	0.072	0.087	0.101	0.113	0.116
					RPM	14324	10743	8594	7162	5371	4297	3438
					FEED	6494	8308	8251	8260	7234	6446	5317
	8-9		0.05D	3.0D	Vc	182.7	182.7	182.7	182.7	182.7	182.7	182.7
					fz	0.025	0.043	0.053	0.064	0.075	0.084	0.087
					RPM	9693	7269	5816	4846	3635	2908	2326
					FEED	1454	1854	1849	1861	1625	1457	1214
	10-11.1	High alloyed steel, and tool steel	0.05D	3.0D	Vc	90	90	90	90	90	90	90
					fz	0.021	0.036	0.044	0.053	0.062	0.069	0.072
					RPM	4775	3581	2865	2387	1790	1432	1146
					FEED	587	763	756	752	661	589	495
M	12-13	Stainless steel	0.05D	3.0D	Vc	191.7	191.7	191.7	191.7	191.7	191.7	191.7
					fz	0.025	0.042	0.052	0.063	0.073	0.081	0.084
					RPM	10170	7628	6102	5085	3814	3051	2441
					FEED	1495	1922	1904	1907	1670	1483	1230
	14.1		0.05D	3.0D	Vc	132.3	132.3	132.3	132.3	132.3	132.3	132.3
					fz	0.021	0.036	0.044	0.053	0.062	0.069	0.072
					RPM	7019	5264	4211	3509	2632	2106	1684
					FEED	863	1121	1112	1105	971	865	723
	14.2		0.05D	3.0D	Vc	120.6	120.6	120.6	120.6	120.6	120.6	120.6
					fz	0.021	0.036	0.044	0.053	0.062	0.069	0.071
					RPM	6398	4799	3839	3199	2399	1919	1536
					FEED	787	1022	1013	1008	885	789	654
S	31-35	Heat Resistant Super Alloys	0.05D	3.0D	Vc	29.7	29.7	29.7	29.7	29.7	29.7	29.7
					fz	0.017	0.028	0.035	0.041	0.049	0.056	0.058
					RPM	1576	1182	945	788	591	473	378
					FEED	156	195	199	194	172	159	130
	36-37	Titanium Alloys	0.05D	3.0D	Vc	104.4	104.4	104.4	104.4	104.4	104.4	104.4
					fz	0.017	0.028	0.035	0.042	0.049	0.057	0.059
					RPM	5539	4154	3323	2769	2077	1662	1329
					FEED	548	685	698	690	604	563	467



EMB72, EMB73 SERIES

5 FLUTE - SIDE CUTTING

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

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)						
						6.0	8.0	10.0	12.0	14.0	16.0	20.0
P	1-2	Non-alloy steel	0.25D	1.25D	Vc	135	135	135	135	135	135	135
					fz	0.034	0.038	0.050	0.063	0.069	0.076	0.089
					RPM	7162	5371	4297	3581	3069	2686	2149
					FEED	1218	1021	1074	1128	1059	1021	956
	6	Low alloy steel	0.25D	1.25D	Vc	135	135	135	135	135	135	135
					fz	0.034	0.038	0.050	0.063	0.069	0.076	0.089
					RPM	7162	5371	4297	3581	3069	2686	2149
					FEED	1218	1021	1074	1128	1059	1021	956
	10	High alloyed steel, and tool steel	0.25D	1.25D	Vc	135	135	135	135	135	135	135
					fz	0.034	0.038	0.050	0.063	0.069	0.076	0.089
					RPM	7162	5371	4297	3581	3069	2686	2149
					FEED	1218	1021	1074	1128	1059	1021	956
M	12-13	Stainless steel	0.25D	1.25D	Vc	105	105	105	145	105	105	105
					fz	0.030	0.032	0.038	0.043	0.064	0.068	0.076
					RPM	5570	4178	3342	3846	2387	2089	1671
					FEED	836	668	635	827	764	710	635
	14.1		0.25D	1.25D	Vc	115	115	115	115	115	115	115
					fz	0.030	0.032	0.038	0.063	0.065	0.069	0.076
					RPM	6101	4576	3661	3050	2615	2288	1830
					FEED	915	732	696	961	850	789	696
K	15-20	Grey cast iron	0.25D	1.25D	Vc	135	135	135	135	135	135	135
					fz	0.034	0.038	0.050	0.063	0.069	0.076	0.089
					RPM	7162	5371	4297	3581	3069	2686	2149
					FEED	1218	1021	1074	1128	1059	1021	956
S	31-35	Heat Resistant Super Alloys	0.25D	1.0D	Vc	25	25	25	25	25	25	25
					fz	0.017	0.020	0.025	0.036	0.045	0.048	0.060
					RPM	1326	995	796	663	568	497	398
					FEED	113	99	99	119	128	119	119
	36-37	Titanium Alloys	0.25D	1.25D	Vc	85	85	85	85	85	85	85
					fz	0.030	0.031	0.038	0.050	0.057	0.063	0.075
					RPM	4509	3382	2706	2255	1933	1691	1353
					FEED	676	524	514	564	551	533	507