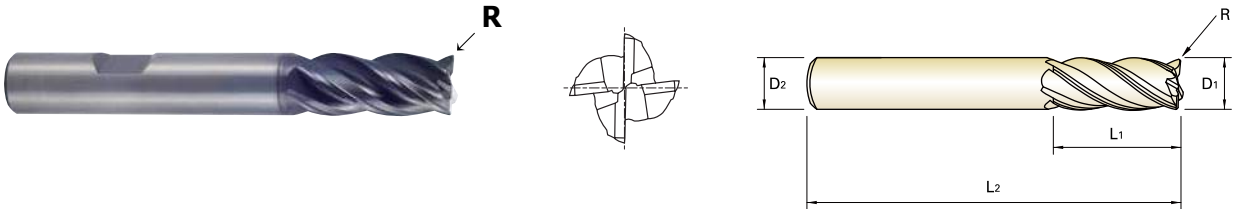


CARBIDE, 4 FLUTE CORNER RADIUS SHORT LENGTH

- VOLLHARTMETALL, 4 SCHNEIDEN ECKENRADIUS KURZ
- CARBURE, 4 DENTS, SÉRIE COURTE, RAYONNÉE
- MD, 4 TAGLIENTI SERIE CORTA TORICA

▶ Special flute geometry and multiple helix eliminate vibrations
 ▶ Excellent performance for Stainless Steels, Mild Steels, Cast Iron,
 Low/Medium hardness materials under HRC40

▶ Die spezielle Schneidengeometrie und der ungleiche Drill verhindern Vibrationen
 ▶ Exzellente Leistung in Edelstählen, Baustählen, Guss und Stählen unter 40HRC



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 Material Description	P										M				K						
	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	130	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

ISO Material Description	N					S										H					
	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
Recommend											○	○	○	○	○	○	○				

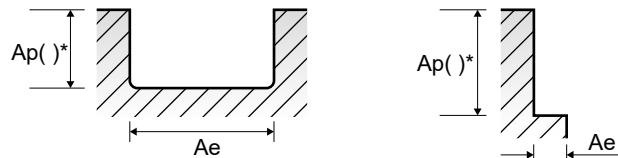
GMF52 GMF53 **GMF54 GMF55** **GMF56 GMF57** **GMF58 GMF59** **GMF60 GMF61** **GMF62 GMF63**

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						
								Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
P	1-4	Non-alloy steel	0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)		152	152	152	152	152	168	168	168	168	168	168	168	168	168				
	5	Low alloy steel	0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)		107	107	107	107	107	117	117	117	117	117	117	117	117	117				
	6-7							152	152	152	152	152	168	168	168	168	168	168	168	168	168	168	168		
	8-9							107	107	107	107	107	117	117	117	117	117	117	117	117	117	117	117	117	117
	10-11.1						High alloyed steel, and tool steel		64	64	64	64	64	64	70	70	70	70	70	70	70	70	70	70	70
M	12-13	Stainless steel	0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)		148	148	148	148	148	148	148	148	148	148	148	148	148	148				
	14.1							106	106	106	106	106	106	106	106	106	106	106	106	106	106	106	106	106	
	14.2							95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95
K	15-20	Grey cast iron	0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)		112	112	112	112	112	123	123	123	123	123	123	123	123	123				
S	31-35	Heat Resistant Super Alloys	0.25D	1.0D	1.0D	0.5D		26	26	26	26	26	26	26	26	26	26	26	26	26	26				
	36-37	Titanium Alloys	0.4D	1.0D	1.0D	0.5D		58	58	58	58	58	58	58	58	58	58	58	58	58	58				

*() : Short length & Neck type



SELECTION GUIDE



SERIES	GMG55 GMG56	GMF54 GMF55	GMF58 GMF59
FLUTE	4	4	4
HELIX ANGLE	35°/37° (MULTIPLE HELIX)	35°/37° (MULTIPLE HELIX)	35°/37° (MULTIPLE HELIX)
CUTTING EDGE SHAPE	BALL NOSE	CORNER RADIUS	CORNER RADIUS
SIZE MIN	R1.5	D3.0	D3.0
SIZE MAX	R12.5	D20.0	D25.0
PAGE	442	443	444

SOLID CARBIDE
V7 PLUS
END MILLS

High performance carbide end mills for Steels, Cast Iron and Stainless Steels



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◎ : Excellent ○ : Good

Recommended cutting conditions : P 458

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc	GMG55 GMG56	GMF54 GMF55	GMF58 GMF59
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	Non Metallic Materials	CuSn, lead-free copper and electrolytic copper	100				
	29		Duroplastic, Fiber Reinforced Plastic					
	30	Rubber, Wood, etc.						
S	31	Heat Resistant Super Alloys	Fe Based Annealed	200	15	○	○	○
	32		Fe Based Cured	280	30	○	○	○
	33		Ni or Co Based Annealed	250	25	○	○	○
	34		Ni or Co Based Cured	350	38	○	○	○
	35	Titanium Alloys 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			