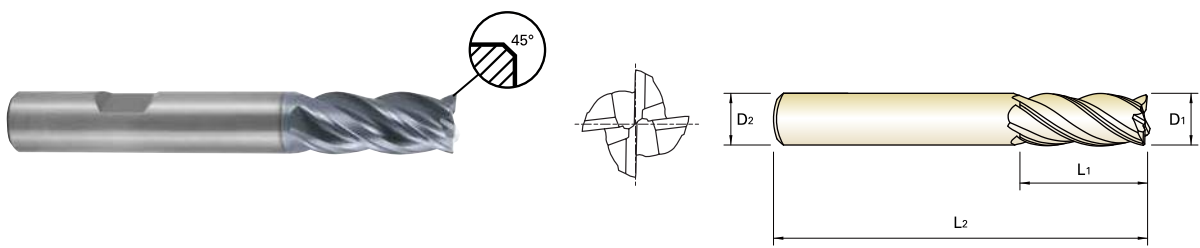


CARBIDE, 4 FLUTE LONG LENGTH

- VOLLHARTMETALL, 4 SCHNEIDEN LANG
- CARBURE, 4 DENTS, SÉRIE LONGUE
- MD, 4 TAGLIENTI SERIE LUNGA

▶ 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 Drall verhindern Vibrationen
 ▶ Exzellente Leistung in Edelstählen, Baustählen, Guss und Stählen unter 40HRC

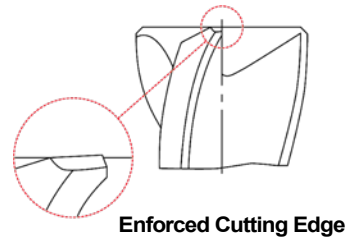


CARBIDE 4 35°/37° PLAIN FLAT C x 45° P.459

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



◎ : 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	125	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	60	100	75	90	130	110	90	100							200	280	550	600	42	55	
HB	60	100	75	90	130	110	90	100							200	280	550	630	400	550	
Recommend											○	○	○	○	○	○	○				

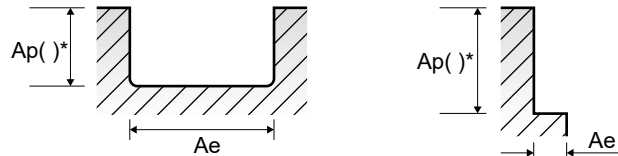
GMF52 GMF53 **GMF54 GMF55** **GMF56 GMF57** **GMF58 GMF59** **GMF60 GMF61** **GMF62 GMF63**

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
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	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	
	5	Low alloy steel	0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)	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	
	6-7	High alloyed steel, and tool 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	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	
	8-9	Stainless steel	0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)	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	Grey cast iron	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	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	
12-13	Heat Resistant Super Alloys	0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)	RPM	16128	12096	9677	8064	6048	5348	4456	3820	3342	2971	2674	2139		
						FEED	227	272	300	363	460	566	583	521	493	488	484	381		
M	Titanium Alloys	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	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		
14.1	High alloyed steel, and tool steel	0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)	FEED	227	272	300	363	460	566	583	521	493	488	484	381		
						Vc	64	64	64	64	64	70	70	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		
14.2	Stainless steel	0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)	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		
						Vc	148	148	148	148	148	148	148	148	148	148	148	148	148	148
15-20	Grey cast iron	0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)	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		
31-35	Heat Resistant Super Alloys	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	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		
36-37	Titanium Alloys	0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)	FEED	225	270	351	405	472	648	619	569	523	525	520	416		
						Vc	95	95	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		
15-20	Grey cast iron	0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)	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		
						Vc	112	112	112	112	112	123	123	123	123	123	123	123	123	123
31-35	Heat Resistant Super Alloys	0.25D	1.0D	1.0D	0.5D	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		
36-37	Titanium Alloys	0.25D	1.0D	1.0D	0.5D	Vc	26	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		
15-20	Grey cast iron	0.5D	1.0D	1.5D (1.2D)	1.0D (0.8D)	FEED	55	58	53	66	79	109	105	95	89	88	89	69		
						Vc	58	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		
31-35	Heat Resistant Super Alloys	0.4D	1.0D	1.0D	0.5D	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		
						Vc	112	112	112	112	112	123	123	123	123	123	123	123	123	

*() : 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



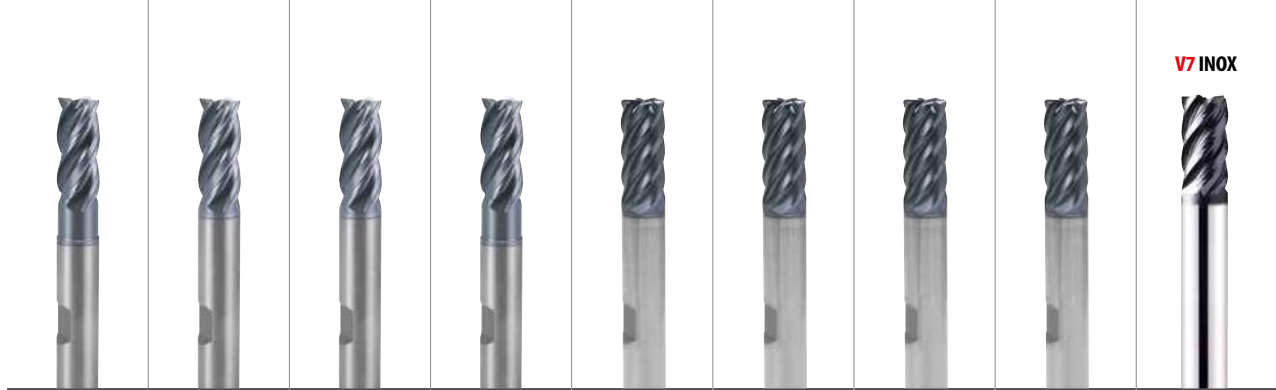
Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : P 458

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc				
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		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		Annealed	250	25	○	○	○	
	34		Ni or Co Based 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				

GMF62 GMF63	GMF52 GMF53	GMF56 GMF57	GMF60 GMF61	GMG16 GMG17	GMG18 GMG19	GMG12 GMG13	GMG14 GMG15	EMB72 EMB73
4	4	4	4	6	6	6	6	5
35°/37° (MULTIPLE HELIX)	35°/37° (MULTIPLE HELIX)	35°/37° (MULTIPLE HELIX)	35°/37° (MULTIPLE HELIX)	45°	45°	45°	45°	41°~45°
CORNER RADIUS	SQUARE	SQUARE	SQUARE	CORNER RADIUS	CORNER RADIUS	SQUARE	SQUARE	SQUARE
D3.0	D3.0	D3.0	D3.0	D6.0	D6.0	D6.0	D6.0	D6.0
D20.0	D20.0	D25.0	D20.0	D25.0	D25.0	D25.0	D25.0	D25.0
445	448	449	450	452	453	455	456	457
LONG LENGTH with NECK	SHORT LENGTH	LONG LENGTH	LONG LENGTH with NECK	LONG LENGTH	EXTRA LONG LENGTH	LONG LENGTH	EXTRA LONG LENGTH	LONG LENGTH
Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	AlTiN



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HSS

CBN
END MILLS

i-Xmill
END MILLS

i-SMART
MODULAR
END MILLS

X5070
END MILLS

4G MILL
END MILLS

X-POWER
PRO
END MILLS

TitaNox-
POWER
END MILLS

JET-POWER
END MILLS

V7 PLUS
END MILLS

ALU-POWER
HPC
END MILLS

ALU-
POWER
END MILLS

D-POWER
GRAPHITE
END MILLS

D-POWER
CFRP
END MILLS

ROUTERS

CRX S
END MILLS

K-2
END MILLS

ONLY ONE
COATED PM60
END MILLS

TANK-
POWER
END MILLS

GENERAL
HSS
END MILLS

MILLING
CUTTERS

TECHNICAL
DATA