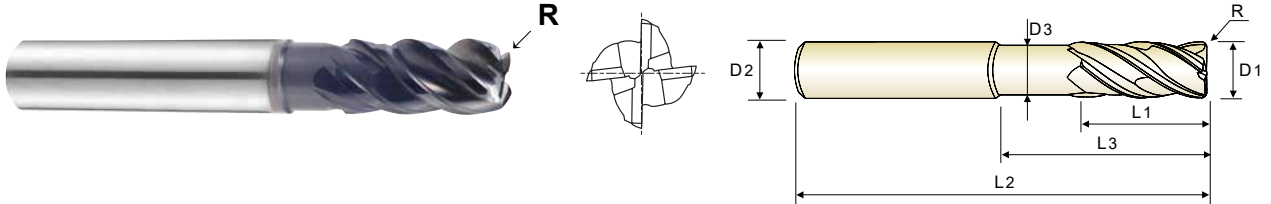


**CARBIDE, 4 FLUTE CORNER RADIUS with DOUBLE CORE**

- **VOLLHARTMETALL, 4 SCHNEIDEN ECKRADIUS mit DOPPELKERN**
- **CARBURE, 4 DENTS, TORIQUE AVEC ÂME DOUBLE**
- **FRESA IN MD, 4 TAGLIENTI, TORICA, DOUBLE CORE**

▶ Double core end mill has a unique flute design for excellent chip evacuation and higher rigidity.  
▶ The double core adds stability and aids chip flow, reducing tool deflection, improving dimensional stability and workpiece accuracy.

▶ Der Doppelkern hat ein einzigartiges Schneiden Design für eine exzellente Spanabfuhr und bessere Zähigkeit.  
▶ Der Doppelkern erhöht die Stabilität und unterstützt den Spänefluss, reduziert die Werkzeugabdrängung, verbessert die Formstabilität und die Werkstückgenauigkeit.



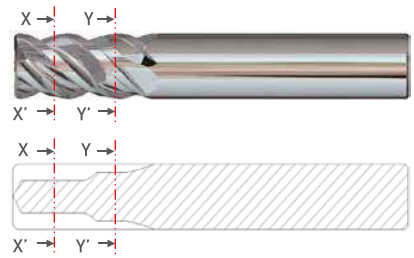
CARBIDE 4 43°/45° PLAIN FLAT P.406-407

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
GMG40060	GMG41060	R0.5	6.0	6	13	20	57	5.5
GMG40901	GMG41901	R1.0	6.0	6	13	20	57	5.5
GMG40080	GMG41080	R0.5	8.0	8	19	25	63	7.5
GMG40902	GMG41902	R1.0	8.0	8	19	25	63	7.5
GMG40903	GMG41903	R1.5	8.0	8	19	25	63	7.5
GMG40904	GMG41904	R2.0	8.0	8	19	25	63	7.5
GMG40100	GMG41100	R0.5	10.0	10	22	30	72	9.2
GMG40905	GMG41905	R1.0	10.0	10	22	30	72	9.2
GMG40906	GMG41906	R1.5	10.0	10	22	30	72	9.2
GMG40907	GMG41907	R2.0	10.0	10	22	30	72	9.2
GMG40120	GMG41120	R0.5	12.0	12	26	35	83	11.0
GMG40908	GMG41908	R1.0	12.0	12	26	35	83	11.0
GMG40909	GMG41909	R1.5	12.0	12	26	35	83	11.0
GMG40910	GMG41910	R2.0	12.0	12	26	35	83	11.0
GMG40911	GMG41911	R3.0	12.0	12	26	35	83	11.0
GMG40140	GMG41140	R1.0	14.0	14	26	35	83	13.0
GMG40912	GMG41912	R2.0	14.0	14	26	35	83	13.0
GMG40160	GMG41160	R1.0	16.0	16	35	43	92	15.0

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

◆ 2 STEP CORE



▶ NEXT PAGE

◎ : Excellent ○ : Good

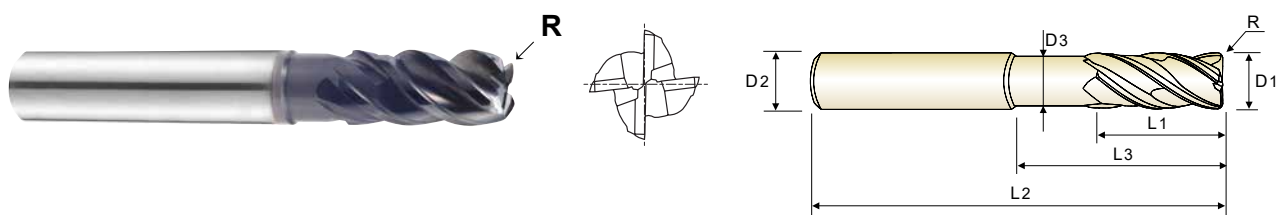
ISO Material Description	P											M				K					
	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel				Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		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											○	○	○	○	○	◎	◎				

**CARBIDE, 4 FLUTE CORNER RADIUS with DOUBLE CORE**

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CARBIDE 4 43°/45° PLAIN FLAT P.406-407

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
GMG40913	GMG41913	R1.5	16.0	16	35	43	92	15.0
GMG40914	GMG41914	R2.0	16.0	16	35	43	92	15.0
GMG40915	GMG41915	R3.0	16.0	16	35	43	92	15.0
GMG40916	GMG41916	R4.0	16.0	16	35	43	92	15.0
GMG40200	GMG41200	R1.0	20.0	20	44	56	110	19.0
GMG40917	GMG41917	R1.5	20.0	20	44	56	110	19.0
GMG40918	GMG41918	R2.0	20.0	20	44	56	110	19.0
GMG40919	GMG41919	R3.0	20.0	20	44	56	110	19.0
GMG40920	GMG41920	R3.5	20.0	20	44	56	110	19.0
GMG40921	GMG41921	R4.0	20.0	20	44	56	110	19.0
GMG40250	GMG41250	R1.0	25.0	25	55	70	130	24.0
GMG40922	GMG41922	R1.5	25.0	25	55	70	130	24.0
GMG40923	GMG41923	R2.0	25.0	25	55	70	130	24.0
GMG40924	GMG41924	R3.0	25.0	25	55	70	130	24.0
GMG40925	GMG41925	R4.0	25.0	25	55	70	130	24.0

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

◆ 2 STEP CORE

<SECTION X-X'> EXCELLENT CHIP EVACUATION  
 <SECTION Y-Y'> HIGHER RIGIDITY

© : 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	42	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	○	○	○	○	○	○	○	○	○	◎	◎	◎	○	○	○	○	○	○	

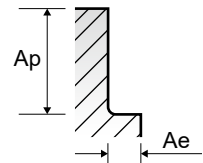
  

ISO	N					S										H					
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	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
Recommend											○	○	○	○	○	◎	◎				

**GMG40, GMG41 SERIES 4 FLUTES CORNER RADIUS - 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	25.0																												
P	1-4	Non-alloy steel	0.4D	1.0D	Vc	160	160	160	160	160	160	160	160	fz	0.027	0.035	0.042	0.053	0.058	0.063	0.077	0.084	RPM	8488	6366	5093	4244	3638	3183	2546	2037	FEED	917	891	856	900	844	802	784	684	
					Vc	150	150	150	150	150	150	150	150	150	fz	0.025	0.035	0.042	0.049	0.056	0.063	0.070	0.084	RPM	7958	5968	4775	3979	3410	2984	2387	1910	FEED	796	836	802	780	764	752	668	642
	5	Low alloy steel	0.4D	1.0D	Vc	160	160	160	160	160	160	160	160	fz	0.027	0.035	0.042	0.053	0.058	0.063	0.077	0.084	RPM	8488	6366	5093	4244	3638	3183	2546	2037	FEED	917	891	856	900	844	802	784	684	
					Vc	150	150	150	150	150	150	150	150	150	fz	0.025	0.035	0.042	0.049	0.056	0.063	0.070	0.084	RPM	7958	5968	4775	3979	3410	2984	2387	1910	FEED	796	836	802	780	764	752	668	642
	6-7	Low alloy steel	0.4D	1.0D	Vc	160	160	160	160	160	160	160	160	fz	0.027	0.035	0.042	0.053	0.058	0.063	0.077	0.084	RPM	8488	6366	5093	4244	3638	3183	2546	2037	FEED	917	891	856	900	844	802	784	684	
					Vc	150	150	150	150	150	150	150	150	150	fz	0.025	0.035	0.042	0.049	0.056	0.063	0.070	0.084	RPM	7958	5968	4775	3979	3410	2984	2387	1910	FEED	796	836	802	780	764	752	668	642
	8	Low alloy steel	0.4D	1.0D	Vc	150	150	150	150	150	150	150	150	fz	0.025	0.035	0.042	0.049	0.056	0.063	0.070	0.084	RPM	7958	5968	4775	3979	3410	2984	2387	1910	FEED	796	836	802	780	764	752	668	642	
					Vc	150	150	150	150	150	150	150	150	150	fz	0.027	0.035	0.046	0.053	0.060	0.067	0.077	0.084	RPM	7958	5968	4775	3979	3410	2984	2387	1910	FEED	859	836	879	844	819	800	735	642
	10-11.1	High alloyed steel, and tool steel	0.4D	1.0D	Vc	150	150	150	150	150	150	150	150	fz	0.027	0.035	0.046	0.053	0.060	0.067	0.077	0.084	RPM	7958	5968	4775	3979	3410	2984	2387	1910	FEED	859	836	879	844	819	800	735	642	
					Vc	155	155	155	155	155	155	155	155	155	fz	0.034	0.046	0.057	0.067	0.076	0.086	0.095	0.114	RPM	8223	6167	4934	4112	3524	3084	2467	1974	FEED	1118	1135	1125	1102	1071	1061	937	900
M	14.1	Stainless steel	0.4D	1.0D	Vc	105	105	105	105	105	105	105	105	fz	0.025	0.034	0.042	0.048	0.055	0.062	0.071	0.081	RPM	5570	4178	3342	2785	2387	2089	1671	1337	FEED	557	568	561	535	525	518	475	433	
					Vc	44	44	44	44	44	44	44	44	44	fz	0.016	0.021	0.027	0.032	0.036	0.040	0.046	0.052	RPM	2334	1751	1401	1167	1000	875	700	560	FEED	149	147	151	149	144	140	129	117
					Vc	175	175	175	175	175	175	175	175	175	175	175	fz	0.021	0.028	0.035	0.042	0.048	0.053	0.060	0.070	RPM	9284	6963	5570	4642	3979	3482	2785	2228	FEED	780	780	780	780	764	738
K	15-20	Grey cast iron	0.4D	1.0D	Vc	32	32	32	32	32	32	32	32	fz	0.020	0.026	0.032	0.038	0.044	0.048	0.055	0.065	RPM	1698	1273	1019	849	728	637	509	407	FEED	136	132	130	129	128	122	112	106	
					Vc	70	70	70	70	70	70	70	70	70	70	fz	0.034	0.048	0.057	0.067	0.076	0.086	0.095	0.114	RPM	3714	2785	2228	1857	1592	1393	1114	891	FEED	505	535	508	498	484	479	423
S	31-35	Heat Resistant Super Alloys	0.3D	0.6D	Vc	32	32	32	32	32	32	32	32	fz	0.020	0.026	0.032	0.038	0.044	0.048	0.055	0.065	RPM	1698	1273	1019	849	728	637	509	407	FEED	136	132	130	129	128	122	112	106	
					Vc	70	70	70	70	70	70	70	70	70	70	fz	0.034	0.048	0.057	0.067	0.076	0.086	0.095	0.114	RPM	3714	2785	2228	1857	1592	1393	1114	891	FEED	505	535	508	498	484	479	423
36-37	Titanium Alloys	0.4D	1.0D	Vc	70	70	70	70	70	70	70	70	fz	0.034	0.048	0.057	0.067	0.076	0.086	0.095	0.114	RPM	3714	2785	2228	1857	1592	1393	1114	891	FEED	505	535	508	498	484	479	423	406		

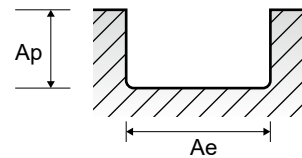


**GMG40, GMG41** SERIES

**4 FLUTES CORNER RADIUS - SLOTTING**

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	25.0		
<b>P</b>	1-4	Non-alloy steel	1.0D	1.0D	Vc	125	125	125	125	125	125	125	125		
					fz	0.025	0.034	0.042	0.049	0.056	0.063	0.070	0.084		
					RPM	6631	4974	3979	3316	2842	2487	1989	1592		
	5	Low alloy steel	1.0D	1.0D	Vc	120	120	120	120	120	120	120	120		
					fz	0.025	0.034	0.042	0.049	0.056	0.063	0.070	0.077		
					RPM	6366	4775	3820	3183	2728	2387	1910	1528		
	6-7	Low alloy steel	1.0D	1.0D	Vc	125	125	125	125	125	125	125	125		
					fz	0.025	0.034	0.042	0.049	0.056	0.063	0.070	0.084		
					RPM	6631	4974	3979	3316	2842	2487	1989	1592		
	8-9	Low alloy steel	1.0D	1.0D	Vc	120	120	120	120	120	120	120	120		
					fz	0.025	0.034	0.042	0.049	0.056	0.063	0.070	0.077		
					RPM	6366	4775	3820	3183	2728	2387	1910	1528		
	10-11.1	High alloyed steel, and tool steel	1.0D	1.0D	Vc	120	120	120	120	120	120	120	120		
					fz	0.027	0.035	0.042	0.053	0.058	0.063	0.077	0.084		
					RPM	6366	4775	3820	3183	2728	2387	1910	1528		
<b>M</b>	12-13	Stainless steel	1.0D	1.0D	Vc	125	125	125	125	125	125	125	125		
					fz	0.034	0.046	0.057	0.067	0.074	0.081	0.095	0.105		
					RPM	6631	4974	3979	3316	2842	2487	1989	1592		
	14.1	Stainless steel	1.0D	1.0D	Vc	85	85	85	85	85	85	85	85		
					fz	0.025	0.034	0.042	0.048	0.055	0.062	0.071	0.081		
					RPM	4509	3382	2706	2255	1933	1691	1353	1082		
	14.2	Stainless steel	1.0D	0.5D	Vc	36	36	36	36	36	36	36	36		
					fz	0.016	0.021	0.027	0.032	0.036	0.040	0.046	0.052		
					RPM	1910	1432	1146	955	819	716	573	458		
	<b>K</b>	15-20	Grey cast iron	1.0D	1.0D	Vc	140	140	140	140	140	140	140	140	
						fz	0.021	0.028	0.035	0.042	0.048	0.053	0.060	0.067	
						RPM	7427	5570	4456	3714	3183	2785	2228	1783	
		<b>S</b>	31-35	Heat Resistant Super Alloys	1.0D	0.4D	Vc	25	25	25	25	25	25	25	25
							fz	0.018	0.024	0.030	0.036	0.040	0.044	0.050	0.055
							RPM	1326	995	796	663	568	497	398	318
36-37			Titanium Alloys	1.0D	1.0D	Vc	55	55	55	55	55	55	55	55	
						fz	0.034	0.046	0.057	0.067	0.076	0.086	0.095	0.105	
						RPM	2918	2188	1751	1459	1251	1094	875	700	



SELECTION GUIDE



SERIES	GMG40 GMG41	GMG28 GMG29	GMG30 GMG31	GMG24 GMG25
FLUTE	4	5	5	5
HELIX ANGLE	43°/45°	43°/44°/45°	43°/44°/45°	43°/44°/45°
CUTTING EDGE SHAPE	CORNER RADIUS	CORNER RADIUS	CORNER RADIUS	SQUARE
SIZE MIN	D6.0	D6.0	D6.0	D6.0
SIZE MAX	D25.0	D25.0	D25.0	D25.0
PAGE	398	400	401	403

**SOLID CARBIDE**  
**TitaNox-POWER**  
**END MILLS**

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

LONG LENGTH DOUBLE CORE	SHORT LENGTH	LONG LENGTH	SHORT LENGTH
Y-Coating	Y-Coating	Y-Coating	Y-Coating



Please visit  
[globalyg1.com/mat](http://globalyg1.com/mat)  
for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : P 406

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	Malleable cast iron	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		Cutting Alloys, PB>1%	110						
	27	Copper and Copper Alloys	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					