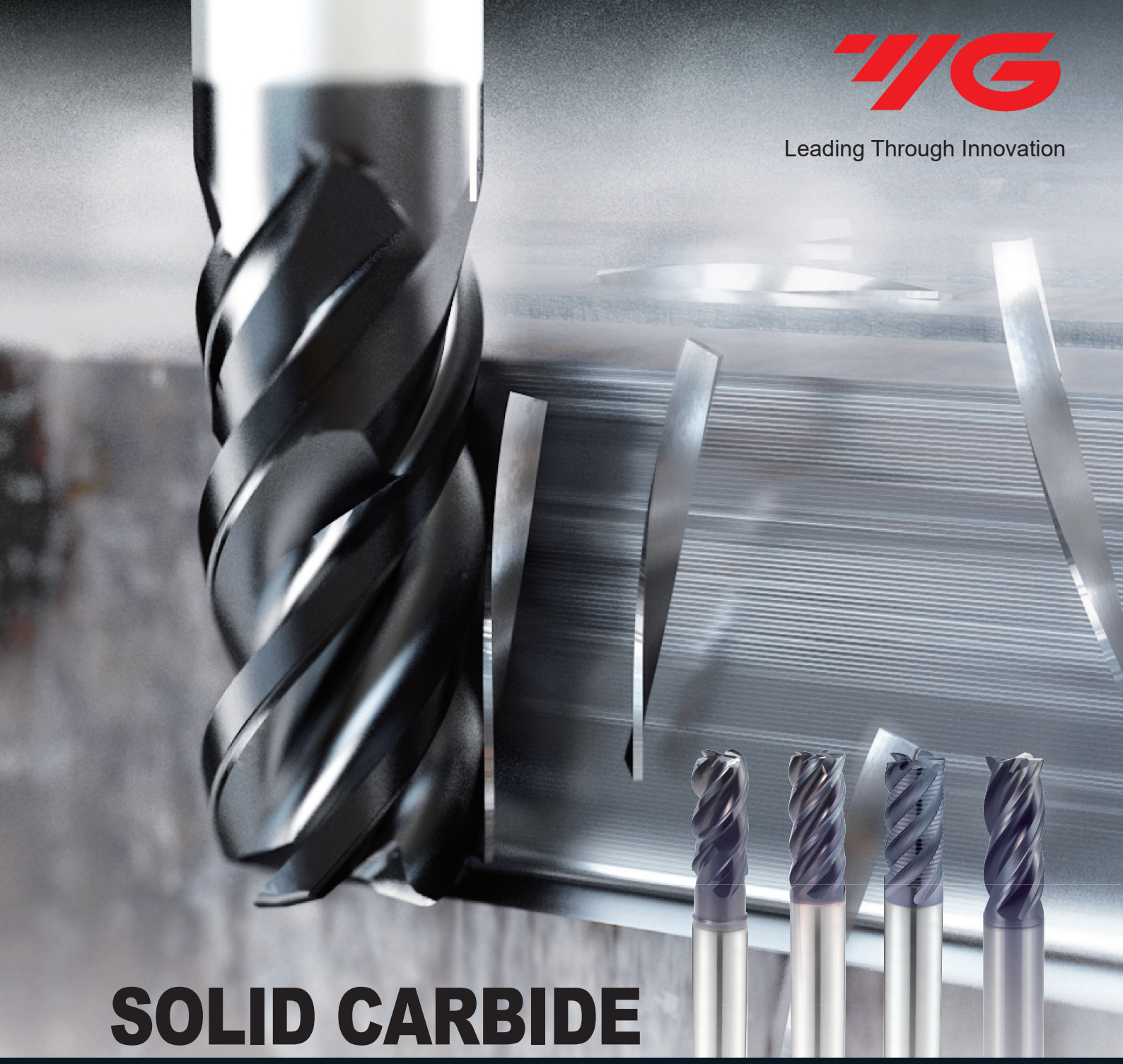
Leading Through Innovation



SOLID CARBIDE

TitaNox-POWER END MILLS

TitaNox-Power VHM - Schaftfräser

- High Speed Machining for Exotic Materials: Titanium and Stainless Steels
- Hochgeschwindigkeitsbearbeitung von Sonderwerkstoffen: Titan und rostfreie Stähle

SELECTION GUIDE

YG MILLING TOOLS

SOLID CARBIDE
TitaNox-POWER END MILLS

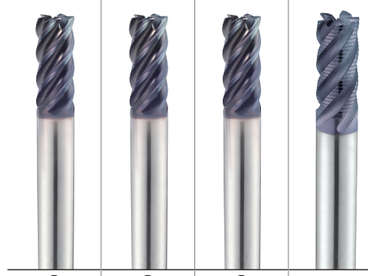
High Speed Machining for Exotic Materials:
Titanium and Stainless Steels

Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : p. C449

SERIES	GMG40 GMG41	EMI94 EMI96	EMI93 EMI95	GMG28 GMG29	GMG30 GMG31	GMG24 GMG25	GMG26 GMG27	EHE54 EHE55
FLUTE	4	5	5	5	5	5	5	5
HELIX ANGLE	43°/45°	38°	38°	43°/44°/45°	43°/44°/45°	43°/44°/45°	43°/44°/45°	40°
CUTTING EDGE SHAPE	CORNER RADIUS	CORNER RADIUS	SQUARE	CORNER RADIUS	CORNER RADIUS	SQUARE	SQUARE	ROUGHING CORNER RADIUS
SIZE MIN	D6.0	D6.0	D6.0	D6.0	D6.0	D6.0	D6.0	D6.0
SIZE MAX	D25.0	D25.0	D25.0	D25.0	D25.0	D25.0	D25.0	D25.0
PAGE	C438	C440	C442	C443	C444	C446	C447	C448
	LONG LENGTH DOUBLE CORE	-	-	SHORT LENGTH	LONG LENGTH	SHORT LENGTH	LONG LENGTH	-
	Y-Coating	AlTiN		Y-Coating	Y-Coating	Y-Coating	Y-Coating	TiAlN
		TitaNox-Power HPC						

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

CARBIDE
HSS
CBN END MILLS
i-Xmill END MILLS
i-SMART MODULAR END MILLS
X1-EH 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
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

TitaNox-POWER END MILLS

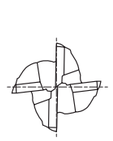
PLAIN SHANK **GMG40** SERIES
FLAT SHANK **GMG41** SERIES

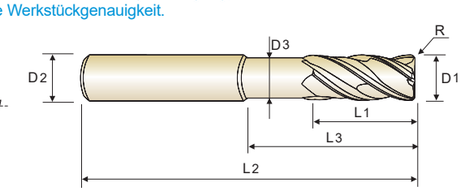
CARBIDE, 4 FLUTE CORNER RADIUS with DOUBLE CORE

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 | Y Coating

p.C449~C450

Recommended ToolHolder

	Flat Shank	Plain Shank
◎	END MILL HOLDER	POWER MILLING CHUCK
◎	-	HYDRAULIC CHUCK SHRINK FIT HOLDER
○	-	ER COLLET CHUCK

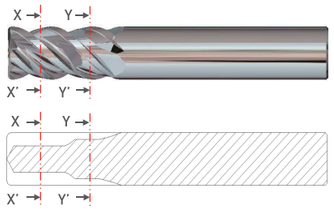
Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
PLAIN	FLAT	R	D_1	D_2	L_1	L_3	L_2	D_3
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

▶ NEXT PAGE

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		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											○	○	○	○	○	◎	◎				

CARBIDE
HSS
CBN END MILLS
i-Xmill END MILLS
i-SMART MODULAR END MILLS
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TitaNox-POWER END MILLS

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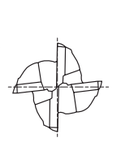
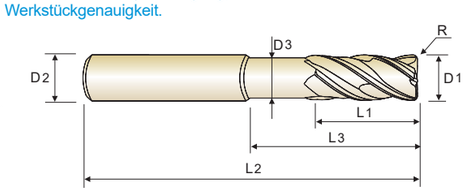




CARBIDE | 4 | 43°/45° | PLAIN | FLAT | Y Coating

p.C449~C450

Recommended ToolHolder

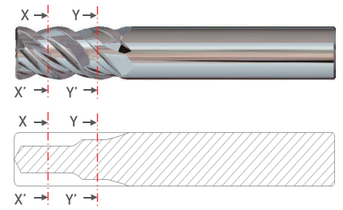
	Flat Shank	Plain Shank
◎	END MILL HOLDER	POWER MILLING CHUCK
◎	-	HYDRAULIC CHUCK SHRINK FIT HOLDER
○	-	ER COLLET CHUCK

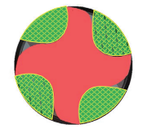
Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
PLAIN	FLAT	R	D_1	D_2	L_1	L_3	L_2	D_3
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		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											○	○	○	○	○	◎	◎				

TitaNox-POWER END MILLS

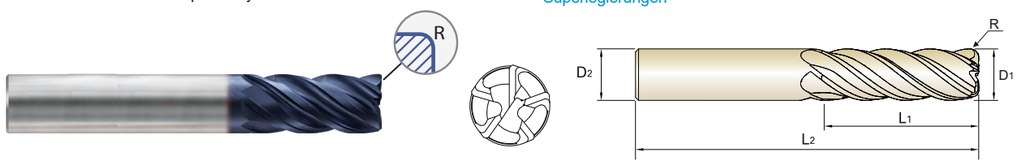
PLAIN SHANK **EMI94 SERIES**
FLAT SHANK **EMI96 SERIES**

CARBIDE, 5 FLUTE STANDARD LENGTH (TitaNox-Power HPC)

HARTMETALL, 5-SCHNEIDEN STANDARD LÄNGE (TITANOX-POWER HPC) HARTMETALL 5
FRAISE CARBURE, 5 DENTS, LONGUEUR STANDARD (TITANOX-POWER HPC)
FRESA MD, 5 TAGLIENTI, SERIE CORTA (TITANOX-POWER HPC)

- ▶ New design enhances chip space in heavy cuts, while still maintaining rigidity in peel milling.
- ▶ Unequal index design for Chatter-Free cutting.
- ▶ High performance milling of Stainless Steel, Titanium, and Heat-Resistant Super Alloys.

- ▶ Das neue Design verbessert den Spanraum bei schweren Schnitten, während die Steifigkeit beim Schälfräsen erhalten bleibt.
- ▶ Ungleiche Teilung für einen ratterfreien Schnittreduziert die
- ▶ Hochleistungsfräsen von rostfreiem Stahl, Titan und hitzebeständigen Superlegierungen



CARBIDE | 5 | 38° | PLAIN | FLAT | AlTiN

p.C451~C453

Recommended ToolHolder	Flat Shank	Plain Shank
	END MILL HOLDER	POWER MILLING CHUCK
	-	HYDRAULIC CHUCK SHRINK FIT HOLDER
	-	ER COLLET CHUCK

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R	D_1	D_2	L_1	L_2
EMI94060	**EMI96060**	R0.3	**6.0**	6	13	57
EMI94901	**EMI96901**	R0.5	**6.0**	6	13	57
EMI94902	**EMI96902**	R1.0	**6.0**	6	13	57
EMI94080	**EMI96080**	R0.5	**8.0**	8	19	63
EMI94903	**EMI96903**	R1.0	**8.0**	8	19	63
EMI94904	**EMI96904**	R1.5	**8.0**	8	19	63
EMI94905	**EMI96905**	R2.0	**8.0**	8	19	63
EMI94100	**EMI96100**	R0.5	**10.0**	10	22	72
EMI94906	**EMI96906**	R1.0	**10.0**	10	22	72
EMI94907	**EMI96907**	R1.5	**10.0**	10	22	72
EMI94908	**EMI96908**	R2.0	**10.0**	10	22	72
EMI94909	**EMI96909**	R2.5	**10.0**	10	22	72
EMI94120	**EMI96120**	R0.5	**12.0**	12	26	83
EMI94910	**EMI96910**	R1.0	**12.0**	12	26	83
EMI94911	**EMI96911**	R1.5	**12.0**	12	26	83
EMI94912	**EMI96912**	R2.0	**12.0**	12	26	83
EMI94913	**EMI96913**	R2.5	**12.0**	12	26	83
EMI94914	**EMI96914**	R3.0	**12.0**	12	26	83
EMI94160	**EMI96160**	R0.5	**16.0**	16	36	92
EMI94915	**EMI96915**	R1.0	**16.0**	16	36	92
EMI94916	**EMI96916**	R1.5	**16.0**	16	36	92
EMI94917	**EMI96917**	R2.0	**16.0**	16	36	92
EMI94918	**EMI96918**	R2.5	**16.0**	16	36	92

▶ 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	
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											○	○	○	○	○	◎	◎				

TitaNox-POWER END MILLS

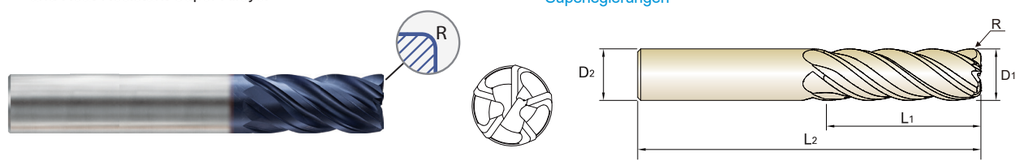
PLAIN SHANK EMI94 SERIES
FLAT SHANK EMI96 SERIES

CARBIDE, 5 FLUTE STANDARD LENGTH (TitaNox-Power HPC)

HARTMETALL, 5-SCHNEIDEN STANDARD LÄNGE (TITANOX-POWER HPC) HARTMETALL 5
FRAISE CARBURE, 5 DENTS, LONGUEUR STANDARD (TITANOX-POWER HPC)
FRESA MD, 5 TAGLIENTI, SERIE CORTA (TITANOX-POWER HPC)

- ▶ New design enhances chip space in heavy cuts, while still maintaining rigidity in peel milling.
- ▶ Unequal index design for Chatter-Free cutting.
- ▶ High performance milling of Stainless Steel, Titanium, and Heat-Resistant Super Alloys.

- ▶ Das neue Design verbessert den Spanraum bei schweren Schnitten, während die Steifigkeit beim Schälfräsen erhalten bleibt.
- ▶ Ungleiche Teilung für einen ratterfreien Schnittreduziert die
- ▶ Hochleistungsfräsen von rostfreiem Stahl, Titan und hitzebeständigen Superlegierungen



CARBIDE | 5 | 38° | PLAIN | FLAT | AlTiN

p.C451~C453

Recommended ToolHolder	Flat Shank	Plain Shank
	END MILL HOLDER	POWER MILLING CHUCK
	-	HYDRAULIC CHUCK SHRINK FIT HOLDER
	-	ER COLLET CHUCK

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R	D_1	D_2	L_1	L_2
EMI94919	**EMI96919**	R3.0	**16.0**	16	36	92
EMI94920	**EMI96920**	R4.0	**16.0**	16	36	92
EMI94200	**EMI96200**	R1.0	**20.0**	20	44	104
EMI94921	**EMI96921**	R1.5	**20.0**	20	44	104
EMI94922	**EMI96922**	R2.0	**20.0**	20	44	104
EMI94923	**EMI96923**	R2.5	**20.0**	20	44	104
EMI94924	**EMI96924**	R3.0	**20.0**	20	44	104
EMI94925	**EMI96925**	R4.0	**20.0**	20	44	104
EMI94926	**EMI96926**	R5.0	**20.0**	20	44	104
EMI94250	**EMI96250**	R1.0	**25.0**	25	54	121
EMI94927	**EMI96927**	R1.5	**25.0**	25	54	121
EMI94928	**EMI96928**	R2.0	**25.0**	25	54	121
EMI94929	**EMI96929**	R2.5	**25.0**	25	54	121
EMI94930	**EMI96930**	R3.0	**25.0**	25	54	121
EMI94931	**EMI96931**	R4.0	**25.0**	25	54	121
EMI94932	**EMI96932**	R5.0	**25.0**	25	54	121

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	
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											○	○	○	○	○	◎	◎				

TitaNox-POWER END MILLS

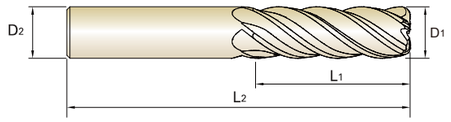
PLAIN SHANK **EMI93** SERIES
FLAT SHANK **EMI95** SERIES

CARBIDE, 5 FLUTE STANDARD LENGTH (TitaNox-Power HPC)

HARTMETALL, 5-SCHNEIDEN STANDARD LÄNGE (TITANOX-POWER HPC) HARTMETALL 5
FRAISE CARBURE, 5 DENTS, LONGUEUR STANDARD (TITANOX-POWER HPC)
FRESA MD, 5 TAGLIENTI, SERIE CORTA (TITANOX-POWER HPC)

- ▶ New design enhances chip space in heavy cuts, while still maintaining rigidity in peel milling.
- ▶ Unequal index design for Chatter-Free cutting.
- ▶ High performance milling of Stainless Steel, Titanium, and Heat-Resistant Super Alloys.

- ▶ Das neue Design verbessert den Spanraum bei schweren Schnitten, während die Steifigkeit beim Schälfräsen erhalten bleibt.
- ▶ Ungleiche Teilung für einen ratterfreien Schnittreduziert die
- ▶ Hochleistungsfräsen von rostfreiem Stahl, Titan und hitzebeständigen Superlegierungen



CARBIDE | 5 | 38° | PLAIN | FLAT | AlTiN | p.C451~C453

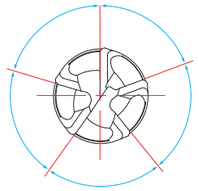
Recommended ToolHolder

	Flat Shank	Plain Shank
◎	END MILL HOLDER	POWER MILLING CHUCK
◎	-	HYDRAULIC CHUCK SHRINK FIT HOLDER
○	-	ER COLLET CHUCK

Unit : mm

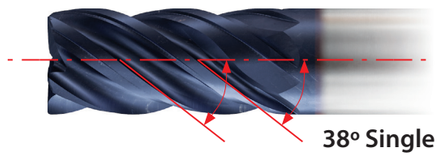
EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Chamfer
PLAIN	FLAT	D_1	D_2	L_1	L_2	
EMI93060	**EMI95060**	**6.0**	6	13	57	0.20
EMI93080	**EMI95080**	**8.0**	8	19	63	0.20
EMI93100	**EMI95100**	**10.0**	10	22	72	0.30
EMI93120	**EMI95120**	**12.0**	12	26	83	0.35
EMI93160	**EMI95160**	**16.0**	16	36	92	0.40
EMI93200	**EMI95200**	**20.0**	20	44	104	0.50
EMI93250	**EMI95250**	**25.0**	25	54	121	0.50

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



Unequal Index

Exclusively Designed Unique Geometry applied to Reduce Vibration and also to achieve Excellent surface finish



Core Design

YG-1's High Performance Core Geometries is designed for superior chip evacuation. It's excellent at Slotting & Heavy Profiling.

◎ : 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
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											○	○	○	○	○	◎	◎				

CARBIDE
HSS
CBN END MILLS
i-Xmill END MILLS
i-SMART MODULAR END MILLS
X1-EH 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
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

TitaNox-POWER END MILLS

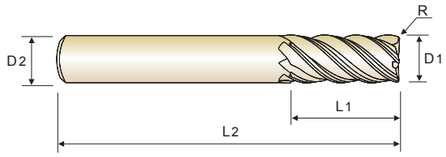
PLAIN SHANK **GMG28** SERIES
FLAT SHANK **GMG29** SERIES

CARBIDE, 5 FLUTE CORNER RADIUS SHORT LENGTH

VOLLHARTMETALL, 5 SCHNEIDEN KURZ MIT ECKRADIUS
CARBURE, 5 DENTS, TORIQUE, SÉRIE COURTE
FRESA IN MD, 5 TAGLIENTI, SERIE CORTA, TORICA

- ▶ Excellent performance results and long tool life when machining Titanium and other tough materials.
- ▶ This tool has high rigidity of flute so that is possible to use for heavy profile and high speed milling.
- ▶ For protecting Corner chipping of end teeth, Corner Radius & Chamfer are adopted.

- ▶ Exzellente Leistungsergebnisse und hohe Standzeiten beim Bearbeiten von Titan oder anderen robusten Materialien.
- ▶ Die Schneiden des Werkzeugs haben eine besondere Festigkeit, so dass es für schwere Profile und zum High-Speed-Fräsen geeignet ist.
- ▶ Durch die Fase und den Eckradius werden Ausbrüche verhindert.



CARBIDE | 5 | 43°/44°/45° | PLAIN | FLAT | γ Coating | p.C454

Recommended ToolHolder

	Flat Shank	Plain Shank
◎	END MILL HOLDER	POWER MILLING CHUCK
◎	-	HYDRAULIC CHUCK SHRINK FIT HOLDER
○	-	ER COLLET CHUCK

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R	D_1	D_2	L_1	L_2
GMG28060	**GMG29060**	R0.5	**6.0**	6	10	54
GMG28080	**GMG29080**	R0.5	**8.0**	8	12	58
GMG28100	**GMG29100**	R0.5	**10.0**	10	14	66
GMG28120	**GMG29120**	R0.5	**12.0**	12	16	73
GMG28160	**GMG29160**	R1.0	**16.0**	16	22	82
GMG28200	**GMG29200**	R1.0	**20.0**	20	26	92
GMG28250	**GMG29250**	R1.0	**25.0**	25	29	100

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
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											○	○	○	○	○	◎	◎				

TitaNox-POWER END MILLS

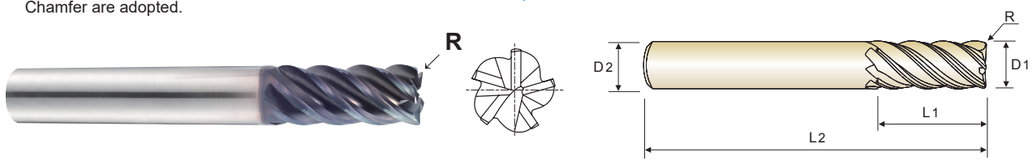
PLAIN SHANK **GMG30** SERIES
FLAT SHANK **GMG31** SERIES

CARBIDE, 5 FLUTE CORNER RADIUS LONG LENGTH

VOLLHARTMETALL, 5 SCHNEIDEN LANG MIT ECKRADIUS
CARBURE, 5 DENTS, TORIQUE, SÉRIE LONGUE
FRESA IN MD, 5 TAGLIENTI, SERIE LUNGA, TORICA

- ▶ Excellent performance results and long tool life when machining Titanium and other tough materials.
- ▶ This tool has high rigidity of flute so that is possible to use for heavy profile and high speed milling.
- ▶ For protecting Corner chipping of end teeth, Corner Radius & Chamfer are adopted.

- ▶Exzellente Leistungsergebnisse und hohe Standzeiten beim Bearbeiten von Titan oder anderen robusten Materialien.
- ▶Die Schneiden des Werkzeugs haben eine besondere Festigkeit, so dass es für schwere Profile und zum High-Speed-Fräsen geeignet ist.
- ▶Durch die Fase und den Eckradius werden Ausbrüche verhindert.



CARBIDE | 5 | 43°/44°/45° | PLAIN | FLAT | Y Coating

p.C454

Recommended ToolHolder

	Flat Shank	Plain Shank
◎	END MILL HOLDER	POWER MILLING CHUCK
◎	-	HYDRAULIC CHUCK SHRINK FIT HOLDER
○	-	ER COLLET CHUCK

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R	D_1	D_2	L_1	L_2
GMG30060	**GMG31060**	R0.3	**6.0**	6	13	57
GMG30901	**GMG31901**	R0.5	**6.0**	6	13	57
GMG30902	**GMG31902**	R1.0	**6.0**	6	13	57
GMG30080	**GMG31080**	R0.5	**8.0**	8	19	63
GMG30903	**GMG31903**	R1.0	**8.0**	8	19	63
GMG30904	**GMG31904**	R1.5	**8.0**	8	19	63
GMG30905	**GMG31905**	R2.0	**8.0**	8	19	63
GMG30100	**GMG31100**	R0.5	**10.0**	10	22	72
GMG30906	**GMG31906**	R1.0	**10.0**	10	22	72
GMG30907	**GMG31907**	R1.5	**10.0**	10	22	72
GMG30908	**GMG31908**	R2.0	**10.0**	10	22	72
GMG30120	**GMG31120**	R0.5	**12.0**	12	26	83
GMG30909	**GMG31909**	R1.0	**12.0**	12	26	83
GMG30910	**GMG31910**	R1.5	**12.0**	12	26	83
GMG30911	**GMG31911**	R2.0	**12.0**	12	26	83
GMG30912	**GMG31912**	R2.5	**12.0**	12	26	83
GMG30913	**GMG31913**	R3.0	**12.0**	12	26	83
GMG30160	**GMG31160**	R1.0	**16.0**	16	36	92
GMG30914	**GMG31914**	R1.5	**16.0**	16	36	92
GMG30915	**GMG31915**	R2.0	**16.0**	16	36	92
GMG30916	**GMG31916**	R2.5	**16.0**	16	36	92
GMG30917	**GMG31917**	R3.0	**16.0**	16	36	92

▶ 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
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											○	○	○	○	○	◎	◎				

TitaNox-POWER END MILLS

PLAIN SHANK GMG30 SERIES
FLAT SHANK GMG31 SERIES

CARBIDE, 5 FLUTE CORNER RADIUS LONG LENGTH

VOLLHARTMETALL, 5 SCHNEIDEN LANG MIT ECKRADIUS
CARBURE, 5 DENTS, TORIQUE, SÉRIE LONGUE
FRESA IN MD, 5 TAGLIENTI, SERIE LUNGA, TORICA

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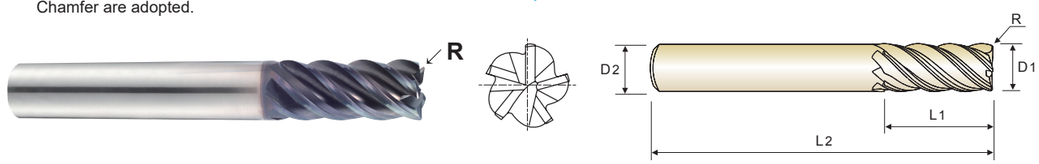
- ▶Die Schneiden des Werkzeugs haben eine besondere Festigkeit, so dass es für schwere Profile und zum High-Speed-Fräsen geeignet ist.
- ▶Durch die Fase und den Eckradius werden Ausbrüche verhindert.



CARBIDE | 5 | 43°/44°/45° | PLAIN | FLAT | Y Coating

p.C454

Recommended ToolHolder

	Flat Shank	Plain Shank
◎	END MILL HOLDER	POWER MILLING CHUCK
◎	-	HYDRAULIC CHUCK SHRINK FIT HOLDER
○	-	ER COLLET CHUCK

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R	D_1	D_2	L_1	L_2
GMG30918	**GMG31918**	R4.0	**16.0**	16	36	92
GMG30200	**GMG31200**	R1.0	**20.0**	20	44	104
GMG30919	**GMG31919**	R1.5	**20.0**	20	44	104
GMG30920	**GMG31920**	R2.0	**20.0**	20	44	104
GMG30921	**GMG31921**	R2.5	**20.0**	20	44	104
GMG30922	**GMG31922**	R3.0	**20.0**	20	44	104
GMG30923	**GMG31923**	R4.0	**20.0**	20	44	104
GMG30924	**GMG31924**	R5.0	**20.0**	20	44	104
GMG30250	**GMG31250**	R1.0	**25.0**	25	54	121
GMG30925	**GMG31925**	R1.5	**25.0**	25	54	121
GMG30926	**GMG31926**	R2.0	**25.0**	25	54	121
GMG30927	**GMG31927**	R2.5	**25.0**	25	54	121
GMG30928	**GMG31928**	R3.0	**25.0**	25	54	121
GMG30929	**GMG31929**	R4.0	**25.0**	25	54	121
GMG30930	**GMG31930**	R5.0	**25.0**	25	54	121

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
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											○	○	○	○	○	◎	◎				

TitaNox-POWER END MILLS

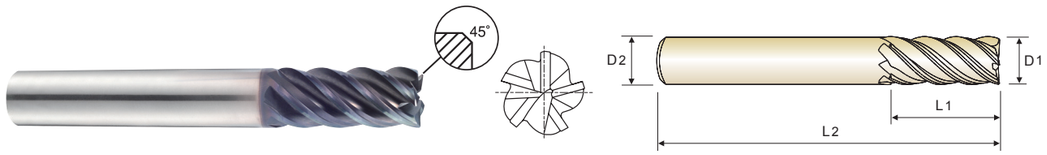
PLAIN SHANK **GMG24** SERIES
FLAT SHANK **GMG25** SERIES

CARBIDE, 5 FLUTE SHORT LENGTH

VOLLHARTMETALL, 5 SCHNEIDEN KURZ
CARBURE, 5 DENTS, SÉRIE COURTE
FRESA IN MD, 5 TAGLIENTI, SERIE CORTA

- ▶ Excellent performance results and long tool life when machining Titanium and other tough materials.
- ▶ This tool has high rigidity of flute so that is possible to use for heavy profile and high speed milling.
- ▶ For protecting Corner chipping of end teeth, Corner Radius & Chamfer are adopted.

- ▶Exzellente Leistungsergebnisse und hohe Standzeiten beim Bearbeiten von Titan oder anderen robusten Materialien.
- ▶Die Schneiden des Werkzeugs haben eine besondere Festigkeit, so dass es für schwere Profile und zum High-Speed-Fräsen geeignet ist.
- ▶Durch die Fase und den Eckradius werden Ausbrüche verhindert.



CARBIDE | 5 | 43°/44°/45° | PLAIN | FLAT | C x 45° | Y Coating | p.C455

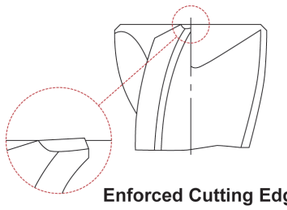
Recommended ToolHolder

	Flat Shank	Plain Shank
◎	END MILL HOLDER	POWER MILLING CHUCK
◎	-	HYDRAULIC CHUCK SHRINK FIT HOLDER
○	-	ER COLLET CHUCK

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Chamfer
PLAIN	FLAT	D_1	D_2	L_1	L_2	
GMG24060	**GMG25060**	**6.0**	6	10	54	0.20
GMG24080	**GMG25080**	**8.0**	8	12	58	0.20
GMG24100	**GMG25100**	**10.0**	10	14	66	0.30
GMG24120	**GMG25120**	**12.0**	12	16	73	0.35
GMG24160	**GMG25160**	**16.0**	16	22	82	0.40
GMG24200	**GMG25200**	**20.0**	20	26	92	0.50
GMG24250	**GMG25250**	**25.0**	25	29	100	0.50

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
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											○	○	○	○	○	◎	◎				

TitaNox-POWER END MILLS

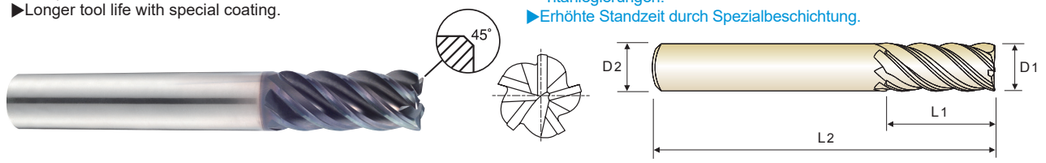
PLAIN SHANK **GMG26** SERIES
FLAT SHANK **GMG27** SERIES

CARBIDE, 5 FLUTE LONG LENGTH

VOLLHARTMETALL, 5 SCHNEIDEN LANG
CARBURE, 5 DENTS, SÉRIE LONGUE
FRESA IN MD, 5 TAGLIENTI, SERIE LUNGA

- ▶ Suitable for Titanium, Titanium Alloys, Inconel and Stainless Steels.
- ▶ Optimized flute design for chip evacuation and rigidity when machining difficult-to-cut materials.
- ▶ Special roughing profile for machining Titanium and Titanium Alloys.
- ▶Longer tool life with special coating.

- ▶Einsetzbar für Titan, Titanlegierungen, Nickellegierungen und rostfreie Stähle.
- ▶Verbessertes Schneidendesign für eine optimale Spanabfuhr und Stabilität beim Bearbeiten von schwer zerspanbaren Materialien.
- ▶Spezielles Schrupprofil zum Bearbeiten von Titan und Titanlegierungen.
- ▶Erhöhte Standzeit durch Spezialbeschichtung.



CARBIDE | 5 | 43°/44°/45° | PLAIN | FLAT | C x 45° | Y Coating | p.C455

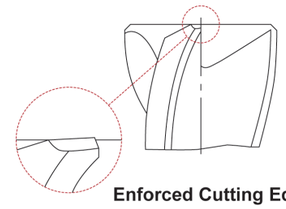
Recommended ToolHolder

	Flat Shank	Plain Shank
◎	END MILL HOLDER	POWER MILLING CHUCK
◎	-	HYDRAULIC CHUCK SHRINK FIT HOLDER
○	-	ER COLLET CHUCK

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Chamfer
PLAIN	FLAT	D_1	D_2	L_1	L_2	
GMG26060	**GMG27060**	**6.0**	6	13	57	0.20
GMG26080	**GMG27080**	**8.0**	8	19	63	0.20
GMG26100	**GMG27100**	**10.0**	10	22	72	0.30
GMG26120	**GMG27120**	**12.0**	12	26	83	0.35
GMG26160	**GMG27160**	**16.0**	16	36	92	0.40
GMG26200	**GMG27200**	**20.0**	20	44	104	0.50
GMG26250	**GMG27250**	**25.0**	25	54	121	0.50

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
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											○	○	○	○	○	◎	◎				

TitaNox-POWER END MILLS

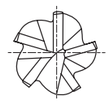
PLAIN SHANK **EHE54** SERIES
FLAT SHANK **EHE55** SERIES

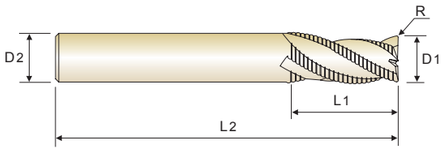
CARBIDE, 5 FLUTE 40˚ HELIX CORNER RADIUS ROUGHING - FINE

VOLLHARTMETALL, 5 SCHNEIDEN 40° HELIX mit ECKRADIUS FÜR FEINSCHRUPPEN
CARBURE, 5 DENTS, HÉLICE 40°, TORIQUE, ÉBAUCHE PAS FINS
FRESA IN MD, 5 TAGLIENTI, ELICA 40°, TORICA, BOMBATO FINE

- ▶ Excellent performance results and long tool life when machining Titanium and other tough materials.
- ▶ This tool has high rigidity of flute so that is possible to use for heavy profile and high speed milling.
- ▶ For protecting Corner chipping of end teeth, Corner Radius & Chamfer are adopted.

- ▶Exzellente Leistungsergebnisse und hohe Standzeiten beim Bearbeiten von Titan oder anderen robusten Materialien.
- ▶Die Schneiden des Werkzeugs haben eine besondere Festigkeit, so dass es für schwere Profile und zum High-Speed-Fräsen geeignet ist.
- ▶Durch die Fase und den Eckradius werden Ausbrüche verhindert.





CARBIDE | 5 | 40° | HR | PLAIN | FLAT | TiAlN

p.C455

Recommended ToolHolder

	Flat Shank	Plain Shank
◎	END MILL HOLDER	POWER MILLING CHUCK
◎	-	HYDRAULIC CHUCK SHRINK FIT HOLDER
○	-	ER COLLET CHUCK

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R	D_1 (h10)	D_2 (h6)	L_1	L_2
EHE54060	**EHE55060**	R0.2	**6.0**	6	16	57
EHE54080	**EHE55080**	R0.2	**8.0**	8	16	63
EHE54100	**EHE55100**	R0.3	**10.0**	10	22	72
EHE54120	**EHE55120**	R0.3	**12.0**	12	26	83
EHE54140	**EHE55140**	R0.3	**14.0**	14	26	83
EHE54160	**EHE55160**	R0.3	**16.0**	16	32	92
EHE54200	**EHE55200**	R0.3	**20.0**	20	38	104
EHE54250	**EHE55250**	R0.3	**25.0**	25	45	121

Tolerances according to DIN 7160 & 7161

Tolerance range in ㎛					
Nominal-Diameter in ㎜					
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
h10	0 - 40	0 - 48	0 - 58	0 - 70	0 - 84
h5	0 - 4	0 - 5	0 - 6	0 - 8	0 - 9

* 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
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											○	○	○	○	○	◎	◎				

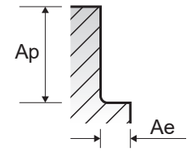
TitaNox-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

GMG40, GMG41 — 4 FLUTE 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
	5	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
	6-7		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
	8		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
	9		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
	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
M	12-13	Stainless steel	0.4D	1.0D	Vc	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
	14.1		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
	14.2		0.4D	0.6D	Vc	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
K	15-20	Grey cast iron	0.4D	1.0D	Vc	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	668	624
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
	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



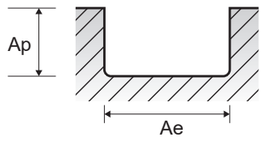
TitaNox-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

GMG40, GMG41 — 4 FLUTE 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
P	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
					FEED	663	676	668	650	637	627	557	535
	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
					FEED	637	649	642	624	611	602	535	471
	6-7		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
					FEED	663	676	668	650	637	627	557	535
	8-9		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
					FEED	637	649	642	624	611	602	535	471
	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
					FEED	688	668	642	675	633	602	588	513
M	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
					FEED	902	915	907	889	841	806	756	668
	14.1		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
					FEED	451	460	455	433	425	419	384	351
	14.2		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
					FEED	122	120	124	122	118	115	105	95
K	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
					FEED	624	624	624	624	611	590	535	478
S	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
					FEED	95	95	95	95	91	88	80	70
	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
					FEED	397	403	399	391	380	376	333	294



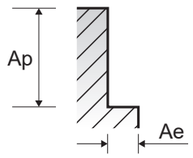
TitaNox-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

EMI94 EMI93 EMI96 EMI95 — 5 FLUTE CORNER RADIUS (TitaNox-Power HPC) - SIDE CUTTING (Heavy 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	1~5	Non-alloy steel	0.5D	1.5D	Vc	152	152	152	152	152	152	152
					fz	0.038	0.046	0.059	0.074	0.095	0.115	0.123
					RPM	8064	6048	4838	4032	3024	2419	1935
					FEED	1532	1391	1427	1492	1436	1391	1190
	6~8	Low alloy steel	0.5D	1.5D	Vc	152	152	152	152	152	152	152
					fz	0.038	0.046	0.059	0.074	0.095	0.115	0.123
					RPM	8064	6048	4838	4032	3024	2419	1935
					FEED	1532	1391	1427	1492	1436	1391	1190
	9		0.5D	1.5D	Vc	122	122	122	122	122	122	122
					fz	0.029	0.036	0.045	0.058	0.072	0.088	0.095
					RPM	6472	4854	3883	3236	2427	1942	1553
					FEED	938	874	874	938	874	854	738
	10	High alloyed steel, and tool steel	0.5D	1.5D	Vc	137	137	137	137	137	137	137
					fz	0.038	0.046	0.059	0.074	0.095	0.115	0.123
					RPM	7268	5451	4361	3634	2726	2180	1744
					FEED	1381	1254	1286	1345	1295	1254	1073
	11.1		0.5D	1.5D	Vc	122	122	122	122	122	122	122
					fz	0.029	0.036	0.045	0.058	0.072	0.088	0.095
					RPM	6472	4854	3883	3236	2427	1942	1553
					FEED	938	874	874	938	874	854	738
M	12	Stainless steel	0.5D	1.5D	Vc	76	76	76	76	76	76	76
					fz	0.024	0.031	0.040	0.050	0.061	0.075	0.080
					RPM	4032	3024	2419	2016	1512	1210	968
					FEED	484	469	484	504	461	454	387
	14.1		0.5D	1.5D	Vc	91	91	91	91	91	91	91
					fz	0.031	0.036	0.048	0.062	0.072	0.083	0.090
					RPM	4828	3621	2897	2414	1810	1448	1159
					FEED	748	652	695	748	652	601	522
	14.2		0.5D	1.5D	Vc	61	61	61	61	61	61	61
					fz	0.024	0.028	0.037	0.050	0.056	0.067	0.073
					RPM	3236	2427	1942	1618	1214	971	777
					FEED	388	340	359	405	340	325	284
K	15~20	Grey cast iron	0.5D	1.5D	Vc	113	113	113	113	113	113	113
					fz	0.034	0.041	0.051	0.062	0.082	0.099	0.105
					RPM	5995	4496	3597	2997	2248	1798	1439
					FEED	1019	922	917	929	922	890	755
S	33	Heat Resistant Super Alloys	0.2D	1.5D	Vc	27	27	27	27	27	27	27
					fz	0.024	0.031	0.037	0.046	0.054	0.061	0.068
					RPM	1432	1074	859	716	537	430	344
					FEED	172	166	159	165	145	131	117
	37	Titanium Alloys	0.5D	1.5D	Vc	49	49	49	49	49	49	49
					fz	0.024	0.031	0.037	0.046	0.054	0.061	0.068
					RPM	2600	1950	1560	1300	975	780	624
					FEED	312	302	289	299	263	238	212



TitaNox-POWER END MILLS

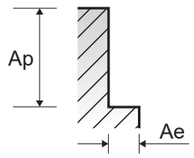
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

EMI94 EMI93 EMI96 EMI95

5 FLUTES CORNER RADIUS (TitaNox-Power HPC)
- SIDE CUTTING (Peel Milling)

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	1~5	Non-alloy steel	0.08D	2.0D	Vc	198	198	198	198	198	198	198
					fz	0.053	0.067	0.083	0.103	0.131	0.160	0.170
					RPM	10504	7878	6303	5252	3939	3151	2521
					FEED	2784	2639	2616	2705	2580	2521	2143
	6~8	Low alloy steel	0.08D	2.0D	Vc	198	198	198	198	198	198	198
					fz	0.053	0.067	0.083	0.103	0.131	0.160	0.170
					RPM	10504	7878	6303	5252	3939	3151	2521
					FEED	2784	2639	2616	2705	2580	2521	2143
	9		0.08D	2.0D	Vc	198	198	198	198	198	198	198
					fz	0.041	0.051	0.064	0.079	0.102	0.123	0.133
					RPM	10504	7878	6303	5252	3939	3151	2521
					FEED	2153	2009	2017	2075	2009	1938	1676
	10	High alloyed steel, and tool steel	0.08D	2.0D	Vc	177	177	177	177	177	177	177
					fz	0.053	0.067	0.083	0.103	0.131	0.160	0.170
					RPM	9390	7043	5634	4695	3521	2817	2254
					FEED	2488	2359	2338	2418	2306	2254	1916
	11.1		0.08D	2.0D	Vc	168	168	168	168	168	168	168
					fz	0.041	0.051	0.064	0.079	0.102	0.123	0.133
					RPM	8913	6685	5348	4456	3342	2674	2139
					FEED	1827	1705	1711	1760	1704	1645	1422
M	12	Stainless steel	0.06D	2.0D	Vc	107	107	107	107	107	107	107
					fz	0.036	0.041	0.056	0.070	0.087	0.104	0.113
					RPM	5677	4257	3406	2838	2129	1703	1362
					FEED	1022	873	954	993	926	886	770
	14.1		0.06D	2.0D	Vc	130	130	130	130	130	130	130
					fz	0.043	0.049	0.067	0.086	0.100	0.117	0.128
					RPM	6897	5173	4138	3448	2586	2069	1655
					FEED	1483	1267	1386	1483	1293	1210	1059
	14.2		0.06D	2.0D	Vc	91	91	91	91	91	91	91
					fz	0.034	0.038	0.053	0.070	0.079	0.093	0.103
					RPM	4828	3621	2897	2414	1810	1448	1159
					FEED	821	688	768	845	715	673	597
K	15~20	Grey cast iron	0.07D	2.0D	Vc	168	168	168	168	168	168	168
					fz	0.048	0.056	0.072	0.089	0.115	0.139	0.148
					RPM	8913	6685	5348	4456	3342	2674	2139
					FEED	2139	1872	1925	1983	1922	1858	1583
S	33	Heat Resistant Super Alloys	0.04D	2.0D	Vc	37	37	37	37	37	37	37
					fz	0.024	0.031	0.037	0.046	0.054	0.061	0.068
					RPM	1963	1472	1178	981	736	589	471
					FEED	236	228	218	226	199	180	160
	37	Titanium Alloys	0.05D	2.0D	Vc	91	91	91	91	91	91	91
					fz	0.024	0.031	0.037	0.046	0.054	0.061	0.068
					RPM	4828	3621	2897	2414	1810	1448	1159
					FEED	579	561	536	555	489	442	394



TitaNox-POWER END MILLS

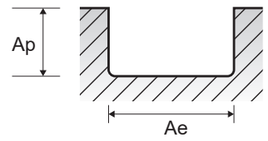
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

EMI94 EMI93 EMI96 EMI95

5 FLUTES CORNER RADIUS (TitaNox-Power HPC)
- 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	16.0	20.0	25.0
P	1~5	Non-alloy steel	1.0D	1.0D	Vc	84	84	84	84	84	84	84
					fz	0.031	0.038	0.048	0.058	0.074	0.091	0.098
					RPM	4456	3342	2674	2228	1671	1337	1070
					FEED	691	635	642	646	618	608	524
	6~8	Low alloy steel	1.0D	1.0D	Vc	84	84	84	84	84	84	84
					fz	0.031	0.038	0.048	0.058	0.074	0.091	0.098
					RPM	4456	3342	2674	2228	1671	1337	1070
					FEED	691	635	642	646	618	608	524
	9		1.0D	1.0D	Vc	84	84	84	84	84	84	84
					fz	0.024	0.028	0.037	0.046	0.059	0.069	0.075
					RPM	4456	3342	2674	2228	1671	1337	1070
					FEED	535	468	495	512	493	461	401
	10	High alloyed steel, and tool steel	1.0D	0.75D	Vc	70	70	70	70	70	70	70
					fz	0.031	0.038	0.048	0.058	0.074	0.091	0.098
					RPM	3714	2785	2228	1857	1393	1114	891
					FEED	576	529	535	539	515	507	437
	11.1		1.0D	0.75D	Vc	76	76	76	76	76	76	76
					fz	0.024	0.028	0.037	0.046	0.059	0.069	0.075
					RPM	4032	3024	2419	2016	1512	1210	968
					FEED	484	423	448	464	446	417	363
M	12	Stainless steel	1.0D	0.5D	Vc	69	69	69	69	69	69	69
					fz	0.019	0.023	0.032	0.041	0.049	0.059	0.065
					RPM	3661	2745	2196	1830	1373	1098	879
					FEED	348	316	351	375	336	324	286
	14.1		1.0D	0.5D	Vc	76	76	76	76	76	76	76
					fz	0.024	0.028	0.037	0.050	0.059	0.067	0.073
					RPM	4032	3024	2419	2016	1512	1210	968
					FEED	484	423	448	504	446	405	353
	14.2		1.0D	0.5D	Vc	61	61	61	61	61	61	61
					fz	0.019	0.023	0.029	0.041	0.046	0.053	0.058
					RPM	3236	2427	1942	1618	1214	971	777
					FEED	307	279	282	332	279	257	225
K	15~20	Grey cast iron	1.0D	1.0D	Vc	79	79	79	79	79	79	79
					fz	0.026	0.033	0.040	0.050	0.067	0.080	0.085
					RPM	4191	3143	2515	2096	1572	1257	1006
					FEED	545	519	503	524	527	503	428
S	33	Heat Resistant Super Alloys	1.0D	0.4D	Vc	20	20	20	20	20	20	20
					fz	0.019	0.026	0.029	0.036	0.044	0.051	0.053
					RPM	1061	796	637	531	398	318	255
					FEED	101	103	92	96	88	81	68
	37	Titanium Alloys	1.0D	0.5D	Vc	49	49	49	49	49	49	49
					fz	0.019	0.026	0.029	0.036	0.044	0.051	0.053
					RPM	2600	1950	1560	1300	975	780	624
					FEED	247	254	226	234	215	199	165



TitaNox-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

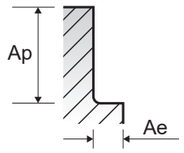
GMG28 | GMG30 | GMG29 | GMG31

5 FLUTE 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	18.0	20.0	25.0
P	1-4	Non-alloy steel	0.3D	1.5D(*)	Vc	144	144	144	144	144	144	144	144	144
					fz	0.034	0.038	0.050	0.063	0.069	0.076	0.083	0.089	0.101
					RPM	7639	5730	4584	3820	3274	2865	2546	2292	1833
					FEED	1299	1089	1146	1203	1130	1089	1057	1020	926
	5	Low alloy steel	0.3D	1.5D(*)	Vc	101	101	101	101	101	101	101	101	101
					fz	0.034	0.038	0.050	0.063	0.069	0.076	0.083	0.089	0.101
					RPM	5358	4019	3215	2679	2296	2009	1786	1607	1286
					FEED	911	764	804	844	792	764	741	715	649
	6-7		0.3D	1.5D(*)	Vc	144	144	144	144	144	144	144	144	144
					fz	0.034	0.038	0.050	0.063	0.069	0.076	0.083	0.089	0.101
					RPM	7639	5730	4584	3820	3274	2865	2546	2292	1833
					FEED	1299	1089	1146	1203	1130	1089	1057	1020	926
	8-9		0.3D	1.5D(*)	Vc	101	101	101	101	101	101	101	101	101
					fz	0.034	0.038	0.050	0.063	0.069	0.076	0.083	0.089	0.101
					RPM	5358	4019	3215	2679	2296	2009	1786	1607	1286
					FEED	911	764	804	844	792	764	741	715	649
	10-11.1	High alloyed steel, and tool steel	0.3D	1.5D(*)	Vc	60	60	60	60	60	60	60	60	60
					fz	0.024	0.027	0.035	0.044	0.049	0.054	0.058	0.062	0.071
					RPM	3183	2387	1910	1592	1364	1194	1061	955	764
					FEED	382	322	334	350	334	322	308	296	271
M	12-13	Stainless steel	0.3D	1.5D(*)	Vc	117	117	117	117	117	117	117	117	117
					fz	0.024	0.025	0.030	0.046	0.051	0.054	0.057	0.061	0.071
					RPM	6207	4655	3724	3104	2660	2328	2069	1862	1490
					FEED	745	582	559	714	678	628	590	568	529
	14.1		0.3D	1.5D(*)	Vc	82	82	82	82	82	82	82	82	82
					fz	0.030	0.032	0.038	0.063	0.065	0.069	0.070	0.076	0.088
					RPM	4350	3263	2610	2175	1864	1631	1450	1305	1044
					FEED	653	522	496	685	606	563	508	496	459
	14.2		0.3D	1.5D(*)	Vc	59	59	59	59	59	59	59	59	59
					fz	0.030	0.032	0.038	0.063	0.065	0.069	0.070	0.076	0.088
					RPM	3130	2348	1878	1565	1341	1174	1043	939	751
					FEED	470	376	357	493	436	405	365	357	331
K	15-20	Grey cast iron	0.3D	1.5D(*)	Vc	106	106	106	106	106	106	106	106	106
					fz	0.043	0.048	0.063	0.079	0.087	0.096	0.103	0.111	0.126
					RPM	5623	4218	3374	2812	2410	2109	1874	1687	1350
					FEED	1209	1012	1063	1111	1048	1012	965	936	850
S	31-35	Heat Resistant Super Alloys	0.1D	1.5D	Vc	31	31	31	31	31	31	31	31	31
					fz	0.021	0.022	0.027	0.044	0.046	0.048	0.049	0.053	0.062
					RPM	1645	1233	987	822	705	617	548	493	395
					FEED	173	136	133	181	162	148	134	131	122
	36-37	Titanium Alloys	0.3D	1.5D(*)	Vc	69	69	69	69	69	69	69	69	69
					fz	0.027	0.029	0.034	0.057	0.059	0.062	0.063	0.069	0.079
					RPM	3661	2745	2196	1830	1569	1373	1220	1098	879
					FEED	494	398	373	522	463	426	384	379	347

* Maximum recommended depth shown.
* Finish cuts typically require reduced feed rates and/or higher spindle speed, with radial width of 2% x D1 or less.
* Reduce speed and feed recommendations for materials harder than listed.
* Above recommendations are based on ideal conditions.
  Adjust parameters accordingly for smaller taper machining centers or less rigid conditions.



CARBIDE
HSS
CBN END MILLS
i-Xmill END MILLS
i-SMART MODULAR END MILLS
X1-EH 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
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

TitaNox-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

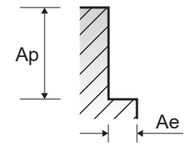
GMG24 | GMG26 | GMG25 | GMG27

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	18.0	20.0	25.0
P	1-4	Non-alloy steel	0.3D	1.5D(*)	Vc	144	144	144	144	144	144	144	144	144
					fz	0.034	0.038	0.050	0.063	0.069	0.076	0.083	0.089	0.101
					RPM	7639	5730	4584	3820	3274	2865	2546	2292	1833
					FEED	1299	1089	1146	1203	1130	1089	1057	1020	926
	5	Low alloy steel	0.3D	1.5D(*)	Vc	101	101	101	101	101	101	101	101	101
					fz	0.034	0.038	0.050	0.063	0.069	0.076	0.083	0.089	0.101
					RPM	5358	4019	3215	2679	2296	2009	1786	1607	1286
					FEED	911	764	804	844	792	764	741	715	649
	6-7		0.3D	1.5D(*)	Vc	144	144	144	144	144	144	144	144	144
					fz	0.034	0.038	0.050	0.063	0.069	0.076	0.083	0.089	0.101
					RPM	7639	5730	4584	3820	3274	2865	2546	2292	1833
					FEED	1299	1089	1146	1203	1130	1089	1057	1020	926
	8-9		0.3D	1.5D(*)	Vc	101	101	101	101	101	101	101	101	101
					fz	0.034	0.038	0.050	0.063	0.069	0.076	0.083	0.089	0.101
					RPM	5358	4019	3215	2679	2296	2009	1786	1607	1286
					FEED	911	764	804	844	792	764	741	715	649
	10-11.1	High alloyed steel, and tool steel	0.3D	1.5D(*)	Vc	60	60	60	60	60	60	60	60	60
					fz	0.024	0.027	0.035	0.044	0.049	0.054	0.058	0.062	0.071
					RPM	3183	2387	1910	1592	1364	1194	1061	955	764
					FEED	382	322	334	350	334	322	308	296	271
M	12-13	Stainless steel	0.3D	1.5D(*)	Vc	117	117	117	117	117	117	117	117	117
					fz	0.024	0.025	0.030	0.046	0.051	0.054	0.057	0.061	0.071
					RPM	6207	4655	3724	3104	2660	2328	2069	1862	1490
					FEED	745	582	559	714	678	628	590	568	529
	14.1		0.3D	1.5D(*)	Vc	82	82	82	82	82	82	82	82	82
					fz	0.030	0.032	0.038	0.063	0.065	0.069	0.070	0.076	0.088
					RPM	4350	3263	2610	2175	1864	1631	1450	1305	1044
					FEED	653	522	496	685	606	563	508	496	459
	14.2		0.3D	1.5D(*)	Vc	59	59	59	59	59	59	59	59	59
					fz	0.030	0.032	0.038	0.063	0.065	0.069	0.070	0.076	0.088
					RPM	3130	2348	1878	1565	1341	1174	1043	939	751
					FEED	470	376	357	493	436	405	365	357	331
K	15-20	Grey cast iron	0.3D	1.5D(*)	Vc	106	106	106	106	106	106	106	106	106
					fz	0.043	0.048	0.063	0.079	0.087	0.096	0.103	0.111	0.126
					RPM	5623	4218	3374	2812	2410	2109	1874	1687	1350
					FEED	1209	1012	1063	1111	1048	1012	965	936	850
S	31-35	Heat Resistant Super Alloys	0.1D	1.5D	Vc	31	31	31	31	31	31	31	31	31
					fz	0.021	0.022	0.027	0.044	0.046	0.048	0.049	0.053	0.062
					RPM	1645	1233	987	822	705	617	548	493	395
					FEED	173	136	133	181	162	148	134	131	122
	36-37	Titanium Alloys	0.3D	1.5D(*)	Vc	69	69	69	69	69	69	69	69	69
					fz	0.027	0.029	0.034	0.057	0.059	0.062	0.063	0.069	0.079
					RPM	3661	2745	2196	1830	1569	1373	1220	1098	879
					FEED	494	398	373	522	463	426	384	379	347

* Maximum recommended depth shown.
* Finish cuts typically require reduced feed rates and/or higher spindle speed, with radial width of 2% x D1 or less.
* Reduce speed and feed recommendations for materials harder than listed.
* Above recommendations are based on ideal conditions.
  Adjust parameters accordingly for smaller taper machining centers or less rigid conditions.



EHE54, EHE55

5 FLUTE ROUGHING - SIDE CUTTING

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
M	12-13	Stainless steel	~Ø10/0.15D ~Ø16/0.10D ~Ø25/0.05D	1.5D	Vc	80	80	80	80	80	80	80	80
					fz	0.025	0.034	0.041	0.051	0.057	0.063	0.081	0.091
					RPM	4244	3183	2546	2122	1819	1592	1273	1019
					FEED	531	541	522	541	518	501	516	463
S	31-35	Heat Resistant Super Alloys	0.05D	1.0D	Vc	40	40	40	40	40	40	40	40
					fz	0.020	0.025	0.037	0.040	0.046	0.052	0.061	0.068
					RPM	2122	1592	1273	1061	909	796	637	509
					FEED	212	199	236	212	209	207	194	173
	36-37	Titanium Alloys	~Ø10/0.15D ~Ø16/0.10D ~Ø25/0.05D	1.5D	Vc	65	65	65	65	65	65	65	65
					fz	0.022	0.031	0.038	0.046	0.052	0.058	0.074	0.084
					RPM	3448	2586	2069	1724	1478	1293	1035	828
					FEED	379	401	393	397	384	375	383	348

Global Cutting Tool Leader **YG-1**

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