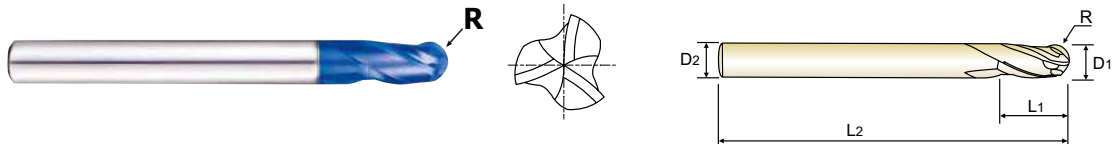




CARBIDE, 3 FLUTE BALL NOSE - Center Match

- **VOLLHARTMETALL, 3 SCHNEIDEN STIRNRADIUS - Schneiden Mittelpunkt**
- **Fraise carbure, 3 dents, hémisphérique, coupe au centre**
- **3 TAGLIENTI, SEMISFERICA**

- ▶ Designed to machine high hardened materials.
 - ▶ Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
 - ▶ Excellent workpiece finish.
 - ▶ Designed for high precision milling operation.
 - ▶ Higher wear-resistance.
- ▶ Geeignet zum Fräsen hochgehärteter Stähle.
 - ▶ Geeignet zum Trockenfräsen und HSC-Fräsen dank neuentwickeltem Material und Beschichtung.
 - ▶ Excellente Werkstückoberflächen.
 - ▶ Geeignet für hochpräzises Fräsen.
 - ▶ Höhere Verschleißfestigkeit.



CARBIDE 3 BLUE 30° R ±0.005 R ±0.010 PLAIN P.144

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D1	D2	L1	L2
G8A59030	R1.5	3.0	6	8	60
G8A59040	R2.0	4.0	6	8	70
G8A59050	R2.5	5.0	6	10	80
G8A59060	R3.0	6.0	6	12	90
G8A59080	R4.0	8.0	8	14	100
G8A59100	R5.0	10.0	10	18	100
G8A59120	R6.0	12.0	12	22	110
G8A59160	R8.0	16.0	16	30	140
G8A59200	R10.0	20.0	20	38	160

Due to the characteristics of the blue decoration layer, it might be erased during short term use and the color layer might not be uniformed. However, it doesn't affect the performance of the tool.

Size	Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to R3	± 0.005	0 ~ - 0.012	h5
over R3	± 0.010	0 ~ - 0.015	

◎ : 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	42	55			
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																		◎	◎	○	◎	

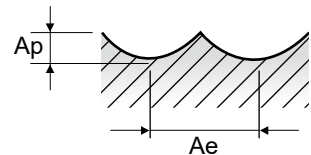


RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDPARAMETER

G8A59 SERIES **3 FLUTE BALL NOSE**

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

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)									
						3.0	4.0	5.0	6.0	8.0	10.0	12.0	16.0	20.0	
P	5	Non-alloy steel	0.05D	0.02D	Vc	300	305	315	340	340	340	340	335	340	
					fz	0.09	0.107	0.121	0.159	0.181	0.202	0.225	0.229	0.222	
					RPM	31831	24271	20054	18038	13528	10823	9019	6665	5411	
	8-9	Low alloy steel	0.05D	0.02D	Vc	300	305	315	340	340	340	340	335	340	
					fz	0.09	0.107	0.121	0.159	0.181	0.202	0.225	0.229	0.222	
					RPM	31831	24271	20054	18038	13528	10823	9019	6665	5411	
	11.1 - 11.2	High alloyed steel, and tool steel	0.05D	0.02D	Vc	300	305	315	340	340	340	340	335	340	
					fz	0.09	0.107	0.121	0.159	0.181	0.202	0.225	0.229	0.222	
					RPM	31831	24271	20054	18038	13528	10823	9019	6665	5411	
H	38.1 - 38.2	Hardened steel	0.05D	0.02D	Vc	255	255	265	285	285	285	285	285	285	
					fz	0.072	0.09	0.108	0.136	0.155	0.168	0.187	0.19	0.192	
					RPM	27056	20292	16870	15120	11340	9072	7560	5670	4536	
	39.1		0.05D	0.02D	Vc	185	185	195	230	230	230	230	230	230	
					fz	0.072	0.087	0.099	0.123	0.144	0.156	0.173	0.18	0.18	
					RPM	19629	14722	12414	12202	9151	7321	6101	4576	3661	
	39.2		0.05D	0.02D	Vc	175	180	185	210	210	210	210	210	205	
					fz	0.072	0.086	0.099	0.115	0.134	0.144	0.145	0.144	0.145	
					RPM	18568	14324	11777	11141	8356	6685	5570	4178	3263	
39.3	0.05D	0.02D	Vc	120	120	125	145	145	145	145	145	145			
			fz	0.072	0.087	0.099	0.108	0.125	0.144	0.144	0.144	0.143			
			RPM	12732	9549	7958	7692	5769	4615	3846	2885	2308			
40	Chilled Cast Iron	0.05D	0.02D	Vc	300	305	315	340	340	340	340	335	340		
				fz	0.09	0.107	0.121	0.159	0.181	0.202	0.225	0.229	0.222		
				RPM	31831	24271	20054	18038	13528	10823	9019	6665	5411		
41	Hardened Cast Iron	0.05D	0.02D	Vc	255	255	265	285	285	285	285	285	285		
				fz	0.072	0.09	0.108	0.136	0.155	0.168	0.187	0.19	0.192		
				RPM	27056	20292	16870	15120	11340	9072	7560	5670	4536		



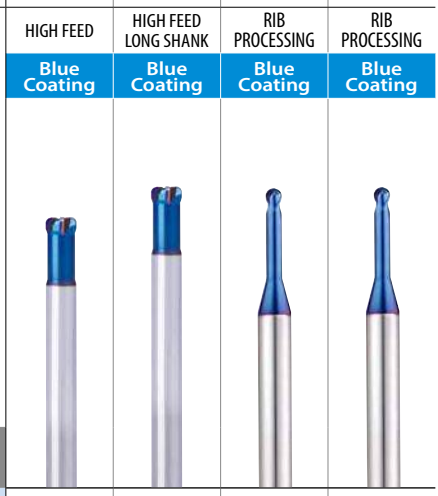
SELECTION GUIDE



SERIES	G8B59	G8B54	G8A46	G8A54
FLUTE	4	4	2	2
HELIX ANGLE	0°	0°	30°	30°
CUTTING EDGE SHAPE	CORNER RADIUS	CORNER RADIUS	BALL NOSE	BALL NOSE
SIZE MIN	D2.0	D2.0	R0.05	R0.25
SIZE MAX	D12.0	D16.0	R2.0	R1.0
PAGE	105	106	107	111

SOLID CARBIDE
X5070
END MILLS

High Hardened Steels HRc45 to HRc70,
High Speed Machining, Dry Cutting



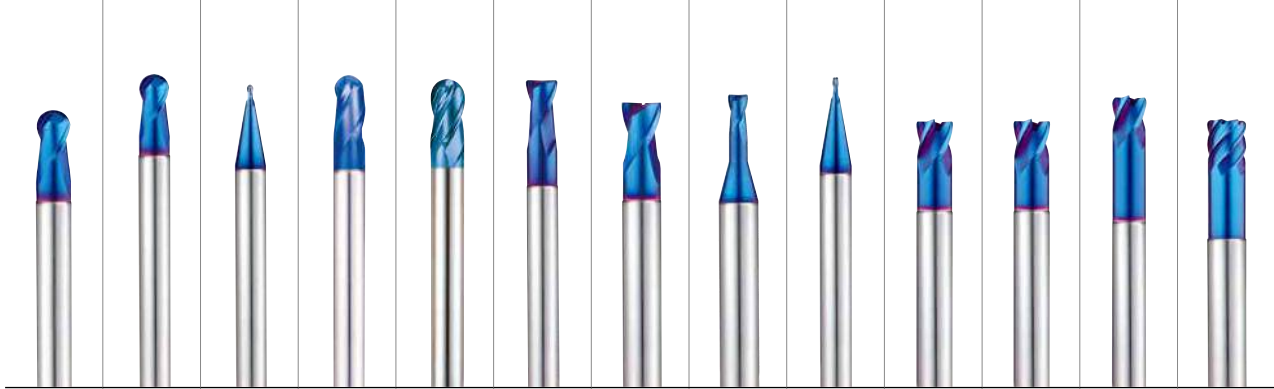
Please visit
globalyg1.com/mat
for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : P 139

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	Malleable cast iron	Ferritic	130					
20	Pearlitic		230	21					
N	21	Aluminum-wrought alloy	Not Curable	60					
	22		Curable Hardened	100					
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable	75					
	24		≤ 12% Si, Curable Hardened	90					
	25		> 12% Si, Not Curable	130					
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%	110					
	27		CuZn, CuSnZn (Brass)	90					
	28		CuSn, lead-free copper and electrolytic copper	100					
	29	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic						
	30		Rubber, Wood, etc.						
S	31	Heat Resistant Super Alloys	Fe Based	Annealed	200	15			
	32			Cured	280	30			
	33		Ni or Co Based	Annealed	250	25			
	34			Cured	350	38			
	35			Cast	320	34			
	36	Titanium Alloys	Pure Titanium	400 Rm					
37	Alpha + Beta Alloys		Hardened	1050 Rm					
H	38	Hardened steel	Hardened	550	55	◎	◎	◎	◎
	39		Hardened	630	60	◎	◎	◎	◎
	40	Chilled Cast Iron	Cast	400	42	○	○	○	○
	41	Hardened Cast Iron	Hardened	550	55	◎	◎	◎	◎

G8A28	G8A38	G8A53	G8A59	G8D62	G8A60	G8A36	G8A52	G8A50	G8A47	G8A37	G8B08	G8A39
2	2	2	3	4	2	2	2	2	4	4	4	6
30°	30°	30°	30°	30°	30°	30°	30°	30°	30°	30°	30°	45°
BALL NOSE	BALL NOSE	BALL NOSE	BALL NOSE	BALL NOSE	CORNER RADIUS	CORNER RADIUS	CORNER RADIUS	CORNER RADIUS	CORNER RADIUS	CORNER RADIUS	CORNER RADIUS	CORNER RADIUS
R0.05	R0.5	R0.2	R1.5	R1.5	D0.5	D0.3	D0.5	D0.3	D3.0	D1.0	D6.0	D6.0
R6.0	R12.5	R1.0	R10.0	R10.0	D12.0	D20.0	D2.0	D2.0	D12.0	D20.0	D12.0	D20.0
112	114	115	116	117	118	123	125	126	127	128	129	130
-	EXTENDED NECK	MINIATURE	Center Match	Center Match	RIB PROCESSING	EXTENDED NECK	RIB PROCESSING	MINIATURE	EXTENDED NECK	EXTENDED NECK	EXTENDED NECK	EXTENDED NECK
Blue Coating	Blue Coating	Blue Coating	Blue Coating	Blue Coating	Blue Coating	Blue Coating	Blue Coating	Blue Coating	Blue Coating	Blue Coating	Blue Coating	Blue Coating



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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