

YE-EV25 EUROPE



W/G **EV** MILLS

Economical High Performance
Solid Carbide End Mills

- Chatter free design for High-Speed Milling
- Short plain and from Flat adapted shank to save material
- Short 1xD Length-of-Cut to cover most applications and to maintain stability



EV MILLS

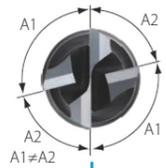
- Extremely stable due to short design addressing also the growing market of mill-turn machines
- Environmentally friendly design minimizes raw material and grinding costs
- Soft cut to support mill-turn machines as well driven units in lathe tooling
- Radius transition created between floor and wall (according DIN) with undersize end mills increases durability of machined shafts
- Instead of regrinding use a new EV MILL with 100% performance

PRODUCT FEATURES & LINE UP

Flute Type	End Mill Type	Dimensions		Features
		Ø	Length	
2 Flute	Ball Nose	Ø2mm - Ø12mm		Ensures smooth chip evacuation and easy programming
	Square			
3 Flute	Ball Nose	Ø1.8mm - Ø11.7mm		Low cutting forces and undersize corner radius diameters for key-way cutting
	Square			
	Corner Radius			
4 Flute	Ball Nose	Ø2mm - Ø12mm		Highest Metal Removal Rates and Tool life
	Square			

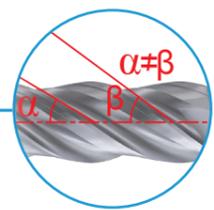
PRODUCT GEOMETRY

Unequal Index
Unique geometry applied to reduce vibration and also to achieve excellent chip evacuation for better surface finish



Enforced Cutting Edge
Increasing corner stability at square end mills to enable higher tool life

Ultra Fine Grain Carbide
Premium carbide substrate achieving exceptional wear resistance



Multiple Helix
For optimal chip formation and chip evacuation concluding faster and heavier cutting providing higher productivity

Adapted Flat and Straight Shank
Common clamping adaptors are applicable, only hydraulic chucks require use of a sleeve to avoid vibrations

CASE STUDY

TEST I Slotting

Ø10mm 3 Flute End Mill

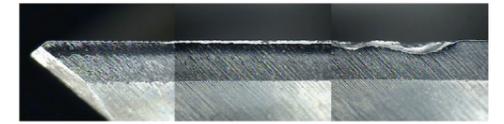
Cutting Condition

Tool	Ø10mm
Work Material	- DIN: C45 (1.0503) - JIS: S45C - AISI: 1045
RPM (rev./min.)	6,400 rev./min.
Feed (mm/min.)	1,150 mm/min.
Milling Depth (mm)	10.0mm (1xD) (Axial Depth) 10.0mm (1xD) (Radial Depth)
Coolant	Water Soluble
Machine	Machining Center

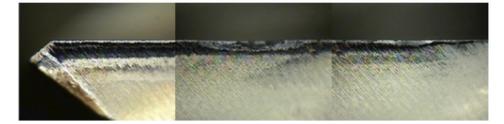
Wear after 21.4m in cut



Competitor 1



Competitor 2



TEST II SIDE MILLING

Ø10mm 3 Flute End Mill

Cutting Condition

Tool	Ø10mm
Work Material	- DIN: X2CrNiMo17-12-2 (1.4404) - JIS: SUS316L - AISI: 316L
RPM (rev./min.)	3,500 rev./min.
Feed (mm/min.)	630 mm/min.
Milling Depth (mm)	10.0mm (1xD) (Axial Depth) 5.0mm (0.5xD) (Radial Depth)
Coolant	Water Soluble
Machine	Machining Center

Wear after 8.4m in cut



(After Cutting 8.4m)



Competitor 1

(Broken At 3.2m)



Competitor 2

(After Cutting 8.4m)



GUIDE TO ICONS



The tool is made of Ultra Fine Grain carbide



No. of Flutes



Tolerance of Radius



Helix Angle



Type of Shank



Type of Coating



Cutting Conditions



Chamfer Angle

SERIES	GMK57	GMK62
FLUTE	2	3
HELIX ANGLE	30°	43°/45°/47° (MULTIPLE HELIX)
CUTTING EDGE SHAPE	BALL NOSE	BALL NOSE
SIZE MIN	R1.0	R1.0
SIZE MAX	R6.0	R6.0
PAGE	6	7



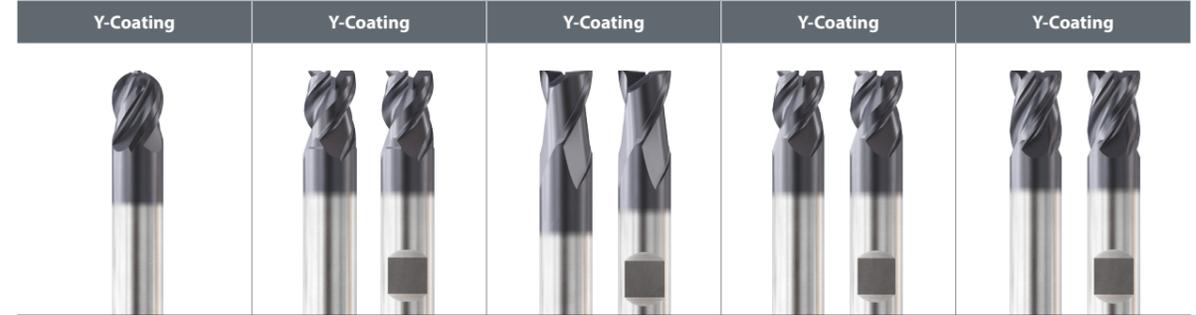
Please visit globalyg1.com/mat for material search

Recommended cutting conditions : p.13-24

◎ : Excellent ○ : Good

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc	GMK57	GMK62
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		Annealed	200	15	◎	◎
	11.1	High alloyed steel, and tool steel	Quenched & Tempered	325	35	◎	◎
11.2	Quenched & Tempered		409	44	◎	◎	
M	12	Stainless steel	Ferritic / Martensitic Annealed	200	15		○
	13		Martensitic Quenched & Tempered	240	23		○
	14.1		Austenitic	180	10		○
	14.2		PH Stainless steel	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			
	29.1	Non Metallic Materials	Duroplastic				
	29.2		GRAPHITE				
29.3	CFRP, GFRP						
30	Rubber, Wood, etc.						
S	31	Heat Resistant Super Alloys	Fe Based Annealed	200	15		○
	32		Fe Based Cured	280	30		○
	33		Fe Based Annealed	250	25		○
	34		Ni or Co Based Cured	350	38		○
	35		Ni or Co Based Cast	320	34		○
	36	Titanium Alloys	Pure Titanium	400 Rm			○
	37		Alpha + Beta Alloys Hardened	1050 Rm			○
H	38.1	Hardened steel	Hardened	421-469	45-49		
	38.2		Hardened	481-560	50-55		
	39.1		Hardened	577-654	56-60		
	39.2		Hardened	670-739	61-65		
	39.3	Hardened		66-70			
40	Chilled Cast Iron	Cast	400	42			
41	Hardened Cast Iron	Hardened	550	55			

GMK65	GMK60 GMK61	GMK55 GMK56	GMK58 GMK59	GMK63 GMK64
4	3	2	3	4
35°/37° (MULTIPLE HELIX)	43°/45°/47° (MULTIPLE HELIX)	30°	43°/45°/47° (MULTIPLE HELIX)	35°/37° (MULTIPLE HELIX)
BALL NOSE	CORNER RADIUS	SQUARE	SQUARE	SQUARE
R1.0	D1.8	D2.0	D2.0	D2.0
R6.0	D11.7	D12.0	D12.0	D12.0
8	9	10	11	12



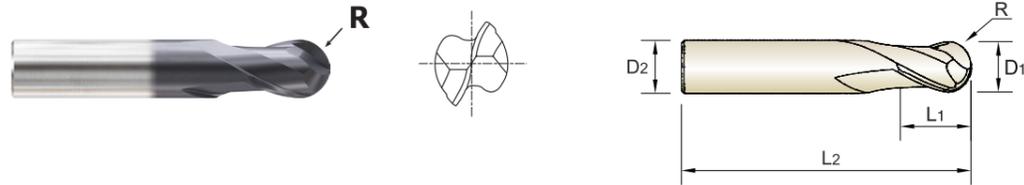
ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc	GMK65	GMK60 GMK61	GMK55 GMK56	GMK58 GMK59	GMK63 GMK64
P	1	Non-alloy steel	About 0.15% C Annealed	125		◎	◎	◎	◎	◎
	2		About 0.45% C Annealed	190	13	◎	◎	◎	◎	◎
	3		About 0.45% C Quenched & tempered	250	25	◎	◎	◎	◎	◎
	4		About 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		Annealed	200	15	◎	◎	◎	◎	◎
	11.1	High alloyed steel, and tool steel	Quenched & Tempered	325	35	◎	◎	◎	◎	◎
11.2	Quenched & Tempered		409	44	◎	◎	◎	◎	◎	
M	12	Stainless steel	Ferritic / Martensitic Annealed	200	15		○		○	
	13		Martensitic Quenched & Tempered	240	23		○		○	
	14.1		Austenitic	180	10		○		○	
	14.2		PH Stainless steel	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						
	29.1	Non Metallic Materials	Duroplastic							
	29.2		GRAPHITE							
29.3	CFRP, GFRP									
30	Rubber, Wood, etc.									
S	31	Heat Resistant Super Alloys	Fe Based Annealed	200	15		○		○	
	32		Fe Based Cured	280	30		○		○	
	33		Fe Based Annealed	250	25		○		○	
	34		Ni or Co Based Cured	350	38		○		○	
	35		Ni or Co Based Cast	320	34		○		○	
	36	Titanium Alloys	Pure Titanium	400 Rm			○		○	
	37		Alpha + Beta Alloys Hardened	1050 Rm			○		○	
H	38.1	Hardened steel	Hardened	421-469	45-49					
	38.2		Hardened	481-560	50-55					
	39.1		Hardened	577-654	56-60					
	39.2		Hardened	670-739	61-65					
	39.3	Hardened		66-70						
40	Chilled Cast Iron	Cast	400	42						
41	Hardened Cast Iron	Hardened	550	55						

**SOLID CARBIDE END MILLS
2 FLUTE BALL NOSE**

SERIES

PLAIN SHANK **GMK57**

- ▶ For precision finishing applications providing higher accuracy than 3&4 Flute Ball Nose tools
- ▶ Wide flutes allow for smooth chip evacuation
- ▶ Short overhang for applications on Mill-Turn machines or with Driven Tooling at Lathes



EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D ₁	D ₂	L ₁	L ₂
GMK57020	R1.0	2.0	6	4.5	38
GMK57030	R1.5	3.0	6	5.5	38
GMK57040	R2.0	4.0	6	7.5	43
GMK57050	R2.5	5.0	6	9	43
GMK57060	R3.0	6.0	6	9	43
GMK57080	R4.0	8.0	8	12	50
GMK57100	R5.0	10.0	10	14	55
GMK57120	R6.0	12.0	12	16.5	60

Unit : mm

▶ Note: Use of hydraulic chucks requires reducer sleeves to ensure stable clamping

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	11.1	11.2	12	13	14.1	14.2	15	16	17	18	19	20
HRc	13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

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	38.1	38.2	39.1	39.2	39.3	40	41
HRc	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

**SOLID CARBIDE END MILLS
3 FLUTE BALL NOSE**

SERIES

PLAIN SHANK **GMK62**

- ▶ For roughing and semi-finishing applications having one edge to center
- ▶ Smooth cutting action, unequal flute geometry and multiple helix eliminate vibrations
- ▶ Short overhang for applications on Mill-Turn machines or with Driven Tooling at Lathes



EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D ₁	D ₂	L ₁	L ₂
GMK62020	R1.0	2.0	6	4.5	38
GMK62030	R1.5	3.0	6	5.5	38
GMK62040	R2.0	4.0	6	7.5	38
GMK62050	R2.5	5.0	6	9	38
GMK62060	R3.0	6.0	6	9	38
GMK62080	R4.0	8.0	8	12	43
GMK62100	R5.0	10.0	10	14	50
GMK62120	R6.0	12.0	12	16.5	55

Unit : mm

▶ Note: Use of hydraulic chucks requires reducer sleeves to ensure stable clamping

Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
±0.020	0~-0.020	h5

◎ : Excellent ○ : Good

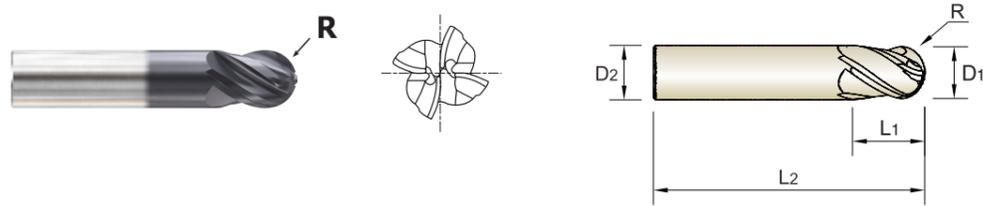
ISO Material Description	P										M				K								
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	14.2	15	16	17	18	19	20	
HRc	13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

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	38.1	38.2	39.1	39.2	39.3	40	41
HRc	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34			45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

**SOLID CARBIDE END MILLS
4 FLUTE BALL NOSE**

PLAIN SHANK **GMK65**

- For roughing and finishing applications having two edges to center
- Unequal flute geometry and multiple helix eliminate vibrations
- Excellent performance in Steels under HRC40 and other materials
- Short overhang for applications on Mill-Turn machines or with Driven Tooling at Lathes



CARBIDE 4 35°/37° ±0.020 PLAIN Y Coating p.16

D=Ø2, 37° HELIX Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut		Overall Length
	R	D ₁	D ₂	L ₁	L ₂	L ₂
GMK65020	R1.0	2.0	6	4.5	38	38
GMK65030	R1.5	3.0	6	5.5	38	38
GMK65040	R2.0	4.0	6	7.5	38	38
GMK65050	R2.5	5.0	6	9	38	38
GMK65060	R3.0	6.0	6	9	38	38
GMK65080	R4.0	8.0	8	12	43	43
GMK65100	R5.0	10.0	10	14	50	50
GMK65120	R6.0	12.0	12	16.5	55	55

► Note: Use of hydraulic chucks requires reducer sleeves to ensure stable clamping

Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
±0.020	0~-0.020	h5

◎ : 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	11.1	11.2	12	13	14.1	14.2	15	16	17	18	19	20
HRC	13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	10	26	3	25	41	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○	○

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	38.1	38.2	39.1	39.2	39.3	40	41
HRC	15	30	25	38	34	15	30	25	38	34	45-49	50-55	56-60	61-65	66-70	42	55	45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739	400	400	550
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

**SOLID CARBIDE END MILLS
3 FLUTE CORNER RADIUS for KEYWAY MILLING**

PLAIN SHANK **GMK60**
FLAT SHANK **GMK61**

- Special undersize design for key-way slots to comply with DIN 6885 while ramping, slotting and finishing with one tool
- Smooth cutting action, unequal flute geometry and multiple helix eliminate vibrations
- Short overhang for applications on Mill-Turn machines or with Driven Tooling at Lathes



CARBIDE 3 43°/45°/47° ±0.020 PLAIN FLAT Y Coating p.18

D<Ø3, 45° HELIX Unit : mm

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut		Overall Length
	R	D ₁	D ₂	L ₁	L ₂	L ₂
GMK60018	GMK61018	R0.12	1.8	6	4.5	38
GMK60028	GMK61028	R0.12	2.8	6	5.5	38
GMK60038	GMK61038	R0.2	3.8	6	7.5	38
GMK60048	GMK61048	R0.2	4.8	6	9	38
GMK600575	GMK610575	R0.2	5.8	6	9	38
GMK600775	GMK610775	R0.2	7.8	8	12	43
GMK60097	GMK61097	R0.33	9.7	10	14	50
GMK60117	GMK61117	R0.33	11.7	12	16.5	55

► Note: Use of hydraulic chucks requires reducer sleeves to ensure stable clamping

Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
±0.020	0~-0.020	h5

◎ : Excellent ○ : Good

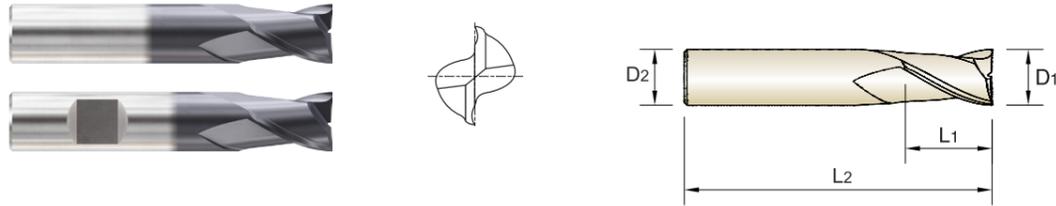
ISO Material Description	P										M				K								
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron				
VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	14.2	15	16	17	18	19	20	
HRC	13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	10	26	3	25	41	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○	○	○

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	38.1	38.2	39.1	39.2	39.3	40	41
HRC	15	30	25	38	34	15	30	25	38	34	45-49	50-55	56-60	61-65	66-70	42	55	45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739	400	400	550
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

**SOLID CARBIDE END MILLS
2 FLUTE SQUARE**

SERIES
PLAIN SHANK **GMK55**
FLAT SHANK **GMK56**

- ▶ Wide flutes allow for smooth chip evacuation with difficult to machine materials
- ▶ Short overhang and lower cutting forces for applications on Mill-Turn machines or with Driven Tooling at Lathes

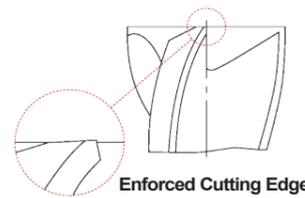


Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	D ₁	D ₂	L ₁	L ₂
GMK55020	GMK56020	2.0	6	4.5	38
GMK55030	GMK56030	3.0	6	5.5	38
GMK55040	GMK56040	4.0	6	7.5	43
GMK55050	GMK56050	5.0	6	9	43
GMK55060	GMK56060	6.0	6	9	43
GMK55080	GMK56080	8.0	8	12	50
GMK55100	GMK56100	10.0	10	14	55
GMK55120	GMK56120	12.0	12	16.5	60

▶ Note: Use of hydraulic chucks requires reducer sleeves to ensure stable clamping

Size	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	0~-0.012	h5
over Ø6	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	11.1	11.2	12	13	14.1	14.2	15	16	17	18	19	20
HRc	13	25	28	32	38	40	29	32	38	15	35	44	15	23	10	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

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	38.1	38.2	39.1	39.2	39.3	40	41
HRc	15	30	25	38	34						45-49	50-55	56-60	61-65	66-70	42	55						40	41
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

**SOLID CARBIDE END MILLS
3 FLUTE SQUARE**

SERIES
PLAIN SHANK **GMK58**
FLAT SHANK **GMK59**

- ▶ For roughing and finishing applications having one edge to center
- ▶ Unequal flute geometry and multiple helix eliminate vibrations
- ▶ Excellent performance in Steels under HRC40 and other materials
- ▶ Short overhang for applications on Mill-Turn machines or with Driven Tooling at Lathes



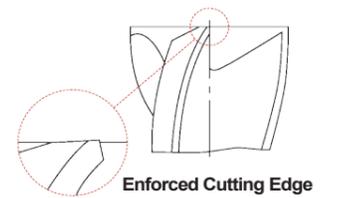
Unit : mm

D=Ø2, 45° HELIX

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	D ₁	D ₂	L ₁	L ₂
GMK58020	GMK59020	2.0	6	4.5	38
GMK58030	GMK59030	3.0	6	5.5	38
GMK58040	GMK59040	4.0	6	7.5	38
GMK58050	GMK59050	5.0	6	9	38
GMK58060	GMK59060	6.0	6	9	38
GMK58080	GMK59080	8.0	8	12	43
GMK58100	GMK59100	10.0	10	14	50
GMK58120	GMK59120	12.0	12	16.5	55

▶ Note: Use of hydraulic chucks requires reducer sleeves to ensure stable clamping

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-0.020	h5



◎ : Excellent ○ : Good

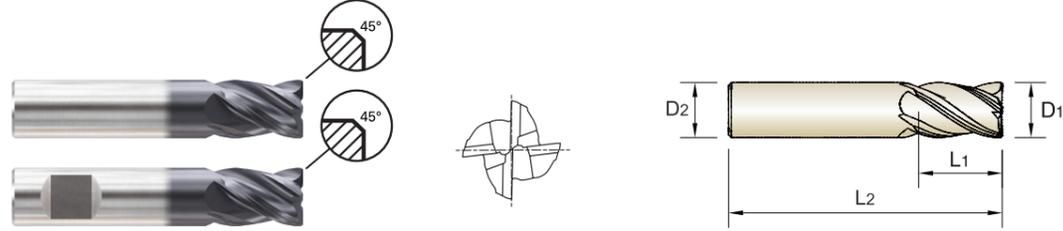
ISO Material Description	P										M				K								
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	14.2	15	16	17	18	19	20	
HRc	13	25	28	32	38	15	29	32	38	15	35	44	15	23	10	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

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	38.1	38.2	39.1	39.2	39.3	40	41
HRc	15	30	25	38	34						45-49	50-55	56-60	61-65	66-70	42	55						40	41
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739		400	550
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

**SOLID CARBIDE END MILLS
4 FLUTE SQUARE**

- For roughing and finishing applications having two edges to center
- Unequal flute geometry and multiple helix eliminate vibrations
- Excellent performance in Steels under HRC40 and other materials
- Short overhang for applications on Mill-Turn machines or with Driven Tooling at Lathes

SERIES
PLAIN SHANK **GMK63**
FLAT SHANK **GMK64**

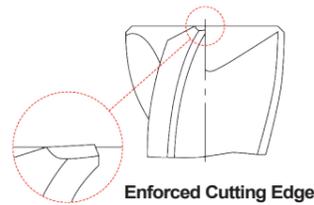


D=Ø2, 37° HELIX Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Chamfer Size
PLAIN	FLAT	D ₁	D ₂	L ₁	L ₂	
GMK63020	GMK64020	2.0	6	4.5	38	0.1
GMK63030	GMK64030	3.0	6	5.5	38	0.1
GMK63040	GMK64040	4.0	6	7.5	38	0.15
GMK63050	GMK64050	5.0	6	9	38	0.15
GMK63060	GMK64060	6.0	6	9	38	0.2
GMK63080	GMK64080	8.0	8	12	43	0.2
GMK63100	GMK64100	10.0	10	14	50	0.3
GMK63120	GMK64120	12.0	12	16.5	55	0.35

► Note: Use of hydraulic chucks requires reducer sleeves to ensure stable clamping

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-0.020	h5

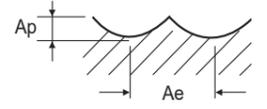


◎ : Excellent ○ : Good

ISO	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			
Material Description	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14.1	14.2	15	16	17	18	19	20
VDI 3323	13	25	28	32	10	29	32	38	15	35	44	15	23	10	10	10	26	3	25			
HRC	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	180	260	160	250	130	230
HB	125	190	250	270	300	180	275	300	350	200	325	409	200	240	180	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO	N										S							H						
	Aluminum-wrought alloy		Aluminum-cast alloy		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel				Chilled Cast Iron	Hardened Cast Iron			
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1	38.2	39.1	39.2	39.3	40	41
HRC	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	45-49	50-55	56-60	61-65	66-70	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	421-469	481-560	577-654	670-739	400	400	550
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

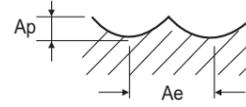
RECOMMENDED CUTTING CONDITIONS



GMK57 SERIES

2 FLUTE BALL NOSE

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)									
						2	3	4	5	6	8	10	12		
P	1	Non-alloy steel	0.2D	0.1D	Vc	87	119	128	140	155	175	194	213		
					fz	0.026	0.026	0.035	0.045	0.060	0.090	0.120	0.150		
					RPM	13850	12630	10190	8910	8220	6960	6180	5650		
					FEED	720	660	710	800	990	1250	1480	1700		
					Vc	87	119	128	140	155	175	194	213		
					fz	0.026	0.026	0.035	0.045	0.060	0.090	0.120	0.150		
	RPM		13850	12630	10190	8910	8220	6960	6180	5650					
	FEED		720	660	710	800	990	1250	1480	1700					
	Vc		87	119	128	140	155	175	194	213					
	fz		0.026	0.026	0.035	0.045	0.060	0.090	0.120	0.150					
	RPM		13850	12630	10190	8910	8220	6960	6180	5650					
	FEED		720	660	710	800	990	1250	1480	1700					
Vc	87	119	128	140	155	175	194	213							
fz	0.026	0.026	0.035	0.045	0.060	0.090	0.120	0.150							
RPM	13850	12630	10190	8910	8220	6960	6180	5650							
FEED	720	660	710	800	990	1250	1480	1700							
Vc	65	91	103	112	126	141	155	170							
fz	0.026	0.026	0.035	0.045	0.060	0.090	0.120	0.150							
RPM	10350	9660	8200	7130	6680	5610	4930	4510							
FEED	540	500	570	640	800	1010	1180	1350							
Vc	87	119	128	140	155	175	194	213							
fz	0.026	0.026	0.035	0.045	0.060	0.090	0.120	0.150							
RPM	13850	12630	10190	8910	8220	6960	6180	5650							
FEED	720	660	710	800	990	1250	1480	1700							
Vc	87	119	128	140	155	175	194	213							
fz	0.026	0.026	0.035	0.045	0.060	0.090	0.120	0.150							
RPM	13850	12630	10190	8910	8220	6960	6180	5650							
FEED	720	660	710	800	990	1250	1480	1700							
Vc	65	91	103	112	126	141	155	170							
fz	0.026	0.026	0.035	0.045	0.060	0.090	0.120	0.150							
RPM	10350	9660	8200	7130	6680	5610	4930	4510							
FEED	540	500	570	640	800	1010	1180	1350							
Vc	65	91	103	112	126	141	155	170							
fz	0.026	0.026	0.035	0.045	0.060	0.090	0.120	0.150							
RPM	10350	9660	8200	7130	6680	5610	4930	4510							
FEED	540	500	570	640	800	1010	1180	1350							
Vc	87	119	128	140	155	175	194	213							
fz	0.026	0.026	0.035	0.045	0.060	0.090	0.120	0.150							
RPM	13850	12630	10190	8910	8220	6960	6180	5650							
FEED	720	660	710	800	990	1250	1480	1700							
Vc	65	91	103	112	126	141	155	170							
fz	0.026	0.026	0.035	0.045	0.060	0.090	0.120	0.150							
RPM	10350	9660	8200	7130	6680	5610	4930	4510							
FEED	540	500	570	640	800	1010	1180	1350							
Vc	28	42	51	56	58	60	62	64							
fz	0.026	0.026	0.035	0.045	0.060	0.090	0.120	0.150							
RPM	4460	4460	4060	3570	3080	2390	1970	1700							
FEED	230	230	280	320	370	430	470	510							



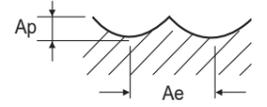
Vc = m/min. fz = mm/tooth
RPM = rev./min. FEED = mm/min.

GMK62 SERIES

3 FLUTE BALL NOSE

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)							
						2	3	4	5	6	8	10	12
P	1	Non-alloy steel	0.5D	0.8D	Vc	162	162	162	162	162	162	162	162
					fz	0.022	0.025	0.027	0.030	0.040	0.060	0.065	0.070
					RPM	25783	17189	12892	10313	8594	6446	5157	4297
	2		0.5D	0.8D	FEED	1702	1289	1044	928	1031	1160	1006	902
					Vc	162	162	162	162	162	162	162	162
					fz	0.022	0.025	0.027	0.030	0.040	0.060	0.065	0.070
	3		0.5D	0.8D	RPM	25783	17189	12892	10313	8594	6446	5157	4297
					FEED	1702	1289	1044	928	1031	1160	1006	902
					Vc	162	162	162	162	162	162	162	162
	4		0.5D	0.8D	fz	0.022	0.025	0.027	0.030	0.040	0.060	0.065	0.070
					RPM	25783	17189	12892	10313	8594	6446	5157	4297
FEED		1702			1289	1044	928	1031	1160	1006	902		
5	0.5D	0.8D	Vc	113	113	113	113	113	113	113	113		
			fz	0.022	0.025	0.027	0.030	0.040	0.060	0.065	0.070		
			RPM	17985	11990	8992	7194	5995	4496	3597	2997		
6	0.5D	0.8D	FEED	1187	899	728	647	719	809	701	629		
			Vc	162	162	162	162	162	162	162	162		
			fz	0.022	0.025	0.027	0.030	0.040	0.060	0.065	0.070		
7	0.5D	0.8D	RPM	25783	17189	12892	10313	8594	6446	5157	4297		
			FEED	1702	1289	1044	928	1031	1160	1006	902		
			Vc	162	162	162	162	162	162	162	162		
8	0.5D	0.8D	fz	0.022	0.025	0.027	0.030	0.040	0.060	0.065	0.070		
			RPM	25783	17189	12892	10313	8594	6446	5157	4297		
			FEED	1702	1289	1044	928	1031	1160	1006	902		
9	0.5D	0.8D	Vc	113	113	113	113	113	113	113	113		
			fz	0.022	0.025	0.027	0.030	0.040	0.060	0.065	0.070		
			RPM	17985	11990	8992	7194	5995	4496	3597	2997		
10	0.5D	0.8D	FEED	1187	899	728	647	719	809	701	629		
			Vc	68	68	68	68	68	68	68	68		
			fz	0.014	0.017	0.019	0.021	0.028	0.042	0.045	0.049		
11.1	0.5D	0.8D	RPM	10823	7215	5411	4329	3608	2706	2165	1804		
			FEED	455	368	308	273	303	341	292	265		
			Vc	68	68	68	68	68	68	68	68		
12	0.5D	0.8D	fz	0.013	0.015	0.015	0.025	0.03	0.04	0.045	0.05		
			RPM	12255	8170	6127	4902	4085	3064	2451	2042		
			FEED	478	368	276	368	368	331	331	306		
13	0.5D	0.8D	Vc	77	77	77	77	77	77	77	77		
			fz	0.013	0.015	0.015	0.025	0.03	0.04	0.045	0.05		
			RPM	12255	8170	6127	4902	4085	3064	2451	2042		
14.1	0.5D	0.8D	FEED	478	368	276	368	368	331	331	306		
			Vc	85	85	85	85	85	85	85	85		
			fz	0.015	0.02	0.02	0.025	0.041	0.045	0.05	0.055		
14.2	0.5D	0.8D	RPM	13528	9019	6764	5411	4509	3382	2706	2255		
			FEED	609	541	406	406	555	457	406	372		
			Vc	77	77	77	77	77	77	77	77		
	0.5D	0.8D	fz	0.015	0.02	0.02	0.025	0.041	0.045	0.05	0.055		
			RPM	12255	8170	6127	4902	4085	3064	2451	2042		
			FEED	551	490	368	368	502	414	368	337		

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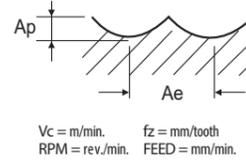


Vc = m/min. fz = mm/tooth
RPM = rev./min. FEED = mm/min.

GMK62 SERIES

3 FLUTE BALL NOSE

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)							
						2	3	4	5	6	8	10	12
K	15	Grey cast iron	0.5D	0.8D	Vc	119	119	119	119	119	119	119	119
					fz	0.028	0.031	0.033	0.037	0.05	0.074	0.081	0.087
					RPM	18939	12626	9470	7576	6313	4735	3788	3157
	16		0.5D	0.8D	FEED	1591	1174	938	841	947	1051	920	824
					Vc	119	119	119	119	119	119	119	119
					fz	0.028	0.031	0.033	0.037	0.05	0.074	0.081	0.087
	17		0.5D	0.8D	RPM	18939	12626	9470	7576	6313	4735	3788	3157
					FEED	1591	1174	938	841	947	1051	920	824
					Vc	119	119	119	119	119	119	119	119
	18		0.5D	0.8D	fz	0.028	0.031	0.033	0.037	0.05	0.074	0.081	0.087
					RPM	18939	12626	9470	7576	6313	4735	3788	3157
					FEED	1591	1174	938	841	947	1051	920	824
19	0.5D	0.8D	Vc	119	119	119	119	119	119	119	119		
			fz	0.028	0.031	0.033	0.037	0.05	0.074	0.081	0.087		
			RPM	18939	12626	9470	7576	6313	4735	3788	3157		
20	0.5D	0.8D	FEED	1591	1174	938	841	947	1051	920	824		
			Vc	119	119	119	119	119	119	119	119		
			fz	0.028	0.031	0.033	0.037	0.05	0.074	0.081	0.087		
31	0.2D	Heat Resistant Super Alloys	0.3D	Vc	21	21	21	21	21	21	21	21	
				fz	0.01	0.014	0.014	0.017	0.028	0.031	0.035	0.038	
				RPM	3342	2228	1671	1337	1114	836	668	557	
32	0.2D		0.3D	FEED	100	94	70	68	94	78	70	63	
				Vc	21	21	21	21	21	21	21	21	
				fz	0.01	0.014	0.014	0.017	0.028	0.031	0.035	0.038	
33	0.2D		0.3D	RPM	3342	2228	1671	1337	1114	836	668	557	
				FEED	100	94	70	68	94	78	70	63	
				Vc	21	21	21	21	21	21	21	21	
34	0.2D		0.3D	fz	0.01	0.014	0.014	0.017	0.028	0.031	0.035	0.038	
				RPM	3342	2228	1671	1337	1114	836	668	557	
				FEED	100	94	70	68	94	78	70	63	
35	0.2D	0.3D	Vc	21	21	21	21	21	21	21	21		
			fz	0.01	0.014	0.014	0.017	0.028	0.031	0.035	0.038		
			RPM	3342	2228	1671	1337	1114	836	668	557		
36	0.5D	0.3D	FEED	100	94	70	68	94	78	70	63		
			Vc	47	47	47	47	47	47	47	47		
			fz	0.014	0.018	0.018	0.022	0.037	0.040	0.045	0.049		
37	0.5D	0.3D	RPM	7480	4987	3740	2992	2493	1870	1496	1247		
			FEED	314	269	202	197	277	224	202	183		
			Vc	47	47	47	47	47	47	47	47		
	0.5D	0.3D	fz	0.014	0.018	0.018	0.022	0.037	0.040	0.045	0.049		
			RPM	7480	4987	3740	2992	2493	1870	1496	1247		
			FEED	314	269	202	197	277	224	202	183		

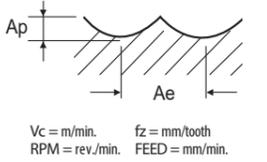


GMK65 SERIES

4 FLUTE BALL NOSE

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)							
						2	3	4	5	6	8	10	12
P	1	Non-alloy steel	0.5D	0.8D	Vc	162	162	162	162	162	162	162	162
					fz	0.022	0.025	0.027	0.030	0.040	0.060	0.065	0.070
					RPM	25783	17189	12892	10313	8594	6446	5157	4297
	2		0.5D	0.8D	Vc	162	162	162	162	162	162	162	162
					fz	0.022	0.025	0.027	0.030	0.040	0.060	0.065	0.070
					RPM	25783	17189	12892	10313	8594	6446	5157	4297
	3		0.5D	0.8D	Vc	162	162	162	162	162	162	162	162
					fz	0.022	0.025	0.027	0.030	0.040	0.060	0.065	0.070
					RPM	25783	17189	12892	10313	8594	6446	5157	4297
	4		0.5D	0.8D	Vc	162	162	162	162	162	162	162	162
					fz	0.022	0.025	0.027	0.030	0.040	0.060	0.065	0.070
RPM		25783			17189	12892	10313	8594	6446	5157	4297		
5	0.5D	0.8D	Vc	113	113	113	113	113	113	113	113		
			fz	0.022	0.025	0.027	0.030	0.040	0.060	0.065	0.070		
			RPM	17985	11990	8992	7194	5995	4496	3597	2997		
6	0.5D	0.8D	Vc	162	162	162	162	162	162	162	162		
			fz	0.022	0.025	0.027	0.030	0.040	0.060	0.065	0.070		
			RPM	25783	17189	12892	10313	8594	6446	5157	4297		
7	0.5D	0.8D	Vc	162	162	162	162	162	162	162	162		
			fz	0.022	0.025	0.027	0.030	0.040	0.060	0.065	0.070		
			RPM	25783	17189	12892	10313	8594	6446	5157	4297		
8	0.5D	0.8D	Vc	113	113	113	113	113	113	113	113		
			fz	0.022	0.025	0.027	0.030	0.040	0.060	0.065	0.070		
			RPM	17985	11990	8992	7194	5995	4496	3597	2997		
9	0.5D	0.8D	Vc	113	113	113	113	113	113	113	113		
			fz	0.022	0.025	0.027	0.030	0.040	0.060	0.065	0.070		
			RPM	17985	11990	8992	7194	5995	4496	3597	2997		
10	0.5D	0.8D	Vc	68	68	68	68	68	68	68	68		
			fz	0.014	0.017	0.019	0.021	0.028	0.042	0.045	0.049		
			RPM	10823	7215	5411	4329	3608	2706	2165	1804		
11.1	0.5D	0.8D	Vc	68	68	68	68	68	68	68	68		
			fz	0.014	0.017	0.019	0.021	0.028	0.042	0.045	0.049		
			RPM	10823	7215	5411	4329	3608	2706	2165	1804		
M	12	Stainless steel	0.5D	0.8D	Vc	77	77	77	77	77	77	77	77
					fz	0.013	0.015	0.015	0.025	0.03	0.04	0.045	0.05
					RPM	12255	8170	6127	4902	4085	3064	2451	2042
	13		0.5D	0.8D	Vc	77	77	77	77	77	77	77	77
					fz	0.013	0.015	0.015	0.025	0.03	0.04	0.045	0.05
					RPM	12255	8170	6127	4902	4085	3064	2451	2042
	14.1		0.5D	0.8D	Vc	85	85	85	85	85	85	85	85
					fz	0.015	0.02	0.02	0.025	0.041	0.045	0.05	0.055
					RPM	13528	9019	6764	5411	4509	3382	2706	2255
	14.2		0.5D	0.8D	Vc	77	77	77	77	77	77	77	77
					fz	0.015	0.02	0.02	0.025	0.041	0.045	0.05	0.055
					RPM	12255	8170	6127	4902	4085	3064	2451	2042

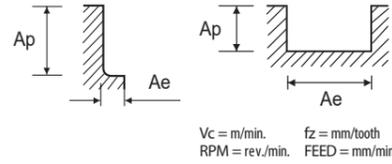
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GMK65 SERIES

4 FLUTE BALL NOSE

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)							
						2	3	4	5	6	8	10	12
K	15	Grey cast iron	0.5D	0.8D	Vc	119	119	119	119	119	119	119	119
					fz	0.028	0.031	0.033	0.037	0.05	0.074	0.081	0.087
					RPM	18939	12626	9470	7576	6313	4735	3788	3157
	16		0.5D	0.8D	Vc	119	119	119	119	119	119	119	119
					fz	0.028	0.031	0.033	0.037	0.05	0.074	0.081	0.087
					RPM	18939	12626	9470	7576	6313	4735	3788	3157
	17		0.5D	0.8D	Vc	119	119	119	119	119	119	119	119
					fz	0.028	0.031	0.033	0.037	0.05	0.074	0.081	0.087
					RPM	18939	12626	9470	7576	6313	4735	3788	3157
	18		0.5D	0.8D	Vc	119	119	119	119	119	119	119	119
					fz	0.028	0.031	0.033	0.037	0.05	0.074	0.081	0.087
					RPM	18939	12626	9470	7576	6313	4735	3788	3157
19	0.5D	0.8D	Vc	119	119	119	119	119	119	119	119		
			fz	0.028	0.031	0.033	0.037	0.05	0.074	0.081	0.087		
			RPM	18939	12626	9470	7576	6313	4735	3788	3157		
20	0.5D	0.8D	Vc	119	119	119	119	119	119	119	119		
			fz	0.028	0.031	0.033	0.037	0.05	0.074	0.081	0.087		
			RPM	18939	12626	9470	7576	6313	4735	3788	3157		
S	31	Heat Resistant Super Alloys	0.2D	0.3D	Vc	21	21	21	21	21	21	21	21
					fz	0.010	0.014	0.014	0.017	0.028	0.031	0.035	0.038
					RPM	3342	2228	1671	1337	1114	836	668	557
	32		0.2D	0.3D	Vc	21	21	21	21	21	21	21	21
					fz	0.010	0.014	0.014	0.017	0.028	0.031	0.035	0.038
					RPM	3342	2228	1671	1337	1114	836	668	557
	33		0.2D	0.3D	Vc	21	21	21	21	21	21	21	21
					fz	0.010	0.014	0.014	0.017	0.028	0.031	0.035	0.038
					RPM	3342	2228	1671	1337	1114	836	668	557
	34		0.2D	0.3D	Vc	21	21	21	21	21	21	21	21
					fz	0.010	0.014	0.014	0.017	0.028	0.031	0.035	0.038
					RPM	3342	2228	1671	1337	1114	836	668	557
35	0.2D	0.3D	Vc	21	21	21	21	21	21	21	21		
			fz	0.010	0.014	0.014	0.017	0.028	0.031	0.035	0.038		
			RPM	3342	2228	1671	1337	1114	836	668	557		
36	0.5D	0.3D	Vc	47	47	47	47	47	47	47	47		
			fz	0.014	0.018	0.018	0.022	0.037	0.040	0.045	0.049		
			RPM	7480	4987	3740	2992	2493	1870	1496	1247		
37	0.5D	0.3D	Vc	47	47	47	47	47	47	47	47		
			fz	0.014	0.018	0.018	0.022	0.037	0.040	0.045	0.049		
			RPM	7480	4987	3740	2992	2493	1870	1496	1247		

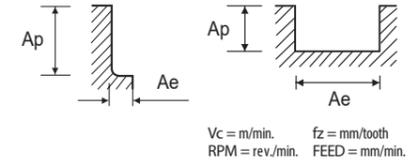


GMK60, GMK61 SERIES

3 FLUTE CORNER RADIUS - SIDE CUTTING & SLOTTING

ISO	VDI 3323	Material Description	Side		Slotting		Parameter	Diameter (Ø)							
			Ae	Ap	Ae	Ap		1.8	2.8	3.8	4.8	5.75	7.75	9.7	11.7
P	1	Non-alloy steel	0.5D	1.0D	1.0D	0.8D	Vc	152	152	152	152	152	152	168	168
							fz	0.003	0.005	0.008	0.011	0.016	0.027	0.038	0.047
							RPM	26880	17280	12732	10080	8414	6243	5513	4571
							FEED	242	259	306	333	404	506	628	645
	2		0.5D	1.0D	1.0D	0.8D	Vc	152	152	152	152	152	152	168	168
							fz	0.003	0.005	0.008	0.011	0.016	0.027	0.038	0.047
							RPM	26880	17280	12732	10080	8414	6243	5513	4571
							FEED	242	259	306	333	404	506	628	645
3	0.5D	1.0D	1.0D	0.8D	Vc	152	152	152	152	152	152	168	168		
					fz	0.003	0.005	0.008	0.011	0.016	0.027	0.038	0.047		
					RPM	26880	17280	12732	10080	8414	6243	5513	4571		
					FEED	242	259	306	333	404	506	628	645		
4	0.5D	1.0D	1.0D	0.8D	Vc	152	152	152	152	152	152	168	168		
					fz	0.003	0.005	0.008	0.011	0.016	0.027	0.038	0.047		
					RPM	26880	17280	12732	10080	8414	6243	5513	4571		
					FEED	242	259	306	333	404	506	628	645		
5	0.5D	1.0D	1.0D	0.8D	Vc	107	107	107	107	107	107	117	117		
					fz	0.003	0.005	0.008	0.011	0.016	0.027	0.038	0.047		
					RPM	18922	12164	8963	7096	5923	4395	3839	3183		
					FEED	170	182	215	234	284	356	438	449		
6	0.5D	1.0D	1.0D	0.8D	Vc	152	152	152	152	152	152	168	168		
					fz	0.003	0.005	0.008	0.011	0.016	0.027	0.038	0.047		
					RPM	26880	17280	12732	10080	8414	6243	5513	4571		
					FEED	242	259	306	333	404	506	628	645		
7	0.5D	1.0D	1.0D	0.8D	Vc	152	152	152	152	152	152	168	168		
					fz	0.003	0.005	0.008	0.011	0.016	0.027	0.038	0.047		
					RPM	26880	17280	12732	10080	8414	6243	5513	4571		
					FEED	242	259	306	333	404	506	628	645		
8	0.5D	1.0D	1.0D	0.8D	Vc	107	107	107	107	107	107	117	117		
					fz	0.003	0.005	0.008	0.011	0.016	0.027	0.038	0.047		
					RPM	18922	12164	8963	7096	5923	4395	3839	3183		
					FEED	170	182	215	234	284	356	438	449		
9	0.5D	1.0D	1.0D	0.8D	Vc	107	107	107	107	107	107	117	117		
					fz	0.003	0.005	0.008	0.011	0.016	0.027	0.038	0.047		
					RPM	18922	12164	8963	7096	5923	4395	3839	3183		
					FEED	170	182	215	234	284	356	438	449		
10	0.5D	1.0D	1.0D	0.8D	Vc	64	64	64	64	64	64	70	70		
					fz	0.001	0.003	0.006	0.008	0.011	0.019	0.027	0.032		
					RPM	11318	7276	5361	4244	3543	2629	2297	1904		
					FEED	34	65	96	102	117	150	186	183		
11.1	0.5D	1.0D	1.0D	0.8D	Vc	64	64	64	64	64	64	70	70		
					fz	0.001	0.003	0.006	0.008	0.011	0.019	0.027	0.032		
					RPM	11318	7276	5361	4244	3543	2629	2297	1904		
					FEED	34	65	96	102	117	150	186	183		
M	12	Stainless steel	0.5D	1.0D	1.0D	0.8D	Vc	148	148	148	148	148	148	148	148
							fz	0.002	0.004	0.006	0.009	0.013	0.022	0.034	0.039
							RPM	26172	16825	12397	9815	8193	6079	4857	4026
							FEED	157	202	223	265	320	401	495	471
	13		0.5D	1.0D	1.0D	0.8D	Vc	148	148	148	148	148	148	148	148
							fz	0.002	0.004	0.006	0.009	0.013	0.022	0.034	0.039
							RPM	26172	16825	12397	9815	8193	6079	4857	4026
							FEED	157	202	223	265	320	401	495	471
14.1	0.5D	1.0D	1.0D	0.8D	Vc	106	106	106	106	106	106	106	106		
					fz	0.003	0.005	0.008	0.013	0.018	0.028	0.048	0.055		
					RPM	18745	12050	8879	7029	5868	4354	3478	2884		
					FEED	169	181	213	274	317	366	501	476		
14.2	0.5D	1.0D	1.0D	0.8D	Vc	95	95	95	95	95	95	95	95		
					fz	0.003	0.005	0.008	0.013	0.018	0.028	0.048	0.055		
					RPM	16800	10800	7958	6300	5259	3902	3117	2585		
					FEED	151	162	191	246	284	328	449	427		

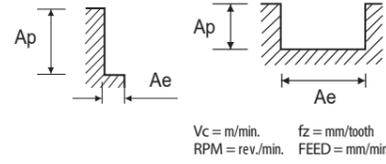
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GMK60, GMK61 SERIES

3 FLUTE CORNER RADIUS - SIDE CUTTING & SLOTTING

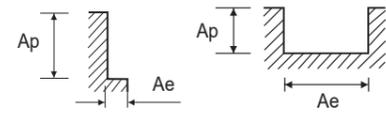
ISO	VDI 3323	Material Description	Side		Slotting		Parameter	Diameter (Ø)							
			Ae	Ap	Ae	Ap		1.8	2.8	3.8	4.8	5.75	7.75	9.7	11.7
K	15	Grey cast iron	0.5D	1.0D	1.0D	0.8D	Vc	112	112	112	112	112	112	123	123
							fz	0.004	0.006	0.01	0.014	0.02	0.034	0.048	0.058
							RPM	19806	12732	9382	7427	6200	4600	4036	3346
							FEED	238	229	281	312	372	469	581	582
	16		0.5D	1.0D	1.0D	0.8D	Vc	112	112	112	112	112	112	123	123
							fz	0.004	0.006	0.01	0.014	0.02	0.034	0.048	0.058
							RPM	19806	12732	9382	7427	6200	4600	4036	3346
							FEED	238	229	281	312	372	469	581	582
17	0.5D	1.0D	1.0D	0.8D	Vc	112	112	112	112	112	112	123	123		
					fz	0.004	0.006	0.01	0.014	0.02	0.034	0.048	0.058		
					RPM	19806	12732	9382	7427	6200	4600	4036	3346		
					FEED	238	229	281	312	372	469	581	582		
18	0.5D	1.0D	1.0D	0.8D	Vc	112	112	112	112	112	112	123	123		
					fz	0.004	0.006	0.01	0.014	0.02	0.034	0.048	0.058		
					RPM	19806	12732	9382	7427	6200	4600	4036	3346		
					FEED	238	229	281	312	372	469	581	582		
19	0.5D	1.0D	1.0D	0.8D	Vc	112	112	112	112	112	112	123	123		
					fz	0.004	0.006	0.01	0.014	0.02	0.034	0.048	0.058		
					RPM	19806	12732	9382	7427	6200	4600	4036	3346		
					FEED	238	229	281	312	372	469	581	582		
20	0.5D	1.0D	1.0D	0.8D	Vc	112	112	112	112	112	112	123	123		
					fz	0.004	0.006	0.01	0.014	0.02	0.034	0.048	0.058		
					RPM	19806	12732	9382	7427	6200	4600	4036	3346		
					FEED	238	229	281	312	372	469	581	582		
S	31	Heat Resistant Super Alloys	0.25D	1D	1D	0.5D	Vc	26	26	26	26	26	26	26	26
							fz	0.003	0.005	0.007	0.008	0.012	0.019	0.033	0.038
							RPM	4598	2956	2178	1724	1439	1068	853	707
							FEED	41	44	46	41	52	61	84	81
	32		0.25D	1D	1D	0.5D	Vc	26	26	26	26	26	26	26	26
							fz	0.003	0.005	0.007	0.008	0.012	0.019	0.033	0.038
							RPM	4598	2956	2178	1724	1439	1068	853	707
							FEED	41	44	46	41	52	61	84	81
33	0.25D	1D	1D	0.5D	Vc	26	26	26	26	26	26	26	26		
					fz	0.003	0.005	0.007	0.008	0.012	0.019	0.033	0.038		
					RPM	4598	2956	2178	1724	1439	1068	853	707		
					FEED	41	44	46	41	52	61	84	81		
34	0.25D	1D	1D												



GMK58, GMK59 SERIES

3 FLUTE SQUARE - SIDE CUTTING & SLOTTING

ISO	VDI 3323	Material Description	Side		Slotting		Parameter	Diameter (Ø)																		
			Ae	Ap	Ae	Ap		2	3	4	5	6	8	10	12											
K	15	Grey cast iron	0.5D	1.0D	1.0D	0.8D	Vc	112	112	112	112	112	112	123	123											
							fz	0.004	0.006	0.01	0.014	0.02	0.034	0.048	0.058											
							RPM	17825	11884	8913	7130	5942	4456	3915	3263											
							FEED	214	214	267	299	357	455	564	568											
							Vc	112	112	112	112	112	112	123	123											
							fz	0.004	0.006	0.01	0.014	0.02	0.034	0.048	0.058											
	16	Grey cast iron	0.5D	1.0D	1.0D	0.8D	Vc	112	112	112	112	112	112	123	123											
							fz	0.004	0.006	0.01	0.014	0.02	0.034	0.048	0.058											
							RPM	17825	11884	8913	7130	5942	4456	3915	3263											
							FEED	214	214	267	299	357	455	564	568											
							Vc	112	112	112	112	112	112	123	123											
							fz	0.004	0.006	0.01	0.014	0.02	0.034	0.048	0.058											
17	Nodular cast iron	0.5D	1.0D	1.0D	0.8D	Vc	112	112	112	112	112	112	123	123												
						fz	0.004	0.006	0.01	0.014	0.02	0.034	0.048	0.058												
						RPM	17825	11884	8913	7130	5942	4456	3915	3263												
						FEED	214	214	267	299	357	455	564	568												
						Vc	112	112	112	112	112	112	123	123												
						fz	0.004	0.006	0.01	0.014	0.02	0.034	0.048	0.058												
18	Nodular cast iron	0.5D	1.0D	1.0D	0.8D	Vc	112	112	112	112	112	112	123	123												
						fz	0.004	0.006	0.01	0.014	0.02	0.034	0.048	0.058												
						RPM	17825	11884	8913	7130	5942	4456	3915	3263												
						FEED	214	214	267	299	357	455	564	568												
						Vc	112	112	112	112	112	112	123	123												
						fz	0.004	0.006	0.01	0.014	0.02	0.034	0.048	0.058												
19	Malleable cast iron	0.5D	1.0D	1.0D	0.8D	Vc	112	112	112	112	112	112	123	123												
						fz	0.004	0.006	0.01	0.014	0.02	0.034	0.048	0.058												
						RPM	17825	11884	8913	7130	5942	4456	3915	3263												
						FEED	214	214	267	299	357	455	564	568												
						Vc	112	112	112	112	112	112	123	123												
						fz	0.004	0.006	0.01	0.014	0.02	0.034	0.048	0.058												
20	Malleable cast iron	0.5D	1.0D	1.0D	0.8D	Vc	112	112	112	112	112	112	123	123												
						fz	0.004	0.006	0.01	0.014	0.02	0.034	0.048	0.058												
						RPM	17825	11884	8913	7130	5942	4456	3915	3263												
						FEED	214	214	267	299	357	455	564	568												
						Vc	112	112	112	112	112	112	123	123												
						fz	0.004	0.006	0.01	0.014	0.02	0.034	0.048	0.058												
S	31	Heat Resistant Super Alloys	0.25D	1D	1D	0.5D	Vc	26	26	26	26	26	26	26	26											
							fz	0.003	0.005	0.007	0.008	0.012	0.019	0.033	0.038											
							RPM	4138	2759	2069	1655	1379	1035	828	690											
							FEED	37	41	43	40	50	59	82	79											
							Vc	26	26	26	26	26	26	26	26											
							fz	0.003	0.005	0.007	0.008	0.012	0.019	0.033	0.038											
	32	Heat Resistant Super Alloys	0.25D	1D	1D	0.5D	Vc	26	26	26	26	26	26	26	26											
							fz	0.003	0.005	0.007	0.008	0.012	0.019	0.033	0.038											
							RPM	4138	2759	2069	1655	1379	1035	828	690											
							FEED	37	41	43	40	50	59	82	79											
							Vc	26	26	26	26	26	26	26	26											
							fz	0.003	0.005	0.007	0.008	0.012	0.019	0.033	0.038											
33	Heat Resistant Super Alloys	0.25D	1D	1D	0.5D	Vc	26	26	26	26	26	26	26	26												
						fz	0.003	0.005	0.007	0.008	0.012	0.019	0.033	0.038												
						RPM	4138	2759	2069	1655	1379	1035	828	690												
						FEED	37	41	43	40	50	59	82	79												
						Vc	26	26	26	26	26	26	26	26												
						fz	0.003	0.005	0.007	0.008	0.012	0.019	0.033	0.038												
34	Heat Resistant Super Alloys	0.25D	1D	1D	0.5D	Vc	26	26	26	26	26	26	26	26												
						fz	0.003	0.005	0.007	0.008	0.012	0.019	0.033	0.038												
						RPM	4138	2759	2069	1655	1379	1035	828	690												
						FEED	37	41	43	40	50	59	82	79												
						Vc	26	26	26	26	26	26	26	26												
						fz	0.003	0.005	0.007	0.008	0.012	0.019	0.033	0.038												
35	Heat Resistant Super Alloys	0.25D	1D	1D	0.5D	Vc	26	26	26	26	26	26	26	26												
						fz	0.003	0.005	0.007	0.008	0.012	0.019	0.033	0.038												
						RPM	4138	2759	2069	1655	1379	1035	828	690												
						FEED	37	41	43	40	50	59	82	79												
						Vc	26	26	26	26	26	26	26	26												
						fz	0.003	0.005	0.007	0.008	0.012	0.019	0.033	0.038												
36	Titanium Alloys	0.35D	1D	1D	0.5D	Vc	58	58	58	58	58	58	58	58												
						fz	0.002	0.004	0.007	0.011	0.016	0.025	0.042	0.050												
						RPM	9231	6154	4615	3692	3077	2308	1846	1538												
						FEED	55	74	97	122	148	173	233	231												
						Vc	58	58	58	58	58	58	58	58												
						fz	0.002	0.004	0.007	0.011	0.016	0.025	0.042	0.050												
37	Titanium Alloys	0.35D	1D	1D	0.5D	Vc	58	58	58	58	58	58	58	58												
						fz	0.002	0.004	0.007	0.011	0.016	0.025	0.042	0.050												
						RPM	9231	6154	4615	3692	3077	2308	1846	1538												
						FEED	55	74	97	122	148	173	233	231												
						Vc	58	58	58	58	58	58	58	58												
						fz	0.002	0.004	0.007	0.011	0.016	0.025	0.042	0.050												



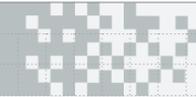
Vc = m/min. fz = mm/tooth
RPM = rev./min. FEED = mm/min.

GMK63, GMK64 SERIES

4 FLUTE SQUARE - SIDE CUTTING & SLOTTING

ISO	VDI 3323	Material Description	Side		Slotting		Parameter	Diameter (Ø)							
			Ae	Ap	Ae	Ap		2	3	4	5	6	8	10	12
K	15	Grey cast iron	0.5D	1.0D	1.0D	0.8D	Vc	112	112	112	112	112	112	123	123
							fz	0.004	0.006	0.01	0.014	0.02	0.034	0.048	0.058
							RPM	17825	11884	8913	7130	5942	4456	3915	3263
							FEED	285	285	357	399	475	606	752	757
							Vc	112	112	112	112	112	112	123	123
							fz	0.004	0.006	0.01	0.014	0.02	0.034	0.048	0.058
	16	Grey cast iron	0.5D	1.0D	1.0D	0.8D	Vc	112	112	112	112	112	112	123	123
							fz	0.004	0.006	0.01	0.014	0.02	0.034	0.048	0.058
							RPM	17825	11884	8913	7130	5942	4456	3915	3263
							FEED	285	285	357	399	475	606	752	757
							Vc	112	112	112	112	112	112	123	123
							fz	0.004	0.006	0.01	0.014	0.02	0.034	0.048	0.058
17	Nodular cast iron	0.5D	1.0D	1.0D	0.8D	Vc	112	112	112	112	112	112	123	123	
						fz	0.004	0.006	0.01	0.014	0.02	0.034	0.048	0.058	
						RPM	17825	11884	8913	7130	5942	4456	3915	3263	
						FEED	285	285	357	399	475	606	752	757	
						Vc	112	112	112	112	112	112	123	123	
						fz	0.004	0.006	0.01	0.014	0.02	0.034	0.048	0.058	
18	Nodular cast iron	0.5D	1.0D	1.0D	0.8D	Vc	112	112	112	112	112	112	123	123	
						fz	0.004	0.006	0.01	0.014	0.02	0.034	0.048	0.058	
						RPM	17825	11884	8913	7130	5942	4456	3915	3263	
						FEED	285	285	357	399	475	606	752	757	
						Vc	112	112	112	112	112	112	123	123	
						fz	0.004	0.006	0.01	0.014	0.02	0.034	0.048	0.058	
19	Malleable cast iron	0.5D	1.0D	1.0D	0.8D	Vc	112	112	112	112	112	112	123	123	
						fz	0.004	0.006	0.01	0.014	0.02	0.034	0.048	0.058	
						RPM	17825	11884	8913	7130	5942	4456	3915	3263	
						FEED	285	285	357	399	475	606	752	757	
						Vc	112	112	112	112	112	112	123	123	
						fz	0.004	0.006	0.01	0.014	0.02	0.034	0.048	0.058	
20	Malleable cast iron	0.5D	1.0D	1.0D	0.8D	Vc	112	112	112	112	112	112	123	123	
						fz	0.004	0.006	0.01	0.014	0.02	0.034	0.048	0.058	
						RPM	17825	11884	8913	7130	5942	4456	3915	3263	
						FEED	285	285	357	399	475	606	752	757	
						Vc	112	112	112	112	112	112	123	123	
						fz	0.004	0.006	0.01	0.014	0.02	0.034	0.048	0.058	
S	31	Heat Resistant Super Alloys	0.25D	1D	1D	0.5D	Vc	26	26	26	26	26	26	26	26
							fz	0.003	0.005	0.007	0.008	0.012	0.019	0.033	0.038
							RPM	4138	2759	2069	1655	1379	1035	828	690
							FEED	50	55	58	53	66	79	109	105
							Vc	26	26	26	26	26	26	26	26
							fz	0.003	0.005	0.007	0.008	0.012	0.019	0.033	0.038
	32	Heat Resistant Super Alloys	0.25D	1D	1D	0.5D	Vc	26	26	26	26	26	26	26	26
							fz	0.003	0.005	0.007	0.008	0.012	0.019	0.033	0.038
							RPM	4138	2759	2069	1655	1379	1035	828	690
							FEED	50	55	58	53	66	79	109	105
							Vc	26	26	26	26	26	26	26	26
							fz	0.003	0.005	0.007	0.008	0.012	0.019	0.033	0.038
33	Heat Resistant Super Alloys	0.25D	1D	1D	0.5D	Vc	26	26	26	26	26	26	26	26	
						fz	0.003	0.005	0.007	0.008	0.012	0.019	0.033	0.038	
						RPM	4138	2759	2069	1655	1379	1035	828	690	
						FEED	50	55	58	53	66	79	109	105	
						Vc	26	26	26	26	26	26	26	26	
						fz	0.003	0.005	0.007	0.008	0.012	0.019	0.033	0.038	
34	Heat Resistant Super Alloys	0.25D	1D	1D	0.5D	Vc	26	26	26	26	26	26	26	26	
						fz	0.003	0.005	0.007	0.008	0.012	0.019	0.033	0.038	
						RPM	4138	2759	2069	1655	1379	1035	828	690	
						FEED	50	55	58	53	66	79	109	105	
						Vc	26	26	26	26	26	26	26	26	
						fz	0.003	0.005	0.007	0.008	0.012	0.019	0.033	0.038	
35	Heat Resistant Super Alloys	0.25D	1D	1D	0.5D	Vc	26	26	26	26	26	26	26	26	
						fz	0.003	0.005	0.007	0.008	0.012	0.019	0.033	0.038	
						RPM	4138	2759	2069	1655	1379	1035	828	690	
						FEED	50	55	58	53	66	79	109	105	
						Vc	26	26	26	26	26	26	26	26	
						fz	0.003	0.005	0.007	0.008	0.012	0.019	0.033	0.038	
36	Titanium Alloys	0.35D	1D	1D	0.5D	Vc	58	58	58	58	58	58	58	58	
						fz	0.002	0.004	0.007	0.011	0.016	0.025	0.042	0.050	
						RPM	9231	6154	4615	3692	3077	2308	1846	1538	
						FEED	74	98	129	162	197	231	310	308	
						Vc	58	58	58	58	58	58	58	58	
						fz	0.002	0.004	0.007	0.011	0.016	0.025	0.042	0.050	
37	Titanium Alloys	0.35D	1D	1D	0.5D	Vc	58	58	58	58	58	58	58	58	
						fz	0.002	0.004	0.007	0.011	0.016	0.025	0.042	0.050	
						RPM	9231	6154	4615	3692	3077	2308	1846	1538	
						FEED	74	98	129	162	197	231	310	308	
						Vc	58	58	58	58	58	58	58	58	
						fz	0.002	0.004	0.007	0.011	0.016	0.025	0.042	0.050	

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