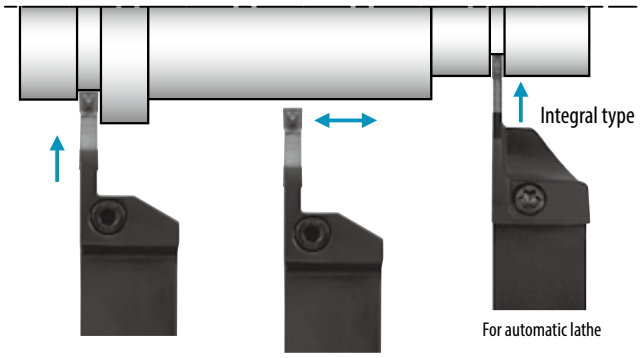
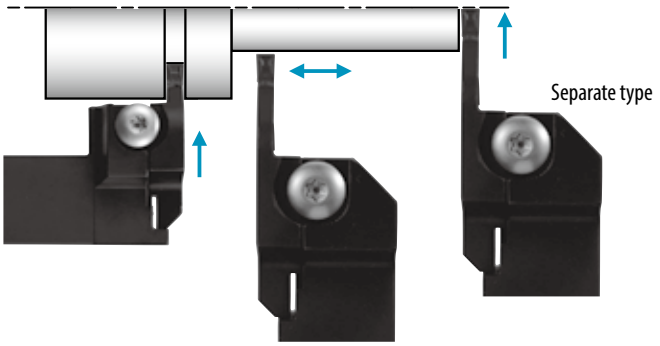
G

KGD Grooving (External grooving & turning)





· Integral type

Type	KGD
Edge width (mm)	2.0 ~ 8.0
Max. grooving depth (mm)	6 ~ 30
See Page	**G34**

· Integral type (Coolant-through holders)

Type	KGD-JCTM
Edge width (mm)	3.0 ~ 5.0
Max. grooving depth (mm)	6 ~ 25
See Page	**G39**

· Integral type for automatic lathe

Type	KGD
Edge width (mm)	2.0 ~ 4.0
Max. grooving depth (mm)	10 ~ 25.5
See Page	**G35**

· Integral type for automatic lathe (Coolant-through holders)

Type	KGD-JCTM
Edge width (mm)	2.0 ~ 4.0
Max. grooving depth (mm)	12 ~ 16
See Page	**G38**

· Separate type

Type	*KGDS-S
Edge width (mm)	3.0
Max. grooving depth (mm)	10
See Page	**G41**

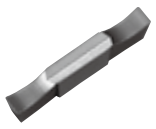
* The separate type toolholders can accept all the blades if their hand is matching.

· Separate type

Type	*KGD-S
Edge width (mm)	2.0 ~ 5.0
Max. grooving depth (mm)	10 ~ 25
See Page	**G40**

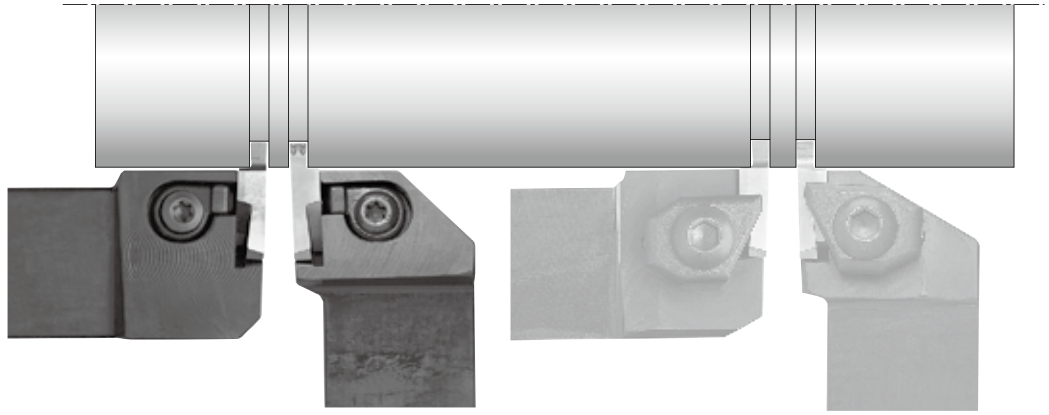
* The separate type toolholders can accept all the blades if their hand is matching.

Low cutting force	Low feed	General purpose	High feed	Copying
GS	GL	GM	PH	CM





Shallow grooving (Grooving depth: ~5 mm)



Type	KGBAS	KGBA (-JCT)	KGBS	KGB
Edge width (mm)	0.33 ~ 4.8	0.33 ~ 4.8	0.33 ~ 4.8	0.33 ~ 4.8
Max. grooving depth (mm)	0.8 ~ 5.0	0.8 ~ 5.0	0.8 ~ 5.0	0.8 ~ 5.0
See Page	**G14**	**G13,G15**	**G17**	**G16**

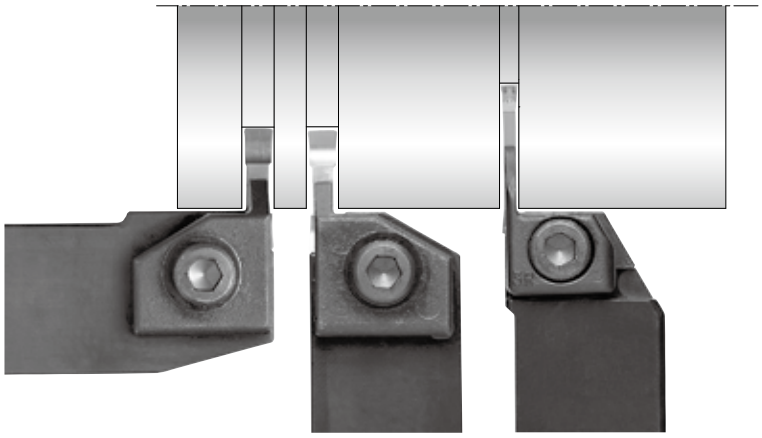
Ground chipbreaker | Ground chipbreaker Full-R | GM chipbreaker | MY chipbreaker

Edge shape	General (Square)	Full-R (Round)	GM chipbreaker	MY chipbreaker
				

* These shallow groove types of the previous system will be switched to the system on the left.

KGBS ⟶ KGBAS
KGB ⟶ KGBA

Deep grooving (Grooving depth : ~25 mm)



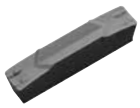
Type	KGHS	KGH	KGA
Edge Width (mm)	4.0 ~ 8.0	4.0 ~ 12.0	3.0 ~ 5.0
Max. grooving depth (mm)	13	13 ~ 17	20 ~ 25
See Page	**G63**	**G62**	**G64**

Ground chipbreaker | Molded chipbreaker | Molded chipbreaker

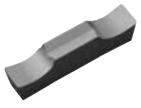
KGM Grooving (External grooving & turning)

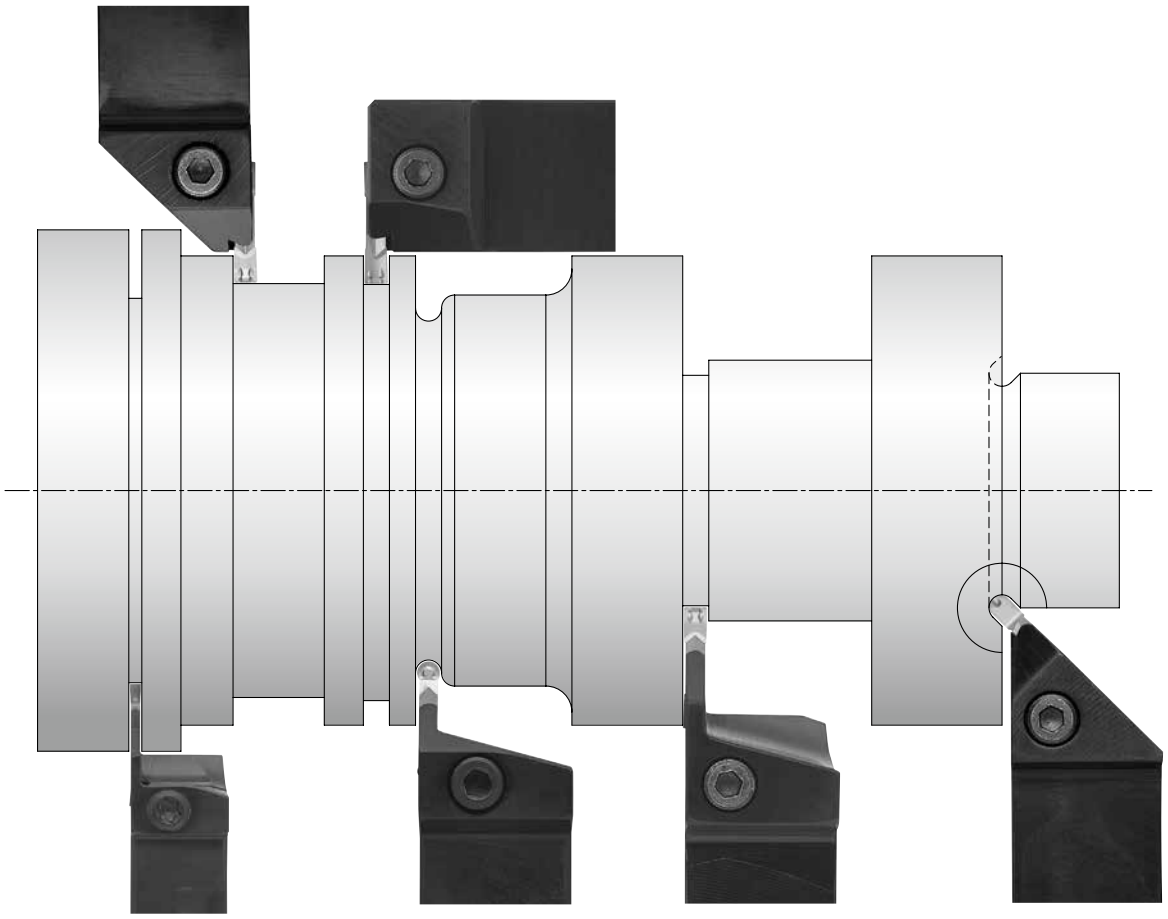
Type	KGMM
Edge width (mm)	3.0 ~ 5.0
Max. grooving depth (mm)	4.8
See Page	**G58**

KGMS
3.0 ~ 5.0
4.8
G58


Molded chipbreaker


Molded chipbreaker Full-R


Ground chipbreaker

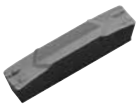


Type	KGM
Edge width (mm)	1.5 ~ 4.0
Max. grooving depth (mm)	10 ~ 16
See Page	**G55**

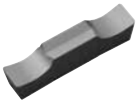
KGM
3.0 ~ 8.0
9 ~ 25
G56

KGM-T
2.0 ~ 6.0
17 ~ 30
G57

KGMU
3.0 ~ 5.0
3.5 ~ 4.5
G60


Molded chipbreaker


Molded chipbreaker Full-R


Ground chipbreaker


Deep grooving / Cut-off


Molded chipbreaker Full-R

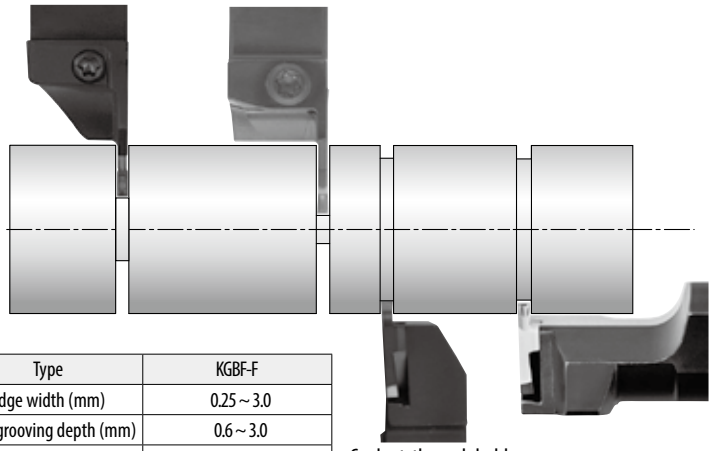
External grooving of precision parts for automatic lathe

Type	KGD
Edge width (mm)	2.0 ~ 4.0
Max. grooving depth (mm)	10 ~ 25.5
See Page	**G35**

· Coolant-through holders

Type	KGD-JCTM
Edge width (mm)	2.0 ~ 4.0
Max. grooving depth (mm)	12 ~ 16
See Page	**G38**

Type	KGM
Edge width (mm)	1.5 ~ 4.0
Max. grooving depth (mm)	10 ~ 16
See Page	**G55**



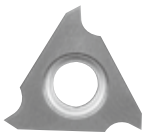
Molded chipbreaker

Ground chipbreaker

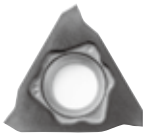
Type	KGBF-F
Edge width (mm)	0.25 ~ 3.0
Max. grooving depth (mm)	0.6 ~ 3.0
See Page	**G23**

· Coolant-through holders

Type	KGBFS	KGBF-JCTM	S-KGBF
Edge width (mm)	0.25 ~ 3.0	0.25 ~ 3.0	0.25 ~ 3.0
Max. grooving depth (mm)	0.6 ~ 3.0	0.6 ~ 3.0	0.6 ~ 3.0
See Page	**G25**	**G24**	**G26**



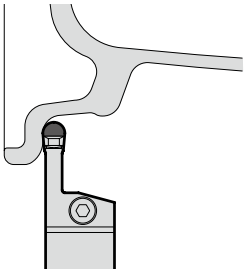
Ground chipbreaker



GL chipbreaker

For aluminum wheel external grooving

(External / Facing / Copying)

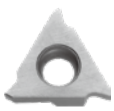


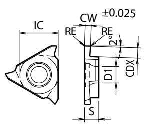
Type	KGMW
Edge width (mm)	6.0 ~ 8.0
Max. grooving depth (mm)	25
See Page	**G67**

1-edge
PCD

GBA32

Work material	PR1215	PR1625	PR905	PR930	KW10	PV7040	TN90	
Carbon steel / Alloy steel	●	◐		○		●		P
Stainless steel	●	◐		○				M
Cast iron	◐		○		○			K
Non-ferrous metals					◐			N
Titanium alloy					◐			S
Hard materials (~ 40HRC)	●			○				H
Hard materials (40HRC ~)								H





Description		No. of edges	CW	CDX	IC	S	D1	RE	CW min.	CW max.	PR1215 (Carbide PVD)	PR1625 (Carbide PVD)	PR905 (Carbide PVD)	PR930 (Carbide PVD)	KW10 (Carbide -)	PV7040 (Cermet PVD)	TN90 (Cermet -)	Applicable toolholder (→ G13~G17, G89)
GBA32R	033-005	3	0.33	0.8	9.525	3.18	4.4	0.05	- 0.03	+ 0.02		●						KGBAR…16, KGBAR…16JCT, KGBASL…16, KIGBAL…16
	050-005		0.5	1				0.05	0	+ 0.05					●		●	
				1.2							●	●		●				
	075-005		0.75	2				0.05	- 0.025	+ 0.025	●	●	●	●	●	●	●	
	095-005		0.95	2				0.05	- 0.025	+ 0.025	●	●		●	●		●	
	100-005		1	2				0.05	- 0.025	+ 0.025	●	●		●	●	●	●	
	110-005		1.1	2				0.05	- 0.025	+ 0.025		●	●					
	120-005		1.2	2				0.05	- 0.025	+ 0.025	●	●						
	125-020		1.25	2				0.2	- 0.025	+ 0.025	●	●		●	●	●	●	
	130-020		1.3	2				0.2	- 0.025	+ 0.025	●	●						
	140-020		1.4	2.5				0.2	- 0.025	+ 0.025	●	●	●					
	145-020		1.45	2				0.2	- 0.025	+ 0.025					●		●	
				2.5							●	●		●				
	150-020		1.5	2				0.2	- 0.025	+ 0.025					●	●	●	
				2.5							●	●		●				
	160-020		1.6	2.5				0.2	- 0.025	+ 0.025	●	●						
	170-020		1.7	2.5				0.2	- 0.025	+ 0.025	●	●						
	175-020		1.75	2				0.2	- 0.025	+ 0.025					●		●	
				2.5							●	●		●				
	200-020		2	2.5				0.2	- 0.025	+ 0.025	●	●	●	●	●	●	●	
	225-020		2.25	2.5				0.2	- 0.025	+ 0.025	●	●						
	250-020		2.5	2.5				0.2	- 0.025	+ 0.025	●	●		●	●		●	
	300-020		3	2.5				0.2	- 0.025	+ 0.025	●	●	●					
GBA32L	033-005		0.33	0.8				0.05	- 0.03	+ 0.02		●						KGBAL…16, KGBAL…16JCT, KGBASR…16, KIGBAR…16
	050-005		0.5	1				0.05	0	+ 0.05					●			
				1.2							●	●		●				
	075-005		0.75	2				0.05	- 0.025	+ 0.025	●	●		●	●	●		
	095-005		0.95	2				0.05	- 0.025	+ 0.025	●	●			●			
	100-005		1	2				0.05	- 0.025	+ 0.025	●	●		●	●	●	●	
	110-005		1.1	2				0.05	- 0.025	+ 0.025		●						
	120-005		1.2	2				0.05	- 0.025	+ 0.025	●	●						
	125-020		1.25	2				0.2	- 0.025	+ 0.025	●	●		●	●	●	●	
	130-020		1.3	2				0.2	- 0.025	+ 0.025	●	●						
	140-020		1.4	2.5				0.2	- 0.025	+ 0.025	●	●						
	145-020		1.45	2				0.2	- 0.025	+ 0.025					●			
				2.5							●	●		●				
	150-020		1.5	2				0.2	- 0.025	+ 0.025					●	●	●	
				2.5							●	●		●				
	160-020		1.6	2.5				0.2	- 0.025	+ 0.025	●	●						
	170-020		1.7	2.5				0.2	- 0.025	+ 0.025	●	●						
	175-020		1.75	2				0.2	- 0.025	+ 0.025					●		●	
				2.5							●	●		●				
	200-020		2	2.5				0.2	- 0.025	+ 0.025	●	●	●	●	●	●	●	
	225-020		2.25	2.5				0.2	- 0.025	+ 0.025	●	●						
	250-020		2.5	2.5				0.2	- 0.025	+ 0.025	●	●		●	●		●	
	300-020		3	2.5				0.2	- 0.025	+ 0.025	●	●						

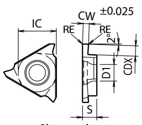
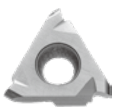
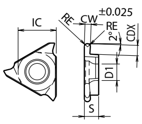
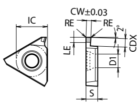
Right-hand shown
CDX shows available grooving depth.

Recommended cutting conditions → G141

●: Standard item

GBA32

Workpiece	PR1215	PR1625	TN620	KPD001	KPD010	
Carbon steel / Alloy steel	●	◐	●			P
Stainless steel	●	◐				M
Cast iron	◐					K
Non-ferrous metals				●		N
Titanium alloy				●		S
Hard materials (~ 40HRC)	●					H
Hard materials (40HRC ~)						H

Insert		Description		No. of edges	CW	CDX	IC	S	D1	RE	LE	CW min.	CW max.	PR1215 (Carbide, PVD)	PR1625 (Carbide, PVD)	TN620 (Cermet, -)	KPD001 (PCD, -)	KPD010 (PCD, -)	Applicable toolholder ➡ G13~G17 G89
	 Sharp edge	GBA32R	050-005F	3	0.5	1	9.525	3.18	4.4	0.05	-	0	+0.05			●			KGBAR...16 KGBAR...16JCT KGBASL...16 KIGBAL...16
			075-005F		0.75	2				0.05		-0.025	+0.025			●			
			095-005F		0.95	2				0.05		-0.025	+0.025			●			
			100-005F		1	2				0.05		-0.025	+0.025			●			
			125-020F		1.25	2				0.2		-0.025	+0.025			●			
			145-020F		1.45	2				0.2		-0.025	+0.025			●			
			150-020F		1.5	2				0.2		-0.025	+0.025			●			
			175-020F		1.75	2				0.2		-0.025	+0.025			●			
			200-020F		2	2.5				0.2		-0.025	+0.025			●			
			250-020F		2.5	2.5				0.2		-0.025	+0.025			●			
		GBA32L	050-005F		0.5	1				0.05		0	+0.05			●			KGBAL...16 KGBAL...16JCT KGBASR...16 KIGBAR...16
			075-005F		0.75	2				0.05		-0.025	+0.025			●			
			095-005F		0.95	2				0.05		-0.025	+0.025			●			
			100-005F		1	2				0.05		-0.025	+0.025			●			
			125-020F		1.25	2				0.2		-0.025	+0.025			●			
			145-020F		1.45	2				0.2		-0.025	+0.025			●			
			150-020F		1.5	2				0.2		-0.025	+0.025			●			
			175-020F		1.75	2				0.2		-0.025	+0.025			●			
			200-020F		2	2.5				0.2		-0.025	+0.025			●			
			250-020F		2.5	2.5				0.2		-0.025	+0.025			●			
	 Full R	GBA32R	200-100R	3	2	2.5	9.525	3.18	4.4	1	-	-0.025	+0.025	●	●				KGBAR...16 KGBAR...16JCT KGBASL...16 KIGBAL...16
			300-150R		3					1.5				●	●				
	 1-edge	GBA32R	125-010	1	1.25	2	9.525	3.18	4.4	0.1	1.7	-0.03	+0.03				●	●	KGBAR...16 KGBAR...16JCT KGBASL...16 KIGBAL...16
			150-010		1.5	2											●	●	
			200-010		2	2.5											●		

Right-hand shown
CDX shows available grooving depth.

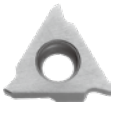
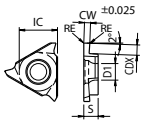
Recommended cutting conditions ➡ G141

●: Standard item

CBN & PCD Inserts are sold in 1 piece boxes

GBA43

Carbon steel / Alloy steel	● ◕ ◔	P
Stainless steel	● ◕ ◔	M
Cast iron	◕ ◔ ◔	K
Non-ferrous metals	◕	N
Titanium alloy	◕	S
Hard materials (~ 40HRC)	● ○	H
Hard materials (40HRC ~)		

Insert	Description	No. of edges	Dimension (mm)						Tolerance (mm)		Carbide				Cermet			Applicable toolholder ⇒ G13~G17 G89
			CW	CDX	IC	S	D1	RE	CW min.	CW max.	PVD			-	PVD	-		
											PR1215	PR1625	PR905	PR930	KW10	PV7040	TC40N	TN90	
																			
	GBA43R 125-010		1.25	2		4.76		0.1			●	●							KGBAR...22-15 KGBAR...22-15JCT KGBASL...22-15 KIGBAL...22
	125-020		1.25	2		4.76		0.2			●	●	●	●	●	●	●	●	
	140-020		1.4	3.5		4.76		0.2			●	●	●						
	145-020		1.45	2 3.5		4.76		0.2							●		●	●	
	150-010		1.5	3.5		4.76		0.1			●	●		●					
	150-020		1.5	3.5		4.76		0.2			●	●	●	●	●	●	●	●	
	170-020		1.7	3.5		4.76		0.2			●	●	●						
	175-020		1.75	3.5		4.76		0.2			●	●	●	●	●		●	●	
	185-020		1.85	3.5		4.76		0.2			●	●	●	●	●		●	●	
	195-020		1.95	3.5		4.76		0.2				●							
	200-010		2	3.5		4.76		0.1			●	●							
	200-020		2	3.5		4.76		0.2			●	●	●	●	●	●	●	●	
	225-020		2.25	3.5		4.76		0.2			●	●	●						
	230-020		2.3	3.5		4.76		0.2			●	●	●	●	●		●	●	
	250-010		2.5	5		4.76		0.1			●	●							*1
	250-030	3	2.5	4 5	12.7	4.76	5.5	0.3	-0.025	+0.025	●	●	●	●	●	●	●	●	*2 *1
	265-030		2.65	4 5		4.76		0.3				●		●	●		●	●	*2 *1
	280-030		2.8	4 5		4.76		0.3				●		●	●		●	●	*2 *1
	300-010		3	5		4.76		0.1			●	●							
	300-030		3	4 5		4.76		0.3			●	●	●	●	●	●	●	●	*2 *1
	325-030		3.25	5		4.76		0.3				●	●						
	330-030		3.3	4 5		4.76		0.3			●	●	●	●	●		●	●	*2 *1
	350-010		3.5	5		4.76		0.1			●	●							
	350-030		3.5	5		4.76		0.3			●	●	●	●	●		●	●	
	400-010		4	5		4.76		0.1			●	●							KGBAR...22-35 KGBAR...22-35JCT KGBASL...22-35 KIGBAL...22
	400-040		4	5		4.76		0.4			●	●	●	●	●	●	●	●	
	430-040		4.3	5		4.76		0.4			●	●		●	●		●	●	
	450-040		4.5	5		4.76		0.4			●	●		●	●		●	●	
	480-040		4.8	5		5		0.4			●	●		●	●			●	

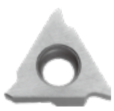
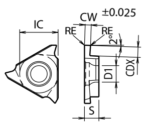
Right-hand shown
CDX shows available grooving depth.
*1 : KGBAR...22-25T5, KGBAR...22-25JCT, KGBASL...22-25T5, KIGBAL...22
*2 : KGBAR...22-25, KGBAR...22-25T5, KGBAR...22-25JCT, KGBASL...22-25, KGBASL...22-25T5, KIGBAL...22

Recommended cutting conditions ⇒ G141

● : Standard item

GBA43

Work material	PR1215	PR1625	PR905	PR930	KW10	PV7040	TC40N	TN90	
Carbon steel / Alloy steel	●	◐		○		●			P
Stainless steel	●	◐		○					M
Cast iron	◐		○		○				K
Non-ferrous metals					◐				N
Titanium alloy					◐				S
Hard materials (~ 40HRC)	●			○					H
Hard materials (40HRC ~)									H

Insert	Description		No. of edges	Dimension (mm) CW	CDX	IC	S	D1	RE	Tolerance (mm) CW min.	CW max.	Carbide PVD PR1215	Carbide PVD PR1625	Carbide PVD PR905	Carbide PVD PR930	Carbide - KW10	Cermet PVD PV7040	Cermet - TC40N	Cermet - TN90	Applicable toolholder ➡ G13~G17 G89
	GBA43L	125-010	3	1.25	2	12.7	4.76	5.5	0.1	- 0.025	+ 0.025	●	●							KGBAL...22-15 KGBAL...22-15JCT KGBASR...22-15 KIGBAR...22
		125-020		1.25	2		4.76		0.2			●	●		●	●	●	●	●	
		140-020		1.4	3.5		4.76		0.2			●	●							
		145-020		1.45	2		4.76		0.2							●		●	●	
					3.5							●	●		●					
		150-010		1.5	3.5		4.76		0.1			●	●							
		150-020		1.5	3.5		4.76		0.2			●	●		●	●	●	●	●	
		170-020		1.7	3.5		4.76		0.2			●	●	●						
		175-020		1.75	3.5		4.76		0.2			●	●	●	●	●			●	
		185-020		1.85	3.5		4.76		0.2			●	●		●	●		●		
		195-020		1.95	3.5		4.76		0.2				●							
		200-010		2	3.5		4.76		0.1			●	●							
		200-020		2	3.5		4.76		0.2			●	●	●	●	●	●	●	●	
		225-020		2.25	3.5		4.76		0.2			●	●							
		230-020		2.3	3.5		4.76		0.2			●	●	●	●	●		●	●	
		250-010		2.5	5		4.76		0.1			●	●							*3
		250-030		2.5	4		4.76		0.3							●	●	●	●	*4
					5							●	●		●					*3
		265-030		2.65	4		4.76		0.3							●			●	*4
					5							●	●		●					*3
		280-030		2.8	4		4.76		0.3							●			●	*4
					5							●	●		●					*3
		300-010		3	5		4.76		0.1			●	●							
		300-030		3	4		4.76		0.3							●	●	●	●	*4
					5							●	●		●					*3
		330-030		3.3	4		4.76		0.3							●		●		*4
					5							●	●		●					*3
		350-010		3.5	5		4.76		0.1			●	●							KGBAL...22-35 KGBAL...22-35JCT KGBASR...22-35 KIGBAR...22
		350-030		3.5	5		4.76		0.3			●	●	●	●	●		●	●	
		400-010		4	5		4.76		0.1			●	●							
		400-040		4	5		4.76		0.4			●	●	●	●	●	●	●	●	
		430-040		4.3	5		4.76		0.4			●	●			●				
		450-040		4.5	5		4.76		0.4			●	●			●				
		480-040		4.8	5		5		0.4			●	●			●				

Right-hand shown
CDX shows available grooving depth.
*3 : KGBAL...22-25T5, KGBAL...22-25JCT, KGBASR...22-25T5, KIGBAR...22
*4 : KGBAL...22-25, KGBAL...22-25T5, KGBAL...22-25JCT, KGBASR...22-25, KGBASR...22-25T5, KIGBAR...22

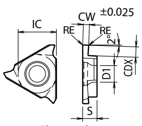
Recommended cutting conditions ➡ G141

● : Standard item

G
Grooving
External
Internal
Face

GBA43

Carbon steel / Alloy steel	●	P
Stainless steel		M
Cast iron		K
Non-ferrous metals		N
Titanium alloy		S
Hard materials (~ 40HRC)		H
Hard materials (40HRC ~)		H

Insert	Description		No. of edges	Dimension (mm) CW	CDX	IC	S	D1	RE	LE	Tolerance (mm) CW min.	CW max.	Cermet - TN620	Applicable toolholder ➡ G13~G17 G89
  Sharp edge	GBA43R	125-020F		1.25	2		4.76		0.2				●	KGBAR...22-15 KGBAR...22-15JCT KGBASL...22-15 KIGBAL...22
		145-020F		1.45	2		4.76		0.2				●	
		150-020F		1.5	3.5		4.76		0.2				●	
		175-020F		1.75	3.5		4.76		0.2				●	
		185-020F		1.85	3.5		4.76		0.2				●	
		200-020F		2	3.5		4.76		0.2				●	
		230-020F		2.3	3.5		4.76		0.2				●	
		250-030F		2.5	4		4.76		0.3				●	*2
		265-030F		2.65	4		4.76		0.3				●	
		280-030F		2.8	4		4.76		0.3				●	
		300-030F		3	4		4.76		0.3				●	
		330-030F		3.3	4		4.76		0.3				●	
		350-030F		3.5	5		4.76		0.3				●	KGBAR...22-35 KGBAR...22-35JCT KGBASL...22-35 KIGBAL...22
		400-040F		4	5		4.76		0.4				●	
		430-040F		4.3	5		4.76		0.4				●	
		450-040F	3	4.5	5	12.7	4.76	5.5	0.4	-	- 0.025	+ 0.025	●	
		480-040F		4.8	5		5		0.4				●	
	GBA43L	125-020F		1.25	2				0.2				●	KGBAL...22-15 KGBAL...22-15JCT KGBASR...22-15 KIGBAR...22
		145-020F		1.45	2				0.2				●	
		150-020F		1.5	3.5				0.2				●	
		175-020F		1.75	3.5				0.2				●	
		185-020F		1.85	3.5				0.2				●	
		200-020F		2	3.5				0.2				●	
		230-020F		2.3	3.5		4.76		0.2				●	
		250-030F		2.5	4				0.3				●	*4
		265-030F		2.65	4				0.3				●	
		280-030F		2.8	4				0.3				●	
		300-030F		3	4				0.3				●	
		330-030F		3.3	4				0.3				●	
		350-030F		3.5	5				0.3				●	*6
		400-040F		4	5				0.4				●	

Right-hand shown
CDX shows available grooving depth.

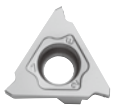
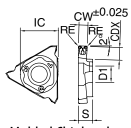
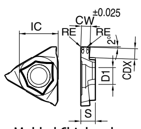
Recommended cutting conditions ➡ G141

*2 : KGBAR...22-25, KGBAR...22-25T5, KGBAR...22-25JCT, KGBASL...22-25, KGBASL...22-25T5, KIGBAL...22
*4 : KGBAL...22-25, KGBAL...22-25T5, KGBAL...22-25JCT, KGBASR...22-25, KGBASR...22-25T5, KIGBAR...22
*6 : KGBAL...22-35, KGBAL...22-35JCT, KGBASR...22-35, KIGBAR...22

● : Standard item

GBA43

Work material	PR1215	PR1625	TN620	TN6020	
Carbon steel / Alloy steel	●	◐	●	○	P
Stainless steel	●	◐			M
Cast iron	◐				K
Non-ferrous metals					N
Titanium alloy					S
Hard materials (~ 40HRC)	●				H
Hard materials (40HRC ~)					H

Insert	Description	No. of edges	CW	CDX	IC	S	D1	RE	CW min.	CW max.	PR1215 (Carbide PVD)	PR1625 (Carbide PVD)	TN620 (Cermet -)	TN6020 (Cermet -)	Applicable toolholder G13~G17 G89
  Molded Chipbreaker	GBA43R 140-010GM		1.4	3.5				0.1			●	●	●		KGBAR...22-15
	150-020GM		1.5	3.5				0.2			●	●	●		KGBAR...22-15JCT
	175-020GM		1.75	3.5				0.2			●	●	●		KGBASL...22-15
	185-020GM		1.85	3.5				0.2			●	●	●		KIGBAL...22
	200-020GM		2	3.5				0.2			●	●	●		
	230-020GM		2.3	3.5				0.2			●	●	●		
	250-030GM		2.5	5				0.3			●	●	●		*2
	265-030GM		2.65	5				0.3			●	●	●		
	300-030GM		3	5				0.3			●	●	●		
	330-030GM		3.3	5				0.3			●	●	●		
	350-030GM		3.5	5				0.3			●	●	●		*5
	400-040GM	3	4	5	12.7	4.76	5.5	0.4	- 0.025	+ 0.025	●	●	●		
	GBA43L 140-010GM		1.4	3.5				0.1			●	●	●		KGBAL...22-15
	150-020GM		1.5	3.5				0.2			●	●	●		KGBAL...22-15JCT
	175-020GM		1.75	3.5				0.2			●	●	●		KGBASR...22-15
	185-020GM		1.85	3.5				0.2			●	●	●		KIGBAR...22
	200-020GM		2	3.5				0.2			●	●	●		
	230-020GM		2.3	3.5				0.2			●	●	●		
	250-030GM		2.5	5				0.3			●	●	●		*4
	265-030GM		2.65	5				0.3			●	●	●		
	300-030GM		3	5				0.3			●	●	●		
	330-030GM		3.3	5				0.3			●	●	●		
	350-030GM		3.5	5				0.3			●	●	●		*6
	400-040GM		4	5				0.4			●	●	●		
  Molded Chipbreaker	GBA43R 175-020MY		1.75	3.5				0.2						●	KGBAR...22-15
	185-020MY		1.85	3.5				0.2						●	KGBAR...22-15JCT
	200-020MY		2	3.5				0.2						●	KGBASL...22-15
	230-020MY		2.3	3.5				0.2						●	KIGBAL...22
	250-030MY		2.5	5				0.3						●	*2
	265-030MY		2.65	5				0.3						●	
	300-030MY		3	5				0.3						●	
	330-030MY		3.3	5				0.3						●	
	350-030MY		3.5	5				0.3						●	*5
	400-040MY	3	4	5	12.7	4.76	5.5	0.4	- 0.025	+ 0.025				●	
	GBA43L 175-020MY		1.75	3.5				0.2						●	KGBAL...22-15
	185-020MY		1.85	3.5				0.2						●	KGBAL...22-15JCT
	200-020MY		2	3.5				0.2						●	KGBASR...22-15
	230-020MY		2.3	3.5				0.2						●	KIGBAR...22
	250-030MY		2.5	5				0.3						●	*4
	265-030MY		2.65	5				0.3						●	
	300-030MY		3	5				0.3						●	
	350-030MY		3.5	5				0.3						●	*6
	400-040MY		4	5				0.4						●	

Right-hand shown
CDX shows available grooving depth.

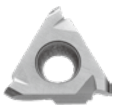
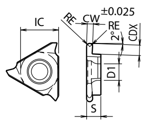
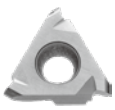
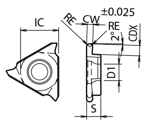
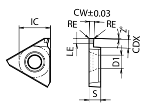
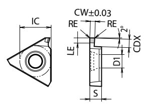
Recommended cutting conditions G141

*2 : KGBAR...22-25, KGBAR...22-25T5, KGBAR...22-25JCT, KGBASL...22-25, KGBASL...22-25T5, KIGBAL...22
*4 : KGBAL...22-25, KGBAL...22-25T5, KGBAL...22-25JCT, KGBASR...22-25, KGBASR...22-25T5, KIGBAR...22
*5 : KGBAR...22-35, KGBAR...22-35JCT, KGBASL...22-35, KIGBAL...22
*6 : KGBAL...22-35, KGBAL...22-35JCT, KGBASR...22-35, KIGBAR...22

● : Standard item

GBA43

Work material	PR1215	PR1625	PR905	PR930	KW10	PV7040	TN620	TN90	KBN510	KBN525	KPD001	KPD010	
Carbon steel / Alloy steel	●	◐		○		●	●						P
Stainless steel	●	◐		○									M
Cast iron	◐		○		○								K
Non-ferrous metals					◐						●		N
Titanium alloy					◐						●		S
Hard materials (~ 40HRC)	●			○									H
Hard materials (40HRC ~)									○	●			H

Insert		Description		Edge preparation type	No. of edges	Dimension (mm) CW	CDX	IC	S	D1	RE	LE	Tolerance (mm) CW min.	CW max.	Carbide PVD PR1215	PR1625	PR905	PR930	Carbide - KW10	Cermet PVD PV7040	Cermet - TN620	TN90	CBN - KBN510	KBN525	PCD - KPD001	KPD010	Applicable toolholder ➡ G13~G17 G89
	 Full R	GBA43R	100-050R			1	2				0.5				●	●		●	●	●		●					KGBAR...22-15 KGBAR...22-15JCT KGBASL...22-15 KIGBAL...22
			150-075R			1.5	3.5				0.75				●	●		●	●	●		●					
			200-100R			2	3.5				1				●	●	●	●	●	●		●					
			250-125R			2.5	4				1.25				●	●		●	●			●					*2
			300-150R			3	4				1.5				●	●	●	●	●			●					
			400-200R	-	3	4	5	12.7	4.76	5.5	2	-	- 0.025	+ 0.025	●	●		●	●			●					*5
		GBA43L	100-050R			1	2				0.5				●	●		●	●	●		●					KGBAL...22-15 KGBAL...22-15JCT KGBASR...22-15 KIGBAR...22
			150-075R			1.5	3.5				0.75				●	●		●	●	●		●					
			200-100R			2	3.5				1				●	●	●	●	●	●		●					
			250-125R			2.5	4				1.25				●	●		●	●								*4
			300-150R			3	4				1.5				●	●	●	●	●			●					
			400-200R			4	5				2				●	●		●	●								*6
	 Full R / Sharp edge	GBA43R	100-050RF			1	2				0.5										●						KGBAR...22-15 KGBAR...22-15JCT KGBASL...22-15 KIGBAL...22
			150-075RF			1.5	3.5				0.75										●						
			200-100RF			2	3.5				1										●						
			250-125RF			2.5	4				1.25										●						*2
			300-150RF			3	4				1.5										●						
			400-200RF	F	3	4	5	12.7	4.76	5.5	2	-	- 0.025	+ 0.025							●						*5
		GBA43L	100-050RF			1	2				0.5										●						KGBAL...22-15 KGBAL...22-15JCT KGBASR...22-15 KIGBAR...22
			150-075RF			1.5	3.5				0.75										●						
			200-100RF			2	3.5				1										●						
			250-125RF			2.5	4				1.25										●						*4
			300-150RF			3	4				1.5										●						
	 1-edge	GBA43R	125-020			1.25	2																●	●			KGBAR...22-15 KGBAR...22-15JCT KGBASL...22-15 KIGBAL...22
			150-020			1.5	3.5																●	●			
			200-020			2	3.5																●	●			
			250-020			2.5	4																●	●			*2
			300-020	E008	1	3	4	12.7	4.76	5.5	0.2	1.9	- 0.03	+ 0.03									●	●			
		GBA43L	125-020			1.25	2																	●			KGBAL...22-15 KGBAL...22-15JCT KGBASR...22-15 KIGBAR...22
			150-020			1.5	3.5																●	●			
			200-020			2	3.5																●	●			
			250-020			2.5	4																	●			*4
			300-020			3	4																	●			
	 1-edge	GBA43R	125-010			1.25	2																			●	KGBAR...22-15 KGBAR...22-15JCT KGBASL...22-15 KIGBAL...22
			150-010			1.5	3.5																		●	●	
			200-010			2	3.5																		●	●	
			250-010			2.5	4																		●	●	*2
			300-010	F	1	3	4	12.7	4.76	5.5	0.1	1.9	- 0.03	+ 0.03											●	●	
		GBA43L	125-010			1.25	2																			●	KGBAL...22-15 KGBAL...22-15JCT KGBASR...22-15 KIGBAR...22
			150-010			1.5	3.5																		●	●	
			200-010			2	3.5																		●	●	
			250-010			2.5	4																		●	●	*4
			300-010			3	4																		●		

Right-hand shown
CDX shows available grooving depth.
*2 : KGBAR...22-25, KGBAR...22-25T5, KGBAR...22-25JCT, KGBASL...22-25, KGBASL...22-25T5, KIGBAL...22
*4 : KGBAL...22-25, KGBAL...22-25T5, KGBAL...22-25JCT, KGBASR...22-25, KGBASR...22-25T5, KIGBAR...22
*5 : KGBAR...22-35, KGBAR...22-35JCT, KGBASL...22-35, KIGBAL...22
*6 : KGBAL...22-35, KGBAL...22-35JCT, KGBASR...22-35, KIGBAR...22

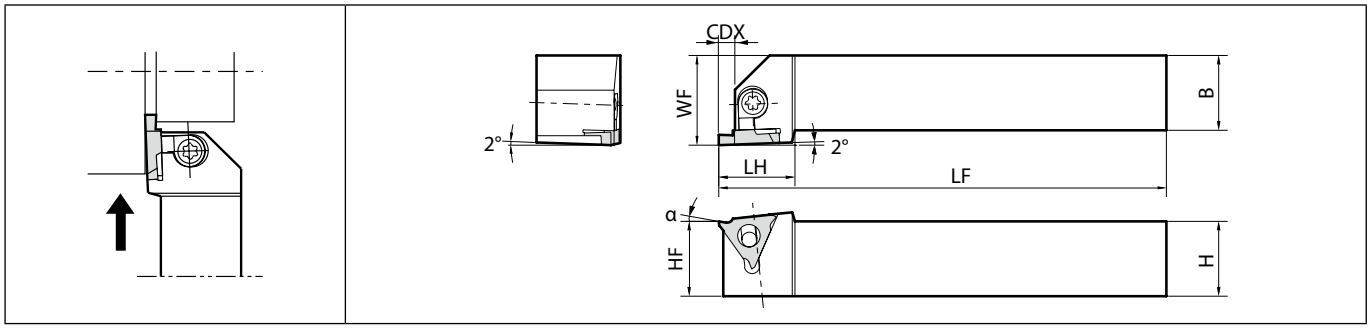
Recommended cutting conditions ➡ G141

CBN & PCD Inserts are sold in 1 piece boxes

● : Standard item

G
Grooving
External
Internal
Face

KGBA (External grooving / Shallow grooving)



Right-hand shown | Right-hand Insert for Right-hand Toolholder, Left-hand Insert for Left-hand Toolholder.

Toolholder dimensions

Description		Availability		Dimension (mm)							Spare parts		Applicable inserts ⇨ G6~G12
		R	L	CDX	H	B	LH	HF	LF	WF	Clamp set	Wrench	
KGBA$^{R}_{L}$	2020K-16	●	●	2.5	20	20	24	20	125	25	LGBA-16$^{R}_{L}$S	FT-15	GBA32$^{R}_{L}$ type
	2525M-16	●	●		25	25		25	150	30			
KGBA$^{R}_{L}$	2020H22-15	●		4	20	20	25.5	20	100	25	LGBA-22RS	FT-15	GBA43$^{R}_{L}$ type
	2020H22-25	●		4.5									
	2020H22-35	●		5.5									
	2020K22-15	●	●	4					125		LGBA-22$^{R}_{L}$S		
	2020K22-25	●	●	4.5									
	2020K22-25T5	●	●	5.5									
	2020K22-35	●	●										
	2525M22-15	●	●	4	25	25		25	150	30			
	2525M22-25	●	●	4.5									
	2525M22-25T5	●	●	5.5									
	2525M22-35	●	●										

CDX shows the distance from the toolholder to the cutting edge. Available Groove Depth : „CDX" of Insert.
Clamp Set : LGBA-○○RS for Right-hand Toolholder and LGBA-○○LS for Left-hand Toolholder.

Rake Angle (α) after Installment of GBA insert

GBA32$^{R}_{L}$○○○-○○○		GBA43$^{R}_{L}$○○○-○○○		GBA43$^{R}_{L}$○○○-○○○R (Full-R)		
α	Insert Grades	α	Insert Grades	α	Insert Grades	Full-R Description
10°	TN620, TN90, PV7040 PR930, PR1215, PR1625, PR905 KPD001, KPD010	0°	KBN510, KBN525	10°	TN620, TN90, PV7040, PR930 PR1215, PR1625, PR905	050R~150R
		10°	TN620, TC40N, TN90, PV7040 PR930, PR1215, PR1625, PR905 KPD001, KPD010	14°	TN620, TN90, PV7040, PR930 PR1215, PR1625, PR905	200R
20°	KW10	20°	KW10		KW10	050R~200R

Rake Angle (α) after Installment of GBA-GM insert

α	Insert Description
10°	GBA43$^{R}_{L}$150-020GM
15°	GBA43$^{R}_{L}$175-020GM ~ GBA43$^{R}_{L}$265-030GM
12°	GBA43$^{R}_{L}$300-030GM ~ GBA43$^{R}_{L}$400-040GM

α indicates the rake angle at the center of the edge width, after installing insert.

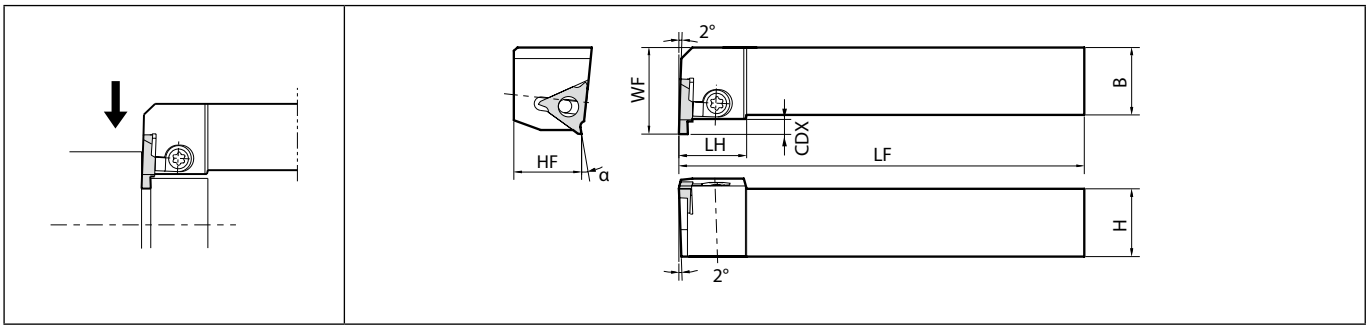
Rake Angle (α) after Installment of GBA-MY insert

α	Insert Description
15°	GBA43$^{R}_{L}$175-020MY ~ GBA43$^{R}_{L}$350-030MY
14°	GBA43$^{R}_{L}$400-040MY

α indicates the rake angle at the center of the edge width, after installing insert.

● : Standard item

KGBAS (External grooving / Shallow grooving)



Right-hand shown | Left-hand Insert for Right-hand Toolholder, Right-hand Insert for Left-hand Toolholder.

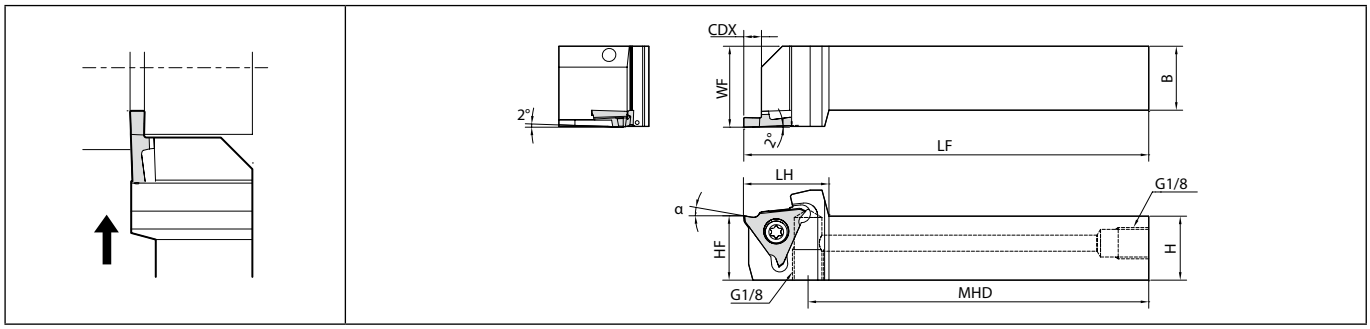
Toolholder dimensions

Description		Availability R	Availability L	Dimension (mm) CDX	H	B	LH	HF	LF	WF	Spare parts: Clamp set	Spare parts: Wrench	Applicable inserts G6~G12
KGBAS$^{R}/_{L}$	2020K-16	●	●	2.5	20	20	25	20	125	25	LGBA-16$^{L}/_{R}$S	FT-15	GBA32$^{L}/_{R}$ type
	2525M-16	●	●		25	25		25	150	30			
KGBAS$^{R}/_{L}$	2020K22-15	●	●	4	20	20	25	20	125	27	LGBA-22$^{L}/_{R}$S	FT-15	GBA43$^{L}/_{R}$ type
	2020K22-25	●	●	4.5									
	2020K22-25T5	●	●	5.5									
	2020K22-35	●	●										
	2525M22-15	●	●	4	25	25		25	150	32			
	2525M22-25	●	●	4.5									
	2525M22-25T5	●	●	5.5									
	2525M22-35	●	●										

CDX shows the distance from the toolholder to the cutting edge. Available Groove Depth : „CDX" of Insert.
See Page **G13** for Rake Angle (α) after Installment of Insert.
Clamp Set : LGBA-○○LS for Right-hand Toolholder and LGBA-○○RS for Left-hand Toolholder.

● : Standard item

KGBA-JCT (External grooving / Shallow grooving, Coolant-through holder)



Right-hand shown | Right-hand Insert for Right-hand Toolholder, Left-hand Insert for Left-hand Toolholder.

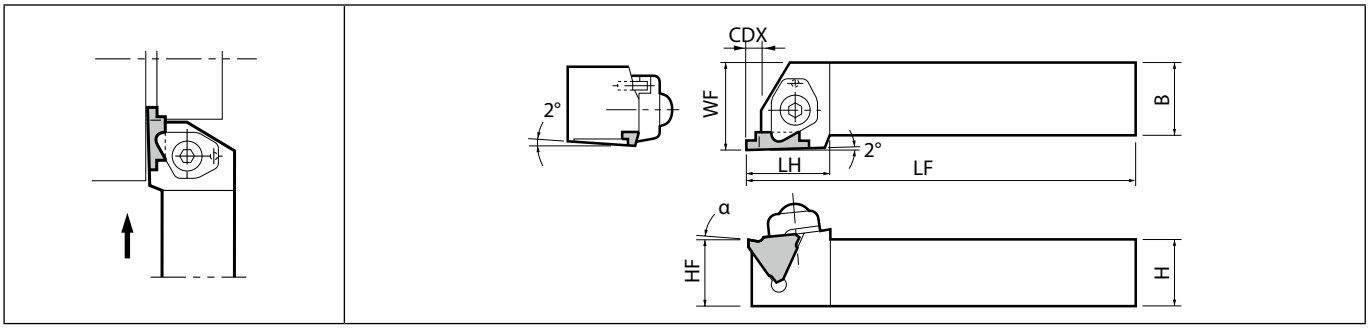
Toolholder dimensions

Description		Availability R	Availability L	Dimension (mm) CDX	H	B	LH	MHD	HF	LF	WF	Coolant hole	Spare parts: Plug	Screw	Wrench	Wrench	Applicable inserts ⇒ G6~G12
KGBA$^{R}_{L}$	2020K-16JCT	●	●	2.5	20	20	24	107.5	20	125	25	Yes	HSG1/8X8.0	SB-4085TR	FT-15	-	GBA32$^{R}_{L}$ type
	2525K-16JCT	●	●		25	25			25		30						
KGBA$^{R}_{L}$	2020K22-15JCT	●	●	4	20	20	26.5	105	20	125	25	Yes	HSG1/8X8.0	SB-5085TR	-	LTW-20	GBA43$^{R}_{L}$ type
	2020K22-25JCT	●	●	5.5													
	2020K22-35JCT	●	●														
	2525K22-15JCT	●	●	4	25	25			25		30						
	2525K22-25JCT	●	●	5.5													
	2525K22-35JCT	●	●														

CDX shows the distance from the toolholder to the cutting edge. Available Groove Depth : „CDX" of Insert.
See Page **G13** for Rake Angle (α) after Installment of Insert.
KGBA-JCT toolholder is screw clamp type.
Please see page **H16** and **H17** for piping parts of coolant-through holders.

● : Standard item

KGB (External grooving / Shallow grooving)



Right-hand shown | Right-hand Insert for Right-hand Toolholder, Left-hand Insert for Left-hand Toolholder.

Toolholder dimensions

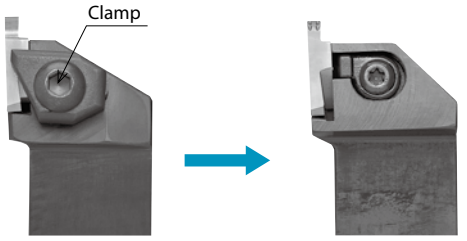
Description		Availability		Dimension (mm)							Spare parts				Applicable inserts ⇨ G6~G12
		R	L	CDX	H	B	LH	HF	LF	WF	Clamp	Clamp bolt	Spring	Wrench	
KGB$^{R/L}$	2020K-16	○	○	2.5	20	20	24	20	125	25	CGB$^{R/L}$	BH6X25	SP-6	LW-4	GBA32$^{R/L}$ type
	2525M-16	○	○		25	25		25	150	30					
KGB$^{R/L}$	2020K22-15	○	○	4	20	20	25.5	20	125	25	CGB$^{R/L}$	BH6X25	SP-6	LW-4	GBA43$^{R/L}$ type
	2020K22-25	○	○	4.5											
	2020K22-35	○	○	5.5											
	2525M22-15	○	○	4	25	25		25	150	30					
	2525M22-25	○	○	4.5											
	2525M22-35	○	○	5.5											

KGB will be switched to KGBA=> **G13**
CDX shows the distance from the toolholder to the cutting edge. Available Groove Depth : „CDX" of Insert.
KGB Clamp : CGBR for Right-hand Toolholder and CGBL for Left-hand Toolholder.

Alternative Toolholder Reference Table

KGBA ←	(KGB)
KGBA$^{R/L}$ ...22-15	KGB$^{R/L}$ ...22-15
KGBA$^{R/L}$ ...22-25	KGB$^{R/L}$ ...22-25
KGBA$^{R/L}$ ...22-35	KGB$^{R/L}$ ...22-35
KGBA$^{R/L}$ ...22-25T5	KGB$^{R/L}$ ...22-25 (Available grooving depth has a limit)

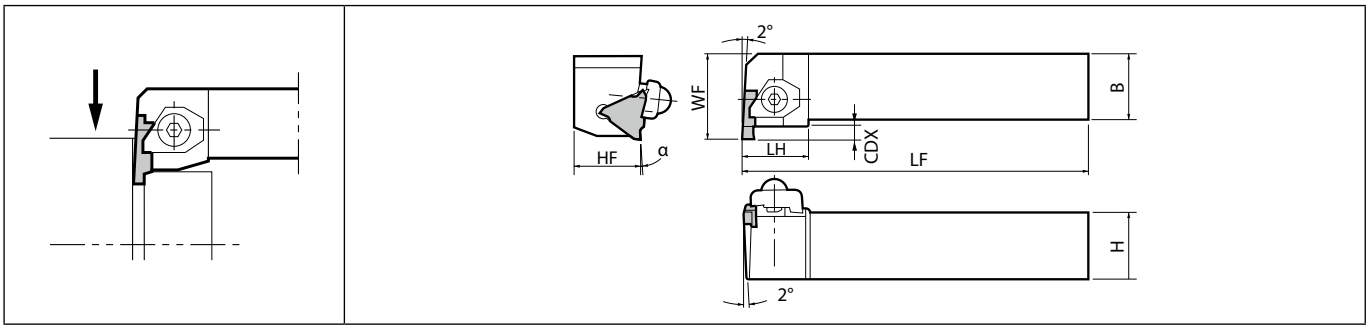
· Short shank type is not available for KGB / KGBS.



* KGB / KGBS toolholder will be switched to KGBA / KGBAS.
Better Chip flow.

○ : Check Availability

KGBS (External grooving / Shallow grooving)



Right-hand shown | Left-hand Insert for Right-hand Toolholder, Right-hand Insert for Left-hand Toolholder.

Toolholder dimensions

Description		Availability		Dimension (mm)							Spare parts				Applicable inserts ➡ G6~G12
		R	L	CDX	H	B	LH	HF	LF	WF	Clamp	Clamp bolt	Spring	Wrench	
KGBS$^{R}/_{L}$	2020K-16	○	○	2.5	20	20	25	20	125	25	CGB$^{L}/_{R}$	BH6X25	SP-6	LW-4	GBA32$^{L}/_{R}$ type
	2525M-16	○	○		25	25		25	150	30					
KGBS$^{R}/_{L}$	2020K22-15	○	○	4	20	20	25	20	125	27	CGB$^{L}/_{R}$	BH6X25	SP-6	LW-4	GBA43$^{L}/_{R}$ type
	2020K22-25	○	○	4.5											
	2020K22-35	○	○	5.5											
	2525M22-15	○	○	4	25	25		25	150	32					
	2525M22-25	○	○	4.5											
	2525M22-35	○	○	5.5											

KGBS will be switched to KGBAS=> **G14**
KGBS Clamp : CGBL for Right-hand Toolholder and CGBR for Left-hand Toolholder.

Alternative Toolholder Reference Table

KGBAS ←	(KGBS)
KGBAS$^{R}/_{L}$ …22-15	KGBS$^{R}/_{L}$ …22-15
KGBAS$^{R}/_{L}$ …22-25	KGBS$^{R}/_{L}$ …22-25
KGBAS$^{R}/_{L}$ …22-35	KGBS$^{R}/_{L}$ …22-35
KGBAS$^{R}/_{L}$ …22-25T5	KGBS$^{R}/_{L}$ …22-25 (Available grooving depth has a limit)

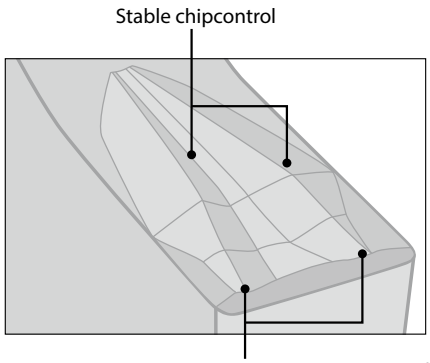
○ : Check Availability

GBF (for automatic lathe)

High precision with edge width tolerance of ±0.02 mm
High efficiency MEGACOAT coating technology for long tool life

1 Stable chip control with GL chipbreaker

GL Chipbreaker controls chips stable at both grooving and turning.
(Turning is not recommended for GBF32R075-005GL)



Chips are short, curled and break evenly in low feed machining.
Prevents chip clogging.

Chip control comparison (internal evaluation)

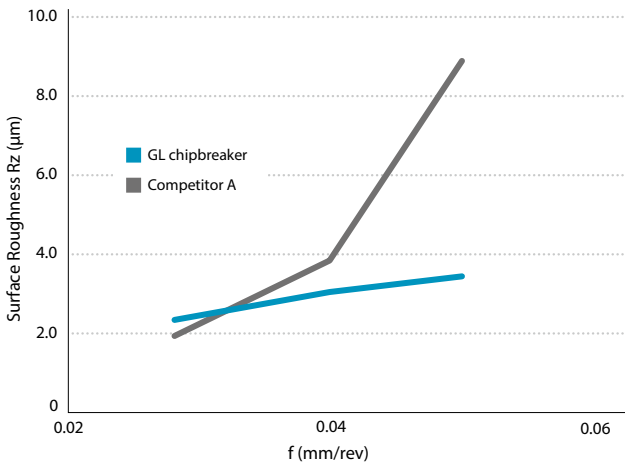
	GL chipbreaker	Competitor A
Grooving f = 0.05 mm/rev d = 1.5 mm		
Turning f = 0.04 mm/rev ap = 0.2 mm		

Cutting conditions: Vc = 80 m/min, edge width 1 mm
Workpiece material : SUS304

2 Good surface finish

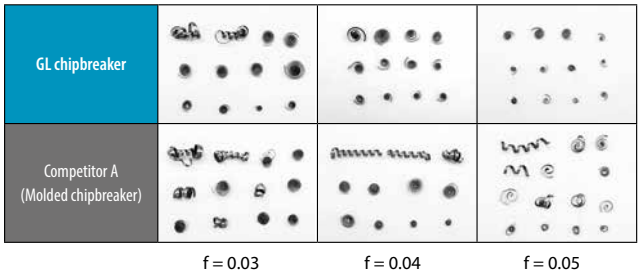
GL chipbreaker controls chips stable at high feed machining,
Good surface finish of side wall

Surface roughness comparison (internal evaluation)



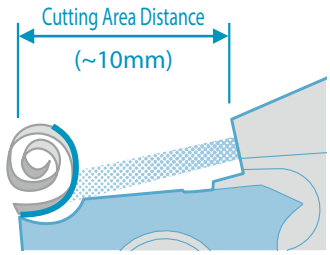
Cutting conditions: Vc = 80 m/min, d = 1.5 mm, f = 0.03~0.05 mm/rev, edge width 1 mm
Workpiece material : SCM415

Chip control comparison (internal evaluation)



KGBF-JCTM (for automatic lathe)

Discharges coolant from the top of the insert



Coolant hole

Ample supply of coolant to the cutting edge.
Prevents coolant stream spreading which slows the coolant flow.

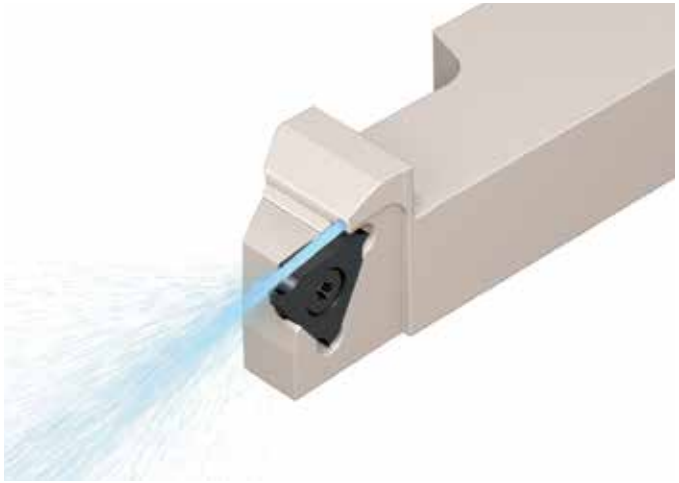
Direction of supply

Sufficient coolant between the chipbreaker and the chips
Stable chip curls and sufficient cooling of the insert

1 Excellent chip control provide long tool life

2 Superior cooling action improves tool life

External Grooving KGBF-JCTM



- **Provides Coolant toward the Rake Surface of Insert**
- **Specification**

Edge Width : 0.25 -3 mm

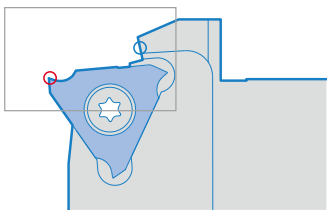
Ground Chipbreaker/Molded GL Chipbreaker

Maximum groove depth : 3 mm

Coolant Discharging Comparison (Internal evaluation)

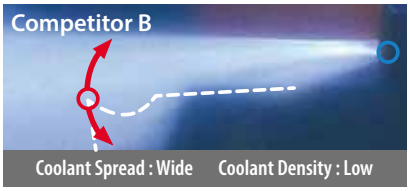
Small chips and better cooling of the insert leads to longer tool life

○ Cutting Edge
○ Coolant Hole



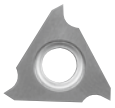
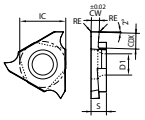
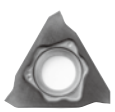
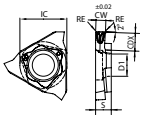
(Without Insert)

(Without Insert)



GBF

Carbon steel / Alloy steel											●	◔		P
Stainless steel											○	●		M
Cast iron													●	K
Non-ferrous metals													●	N
Titanium alloy												●	◔	S
Hard materials (~ 40HRC)														H
Hard materials (40HRC ~)														

Insert		Description		No. of edges	Dimension (mm)						Tolerance (mm)		Carbide			Applicable toolholder ➡ G23~G26
					CW	CDX	IC	S	D1	RE	CW min.	CW max.	PVD PR1215	PVD PR1535	- GW15	
	 Sharp edge	GBF32R	025-000F	3	0.25	0.6	9.525	3.18	4.4	0	-0.02	+0.02	●	●	●	KGBFR...-16F KGBFR...-16FJCTM KGBFSL...-16 S...KGBFL16
			030-000F		0.3	0.8					-0.02	+0.02	●	●	●	
			033-000F		0.33	0.8					-0.025	+0.015	●	●	●	
			043-000F		0.43	1					-0.025	+0.015	●	●	●	
			050-000F		0.5	1.2					-0.02	+0.02	●	●	●	
			053-000F		0.53	1.2					-0.025	+0.015	●	●	●	
			065-000F		0.65	1.2					-0.02	+0.02	●	●	●	
			075-000F		0.75	2					-0.02	+0.02	●	●	●	
			080-000F		0.8	2					-0.02	+0.02	●	●	●	
			095-000F		0.95	2					-0.02	+0.02	●	●	●	
			100-000F		1	2					-0.02	+0.02	●	●	●	
			110-000F		1.1	2					-0.02	+0.02	●	●	●	
			120-000F		1.2	2					-0.02	+0.02	●	●	●	
			125-000F		1.25	2					-0.02	+0.02	●	●	●	
			130-000F		1.3	2					-0.02	+0.02	●	●	●	
			140-000F		1.4	2.7					-0.02	+0.02	●	●	●	
			145-000F		1.45	2.7					-0.02	+0.02	●	●	●	
			150-000F		1.5	2.7					-0.02	+0.02	●	●	●	
			165-000F		1.65	2.7					-0.02	+0.02	●	●	●	
			170-000F		1.7	3					-0.02	+0.02	●	●	●	
			175-000F		1.75	3					-0.02	+0.02	●	●	●	
			200-000F		2	3					-0.02	+0.02	●	●	●	
		GBF32L	025-000F		0.25	0.6					-0.02	+0.02	●	●	●	KGBFL...-16F KGBFSR...-16
			030-000F		0.3	0.8					-0.02	+0.02	●	●	●	
			033-000F		0.33	0.8					-0.025	+0.015	●	●	●	
			043-000F		0.43	1					-0.025	+0.015	●	●	●	
			050-000F		0.5	1.2					-0.02	+0.02	●	●	●	
			053-000F		0.53	1.2					-0.025	+0.015	●	●	●	
			065-000F		0.65	1.2					-0.02	+0.02	●	●	●	
			075-000F		0.75	2					-0.02	+0.02	●	●	●	
			080-000F		0.8	2					-0.02	+0.02	●	●	●	
			095-000F		0.95	2					-0.02	+0.02	●	●	●	
			100-000F		1	2					-0.02	+0.02	●	●	●	
			110-000F		1.1	2					-0.02	+0.02	●	●	●	
			120-000F		1.2	2					-0.02	+0.02	●	●	●	
			125-000F		1.25	2					-0.02	+0.02	●	●	●	
			130-000F		1.3	2					-0.02	+0.02	●	●	●	
			140-000F		1.4	2.7					-0.02	+0.02	●	●	●	
			145-000F		1.45	2.7					-0.02	+0.02	●	●	●	
			150-000F		1.5	2.7					-0.02	+0.02	●	●	●	
			165-000F		1.65	2.7					-0.02	+0.02	●	●	●	
			170-000F		1.7	3					-0.02	+0.02	●	●	●	
			175-000F		1.75	3					-0.02	+0.02	●	●	●	
			200-000F		2	3					-0.02	+0.02	●	●	●	
	 Molded Chipbreaker	GBF32R	075-005GL	3	0.75	2	9.525	3.18	4.4	0.05	-0.02	+0.02	●	●		KGBFR...-16F KGBFR...-16FJCTM KGBFSL...-16 S...KGBFL16
			095-005GL		0.95	2				0.05			●	●		
			100-005GL		1	2				0.05			●	●		
			150-010GL		1.5	2.7				0.1			●	●		
			200-010GL		2	3				0.1			●	●		
			300-010GL		3	3				0.1			●	●		

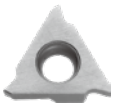
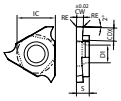
Right-hand shown
Max. Cutting Dia. : See Page **G27**

Recommended cutting conditions ➡ **G142**

● : Standard item

GBF

Carbon steel / Alloy steel	●	P
Stainless steel	○	M
Cast iron	●	K
Non-ferrous metals	●	N
Titanium alloy	●	S
Hard materials (~ 40HRC)		H
Hard materials (40HRC ~)		

Insert	Description	No. of edges	Dimension (mm)						Tolerance (mm)		Carbide			Applicable toolholder ⇨ G23~G26
			CW	CDX	IC	S	D1	RE	CW min.	CW max.	PVD PR1215	PVD PR1535	- GW15	
														
	GBF32R 025-005		0.25	0.6				0.05	- 0.02	+ 0.02	●	●	●	
	030-005		0.3	0.8				0.05	- 0.02	+ 0.02	●	●	●	
	033-005		0.33	0.8				0.05	- 0.025	+ 0.015	●	●	●	
	043-005		0.43	1				0.05	- 0.025	+ 0.015	●	●	●	
	050-005		0.5	1.2				0.05	- 0.02	+ 0.02	●	●	●	
	053-005		0.53	1.2				0.05	- 0.025	+ 0.015	●	●	●	
	065-005		0.65	1.2				0.05	- 0.02	+ 0.02	●	●	●	
	075-005		0.75	2				0.05	- 0.02	+ 0.02	●	●	●	
	075-010		0.75	2				0.1	- 0.02	+ 0.02	●	●	●	
	080-005		0.8	2				0.05	- 0.02	+ 0.02	●	●	●	
	080-010		0.8	2				0.1	- 0.02	+ 0.02	●	●	●	
	095-005		0.95	2				0.05	- 0.02	+ 0.02	●	●	●	
	095-010		0.95	2				0.1	- 0.02	+ 0.02	●	●	●	
	100-005		1	2				0.05	- 0.02	+ 0.02	●	●	●	
	100-010		1	2				0.1	- 0.02	+ 0.02	●	●	●	
	110-005		1.1	2				0.05	- 0.02	+ 0.02	●	●	●	
	110-010		1.1	2				0.1	- 0.02	+ 0.02	●	●	●	
	120-005		1.2	2				0.05	- 0.02	+ 0.02	●	●	●	
	120-010		1.2	2				0.1	- 0.02	+ 0.02	●	●	●	
	125-005		1.25	2				0.05	- 0.02	+ 0.02	●	●	●	
	125-010		1.25	2				0.1	- 0.02	+ 0.02	●	●	●	KGBFR...-16F KGBFR...-16FJCTM KGBFSL...-16 S...KGBFL16
	130-005	3	1.3	2	9.525	3.18	4.4	0.05	- 0.02	+ 0.02	●	●	●	
	130-010		1.3	2				0.1	- 0.02	+ 0.02	●	●	●	
	140-005		1.4	2.7				0.05	- 0.02	+ 0.02	●	●	●	
	140-010		1.4	2.7				0.1	- 0.02	+ 0.02	●	●	●	
	145-005		1.45	2.7				0.05	- 0.02	+ 0.02	●	●	●	
	145-010		1.45	2.7				0.1	- 0.02	+ 0.02	●	●	●	
	150-005		1.5	2.7				0.05	- 0.02	+ 0.02	●	●	●	
	150-010		1.5	2.7				0.1	- 0.02	+ 0.02	●	●	●	
	165-005		1.65	2.7				0.05	- 0.02	+ 0.02	●	●	●	
	165-010		1.65	2.7				0.1	- 0.02	+ 0.02	●	●	●	
	170-005		1.7	3				0.05	- 0.02	+ 0.02	●	●	●	
	170-010		1.7	3				0.1	- 0.02	+ 0.02	●	●	●	
	175-005		1.75	3				0.05	- 0.02	+ 0.02	●	●	●	
	175-010		1.75	3				0.1	- 0.02	+ 0.02	●	●	●	
	200-005		2	3				0.05	- 0.02	+ 0.02	●	●	●	
	200-010		2	3				0.1	- 0.02	+ 0.02	●	●	●	
	225-005		2.25	3				0.05	- 0.02	+ 0.02	●	●	●	
	225-010		2.25	3				0.1	- 0.02	+ 0.02	●	●	●	
	250-005		2.5	3				0.05	- 0.02	+ 0.02	●	●	●	
	250-010		2.5	3				0.1	- 0.02	+ 0.02	●	●	●	
	300-005		3	3				0.05	- 0.02	+ 0.02	●	●	●	
	300-010		3	3				0.1	- 0.02	+ 0.02	●	●	●	

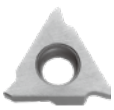
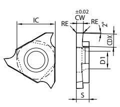
Right-hand shown
Max. Cutting Dia. : See Page **G27**

Recommended cutting conditions ⇨ **G142**

● : Standard item

GBF

		Carbon steel / Alloy steel	◕	◔		P
		Stainless steel	○	◕		M
		Cast iron			◕	K
		Non-ferrous metals			◕	N
		Titanium alloy		◕	◔	S
		Hard materials (~ 40HRC)				H
		Hard materials (40HRC ~)				

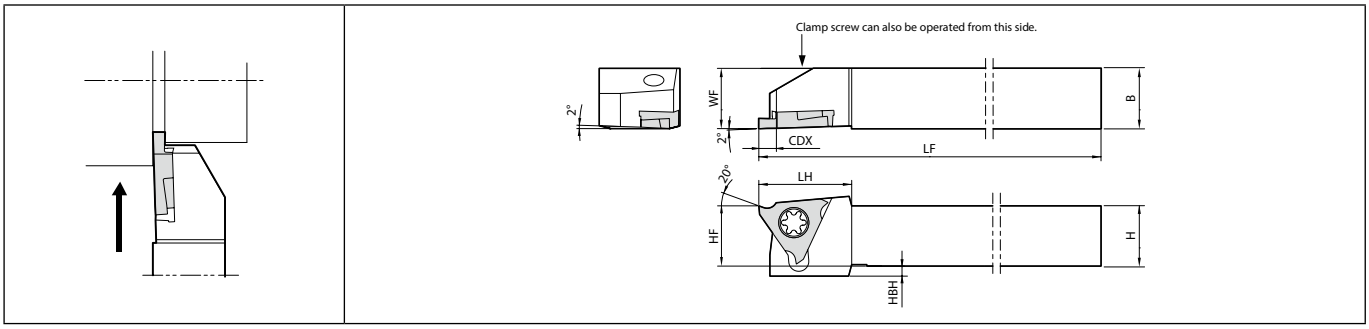
Insert		Description		No. of edges	Dimension (mm) CW	CDX	IC	S	D1	RE	Tolerance (mm) CW min.	CW max.	Carbide PVD PR1215	PVD PR1535	- GW15	Applicable toolholder ➡ G23,G25
		GBF32L	025-005		0.25	0.6				0.05	-0.02	+0.02	●	●	●	
			030-005		0.3	0.8				0.05	-0.02	+0.02	●	●	●	
			033-005		0.33	0.8				0.05	-0.025	+0.015	●	●	●	
			043-005		0.43	1				0.05	-0.025	+0.015	●	●	●	
			050-005		0.5	1.2				0.05	-0.02	+0.02	●	●	●	
			053-005		0.53	1.2				0.05	-0.025	+0.015	●	●	●	
			065-005		0.65	1.2				0.05	-0.02	+0.02	●	●	●	
			075-005		0.75	2				0.05	-0.02	+0.02	●	●	●	
			075-010		0.75	2				0.1	-0.02	+0.02	●	●	●	
			080-005		0.8	2				0.05	-0.02	+0.02	●	●	●	
			080-010		0.8	2				0.1	-0.02	+0.02	●	●	●	
			095-005		0.95	2				0.05	-0.02	+0.02	●	●	●	
			095-010		0.95	2				0.1	-0.02	+0.02	●	●	●	
			100-005		1	2				0.05	-0.02	+0.02	●	●	●	
			100-010		1	2				0.1	-0.02	+0.02	●	●	●	
			110-005		1.1	2				0.05	-0.02	+0.02	●	●	●	
			110-010		1.1	2				0.1	-0.02	+0.02	●	●	●	
			120-005		1.2	2				0.05	-0.02	+0.02	●	●	●	
			120-010		1.2	2				0.1	-0.02	+0.02	●	●	●	
			125-005		1.25	2				0.05	-0.02	+0.02	●	●	●	
			125-010		1.25	2				0.1	-0.02	+0.02	●	●	●	KGBFL...-16F
			130-005	3	1.3	2	9.525	3.18	4.4	0.05	-0.02	+0.02	●	●	●	KGBFSR...-16
			130-010		1.3	2				0.1	-0.02	+0.02	●	●	●	
			140-005		1.4	2.7				0.05	-0.02	+0.02	●	●	●	
			140-010		1.4	2.7				0.1	-0.02	+0.02	●	●	●	
			145-005		1.45	2.7				0.05	-0.02	+0.02	●	●	●	
			145-010		1.45	2.7				0.1	-0.02	+0.02	●	●	●	
			150-005		1.5	2.7				0.05	-0.02	+0.02	●	●	●	
			150-010		1.5	2.7				0.1	-0.02	+0.02	●	●	●	
			165-005		1.65	2.7				0.05	-0.02	+0.02	●	●	●	
			165-010		1.65	2.7				0.1	-0.02	+0.02	●	●	●	
			170-005		1.7	3				0.05	-0.02	+0.02	●	●	●	
			170-010		1.7	3				0.1	-0.02	+0.02	●	●	●	
			175-005		1.75	3				0.05	-0.02	+0.02	●	●	●	
			175-010		1.75	3				0.1	-0.02	+0.02	●	●	●	
			200-005		2	3				0.05	-0.02	+0.02	●	●	●	
			200-010		2	3				0.1	-0.02	+0.02	●	●	●	
			225-005		2.25	3				0.05	-0.02	+0.02	●	●	●	
			225-010		2.25	3				0.1	-0.02	+0.02	●	●	●	
			250-005		2.5	3				0.05	-0.02	+0.02	●	●	●	
			250-010		2.5	3				0.1	-0.02	+0.02	●	●	●	
			300-005		3	3				0.05	-0.02	+0.02	●	●	●	
			300-010		3	3				0.1	-0.02	+0.02	●	●	●	

Right-hand shown
Max. Cutting Dia. : See Page **G27**

Recommended cutting conditions ➡ **G142**

● : Standard item

KGBF-F (External grooving / Shallow grooving)



Right-hand shown | Right-hand Insert for Right-hand Toolholder, Left-hand Insert for Left-hand Toolholder.

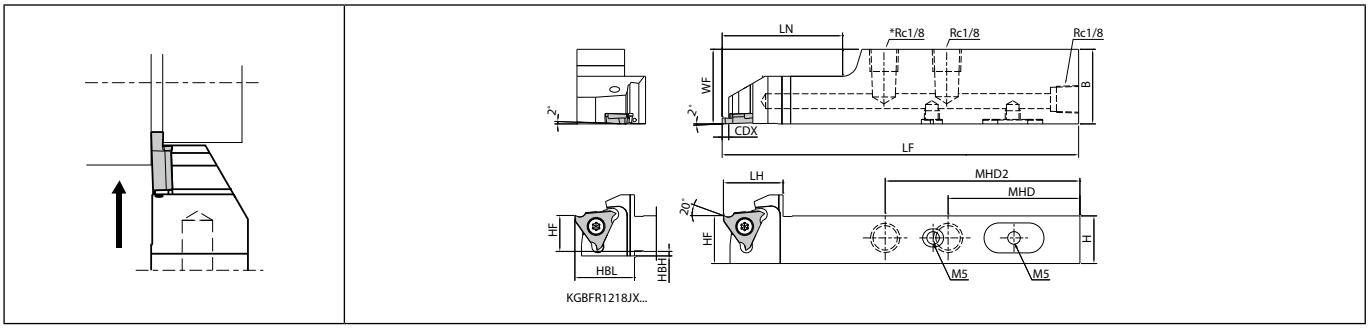
Toolholder dimensions

Description		Availability		Dimension (mm)								Spare parts		Applicable inserts ⇨ G20~G22
		R	L	CDX	H	B	LH	HF	HBH	LF	WF	Screw	Wrench	
KGBF$^{R}_{L}$	1010JX-16F	●	●	3	10	10	18.5	10	4	120	10	SB-4070TRW	FT-8	GBF32$^{R}_{L}$ type
	1212JX-16F	●	●		12	12		12	2		12			
	1616JX-16F	●	●		16	16		16	-		16			
	2020JX-16F	●	●		20	20		20			20			

CDX shows the distance from the toolholder to the cutting edge. Available Groove Depth : „CDX" of Insert.

● : Standard item

KGBF-JCTM (External grooving / Shallow grooving, Coolant-through holder)



Right-hand shown | Right-hand Insert for Right-hand Toolholder. | KGBFR1218JX-16FJCTM : 2-Rc1/8

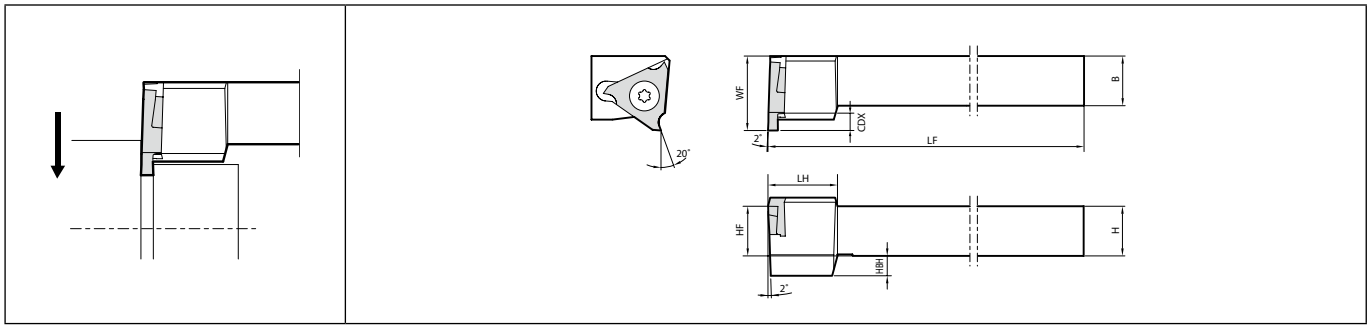
Toolholder dimensions

Description		Availability	Dimension (mm)												Coolant hole	Spare parts				Applicable inserts ⇨ G20,G21
																Plug	Plug	Screw	Wrench	
		R	CDX	H	B	LH	MHD	MHD2	HF	HBH	HBL	LF	LN	WF						
KGBFR	1218JX-16FJCTM	●	3	12	18	20	54	-	12	1.5	20	120	28	12	Yes	GP-1	HS5X4LP	SB-4070TRW	FT-8	GBF32R type
	1625JX-16FJCTM	●		16	25		44	65	16	-	-		40	16			-			
	2025JX-16FJCTM	●		20					20					20						

CDX shows the distance from the toolholder to the cutting edge. Available Groove Depth : „CDX" of Insert.
Please see page **H16** and **H17** for piping parts of coolant-through holders.

● : Standard item

KGBFS (External grooving / Shallow grooving)



Right-hand shown | Left-hand Insert for Right-hand Toolholder, Right-hand Insert for Left-hand Toolholder.

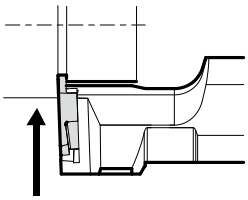
Toolholder dimensions

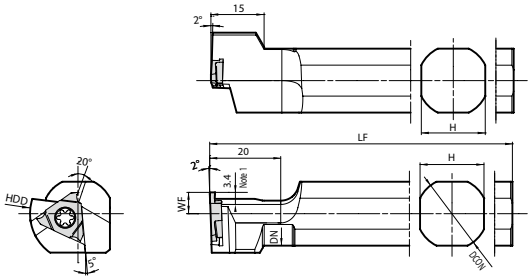
Description		Availability		Dimension (mm)								Spare parts		Applicable inserts
												Screw	Wrench	
		R	L	CDX	H	B	LH	HF	HBH	LF	WF			G20~G22
KGBFS$^{R}/_{L}$	1010JX-16	●	●		10	10		10	4		15			
	1212JX-16	●	●	3	12	12	14	12	2	120	16	SB-4070TRW	FT-8	GBF32$^{L}/_{R}$ type
	1616JX-16	●	●		16	16		16	-		20			

CDX shows the distance from the toolholder to the cutting edge. Available Groove Depth : „CDX" of Insert.

● : Standard item

S-KGBF (External grooving / Shallow grooving)





Left-hand shown | Right-hand Insert for Left-hand Toolholder. | Note 1) CDX shows available grooving depth.

Toolholder dimensions

Description		Availability	Dimension (mm)						Spare parts		Applicable inserts G20,G21
									Screw	Wrench	
		L	DCON	H	DN	HDD	LF	WF			
S12F-	KGBFL16	●	12	11	11	27	80	6	SB-4070TRW	FT-8	GBF32R type
S14H-	KGBFL16	●	14	13	13		100				
S15F-	KGBFL16	●	15.875	15	15		85				
S16F-	KGBFL16	●	16								
S19G-	KGBFL16	●	19.05	17	18		90				
S19K-	KGBFL16	●					120				
S20G-	KGBFL16	●	20	18	19		90				
S20K-	KGBFL16	●					120				
S22K	KGBFL16	●	22	20	21						
S25.0H-	KGBFL16	●	25	23	24	32	100	10			
S25K-	KGBFL16	●	25.4								

● : Standard item

Compatiblity with GBF and GBA

1. GBF will fit KGBA / KGBAS toolholders.
   - Caution: The maximum groove depth for KGBA / KGBAS toolholders is 2.5 mm
2. GBA inserts will also fit KGBF-F toolholders
   - Caution: The rake angle after installation in the toolholder is 11°

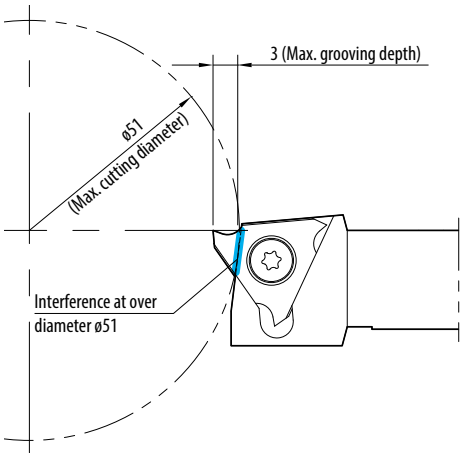
KGBF-F toolholder with GBF insert maximum machining diameter

- 3 mm groove depth is available on workpiece diameters up to ø51mm.
- 2.7 mm groove depth is available on workpiece diameters up to ø100mm.
- 2.5 mm or less groove depth is available on workpiece diameters up to ø200mm

The workpiece will interfere with the holder at maximum diameter or larger

Max. cutting diameter

Max. cutting diameter at 3 mm grooving depth



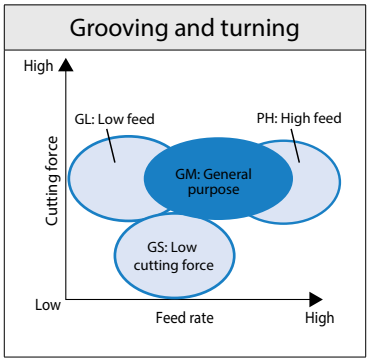
Various insert lineup for KGD toolholder

Smooth chip control
» Newly-introduced chipbreakers designed to cover a variety of workpiece materials.

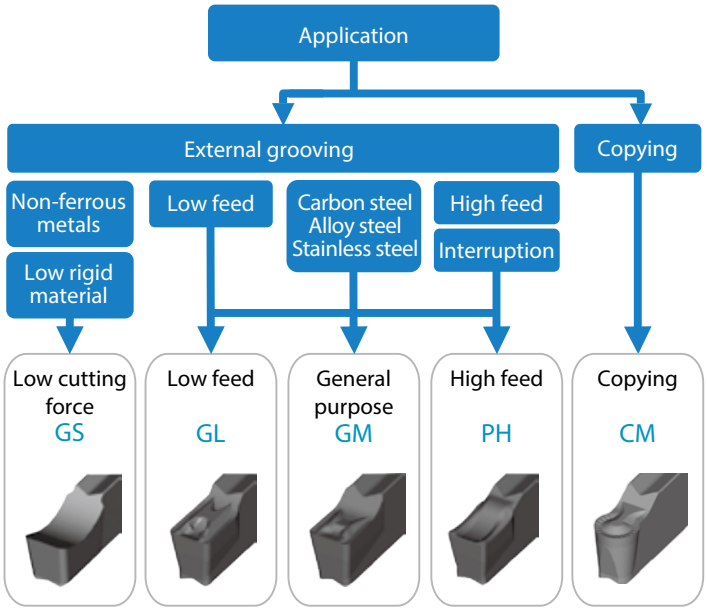
High precision edge preparation
» High precision molding technology with tolerance ±0.03 mm (Edge width 2, 3, 4 mm types)

Highly-reputed MEGACOAT technology
» Long tool life and high efficiency machining achieved by superior oxidation resistance and wear resistance.

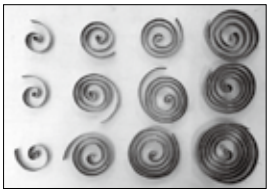
Application map



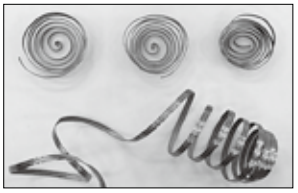
Chipbreaker selection



Comparison of chip control (SCM415, Vc = 150 m/min, f = 0.15 mm/rev)


GM chipbreaker

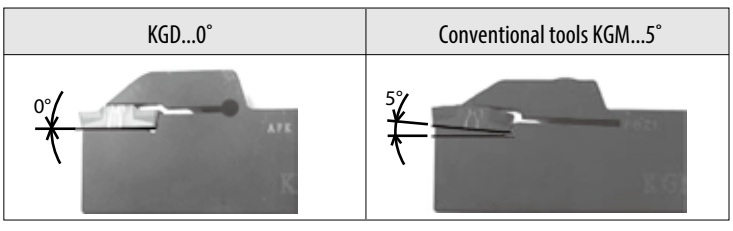

Competitor A

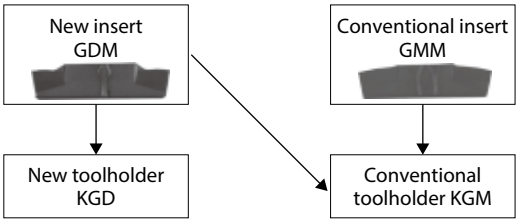

Competitor B

Smooth chip control
» Less chip biting troubles

Toolholder and insert combination of KGD type (new) and KGM type (conventional)

Insert setting angle for grooving toolholders



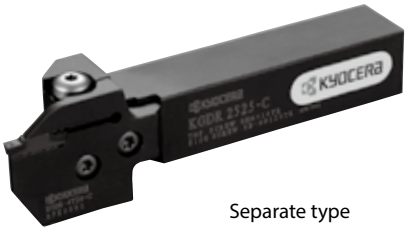


Installing conventional inserts to the new toolholder is not recommended.

KGD grooving toolholder

Integral type and separate type (toolholder + blade) are available

Integral type



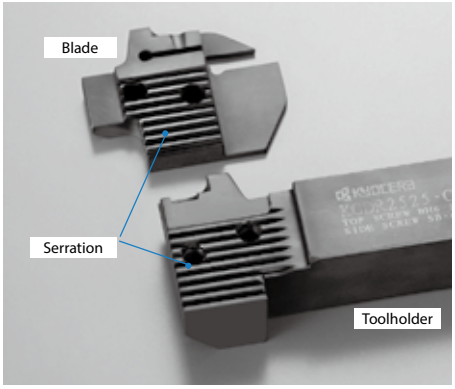
Separate type

High rigidity separate type toolholder

- Adaptable to wide applications by changing blades.
- Deals with various edge widths and cutting depths by changing the blade and toolholder combination.
- Even if the blade is broken, you only need to replace the broken part.

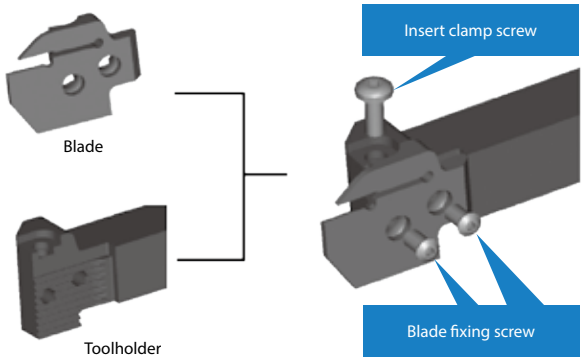
Toolholders for High Pressure Coolant

- Added coolant-through holder KGD-JCTM with superior chip control and long tool life



Structure of toolholder unit (toolholder + blade)

KGD-S (0º separate type)



Note for the toolholder and blade combination of 0° separate type

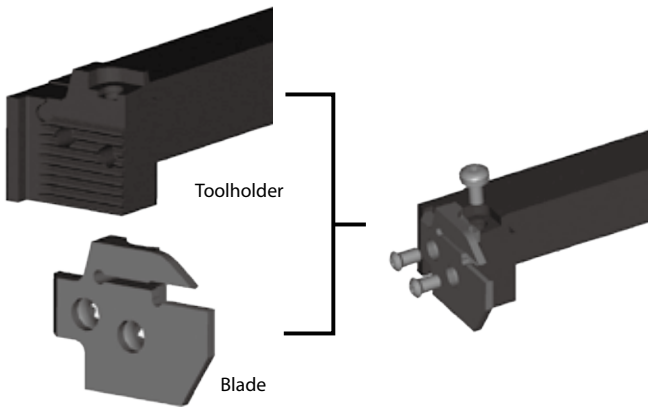
Toolholder (KGD$^{R}/_{L}$○○○○-C)

+

Blade (KGD$^{R}/_{L}$-○T○○-C)

Right-hand blade for right-hand toolholder,
Left-hand blade for left-hand toolholder.

KGDS-S (90º separate type)



Note for the toolholder and blade combination of 90° separate type

Toolholder (KGDS$^{R}/_{L}$○○○○-C)

+

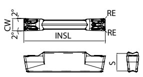
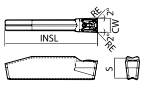
Blade (KGD$^{L}/_{R}$-○T○○-C)

Left-hand blade for right-hand toolholder,
Right-hand blade for left-hand toolholder.

G
Grooving
External
Internal
Face

GDM/GDMS/GDG

Work material	PR1215	PR1225	PR1535	TN620	TN90	
Carbon steel / Alloy steel	◌	◕		●	○	P
Stainless steel	◌	◌	◕			M
Cast iron	◕					K
Non-ferrous metals						N
Titanium alloy			◕			S
Hard materials (~ 40HRC)		○				H
Hard materials (40HRC ~)						H

Insert		Description		No. of edges	Dimension (mm) CW	S	RE	INSL	Tolerance (mm) CW min.	CW max.	Carbide PVD PR1215	PR1225	PR1535	Cermet - TN620	TN90	Applicable toolholder ➡ G34~G42
	 General purpose	GDM	2420N-020GM	2	2.4	4.3	0.2	20	- 0.03	+ 0.03	●	●	●	●	●	KGDR/L…2.4… KGDR/L…2…
		GDM	3020N-020GM 3020N-040GM	2	3	4.3	0.2 0.4	20	- 0.03	+ 0.03	● ●	● ●	● ●	● ●	● ●	KGDR/L…3… KGDR/L…2.4…
		GDM	4020N-020GM 4020N-040GM 4020N-080GM	2	4	4.3	0.2 0.4 0.8	20	- 0.03	+ 0.03	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	KGDR/L…4… KGDR/L…3…
		GDM	5020N-040GM 5020N-080GM	2	5	4.3	0.4 0.8	20	- 0.04	+ 0.04	● ●	● ●	● ●	● ●	●	KGDR/L…5… KGDR/L…4…
		GDM	6020N-040GM 6020N-080GM	2	6	4.3	0.4 0.8	20	- 0.04	+ 0.04	● ●	● ●	● ●	● ●	● ●	KGDR/L…6… KGDR/L…5…
		GDM	8030N-080GM	2	8	5.5	0.8	30	- 0.05	+ 0.05	●	●	●			KGDR/L…-8T25
	 1-edge / General purpose	GDMS	2220N-020GM	1	2.2	4.3	0.2	20	- 0.03	+ 0.03	●	●	●	●	●	KGDR/L…2…
		GDMS	3020N-040GM	1	3	4.3	0.4	20	- 0.03	+ 0.03	●	●	●	●		KGDR/L…3… KGDR/L…2.4…
		GDMS	4020N-040GM	1	4	4.3	0.4	20	- 0.03	+ 0.03	●	●	●	●	●	KGDR/L…4… KGDR/L…3…
		GDMS	5020N-080GM	1	5	4.3	0.8	20	- 0.04	+ 0.04	●	●	●	●		KGDR/L…5… KGDR/L…4…
		GDMS	6020N-080GM	1	6	4.3	0.8	20	- 0.04	+ 0.04	●	●	●	●		KGDR/L…6… KGDR/L…5…

Recommended cutting conditions ➡ G44

Inserts identification system

GD M S 30 20 N - 040 GM

Series: GD

Tolerance symbol	
M	M class
G	G class

Number of edges	
Without indication	2-edge
S	1-edge

Edge width	
20	2 mm
30	3 mm
40	4 mm

Insert length	
20	20 mm
30	30 mm

Hand of tool	
N	Neutral

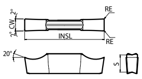
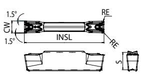
Corner-R (RE)	
020	0.2 mm
030	0.3 mm
040	0.4 mm
150R	1.5 mm (Full-R)

Chipbreaker symbol	
GM	Grooving and turning
GL	Low feed
GS	Low cutting force
CM	Copying
PH	High speed
NB	Without chipbreaker

● : Standard item

GDM/GDMS/GDG

Workpiece material	PR1215	PR1225	PR1535	GW15	TN620	TN90	
Carbon steel / Alloy steel	◔	◕			●	○	P
Stainless steel	◔	◔	◕				M
Cast iron	◕						K
Non-ferrous metals				◕			N
Titanium alloy			◕	◔			S
Hard materials (~ 40HRC)		○					H
Hard materials (40HRC ~)							H

Insert	Description			No. of edges	Dimension (mm) CW	S	RE	INSL	Tolerance (mm) CW min.	CW max.	Carbide PVD PR1215	PR1225	PR1535	Carbide - GW15	Cermet - TN620	TN90	Applicable toolholder ➡ G34~G42
	 Low cutting force	GDG	2520N-020GS	2	2.5	4.3	0.2	20	- 0.02	+ 0.02	●	●	●	●	●	●	KGDR/L...2.4... KGDR/L...2...
		GDG	3020N-020GS	2	3	4.3	0.2	20	- 0.02	+ 0.02	●	●	●	●	●	●	KGDR/L...3... KGDR/L...2.4...
		GDG	3520N-020GS	2	3.5	4.3	0.2	20	- 0.02	+ 0.02	●	●	●	●	●		KGDR/L...3...
		GDG	4020N-040GS	2	4	4.3	0.4	20	- 0.02	+ 0.02	●	●	●	●	●	●	KGDR/L...4... KGDR/L...3...
		GDG	5020N-040GS	2	5	4.3	0.4	20	- 0.02	+ 0.02	●	●	●	●	●	●	KGDR/L...5... KGDR/L...4...
		GDG	6020N-040GS	2	6	4.3	0.4	20	- 0.02	+ 0.02	●	●	●	●	●		KGDR/L...6... KGDR/L...5...
		GDG	8030N-040GS	2	8	5.5	0.4	30	- 0.02	+ 0.02	●	●	●	●	●		KGDR/L...-8T25
	 Low feed	GDM	2420N-020GL	2	2.4	4.3	0.2	20	- 0.03	+ 0.03	●	●	●		●	●	KGDR/L...2.4... KGDR/L...2...
		GDM	3020N-020GL 3020N-040GL	2	3	4.3	0.2 0.4	20	- 0.03	+ 0.03	● ●	● ●	● ●		● ●	● ●	KGDR/L...3... KGDR/L...2.4...
		GDM	4020N-020GL 4020N-040GL	2	4	4.3	0.2 0.4	20	- 0.03	+ 0.03	● ●	● ●	● ●		● ●	●	KGDR/L...4... KGDR/L...3...
		GDM	5020N-040GL	2	5	4.3	0.4	20	- 0.04	+ 0.04	●	●	●		●	●	KGDR/L...5... KGDR/L...4...
		GDM	6020N-040GL	2	6	4.3	0.4	20	- 0.04	+ 0.04	●	●	●		●		KGDR/L...6... KGDR/L...5...

Recommended cutting conditions ➡ G44

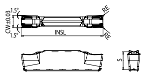
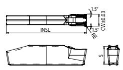
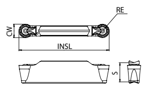
G

Grooving

● : Standard item

GDM/GDMS/GDG

Work material	PR1215	PR1225	PR1535	TN620	TN90	
Carbon steel / Alloy steel	◌	◐		●	○	P
Stainless steel	◌	◌	◐			M
Cast iron	◐					K
Non-ferrous metals						N
Titanium alloy			◐			S
Hard materials (~ 40HRC)		○				H
Hard materials (40HRC ~)						H

Insert		Description		No. of edges	Dimension (mm) CW	S	RE	INSL	Tolerance (mm) CW min.	CW max.	Carbide PVD PR1215	PR1225	PR1535	Cermet - TN620	TN90	Applicable toolholder ➡ G34~G42
	 High feed	GDM	2020N-020PH	2	2	4.3	0.2	20	- 0.03	+ 0.03	●	●	●			KGDR/L...2...
		GDM	3020N-030PH	2	3	4.3	0.3	20	- 0.03	+ 0.03	●	●	●			KGDR/L...3... KGDR/L...2.4...
		GDM	4020N-030PH	2	4	4.3	0.3	20	- 0.03	+ 0.03	●	●	●			KGDR/L...4... KGDR/L...3...
	 1-edge / High feed	GDMS	2020N-020PH	1	2	4.3	0.2	20	- 0.03	+ 0.03	●	●	●			KGDR/L...2...
		GDMS	3020N-030PH	1	3	4.3	0.3	20	- 0.03	+ 0.03	●	●	●			KGDR/L...3... KGDR/L...2.4...
		GDMS	4020N-030PH	1	4	4.3	0.3	20	- 0.03	+ 0.03	●	●	●			KGDR/L...4... KGDR/L...3...
	 Full R	GDM	3020N-150R-CM	2	3	4.3	1.5	20	- 0.03	+ 0.03	●	●	●	●	●	KGDR/L...3... KGDR/L...2.4...
		GDM	4020N-200R-CM	2	4	4.3	2	20	- 0.03	+ 0.03	●	●	●	●	●	KGDR/L...4... KGDR/L...3...
		GDM	5020N-250R-CM	2	5	4.3	2.5	21	- 0.04	+ 0.04	●	●	●	●	●	KGDR/L...5... KGDR/L...4...
		GDM	6020N-300R-CM	2	6	4.3	3	21	- 0.04	+ 0.04	●	●	●	●		KGDR/L...6... KGDR/L...5...

GDM50/60-CM differs from other descriptions in length (INSL) to avoid interference of a toolholder with workpiece.

Recommended cutting conditions ➡ G44

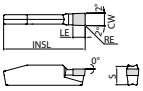
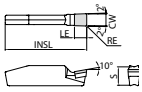
● : Standard item

GDGS

Cutting edge preparation

Symbol	Specification	Example	
F	Sharp edge	F	Sharp edge
E	R-honed	E008	R0.08mm honed

					P
Carbon steel / Alloy steel					
Stainless steel					M
Cast iron					K
Non-ferrous metals			●		N
Titanium alloy			●		S
Hard materials (~ 40HRC)					H
Hard materials (40HRC ~)	●				
Sintered steel		●			

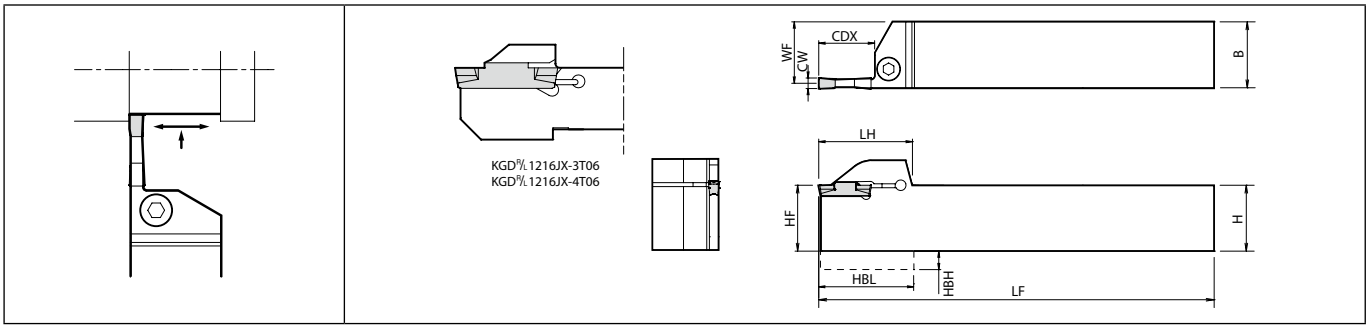
Insert		Description		Edge preparation type	No. of edges	Dimension (mm)					Tolerance (mm)		CBN		PCD	Applicable toolholder ➡ G34~G42
						CW	S	RE	INSL	LE	CW min.	CW max.	PVD	-	-	
													KBN05M	KBN570	KPD001	
	 1-edge	GDGS	2020N-020NB	E008	1	2	4.3	0.2	20	2.9	-0.03	+0.03	●	●		KGD$^{R/L}$...2...
		GDGS	3020N-040NB	E008	1	3	4.3	0.4	20	2.9	-0.03	+0.03	●	●		KGD$^{R/L}$...3... KGD$^{R/L}$...2.4...
		GDGS	4020N-040NB	E008	1	4	4.3	0.4	20	2.9	-0.03	+0.03	●	●		KGD$^{R/L}$...4... KGD$^{R/L}$...3...
		GDGS	5020N-040NB	E008	1	5	4.3	0.4	20	2.9	-0.03	+0.03	●	●		KGD$^{R/L}$...5... KGD$^{R/L}$...4...
		GDGS	6020N-040NB	E008	1	6	4.3	0.4	20	2.9	-0.03	+0.03	●			KGD$^{R/L}$...6... KGD$^{R/L}$...5...
	 1-edge	GDGS	2020N-020NB	F	1	2	4.3	0.2	20	2.9	-0.03	+0.03			●	KGD$^{R/L}$...2...
		GDGS	3020N-020NB	F	1	3	4.3	0.2	20	2.9	-0.03	+0.03			●	KGD$^{R/L}$...3... KGD$^{R/L}$...2.4...
		GDGS	4020N-020NB	F	1	4	4.3	0.2	20	2.9	-0.03	+0.03			●	KGD$^{R/L}$...4... KGD$^{R/L}$...3...
		GDGS	5020N-020NB	F	1	5	4.3	0.2	20	2.9	-0.03	+0.03			●	KGD$^{R/L}$...5... KGD$^{R/L}$...4...
		GDGS	6020N-020NB	F	1	6	4.3	0.2	20	2.9	-0.03	+0.03			●	KGD$^{R/L}$...6... KGD$^{R/L}$...5...

Recommended cutting conditions ➡ G44

● : Standard item

CBN & PCD Inserts are sold in 1 piece boxes

KGD (External grooving)



Right-hand shown

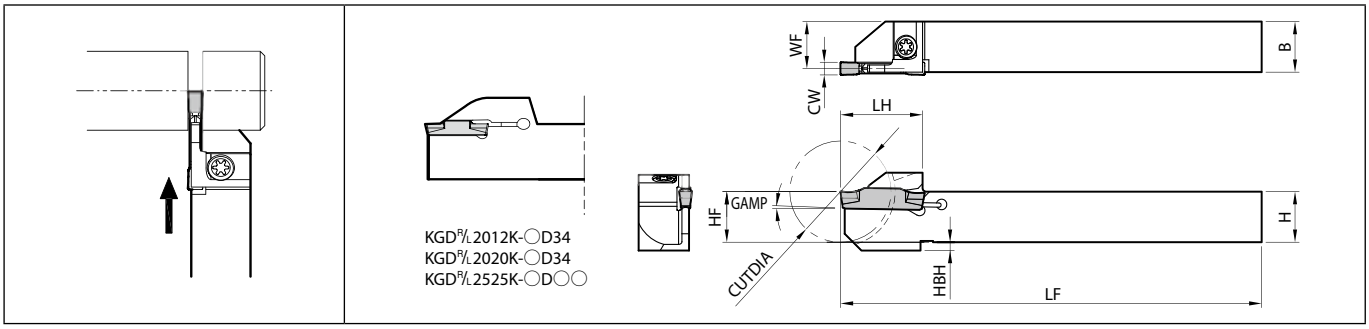
Toolholder dimensions

Description		Availability R	Availability L	Dimension (mm) CDX	H	B	LH	HF	HBH	HBL	LF	WF	CW min.	CW max.	Spare parts: Clamp bolt	Screw	Wrench	Wrench	Applicable inserts G30~G33
KGDR/L	1616H-2T06	●	●	6	16	16	27.7	16	4	28	100	15.2	2	3	HH5X16	-	LW-4	-	GD..2020... GD..2220... GD..2420... GD..2520... GD..3020...
	1616H-2T10	●	●	10			30.2			30.5									
	1616H-2T17	●	●	17			31.2			31.5									
	2012K-2T17	●	●	17	20	12	32.5	20	-	-	125	11.2							
	2020K-2T06	●	●	6	20	20	28	20	-	-	125	19.2							
	2020K-2T10	●	●	10			30.5												
	2020K-2T17	●	●	17			32.5												
	2525M-2T06	●	●	6	25	25	28	25	-	-	150	24.2			HH5X25				
	2525M-2T10	●	●	10			30.5												
	2525M-2T17	●	●	17			32.5												
KGDR/L	2012K-2.4T17	●	●	17	20	12	32.5	20	-	-	125	11	2.4	3	HH5X16	-	LW-4	-	GD..2420... , GD..2520... GD..3020...
	2020K-2.4T17	●	●			20						19							
KGDR/L	1216JX-3T06	●	●	6	12	16	19.5	12	2	19	120	14.8	3	4	-	SE-50125TR	-	LTW-20	GD..3020... GD..3520... GD..4020...
	1616H-3T06	●	●		16		27.7	16	4	28	100				HH5X16	-	LW-4	-	
	1616H-3T10	●	●	10			30.2			30.5									
	1616H-3T20	●	●	20			34.2			34.5									
	2012K-3T20	●	●		20	12	34.5	20	-	-	125	10.8							
	2020K-3T06	●	●	6		20	28					18.8							
	2020K-3T10	●	●	10			30.5												
	2020K-3T20	●	●	20			34.5												
	2525M-3T06	●	●	6	25	25	28	25	-	-	150	23.8			HH5X25				
	2525M-3T10	●	●	10			30.5												
	2525M-3T20	●	●	20			35.5												
KGDR/L	1216JX-4T06	●	●	6	12	16	19.5	12	2	19	120	14.3	4	5	-	SE-50125TR	-	LTW-20	GD..4020... GD..5020...
	2020K-4T10	●	●	10	20	20	30.5	20	-	-	125	18.3			HH5X16	-	LW-4	-	
	2020K-4T20	●	●	20			34.5												
	2525M-4T10	●	●	10	25	25	30.5	25	-	-	150	23.3			HH5X25				
	2525M-4T20	●	●	20			35.5												
	2525M-4T25	●	●	25			40.5												
KGDR/L	2020K-5T10	●	●	10	20	20	30.5	20	-	-	125	17.8	5	6	HH5X16	-	LW-4	-	GD..5020... GD..6020...
	2020K-5T17	●	●	17			37.5								HH5X25				
	2525M-5T10	●	●	10	25	25	30.5	25	-	-	150	22.8							
	2525M-5T17	●	●	17			37.5												
	2525M-5T25	●	●	25			40.5												
KGDR/L	2525M-6T15	●	●	15	25	25	32.5	25	-	-	150	22.4	6	6	HH5X25	-	LW-4	-	GD..6020...
	2525M-6T30	●	●	30			45.5												
KGDR/L	2525M-8T25	●	●	25	25	25	43.3	25	7	44.2	150	22	8	8	HH6X25	-	LW-5	-	GD..8030...
	3232P-8T25	●	●		32	32		32	-	-	170	29							

CDX : Maximum depth to which processing can be made. (If the CDX is 20 mm or more, the maximum groove-depth of groove made by the 2-edge insert will be 18 mm.)
Recommended tightening torque of clamp bolt : 6.5N·m (HH5X○○), 8.0N·m (HH6X25), 2.5N·m (SE-50125TR)
Above toolholders are applicable to Cut-off, too.

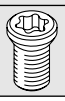
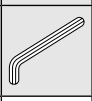
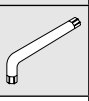
● : Standard item

KGD (External grooving)



Right-hand shown

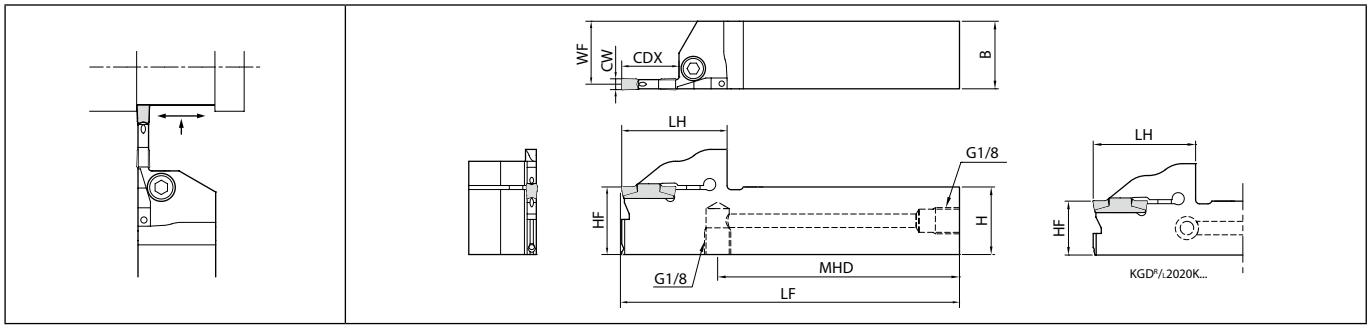
Toolholder dimensions

Description		Availability		Dimension (mm)										Angle (°)	Spare parts					Applicable inserts ➡ G30~G33
															Clamp bolt	Screw	Screw	Wrench	Wrench	
		R	L	CUTDIA	H	B	LH	HF	HBH	LF	WF	CW min.	CW max.	GAMP						
KGDR/L	1010JX-2	●	●	20	10	10	18	10	2	120	9.2	2	3	1	-	SB-40120TR	-	-	LTW-15S	GD..2020... GD..2220... GD..2420... GD..2520... GD..3020...
	1212F-2	●	●	24	12	12	19.5	12		85	11.2									
	1212JX-2	●	●							120										
	1616JX-2	●	●	32	16	16	24.5	16	-		15.2									
	2012K-2D34	●	●	34	20	12	32.5	20		125	11.2			0	HH5X16	-		LW-4	-	
	2020K-2D34	●	●			20					19.2									
	2525K-2D34	●	●		25	25		25			24.2									
KGDR/L	1010JX-2.4	●	●	20	10	10	18	10	2	120	9	2.4	3	1	-	SB-40120TR	-	-	LTW-15S	GD..2420... GD..2520... GD..3020...
	1212F-2.4	●	●	24	12	12	19.5	12		85	11									
	1212JX-2.4	●	●							120										
	1616JX-2.4	●	●	32	16	16	24.5	16	-		15									
	2012K-2.4D34	●	●	34	20	12	32.5	20		125	11			0	HH5X16	-		LW-4	-	
	2020K-2.4D34	●	●			20					19									
	2525K-2.4D34	●	●		25	25		25			24									
KGDR/L	1212JX-3	●	●	24	12	12	19.5	12	2	120	10.8	3	3	1	-	SB-40120TR	-	-	LTW-15S	GD..3020...
KGDR/L	1616JX-3	●	●	32	16	16	24.5	16	-	120	14.8	3	4	1	-	SB-40120TR	-	-	LTW-15S	GD..3020... GD..3520... GD..4020...
	1616JX-3D38	●	●	38			29									-	SE-50125TR	-	LTW-20	
	1913K-3D38	●	●		19	13		19		125	11.8									
	2012JX-3D42	●	●	42	20	12	31	20		120	10.8									
	2012JX-3D51	●	●	51			36													
	2020JX-3D42	●	●	42		20	31				18.8									
	2020JX-3D51	●	●	51			36													
	2525K-3D51	●	●		25	25	41.5	25		125	23.8			0	HH5X16		-	LW-4	-	

4mm width Insert cannot be installed in KGDR/L 1212JX-3
Recommended tightening torque of clamp screw : 2.0N·m (SB-40120TR), 2.5N·m (SE-50125TR), 6.5N·m (HH5X16)
When machining the material greater than ø36 mm with KGDR/L...-3D38, KGDR/L...-3D42 and KGDR/L...-3D51 toolholders, please use 1-edge inserts.
Maximum cuttinng diameter for 2-edge inserts is ø36 mm.

● : Standard item

KGD-JCT (External grooving, Coolant-through holder)

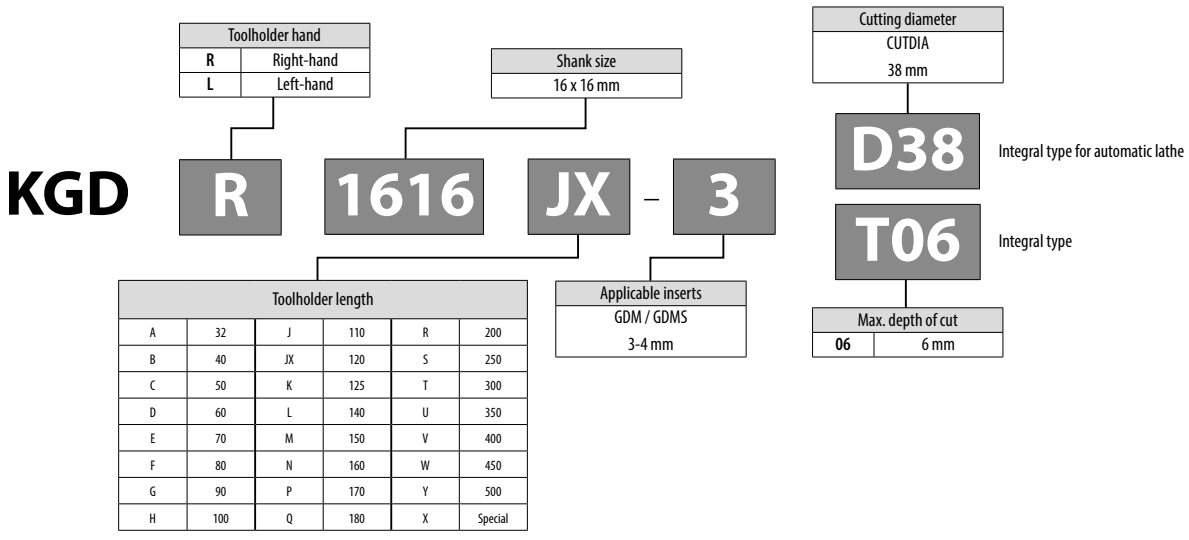


Right-hand shown | Pressure Resistance : ~15MPa

Toolholder dimensions

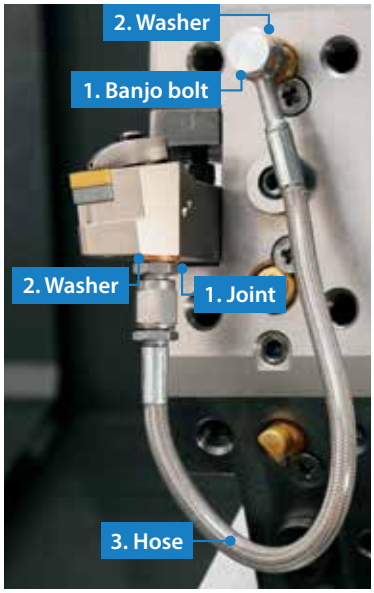
Description		Availability		Dimension (mm)									Coolant hole	Spare parts			Applicable inserts ➡ G30~G33
		R	L	CDX	H	B	LH	MHD	HF	LF	WF	CW min.	CW max.	Clamp bolt	Plug	Wrench	
KGDR/L	2020K-3T06JCT	●	●	6	20	20	31.5	96.2	20	125	18.8	3	4	Yes	HH5X16	HSG1/8X8.0	LW-4	GD..3020... GD..3520... GD..4020...
	2525K-3T06JCT	●	●		25	25		96.5	25		23.8				HH5X25			
KGDR/L	2020K-3T10JCT	●	●	10	20	20	34	94.2	20	125	18.8	3	4	Yes	HH5X16	HSG1/8X8.0	LW-4	
	2525K-3T10JCT	●	●		25	25		94.5	25		23.8				HH5X25			
KGDR/L	2020K-3T20JCT	●	●	20	20	20	38	90.2	20	125	18.8	3	4	Yes	HH5X16	HSG1/8X8.0	LW-4	
	2525K-3T20JCT	●	●		25	25	39	89.5	25		23.8				HH5X25			
KGDR/L	2020K-4T10JCT	●	●	10	20	20	34	94.2	20	125	18.3	4	5	Yes	HH5X16	HSG1/8X8.0	LW-4	GD..4020... GD..5020...
	2525K-4T10JCT	●	●		25	25		94.5	25		23.3				HH5X25			
KGDR/L	2020K-4T20JCT	●	●	20	20	20	38	90.2	20	125	18.3	4	5	Yes	HH5X16	HSG1/8X8.0	LW-4	
	2525K-4T20JCT	●	●		25	25	39	89.5	25		23.3				HH5X25			
KGDR/L	2525K-4T25JCT	●	●	25	25	25	44	84.5	25	125	23.3	4	5	Yes	HH5X25	HSG1/8X8.0	LW-4	

Toolholder identification system



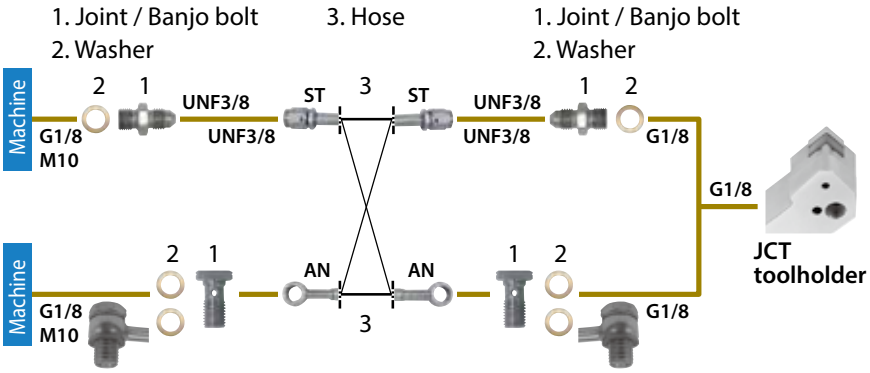
● : Standard item

Easy connection with high pressure hose and joint



- Even without a high pressure pump, internal coolant can be used at a normal pressure
- Banjo bolt available for angled hose connection. Can be used in a variety of machines

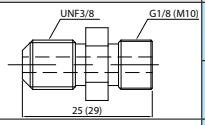
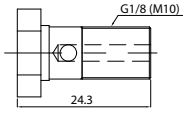
Piping installation guide



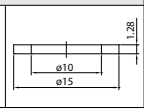
Piping parts

Optional piping parts available
Choose from parts below to match your machine specifications
1. Joint / Banjo bolt × 2 2. Washer × 2-4 3. Hose × 1

1. Joint / Banjo bolt Applicable pressure: ~ 30 MPa

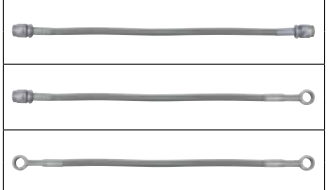
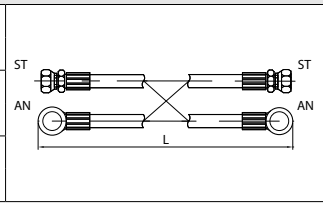
Shape		Description	Availability	Thread standard Thread connection to the machine
		J-G1/8-UNF3/8	●	G1/8
		J-M10X1.5-UNF3/8	●	M10X1.5
Banjo bolt (For the angle hose) 		BB-G1/8	●	G1/8
		BB-M10X1.5	●	M10X1.5

2. Washer Applicable pressure: ~ 30 MPa

Shape		Description	Availability
		WS-10	●

* Use 2 washers for a banjo bolt

3. Hose Applicable pressure: ~ 30 MPa

Shape		Description	Availability	Thread standard		Dimensions (mm) L
		HS-ST-ST-200	●	UNF3/8	UNF3/8	200
		HS-ST-ST-250	●			250
		HS-ST-AN-200	●	UNF3/8	– Banjo bolt	200
		HS-ST-AN-250	●			250
		HS-AN-AN-200	●	– Banjo bolt	– Banjo bolt	200
		HS-AN-AN-250	●			250

● : Std. Item

Precautions

1. Make sure machine door is completely closed before use of these parts.
2. Use appropriate seal for the male thread of the piping parts and make sure the connection is secure. Use plugs to seal off unused coolant holes.
3. Connect and fasten the coolant hose firmly.
4. The use of copper washers may cause leakage but will have no effect on the performance.
5. Commercial piping parts can be used if the thread standards are same. Check the applicable pressure before use.
6. Regularly changing the coolant filter is recommended.

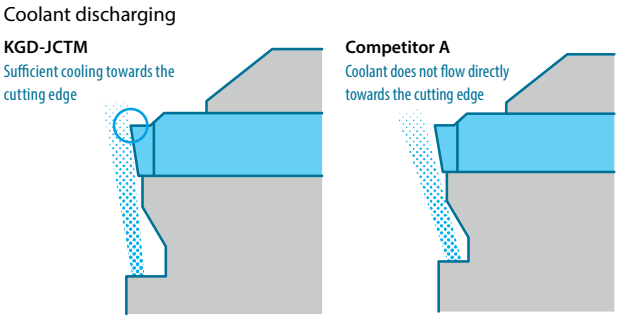
KGD-JCTM (for automatic lathe)

Cut-off holders for high pressure coolant with long tool life
The optimized coolant hole position effectively cools the cutting edge

1 Optimized coolant hole position

2 Discharge coolant towards the flank face of the insert

Coolant discharging



Effective cooling of the cutting edge

Applicable to Different Supply Styles. 2 Supports Internal Coolant with/without Piping System

Internal Coolant without Piping

***When the tool turret supports direct coolant**

Coolant is supplied directly from tool turret into the holder. No need for piping just by installing tools

Applicable to Wide Range of Machines

The tool turret is optional. Please contact our company sales representative for details.

CITIZEN MACHINERY CO., LTD. (L20, D25, M32)
STAR MICRONICS CO., LTD. (SB-R series, SR series, SV series)
TSUGAMI CORPORATION (S205/206-Ⅱ □16 type, S205A/206A-Ⅱ □16 type)

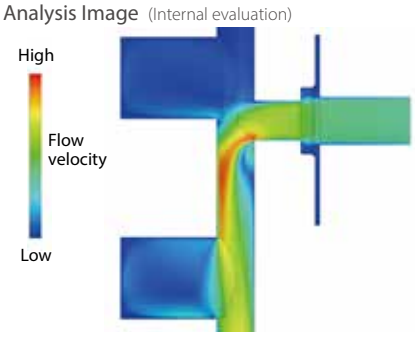
Compatible with various machine including the above.Toolholders can be customized as well.

(Random order)
Based on Kyocera Survey in January 2021

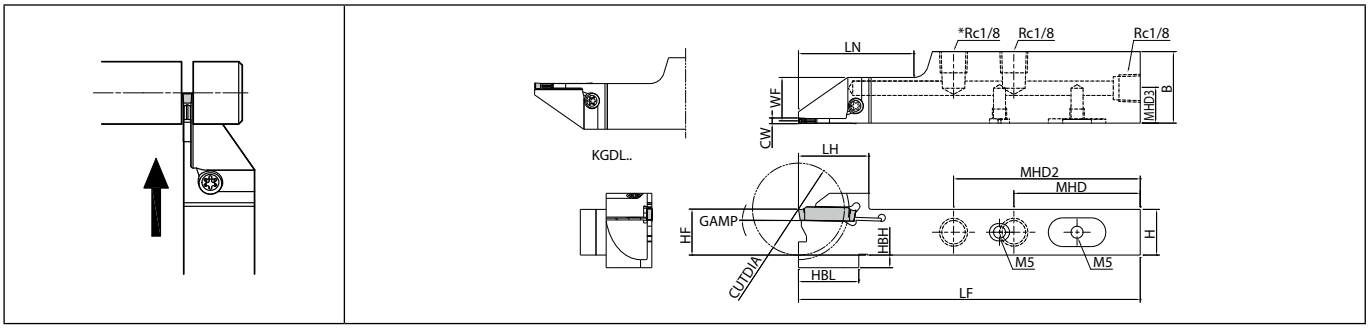
Point

Appropriate hole design to reduce energy loss based on deep analysis

Analysis Image (Internal evaluation)



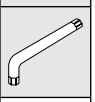
KGD-JCTM (External grooving, Coolant-through holder)



Right-hand shown | KGD$^{R/L}$12-JCTM : 2-Rc1/8

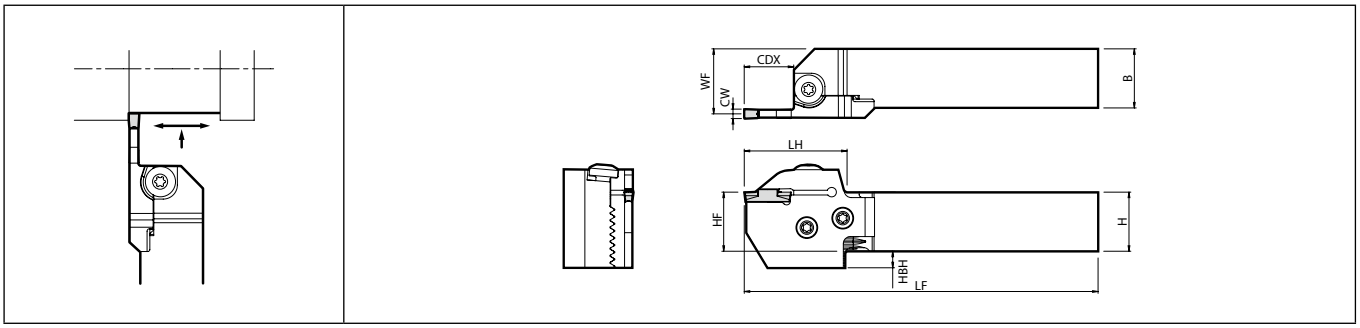
Toolholder dimensions

Description		Availability R	Availability L	Dimension (mm) CUTDIA	H	B	LH	MHD	MHD2	MHD3	HF	HBH	HBL	LF	LN	WF	CW min.	CW max.	Angle (°) GAMP	Coolant hole	Applicable inserts G30~G33
KGDR	1218JX-2JCTM	●		24	12	18	19.5	54	-	8.4	12	8.5	21	120	44	11.2	2	3	1	Yes	GD..2020... GD..2220... GD..2420... GD..2520... GD..3020...
KGDL	1218JX-2JCTM		●							7.7			21.5								
KGDR	1625JX-2JCTM	●		32	16	25	24.5	44	65	12.2	16	4.5	21		40	15.2					
KGDL	1625JX-2JCTM		●							7.7											
KGDR	1218JX-2.4JCTM	●		24	12	18	19.5	54	-	8.4	12	8.5	21	120	44	11	2.4	3	1	Yes	GD..2420... GD..2520... GD..3020...
KGDL	1218JX-2.4JCTM		●							7.7			21.5								
KGDR	1625JX-2.4JCTM	●		32	16	25	24.5	44	65	12.2	16	4.5	21		40	15					
KGDL	1625JX-2.4JCTM		●							7.7											
KGDR	1218JX-3JCTM	●		24	12	18	19.5	54	-	8.6	12	8.5	21	120	44	10.8	3	3	1	Yes	GD..3020... GD..3520... GD..4020...
KGDL	1218JX-3JCTM		●							7.7			21.5								
KGDR	1625JX-3JCTM	●		32	16	25	24.5	44	65	12.2	16	4.5	21		40	14.8		4			
KGDL	1625JX-3JCTM		●							7.7											

Description		Spare parts Plug	Plug	Screw	Wrench
					
KGDR	1218JX-2JCTM	GP-1	HS5X4LP	SB-40120TR	LTW-15S
KGDL	1218JX-2JCTM				
KGDR	1625JX-2JCTM				
KGDL	1625JX-2JCTM				
KGDR	1218JX-2.4JCTM	GP-1	HS5X4LP	SB-40120TR	LTW-15S
KGDL	1218JX-2.4JCTM				
KGDR	1625JX-2.4JCTM				
KGDL	1625JX-2.4JCTM				
KGDR	1218JX-3JCTM	GP-1	HS5X4LP	SB-40120TR	LTW-15S
KGDL	1218JX-3JCTM				
KGDR	1625JX-3JCTM				
KGDL	1625JX-3JCTM				

● : Standard item

KGD-S (External grooving / 0° separate type)



Right-hand shown (Right-hand blade and right-hand toolholder)

Toolholder dimensions (Blade and toolholder)

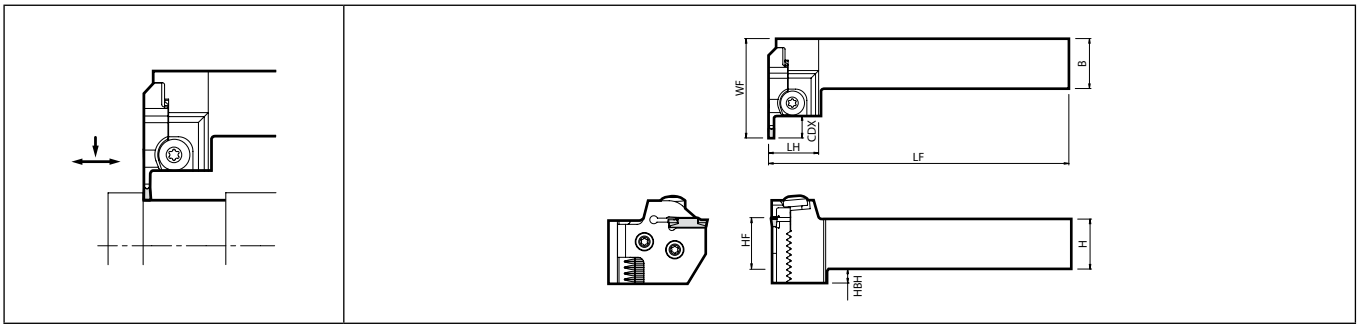
Shank angle	Width (mm)	Max. depth of cut (mm)	Shank size (mm)	Unit description	Availability R	Availability L	Blade description G42	Toolholder description G42	Dimension (mm) CDX	H	B	LH	HF	HBH	LF	WF	CW min.	CW max.	Spare parts: Clamp bolt (for insert clamp)	Screw (for blade)	Wrench
0°	2	17	□20	KGDR/L 2020X-2T17S	●		KGDR/L-2T17-C	KGDR/L2020-C	17	20	20	40	20	12	122	23.4	2	3	BH6X10TR	SB-60120TR	LTW-25
			□25	2525X-2T17S	●	●		KGDR/L2525-C		25	25		25	7	147	28.4					
			□32	No unit description ⇨				KGDR/L3232-C		32	32		32	-	167	35.4					
	3	10	□20	KGDR/L 2020X-3T10S	●		KGDR/L-3T10-C	KGDR/L2020-C	10	20	20	33	20	12	115	23	3	4			
			□25	2525X-3T10S	●			KGDR/L2525-C		25	25		25	7	140	28					
			□32	No unit description ⇨				KGDR/L3232-C		32	32		32	-	160	35					
		20	□20	KGDR/L 2020X-3T20S	●	●	KGDR/L-3T20-C	KGDR/L2020-C	20	20	20	43	20	12	125	23					
			□25	2525X-3T20S	●	●		KGDR/L2525-C		25	25		25	7	150	28					
			□32	3232X-3T20S	●			KGDR/L3232-C		32	32		32	-	170	35					
	4	10	□20	KGDR/L 2020X-4T10S	●		KGDR/L-4T10-C	KGDR/L2020-C	10	20	20	33	20	12	115	22.5	4	5			
			□25	2525X-4T10S	●			KGDR/L2525-C		25	25		25	7	140	27.5					
			□32	No unit description ⇨				KGDR/L3232-C		32	32		32	-	160	34.5					
		20	□20	KGDR/L 2020X-4T20S	●		KGDR/L-4T20-C	KGDR/L2020-C	20	20	20	43	20	12	125	22.5					
			□25	2525X-4T20S	●	●		KGDR/L2525-C		25	25		25	7	150	27.5					
			□32	3232X-4T20S	●			KGDR/L3232-C		32	32		32	-	170	34.5					
		25	□20	KGDR/L 2020X-4T25S	●	●	KGDR/L-4T25-C	KGDR/L2020-C	25	20	20	48	20	12	130	22.5					
			□25	2525X-4T25S	●	●		KGDR/L2525-C		25	25		25	7	155	27.5					
			□32	3232X-4T25S	●			KGDR/L3232-C		32	32		32	-	175	34.5					
	5	10	□20	KGDR/L 2020X-5T10S	●	●	KGDR/L-5T10-C	KGDR/L2020-C	10	20	20	33	20	12	115	22	5	6			
			□25	2525X-5T10S	●			KGDR/L2525-C		25	25		25	7	140	27					
			□32	No unit description ⇨				KGDR/L3232-C		32	32		32	-	160	34					
		25	□20	No unit description ⇨			KGDR/L-5T25-C	KGDR/L2020-C	25	20	20	48	20	12	130	22					
			□25	KGDR/L 2525X-5T25S	●	●		KGDR/L2525-C		25	25		25	7	155	27					
			□32	3232X-5T25S	●			KGDR/L3232-C		32	32		32	-	175	34					

Applicable inserts ⇨ **G30~G33**

1. When using the toolholder in normal mounting position, the lower jaw of toolholder may interfere with the tool presetter.
2. The toolholder and blade descriptions are printed on the toolholder body. (Unit description is not printed.)
   KGD-S: Right-hand blade for right-hand toolholder, left-hand blade for left-hand toolholder.
   The toolholder is applicable for all blade with suitable hand.
3. When the unit description is not available (No unit description) and/or stock status is "-", please purchase toolholder and blade separately.
4. CDX: Maximum depth to which processing can be made. (If the CDX is 20 mm or more, the maximum groove-depth of groove made by the 2-edge insert will be 18 mm.)
   Above toolholders are applicable to Cut-off, too.

● : Standard item

KGDS-S (External grooving / 90° separate type)



Right-hand shown (Left-hand blade and right-hand toolholder)

Toolholder dimensions (Blade and toolholder)

Shank angle	Width (mm)	Max. depth of cut (mm)	Shank size (mm)	Blade description ⇨ G42	Toolholder description ⇨ G42	Unit description	Availability R	Availability L	Dimension (mm) CDX	H	B	LH	HF	HBH	LF	WF	CW min.	CW max.	Spare parts: Clamp bolt (for insert clamp)	Spare parts: Screw (for blade)	Spare parts: Wrench
90°	2	17	□20	KGD$^{L}_{R}$-2T17-C	KGDS$^{R}_{L}$2020-C	-			17	20	20	27.7	20	12	125	56.7	2	3	BH6X10TR	SB-60120TR	LTW-25
			□25		KGDS$^{R}_{L}$2525-C	-				25	25		25	7	150						
	3	10	□20	KGD$^{L}_{R}$-3T10-C	KGDS$^{R}_{L}$2020-C	KGDS$^{R}_{L}$ 2020X-3T10S	●	●	10	20	20		20	12	125	49.7	3	4			
			□25		KGDS$^{R}_{L}$2525-C	2525X-3T10S	●	●		25	25		25	7	150						
		20	□20	KGD$^{L}_{R}$-3T20-C	KGDS$^{R}_{L}$2020-C	-			20	20	20		20	12	125	59.7					
			□25		KGDS$^{R}_{L}$2525-C	-				25	25		25	7	150						
	4	10	□20	KGD$^{L}_{R}$-4T10-C	KGDS$^{R}_{L}$2020-C	-			10	20	20		20	12	125	49.7	4	5			
			□25		KGDS$^{R}_{L}$2525-C	-				25	25		25	7	150						
		20	□20	KGD$^{L}_{R}$-4T20-C	KGDS$^{R}_{L}$2020-C	-			20	20	20		20	12	125	59.7					
			□25		KGDS$^{R}_{L}$2525-C	-				25	25		25	7	150						
		25	□20	KGD$^{L}_{R}$-4T25-C	KGDS$^{R}_{L}$2020-C	-			25	20	20		20	12	125	64.7					
			□25		KGDS$^{R}_{L}$2525-C	-				25	25		25	7	150						
	5	10	□20	KGD$^{L}_{R}$-5T10-C	KGDS$^{R}_{L}$2020-C	-			10	20	20		20	12	125	49.7	5	6			
			□25		KGDS$^{R}_{L}$2525-C	-				25	25		25	7	150						
		25	□20	KGD$^{L}_{R}$-5T25-C	KGDS$^{R}_{L}$2020-C	-			25	20	20		20	12	125	64.7					
			□25		KGDS$^{R}_{L}$2525-C	-				25	25		25	7	150						

1. When using the toolholder in normal mounting position, the lower jaw of toolholder may interfere with the tool presetter.
2. The toolholder and blade descriptions are printed on the toolholder body. (Unit description is not printed.)
   KGDS-S : Left-hand Blade for Right-hand Toolholder, Right-hand Blade for Left-hand Toolholder.
   The toolholder is applicable for all blade with suitable hand.
3. CDX : Maximum depth to which processing can be made. (If the CDX is 20 mm or more, the maximum groove-depth of groove made by the 2-edge insert will be 18 mm.)

Applicable inserts ⇨ G30~G33

Toolholder identification system

KGD
KGDS

Toolholder hand	
R	Right-hand
L	Left-hand

Shank size
20 x 20 mm

R 2020 X – 3 T10 S

Separate type / unit description

Toolholder ype
Unit description

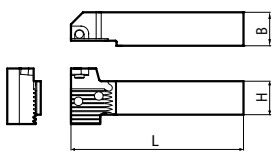
Applicable inserts
GDM / GDMS
3-4 mm

Max. depth of cut	
10	10 mm

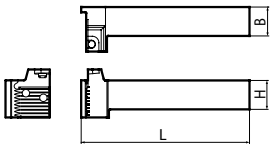
● : Standard item

Toolholder dimensions (Blade and toolholder)

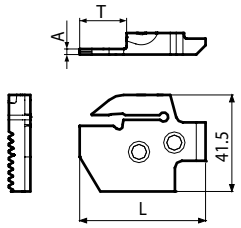
KGD-C (0° Separate Type)

Drawing of 0° type Right-hand shown	Toolholder description		Availability R	Availability L	Dimension (mm) L	B	H
	KGD$^{R}_{L}$	2020-C	●	●	104	20	20
		2525-C	●	●	129	25	25
		3232-C	●	●	149	32	32

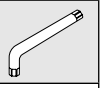
KGDS-C (90° Separate Type)

Drawing of 90° type Right-hand shown	Toolholder description		Availability R	Availability L	Dimension (mm) L	B	H
	KGDS$^{R}_{L}$	2020-C	●	●	122	20	20
		2525-C	●	●	147	25	25

Blade

Drawing of blade Right-hand shown	Blade description		Availability R	Availability L	Dimension (mm) L	T	A
	KGD$^{R}_{L}$	-2T17-C	●	●	51.2	17.2	1.7
		-3T10-C	●	●	44.2	10.2	2.4
		-3T20-C	●	●	53.2	20.2	
		-4T10-C	●	●	44.2	10.2	3.4
		-4T20-C	●	●	54.2	20.2	
		-4T25-C	●	●	59.2	25.2	
		-5T10-C	●	●	44.2	10.2	4.4
		-5T25-C	●	●	59.2	25.2	

Spare parts

Unit description	Spare parts Clamp bolt (for insert clamp)	Screw (for blade)	Wrench
			
KGD$^{R}_{L}$ ...S KGDS$^{R}_{L}$ ...S	BH6X10TR	SB-60120TR	LTW-25

● : Standard item

Setting the inserts

1. Use compressed air or other measures to remove chips from the insert mounting part (Ref. to Fig. 1).
2. Put the insert into the toolholder and push it makes contact with the back end of toolholder's surface (Ref. to Fig. 1 and 2).
3. Keeping the insert fit to the surface, tighten the insert clamp screw at an appropriate torque.
4. Make sure that there is no gap between the insert and the back end of the toolholder's surface and that the insert is set straight (Ref. to Fig. 2 and 3).

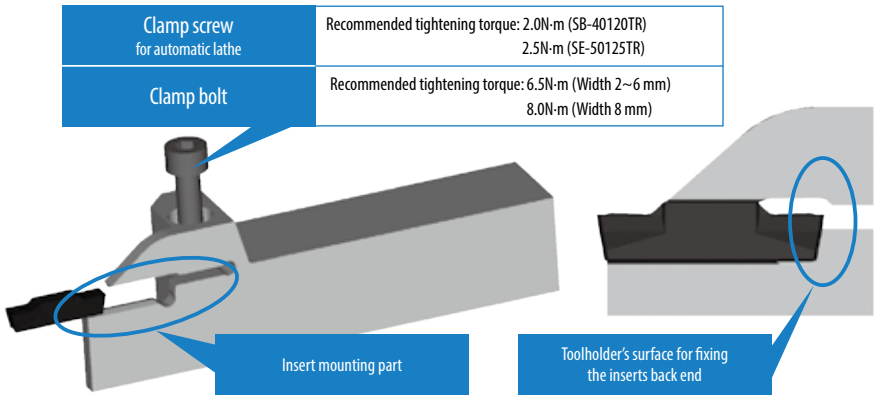


Fig. 1 Fig. 2

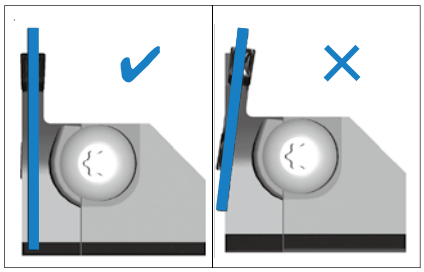


Fig. 3

Setting the blade (Separate type toolholder)

1. Use compressed air or other measures to remove chips and dust from the serration part (Ref. to Fig. 1).
2. Mate and fit the serrations of the blade and toolholder, and also fit the blade end to the toolholder. (Ref. to Fig. 2)
3. Tighten the blade fixing screws at an appropriate torque. You can tighten them in any order. (Ref. to Fig. 2)
   Recommended tightening torque : 8N·m
4. Set the insert after setting the blade.

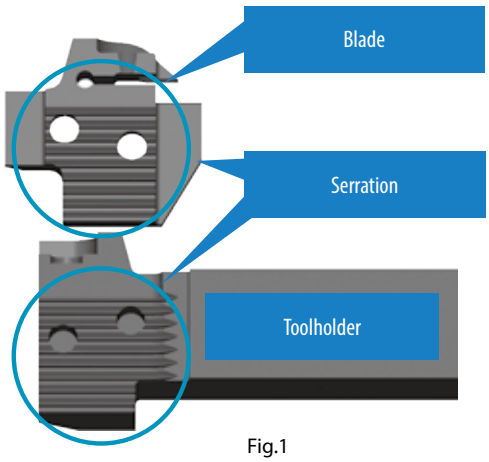


Fig.1

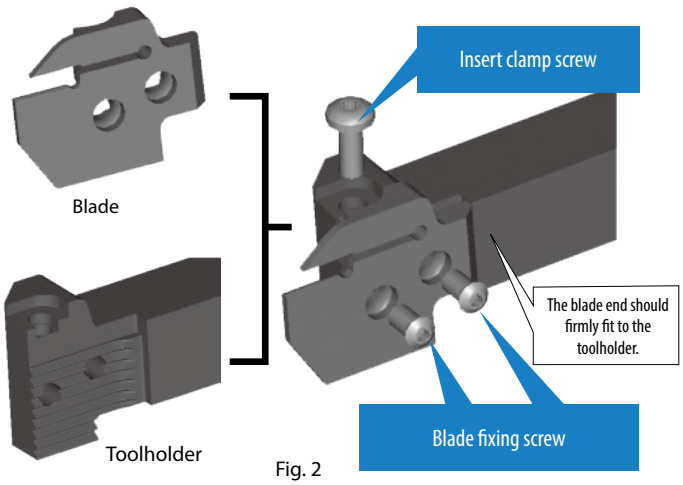
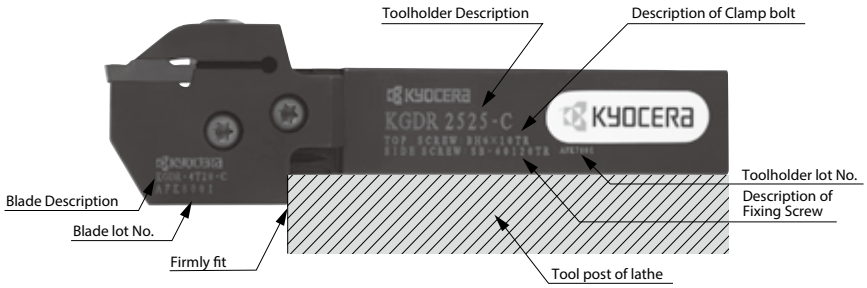


Fig. 2

Separate type toolholder identification system and their setting to lathe

Firmly fit the lower jaw to the tool post of the lathe.



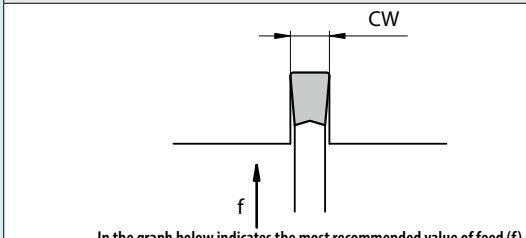
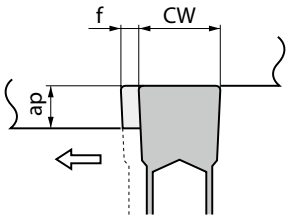
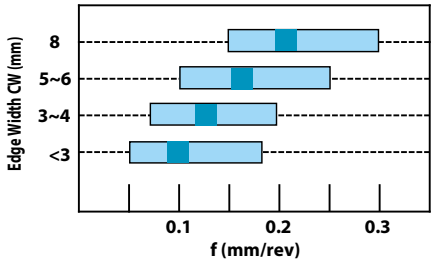
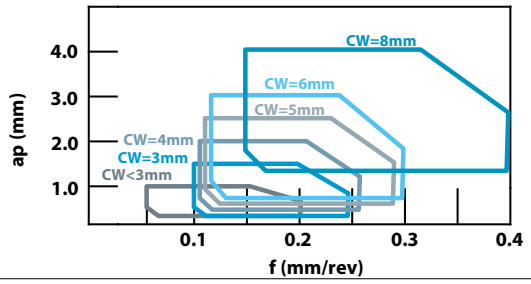
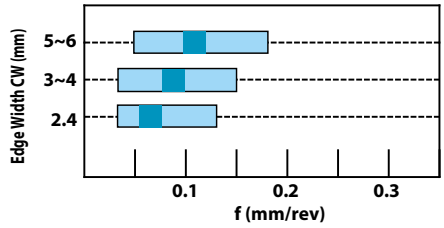
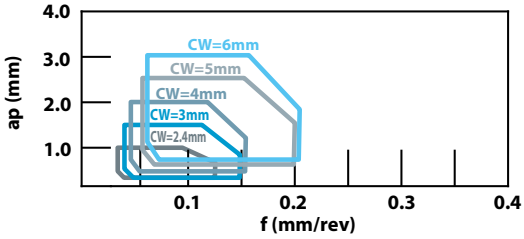
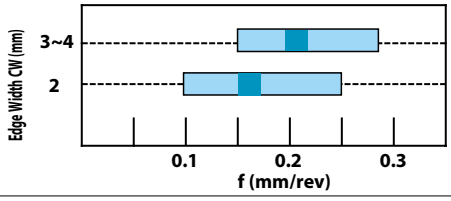
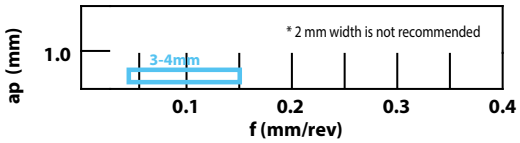
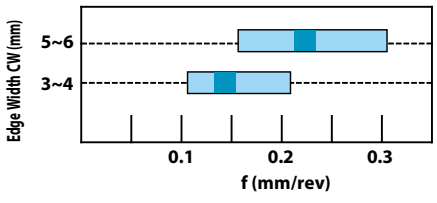
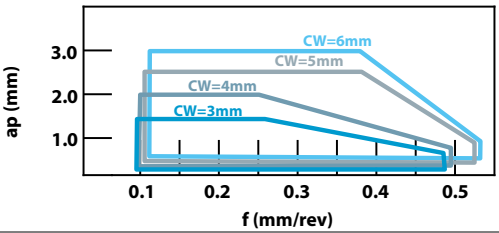
Recommended cutting conditions (cutting speed Vc)

Workpiece material	Chipbreaker	Recommended insert grades (Vc: m/min)								Remarks
		Cermet		MEGACOAT NANO	MEGACOAT		Carbide	MEGACOAT CBN	CBN	PCD	
		TN620	TN90	PR1535	PR1225	PR1215	GW15	KBN05M	KBN570	KPD001	
Carbon steel	GM GL CM PH GS	☆ 80~220	☆ 100~220	☆ 80~200	★ 80~200	☆ 100~200	-	-	-	-	Coolant
Alloy steel		☆ 70~200	☆ 80~200	☆ 70~180	★ 70~180	☆ 80~180	-	-	-	-	
Stainless steel		-	-	★ 60~150	☆ 60~150	☆ 60~150	-	-	-	-	
Cast iron		-	-	-	-	★ 100~200	-	-	-	-	
Aluminum	GS NB	-	-	-	-	-	☆ 200~500	-	-	★ 150~2,000	
Brass		-	-	-	-	-	☆ 100~200	-	-	★ 200~800	
Hard materials	NB	-	-	-	-	-	-	★ 80~150	-	-	
Sintered steel		-	-	-	-	-	-	-	★ 100~250	-	

★:1st recommendation ☆:2nd recommendation

Recommended cutting conditions (feed rate / ap)

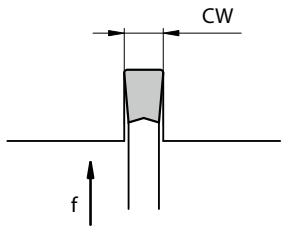
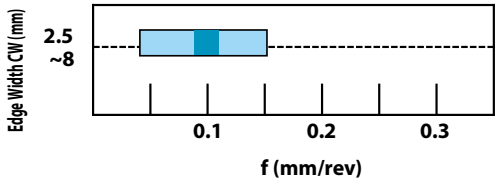
Workpiece material: S50C

Chipbreaker	Grooving	Turning
	 In the graph below indicates the most recommended value of feed (f)	
GM (General purpose)		
GL (Low feed)		
PH (High feed)		
CM (Copying)		

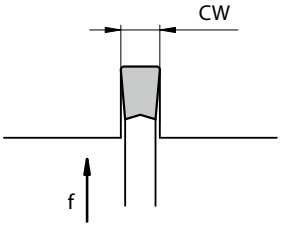
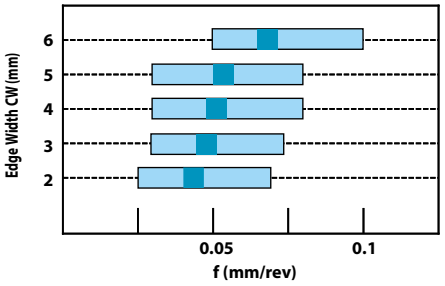
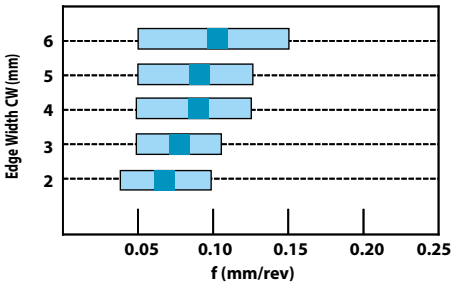
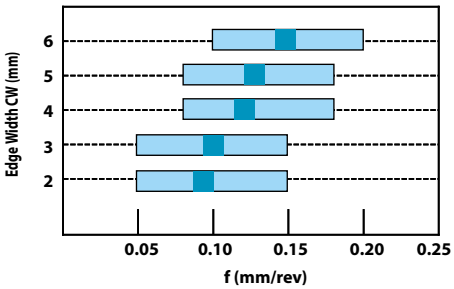
Note 1. The above values are based on the condition that CDX of toolholder is 17 mm or less.
2. If the toolholder is not for the 8 mm width insert and its dimension CDX is over 17 mm, set the values for turning to 90% or less of those above.

Recommended cutting conditions (feed rate / ap)

Workpiece material: S50C

Chipbreaker	Grooving
	 In the graph below indicates the most recommended value of feed (f)
GS (Low cutting force)	 When turning: keep ap less than or equal to the corner-R(RE).

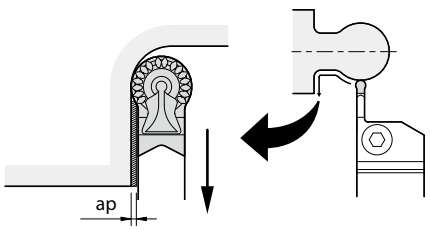
Note 1. The above values are based on the condition that CDX of toolholder is 17 mm or less.

Workpiece material	Insert grades	Grooving
		 In the graph below indicates the most recommended value of feed (f)
Hard materials	KBN05M	
Sintered steel	KBN570	
Non-ferrous metals	KPD001	

CM chipbreaker [Cutting amount (ap) in back copying]

Maximum ap in back copying

Description		Maximum ap (mm)				
		Toolholder description				
		KGD…-2T…	KGD…-3T…	KGD…-4T…	KGD…-5T…	KGD…-6T…
GDM	3020N-150R-CM	0.24	0.20	-	-	-
	4020N-200R-CM	-	0.24	0.20	-	-
	5020N-250R-CM	-	-	0.30	0.20	-
	6020N-300R-CM	-	-	-	0.30	0.25



Guide for external grooving

Point 1 - Turning after grooving

1. Grooving depth over 0.5 mm: For roughing - refer to fig. 1
Before turning, pull the tool back about 0.1mm after grooving, instead of turning subsequent to grooving.
Failure to pull the tool back before traverse machining will result in an unbalanced load applied on only one side of the cutting edge.

2. Grooving depth under 0.5 mm: For finishing - refer to fig. 2
Turning subsequent to grooving is possible because shallow groove depths relate a small load on the cutting edge.
Retention time is not necessary.

Point 2

1. When widening the groove width (Refer to Fig.3), apply the "Step Turning."
2. The widened groove and side walls should be finished last. For better chip control, ap over 0.5 mm is recommended. Note: If the workpiece is not supported at the center, reduce the feed rate when grooving towards center.

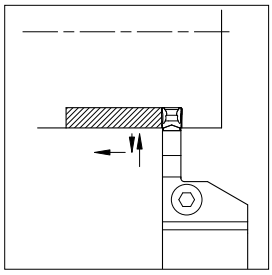


Fig.1
Before turning, pull the tool back about 0.1 mm after grooving. Grooving depth over 0.5 mm: At roughing

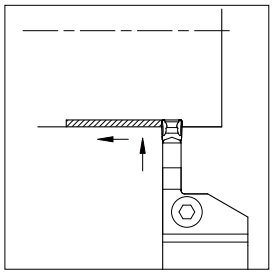


Fig. 2
Turning subsequent to grooving. Grooving depth under 0.5 mm: At finishing

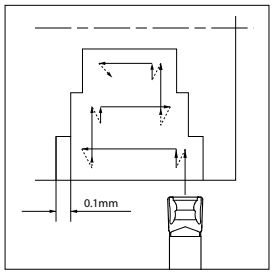
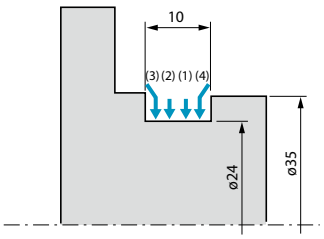


Fig. 3

Case Studies

SCr420H (Grooving)

Gear
Vc = 113~164 m/min
f = 0.06 mm/rev
Wet
GDM4020N-040GM
(PR1225)
KGDL2525X-3T10S



GM chipbreaker (PR1225)	1,500 pcs/c
Competitor K (PVD coated carbide)	250 pcs/c

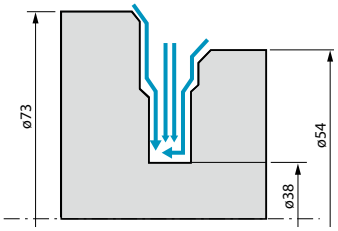
- GM chipbreaker (PR1225) showed 6 times longer tool life than that of Competitor K.
- Good chip control without burned chips.

GM chipbreaker Competitor K

Evaluation by the user

SCM420 (Grooving / Turning)

Gear
Vc = 170 m/min
f = 0.15 mm/rev (Roughing)
0.10 mm/rev (Finishing)
ap = 0.2 mm (Finishing)
Wet
GDM4020N-040GM
(PR1215)
KGDR2525X-4T20S



GM chipbreaker (PR1215)	250 pcs/c
Competitor L (Roughing: PVD coated carbide; Finishing: cermet)	200 pcs/c

- GM chipbreaker reduced occurrence rate of tangle of chips (occurrence rate 80% to 10%). The problem was persistent with Competitor L.
- Machining productivity is improved.

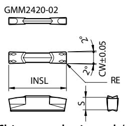
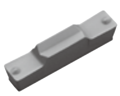
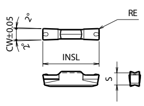
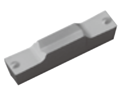
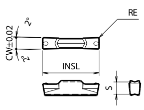
GM Chipbreaker (Finishing)
Smooth chip control

Competitor L (Finishing)
Chips easily tangled

Evaluation by the user

GM/GMN/GMM/GMG/GMGA/FGG

Work material	CR9025	PR905	PR915	PR930	KW10	TN90	
Carbon steel / Alloy steel			◌	●			P
Stainless steel			●	◌			M
Cast iron		●			●		K
Non-ferrous metals					●		N
Titanium alloy					●		S
Hard materials (~ 40HRC)			○	●			H
Hard materials (40HRC ~)							H

Insert		Description		No. of edges	Dimension (mm) CW	S	RE	INSL	Tolerance (mm) CW min.	CW max.	Carbide CVD CR9025	Carbide PVD PR905	PR915	PR930	Carbide - KW10	Cermet - TN90	Applicable toolholder ➡ G55~G58 G95
	 Chip control oriented / M class	GMM	2420-020MW	2	2.4	4.3	0.2	20	- 0.05	+ 0.05	○	○		○	○	○	KGM...2.5(...) KGM...2(...)
		GMM	3020-020MW	2	3	4.3	0.2	20	- 0.05	+ 0.05	○	○	○	○	○	○	KGM...3(...) KGM...2(...)
			3020-040MW				0.4				○	○	○	○	○	○	
		GMM	4020-020MW	2	4	4.3	0.2	20	- 0.05	+ 0.05	○	○		○		○	KGM...4(...) KGM...3(...)
			4020-040MW				0.4					○	○	○	○	○	
			4020-080MW				0.8				○	○	○	○		○	
		GMM	5020-040MW	2	5	4.3	0.4	20	- 0.05	+ 0.05	○	○		○	○	○	KGM...5(...) KGM...4(...)
			5020-080MW				0.8				○	○	○	○	○	○	
		GMM	6020-040MW	2	6	4.3	0.4	20	- 0.05	+ 0.05	○	○	○	○			KGMR...6T30 KGM...5(...)
			6020-080MW				0.8				○	○		○	○		
		GMM	8030-080MW	2	8	5.5	0.8	30	- 0.05	+ 0.05	○	○	○	○	○		KGMR/L 2525M-8 KIGM..6540B-8 KFMS...-8
	 Sharp cutting oriented / M class	GMM	3020-020MS	2	3	4.3	0.2	20	- 0.05	+ 0.05	○		○	○	○	○	KGM...3(...) KGM...2(...)
			3020-040MS				0.4				○		○	○	○	○	
		GMM	4020-040MS	2	4	4.3	0.4	20	- 0.05	+ 0.05	○		○	○	○	○	KGM...4(...) KGM...3(...)
		GMM	5020-040MS	2	5	4.3	0.4	20	- 0.05	+ 0.05	○		○	○	○		KGM...5(...) KGM...4(...)
		GMM	6020-040MS	2	6	4.3	0.4	20	- 0.05	+ 0.05					○		KGMR...6T30 KGM...5(...)
	 Sharp cutting oriented / Precision class	GMG	3020-000MS	2	3	4.3	0	20	- 0.02	+ 0.02			○	○			KGM...3(...) KGM...2(...)
			3020-020MS				0.2				○		○	○	○	○	
			3020-040MS				0.4				○		○	○	○	○	
		GMG	4020-020MS	2	4	4.3	0.2	20	- 0.02	+ 0.02				○	○	○	KGM...4(...) KGM...3(...)
			4020-040MS				0.4				○			○	○	○	
			4020-080MS				0.8				○		○	○			
		GMG	5020-040MS	2	5	4.3	0.4	20	- 0.02	+ 0.02				○	○		KGM...5(...) KGM...4(...)
			5020-080MS				0.8							○			
		GMG	6020-080MS	2	6	4.3	0.8	20	- 0.02	+ 0.02					○		KGMR...6T30 KGM...5(...)

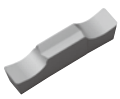
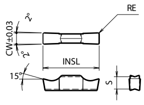
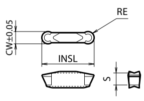
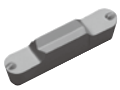
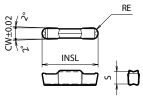
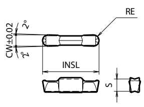
Recommended cutting conditions ➡ G143

G
Grooving
External
Internal
Face

○ : Check availability

GM/GMN/GMM/GMG/GMGA/FGG

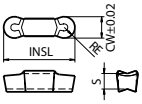
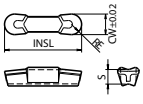
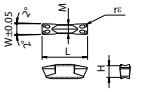
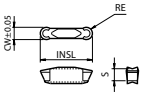
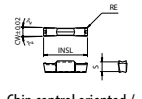
Work material		CR9025	PR905	PR915	PR930	KW10	TN90	
Carbon steel / Alloy steel				○	●			P
Stainless steel				●	○			M
Cast iron			●			○		K
Non-ferrous metals						●		N
Titanium alloy						●		S
Hard materials (~ 40HRC)				○	●			H
Hard materials (40HRC ~)								H

Insert	Description		No. of edges	Dimension (mm) CW	S	RE	INSL	Tolerance (mm) CW min.	CW max.	Carbide CVD CR9025	Carbide PVD PR905	Carbide PVD PR915	Carbide PVD PR930	Carbide - KW10	Cermet - TN90	Applicable toolholder ➡ G55~G60
  Sharp cutting oriented / Precision class (ground chipbreaker)	GMG	2520-030MG	2	2.5	4.3	0.3	20	- 0.03	+ 0.03				○	○	○	KGM...2.5(...) KGM...2(...)
	GMG	3020-030MG	2	3	4.3	0.3	20	- 0.03	+ 0.03		○	○	○	○	○	KGM...3(...) KGM...2(...)
	GMG	3520-030MG	2	3.5	4.3	0.3	20	- 0.03	+ 0.03		○		○			KGM...3(...)
	GMG	4020-040MG	2	4	4.3	0.4	20	- 0.03	+ 0.03	○	○		○	○	○	KGM...4(...) KGM...3(...)
	GMG	5020-040MG	2	5	4.3	0.4	20	- 0.03	+ 0.03		○		○	○	○	KGM...5(...) KGM...4(...)
	GMG	6020-040MG	2	6	4.3	0.4	20	- 0.03	+ 0.03		○		○			KGMR...6T30 KGM...5(...)
	GMG	8030-050MG	2	8	5.5	0.5	30	- 0.03	+ 0.03	○	○		○	○	○	KGMR/L 2525M-8 KIGM..6540B-8 KFMS...-8
  Chip control oriented / M class / Full R	GMM	3020-150R	2	3	4.3	1.5	20	- 0.05	+ 0.05	○	○	○	○	○	○	KGM...3(...) KGM...2(...)
	GMM	4020-200R	2	4	4.3	2	20	- 0.05	+ 0.05	○	○	○	○	○	○	KGM...4(...) KGM...3(...)
	GMM	5020-250R	2	5	4.3	2.5	20	- 0.05	+ 0.05	○	○		○	○		KGM...5(...) KGM...4(...)
	GMM	6020-300R	2	6	4.3	3	20	- 0.05	+ 0.05	○	○		○	○	○	KGMR...6T30 KGM...5(...)
  Full R / Sharp cutting oriented / Precision class	GMG	3020-150R	2	3	4.3	1.5	20	- 0.02	+ 0.02	○			○	○	○	KGM...3(...) KGM...2(...)
	GMG	4020-200R	2	4	4.3	2	20	- 0.02	+ 0.02	○			○			KGM...4(...) KGM...3(...)
	GMG	5020-250R	2	5	4.3	2.5	20	- 0.02	+ 0.02				○			KGM...5(...) KGM...4(...)
  Chip control oriented / Undercutting	GMG	3020-150RU	2	3	4.3	1.5	20	- 0.02	+ 0.02	○			○			KGM...3(...) KGM...2(...) KGMUR2525M
	GMG	4020-200RU	2	4	4.3	2	20	- 0.02	+ 0.02				○			KGM...4(...) KGM...3(...) KGMUR2525M

Recommended cutting conditions ➡ G143

○ : Check availability

GM/GMN/GMM/GMG/GMGA/FGG

											Carbon steel / Alloy steel		●		P
											Stainless steel		○		M
											Cast iron			○	K
											Non-ferrous metals			●	N
											Titanium alloy			●	S
											Hard materials (~ 40HRC)		●		H
											Hard materials (40HRC ~)				
Insert		Description	No. of edges	Dimension (mm)				Tolerance (mm)		Carbide			Cermet	Applicable toolholder ⇒ G56~G58 G95
				CW	S	RE	INSL	CW min.	CW max.	CVD	PVD	-	-	
										CR9025	PR930	KW10	TN90	
	 Full R / Sharp cutting oriented / Precision class	GMGA 6020-300R	2	6	4.3	3	20	- 0.02	+ 0.02			○		KGM[R/L] ...5 KGM[R/L] ...5T
	 Full R / Sharp cutting oriented / Precision class	GMGA 8030-400R	2	8	5.5	4	30	- 0.02	+ 0.02			○		KGM[R/L]2525M-8 KIGM[R/L]6540B-8 KIGMUR6540B-8 KFMS...-8
	 Chip control oriented / M class	GMM 3014-04	2	3	4.3	0.4	14	- 0.05	+ 0.05		○		○	-
	 Chip control oriented / M class / Full R	GMM 3014-15R	2	3	4.3	1.5	14	- 0.05	+ 0.05				○	-
	 Chip control oriented / Precision class	FGGR 3020-02 FGGL 3020-02	2	3	4.3	0.2	20	- 0.02	+ 0.02	○ ○	○ ○	○ ○		KGMMR2525M-3 KGMSR2525M-3
		FGGR 4020-04 FGGL 4020-04	2	4	4.3	0.4	20	- 0.02	+ 0.02	○ ○	○ ○	○ ○		
		FGGR 5020-04 FGGL 5020-04	2	5	4.3	0.4	20	- 0.02	+ 0.02	○ ○		○ ○		

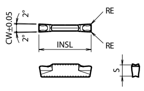
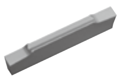
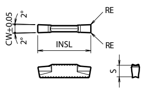
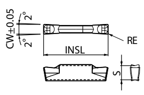
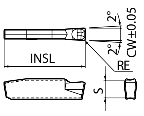
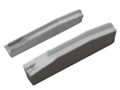
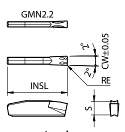
Handed insert shows Right-hand

Recommended cutting conditions ⇒ G143

○ : Check availability

GM/GMN/GMM/GMG/GMGA/FGG

										CR9025	PR905	PR915	PR930	KW10	TN90	
Carbon steel / Alloy steel												○	●			P
Stainless steel												●	○			M
Cast iron											●			●		K
Non-ferrous metals														●		N
Titanium alloy														●		S
Hard materials (~ 40HRC)												○	●			H
Hard materials (40HRC ~)																H

Insert		Description	No. of edges	Dimension (mm) CW	S	RE	INSL	Tolerance (mm) CW min.	CW max.	Carbide CVD CR9025	PVD PR905	PVD PR915	PVD PR930	- KW10	Cermet - TN90	Applicable toolholder ➡ G55~G58
	 Sharp cutting oriented	GMM 1520-MT	2	1.5	4.3	0 0.05	20	- 0.05	+ 0.05			○	○	○		KGM...1.5(...)
		GMM 2020-MT	2	2	4.3	0 0.05	20	- 0.05	+ 0.05	○		○	○	○		KGM...2(...) KGM...1.5(...)
		GMM 2520-MT	2	2.5	4.3	0 0.05	20	- 0.05	+ 0.05			○	○	○		KGM...2.5(...) KGM...2(...)
		GMM 3020-MT	2	3	4.3	0 0.05	20	- 0.05	+ 0.05	○		○	○	○		KGM...3(...) KGM...2(...)
	 Sharp cutting oriented / Without Chipbreaker	GMM 1520-NB	2	1.5	4.3	0	20	- 0.05	+ 0.05				○	○		KGM...1.5(...)
		GMM 2020-NB	2	2	4.3	0	20	- 0.05	+ 0.05				○	○		KGM...2(...) KGM...1.5(...)
		GMM 2520-NB	2	2.5	4.3	0	20	- 0.05	+ 0.05				○			KGM...2.5(...) KGM...2(...)
		GMM 3020-NB	2	3	4.3	0	20	- 0.05	+ 0.05					○		KGM...3(...) KGM...2(...)
	 Stability oriented	GMM 2020-TK	2	2	4.3	0.2	20	- 0.05	+ 0.05			○	○	○		KGM...2(...) KGM...1.5(...)
		GMM 2520-TK	2	2.5	4.3	0.2	20	- 0.05	+ 0.05			○	○	○		KGM...2.5(...) KGM...2(...)
		GMM 3020-TK	2	3	4.3	0.25	20	- 0.05	+ 0.05	○		○	○	○		KGM...3(...) KGM...2(...)
	 1-edge / Stability oriented	GMN 2-TK	1	2	4.3	0.2	20	- 0.05	+ 0.05			○	○	○		KGM...2(...) KGM...1.5(...)
		GMN 3-TK	1	3	4.3	0.25	20	- 0.05	+ 0.05	○		○	○	○		KGM...3(...) KGM...2(...)
		GMN 4-TK	1	4	4.3	0.3	20	- 0.05	+ 0.05	○		○	○	○		KGM...4(...) KGM...3(...)
	 1-edge	GMN 2.2	1	2.2	4.3	0.17	20	- 0.05	+ 0.05	○			○	○	○	KGM...2(...)
		GMN 3	1	3	4.3	0.2	20	- 0.05	+ 0.05	○			○	○	○	KGM...3(...) KGM...2(...)
		GMN 4	1	4	4.3	0.25	20	- 0.05	+ 0.05	○			○	○	○	KGM...4(...) KGM...3(...)
		GMN 5	1	5	4.3	0.8	20	- 0.05	+ 0.05	○			○	○		KGM...5(...) KGM...4(...)
		GMN 6	1	6	4.3	0.8	20	- 0.05	+ 0.05	○			○	○		KGMR...6T30 KGM...5(...)

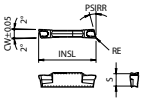
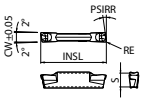
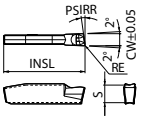
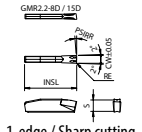
Handed insert shows Right-hand

Recommended cutting conditions ➡ G143

○ : Check availability

GM/GMN/GMM/GMG/GMGA/FGG

Carbon steel / Alloy steel	○	P
Stainless steel	● ○	M
Cast iron	●	K
Non-ferrous metals	●	N
Titanium alloy	●	S
Hard materials (~ 40HRC)	○ ●	H
Hard materials (40HRC ~)		

Insert		Description		No. of edges	Dimension (mm) CW	S	RE	INSL	Angle (°) PSIR R/L	Tolerance (mm) CW min.	CW max.	Carbide CVD CR9025	PVD PR905	PVD PR915	PVD PR930	- KW10	- TN90	Cermet	Applicable toolholder ➡ G55~G58
	 Sharp cutting oriented	GMM	1520R-MT-15D	2	1.5	4.3	0 0.05	20	15	- 0.05	+ 0.05			○	○	○			KGM...1.5(...)
		GMM	2020R-MT-15D 2020R-MT-15D 2020L-MT-15D	2	2	4.3	0 0.05 0	20	15	- 0.05	+ 0.05	○		○	○	○			KGM...2(...) KGM...1.5(...)
		GMM	2520R-MT-15D	2	2.5	4.3	0 0.05	20	15	- 0.05	+ 0.05			○	○				KGM...2.5(...) KGM...2(...)
		GMM	3020R-MT-15D 3020R-MT-15D 3020L-MT-15D	2	3	4.3	0 0.05 0	20	15	- 0.05	+ 0.05	○		○	○	○			KGM...3(...) KGM...2(...)
	 Stability oriented	GMM	2020R-TK-8D	2	2	4.3	0.2	20	8	- 0.05	+ 0.05			○	○	○			KGM...2(...) KGM...1.5(...)
		GMM	2520R-TK-8D	2	2.5	4.3	0.2	20	8	- 0.05	+ 0.05				○				KGM...2.5(...) KGM...2(...)
		GMM	3020R-TK-8D	2	3	4.3	0.25	20	8	- 0.05	+ 0.05	○		○	○				KGM...3(...) KGM...2(...)
	 1-edge / Stability oriented	GMR	2-TK-8D	1	2	4.3	0.2	20	8	- 0.05	+ 0.05				○	○			KGM...2(...) KGM...1.5(...)
		GMR	3-TK-8D	1	3	4.3	0.25	20	8	- 0.05	+ 0.05			○	○	○			KGM...3(...) KGM...2(...)
		GMR	4-TK-8D	1	4	4.3	0.3	20	8	- 0.05	+ 0.05			○	○	○			KGM...4(...) KGM...3(...)
	 1-edge / Sharp cutting oriented	GMR GML	2.2-8D 2.2-8D	1	2.2	4.3	0.17	20	8	- 0.05	+ 0.05	○			○ ○	○	○	○	KGM...2(...)
		GMR	2.2-15D	1	2.2	4.3	0	20	15	- 0.05	+ 0.05	○			○	○	○		
		GMR GML	3-4D 3-4D	1	3	4.3	0.2	20	4	- 0.05	+ 0.05	○ ○			○ ○	○	○		KGM...3(...) KGM...2(...)
		GMR GML	4-4D 4-4D	1	4	4.3	0.25	20	4	- 0.05	+ 0.05	○ ○			○				KGM...4(...) KGM...3(...)

Handed insert shows Right-hand

Recommended cutting conditions ➡ G143

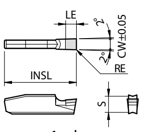
○ : Check availability

GM/GMN/GMM/GMG/GMGA/FGG

Cutting edge preparation

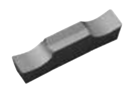
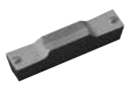
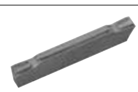
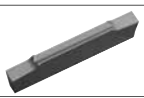
Symbol	Specification	Example	
F	Sharp edge	F	Sharp edge
E	R-honed	E008	R0.08mm honed

Work material	KBN510	KBN525	KPD001	KPD010	
Carbon steel / Alloy steel					P
Stainless steel					M
Cast iron					K
Non-ferrous metals			●		N
Titanium alloy			●		S
Hard materials (~ 40HRC)					H
Hard materials (40HRC ~)	○	●			H

Insert		Description		Edge preparation type	No. of edges	Dimension (mm) CW	S	RE	INSL	LE	Tolerance (mm) CW min.	CW max.	CBN - KBN510	KBN525	PCD - KPD001	KPD010	Applicable toolholder ➡ G55~G58
	 1-edge	GMN	2	E008	1	2	4.3	0.2	20	2.9	- 0.05	+ 0.05	○	○			KGM...2(...) KGM...1.5(...)
		GMN	2	F	1	2	4.3	0.2	20	2.9	- 0.05	+ 0.05			○	○	
		GMN	3	E008	1	3	4.3	0.4	20	2.9	- 0.05	+ 0.05	○	○			KGM...3(...) KGM...2(...)
		GMN	3	F	1	3	4.3	0.2	20	2.9	- 0.05	+ 0.05			○	○	
		GMN	4	E008	1	4	4.3	0.4	20	2.9	- 0.05	+ 0.05	○	○			KGM...4(...) KGM...3(...)
		GMN	4	F	1	4	4.3	0.2	20	2.9	- 0.05	+ 0.05			○	○	
		GMN	5	F	1	5	4.3	0.2	20	2.9	- 0.05	+ 0.05			○	○	KGM...5(...) KGM...4(...)
		GMN	6	F	1	6	4.3	0.2	20	2.9	- 0.05	+ 0.05				○	KGMR...6T30 KGM...5(...)

Recommended cutting conditions ➡ G146

Features of Chipbreaker

Series	Insert	Features
GMM MW		Excellent chip evacuation at Grooving, Turning, Cut-off
GMG MG		Low cutting force with ground chipbreaker
GMG MS GMM MS		Grooving / Turning / Cut-off operations are minimum cutting force at Positive Edge
GMM MT		Small corner-R(RE) and minimize the core which remains in the center of the face
GMM TK		Large corner-R(RE) and stable performance at cut-off
GMM NB		Flat rake face and non-chipbreake It works well for brass

Edge Preparation

Edge Prep.	Chamfered + R-honed	Chamfered + R-honed
	Corner-R(RE) = 0.05	Sharp Corner
		
MT Chipbreaker	CR9025 / PR915	PR930 / KW10
Edge Prep.	Chamfered + R-honed	Sharp Edge
	Corner-R(RE) = 0.2 ~ 0.3	Corner-R(RE) = 0.2 ~ 0.3
		
TK Chipbreaker	CR9025 / PR915	PR930 / KW10
Edge Prep.	R-honed	Sharp Edge
	Corner-R(RE) = 0.05	Sharp Corner
		
Without Chipbreaker (-NB)	CR9025	PR930 / KW10

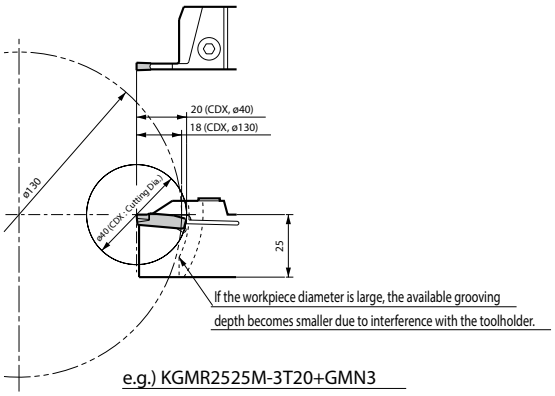
· Sharp Edge Spec. can reduce cutting force by 40% less than that of chamfer edge.

○ : Check availability

CBN & PCD Inserts are sold in 1 piece boxes

Available Cutting Diameter of KGM (for automatic lathe) / KGM-T

· There is a limit to available grooving depth depending on the workpiece diameter.



e.g.) KGMR2525M-3T20+GMN3

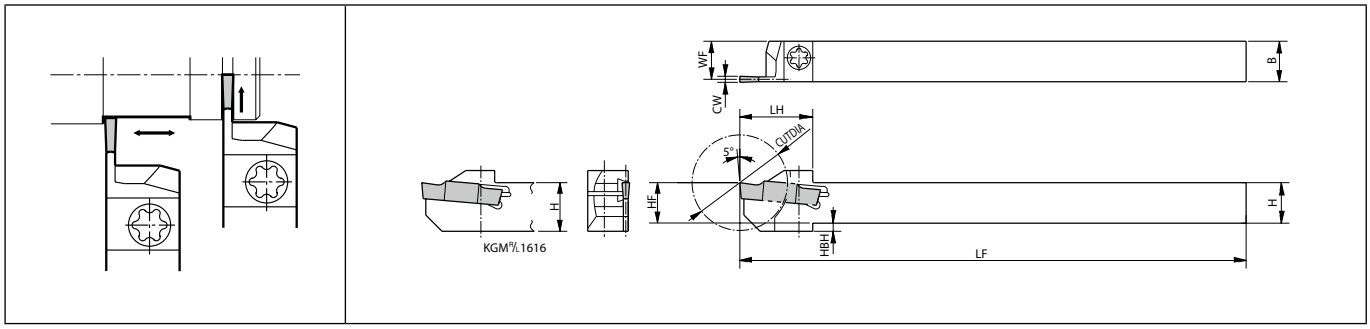
KGM (for automatic lathe) Possible Cutting Diameter and Available Grooving Depth Table

Toolholder Description		DCX (Cutting Dia.)																
KGM$^{R/L}$	1010□-1.5...	-	-	-	-	-	-	-	18	21	26	38	76	∞				
	1212□-1.5...	-	-	-	-	23	27	37	71	∞	∞	∞	∞					
	1010□-2...	-	-	-	-	-	-	-	18	21	26	38	76					
	1212□-2...	-	-	-	-	23	27	37	71	∞								
	1616□-2...	30	37	47	68	89	131	∞	∞									
	1212□-2.5...	-	-	-	-	23	27	37	71									
	1616□-2.5...	30	37	47	68	89	131	∞	∞									
	1616□-3...																	
Available Grooving Depth CDX (mm)		15	14	13	12	11.5	11	10	9	8	7	6	5	4	3	2	1	

KGM-T Possible Cutting Diameter and Available Grooving Depth Table (GMN, GM$^{R/L}$ when using 1-edge insert)

Toolholder Description		DCX (Cutting Dia.)												
KGM$^{R/L}$	2012K-2T17	-	-	-	-	-	-	-	-	66	80	130	260	∞
	2020K-2T17													
	2525M-2T17													
	1616H-3T20	-	-	-	-	-	40	54	70	100	180	∞	∞	
	2012K-3T20	-	-	-	-	-	40	90	130	240	∞			
	2020K-3T20													
	2525M-3T20													
	2020K-4T20													
	2525M-4T20													
	2525M-4T25	-	-	50	140	240	∞	∞	∞	∞				
	2525M-5T25													
	3232P-5T25				280	600								
	2525M-6T30	100	300	∞	∞	∞								
Available Grooving Depth CDX (mm)		30	27	25	23	22	20	19	18	17	16	15	14	13 or under

KGM (External grooving / for automatic lathe)



Right-hand shown

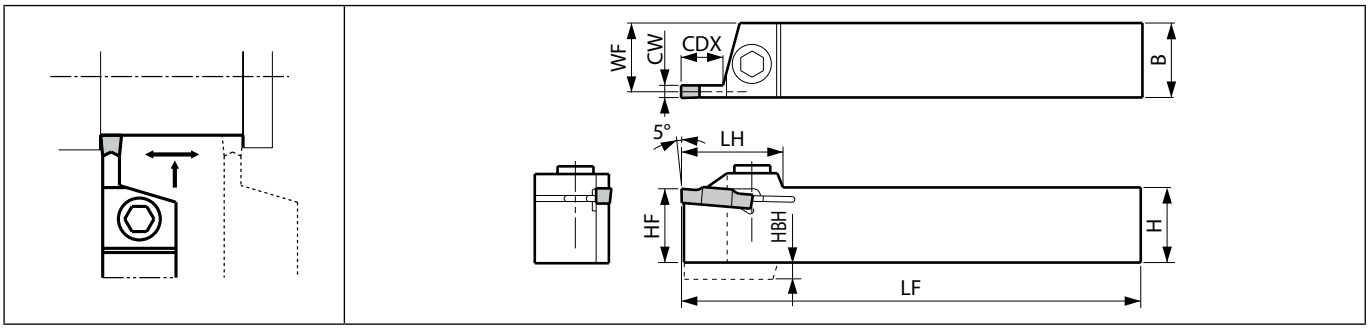
Toolholder dimensions

Description		Availability		Dimension (mm)										Spare parts		Applicable inserts ⇒ G48,G49 G51~G53
														Screw	Wrench	
		R	L	CUTDIA	H	B	LH	HF	HBH	LF	WF	CW min.	CW max.			
KGMR/L	1010JX-1.5	○	○	18	10	10	18	10	2	120	9.4	1.5	2	SE-40120TR	LTW-15S	GMM1520... GM.2(...)
	1212F-1.5-85	○		23	12	12	19	12		85	11.4					
	1212JX-1.5	○	○							120						
KGMR/L	1010JX-2	○	○	18	10	10	18	10	2	120	9.15	2	3	SE-40120TR	LTW-15S	GM.2(...) GM.3(...)
	1212F-2-85	○	○	23	12	12	19	12		85	11.15					
	1212JX-2	○	○							120						
	1616JX-2	○	○	30	16	16	24.5	16	-		15.15			SE-50125TR	LTW-20	
KGMR/L	1212F-2.5-85	○		23	12	12	19	12	2	85	11	2.4	3	SE-40120TR	LTW-15S	GMM24... GM.25... GM.3(...)
	1212JX-2.5	○	○							120						
	1616JX-2.5	○	○	30	16	16	24.5	16	-		15			SE-50125TR	LTW-20	
KGMR/L	1616JX-3	○	○	30	16	16	24.5	16	-	120	14.8	3	4	SE-50125TR	LTW-20	GM.3(...) , GM.4(...)

If using a full-R insert, you need to modify the corner of insert adapter part of toolholder.
KGM will be switched to KGD=> **G35**

○ : Check availability

KGM (External grooving)



Right-hand shown

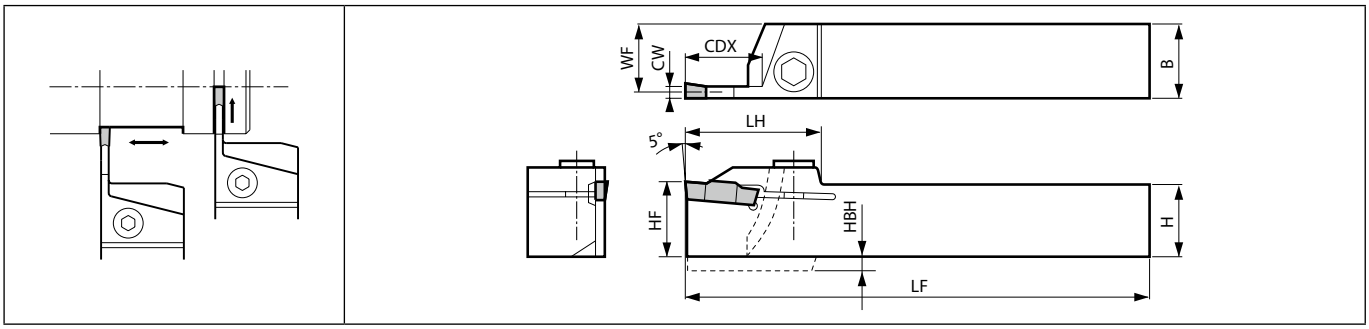
Toolholder dimensions

Description		Availability		Dimension (mm)										Spare parts				Applicable inserts ⇒ G48~G53
														Clamp bolt	Clamp screw (Torx)	Wrench	Wrench	
		R	L	CDX	H	B	LH	HF	HBH	LF	WF	CW min.	CW max.					
KGM$^{R/L}$	1212H-3	○		9	12	12	27	12	4	100	10.8	3	3	-	SB-5TR	-	LTW-20	GM.3(...) GM.4(...)
	1616H-3	○			16	16		16			14.8		4	HH5X16	-	LW-4	-	
	2020K-3	○	○		20	20		20	-	125	18.8							
	2525M-3	○	○		25	25		25		150	23.8			HH5X25				
KGM$^{R/L}$	2020K-4	○		10	20	20	27	20	-	125	18.3	4	5	HH5X16	-	LW-4	-	GM.4(...) GM.5(...)
	2525M-4	○	○		25	25		25		150	23.3			HH5X25				
KGMR	2020K-5	○		10	20	20	27	20	-	125	17.8	5	6	HH5X16	-	LW-4	-	GM.5(...) GM.6(...)
	2525M-5	○			25	25		25		150	22.8			HH5X25				
KGM$^{R/L}$	2525M-8	○	○	25	25	25	40	25	7.5	150	22	8	8	HH6X25	-	LW-5	-	GM..8030...

CDX shows available grooving depth.
4mm width Insert can be installed in KGM$^{R/L}$1212H-3, but is not recommended due to the toolholder's rigidity.
If using a full-R insert, you need to modify the corner of insert adapter part of toolholder.
KGM will be switched to KGD=> **G34**

○ : Check availability

KGM-T (External grooving / Deep grooving)



Right-hand shown

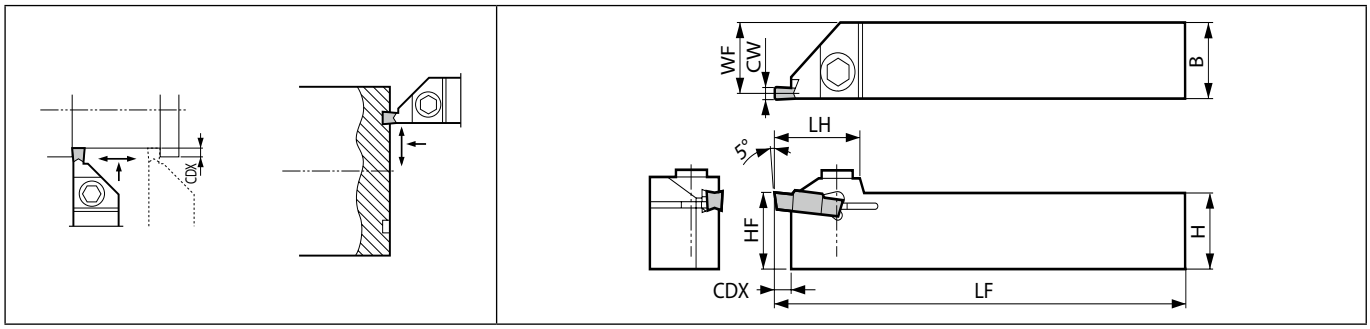
Toolholder dimensions

Description		Availability		Dimension (mm)										Spare parts				Applicable inserts G48~G53
														Clamp bolt	Clamp screw (Torx)	Wrench	Wrench	
		R	L	CDX	H	B	LH	HF	HBH	LF	WF	CW min.	CW max.					
KGM R/L	2012K-2T17		○	17	20	12	33	20	-	125	11.15	2	3	-	SB-5TR	-	LTW-20	GM.2(...) GM.3(...)
	2020K-2T17	○	○			20					19.15			HH5X16	-	LW-4	-	
	2525M-2T17	○	○		25	25		25		150	24.15			HH5X25				
KGM R/L	1616H-3T20	○		20	16	16	36	16	4	100	14.8	3	4	HH5X16	-	LW-4	-	GM.3(...) GM.4(...)
	2012K-3T20		○		20	12		20	-	125	10.8			-	SB-5TR	-	LTW-20	
	2020K-3T20	○	○			20					18.8			HH5X16	-	LW-4	-	
	2525M-3T20	○	○		25	25		25		150	23.8			HH5X25				
KGM R/L	2020K-4T20	○		20	20	20	36	20	-	125	18.3	4	5	HH5X16	-	LW-4	-	GM.4(...) GM.5(...)
	2525M-4T20	○			25	25		25		150	23.3			HH5X25				
	2525M-4T25	○	○	25			41											
KGM R/L	2525M-5T25	○	○	25	25	25	42	25	-	150	22.8	5	6	HH5X25	-	LW-4	-	GM.5(...) GM.6(...)
	3232P-5T25	○			32	32		32		170	29.8							
KGMR	2525M-6T30	○		30	25	25	45	25	-	150	22.4	6	6	HH5X25	-	LW-4	-	GM6.(...)

If using a full-R insert, you need to modify the corner of insert adapter part of toolholder.
CDX shows the distance from the toolholder to the cutting edge. Ref. to the Table (**G54**) for the relationship between the available grooving depth and the cutting dia.
When using GMG / GMM (2-edge) insert, set the groove depth under 15 mm.
KGM will be switched to KGD=> **G34**

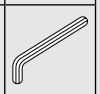
○ : Check availability

KGMM (External grooving / Face grooving)



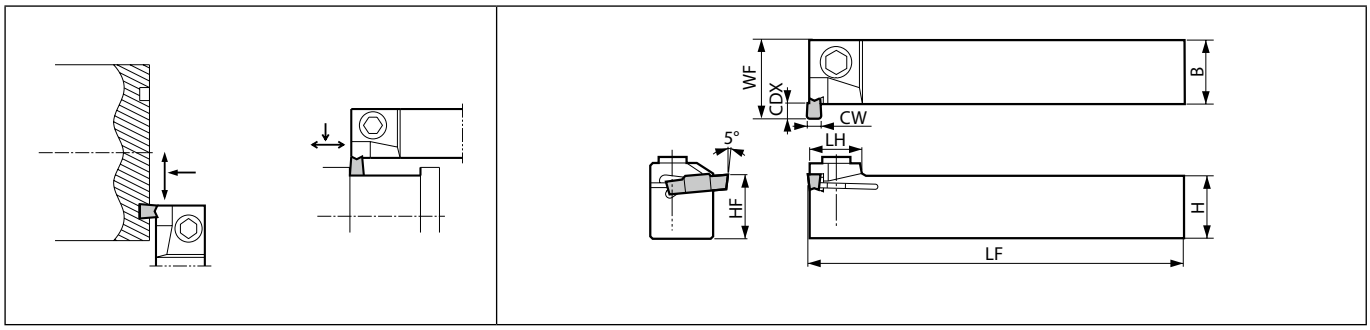
Right-hand shown

Toolholder dimensions

Description	Availability	Dimension (mm)									Spare parts		Applicable inserts G48~G53
											Clamp bolt	Wrench	
	R	CDX	H	B	LH	HF	LF	WF	CW min.	CW max.			
KGMMR 2525M-3	○	4.8	25	25	25	25	150	23.8	3	5	HH5X25	LW-4	FGG... , GM.3(...), GM.4(...), GM.5(...)

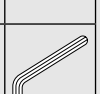
CDX shows available grooving depth. (Ref. to the table **G59** for Face Grooving)

KGMS (External grooving / Face grooving)



Right-hand shown

Toolholder dimensions

Description	Availability	Dimension (mm)									Spare parts		Applicable inserts G48~G53
											Clamp bolt	Wrench	
	R	CDX	H	B	LH	HF	LF	WF	CW min.	CW max.			
KGMSR 2525M-3	○	4.8	25	25	17	25	150	30	3	5	HH5X25	LW-4	FGG... , GM.3(...), GM.4(...), GM.5(...)

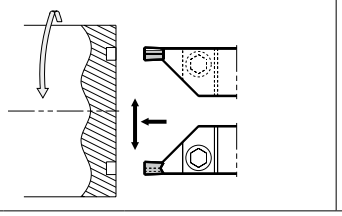
CDX shows available grooving depth. (Ref. to the table **G59** for Face Grooving)

○ : Check availability

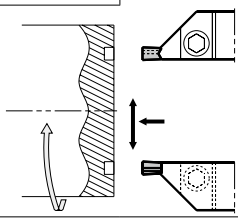
Selection of Insert & Toolholder (Face Grooving)

Case of KGMM

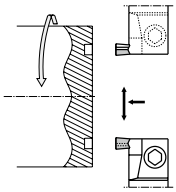
Toolholder	Right-hand
Insert	Left-hand



Toolholder	Right-hand
Insert	Right-hand

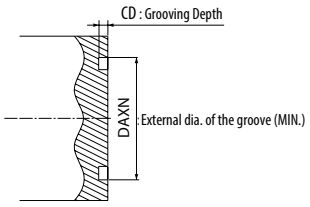


Toolholder	Right-hand
Insert	Left-hand



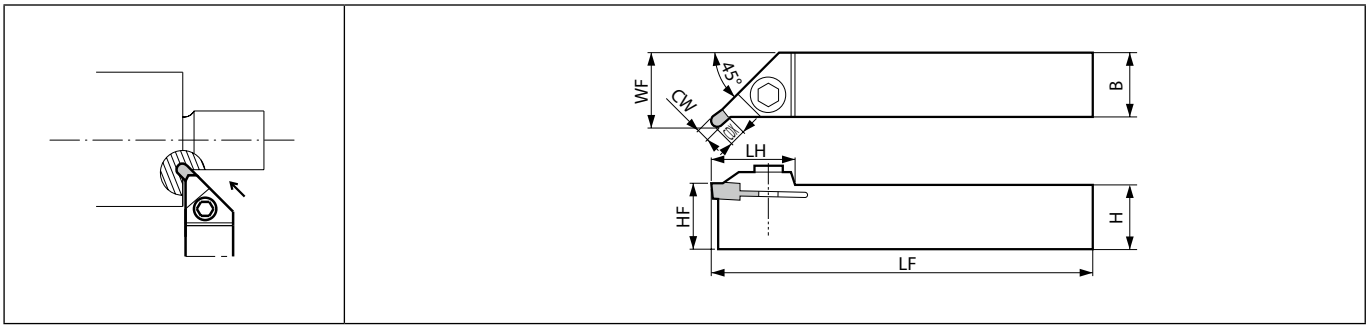
External dia. of the groove (min.) & Grooving Depth (Face Grooving)

KGMM / KGMS (Common) (mm)



Description	DAXN	CD
GMG/GMM3020-○○○□□	ø100	4.8
GMG/GMM4020-○○○□□		
GMG/GMM5020-○○○□□		
FGG$^{R}/_{L}$3020-02	ø22	4.3
FGG$^{R}/_{L}$4020-04	ø28	4.8
FGG$^{R}/_{L}$5020-04	ø30	
GMG3020-150RU	ø22	4.3
GMG4020-200RU	ø28	4.8

KGMU (External grooving / Undercut grooving)



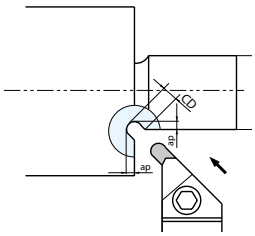
Right-hand shown

Toolholder dimensions

Description	Availability	Dimension (mm)									Spare parts		Applicable inserts G49
											Clamp bolt	Wrench	
	R	CDX	H	B	LH	HF	LF	WF	CW min.	CW max.			
KGMUR 2525M	○	4.8	25	25	28.5	25	150	28.6	3	5 (6)	HH5X25	LW-4	GMG3020..RU , GMG4020..RU

CDX shows the distance from the toolholder to the cutting edge. Ref. to the table below for the available grooving depth.
WF shows at GMM5020-RU. ( ) indicates external grooving inserts when installed.
External grooving inserts (grooving width 3 mm~6 mm) will be attached. (In case of using GMG○○20-○○○□□, GMM○○20-○○○□□, GMN○ insert)

Undercut Depth CD



Description	Undercut Depth	Distance from the face of the workpiece
	CD (mm)	ap (mm)
GMG3020-150RU	3.5	1.8
GMG4020-200RU	4.0	1.9

* In case of undercutting for the diameter 100mm or over,
Inserts for External Grooving
GMG○○20-○○○□□ ,GMM○○20-○○○□□ ,
GMN○ are also available.

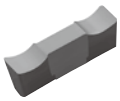
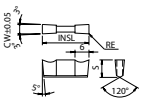
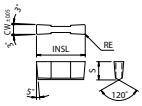
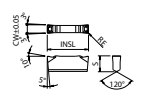
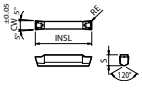
○ : Check availability

GH/GHU/GA

Cutting edge preparation

Symbol	Specification	Example	
S	Chamfered and R-honed	S01020	0.10mm × 20° chamfered and R-honed
T	Chamfered	T01020	0.10mm × 20° chamfered

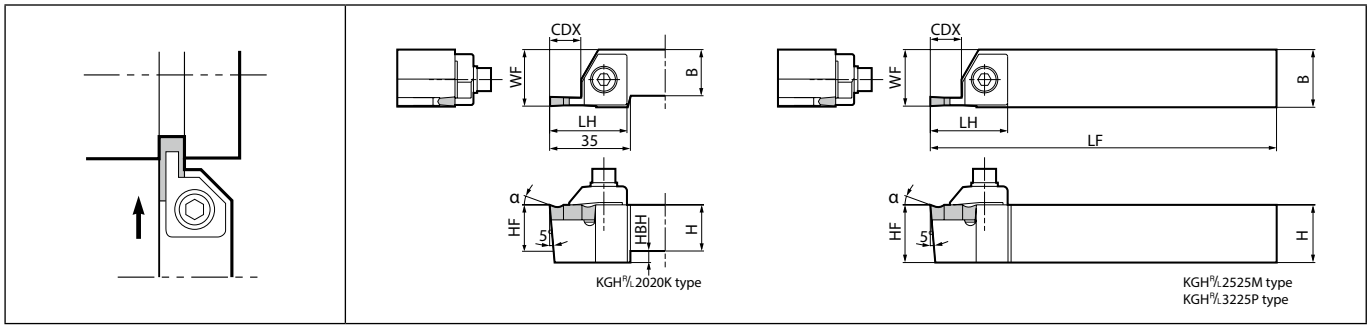
Carbon steel / Alloy steel	✖	●										P
Stainless steel	●	●										M
Cast iron		●	●		●	○						K
Non-ferrous metals		●										N
Titanium alloy		●										S
Hard materials (~ 40HRC)	●											H
Hard materials (40HRC ~)				○	●							

Insert		Description		Edge preparation type	No. of edges	Dimension (mm)				Tolerance (mm)		Carbide			Ceramic		Cermet			Applicable toolholder ➡ G62~G64
						CW	S	RE	INSL	CW min.	CW max.	CVD	PVD	-	PVD	-	-			
												CR9025	PR930	KW10	A66N PT600M	A65	TC40N	TC60M	TN60	
		GH	4020-02 4020-05	-	2	4	7.5	0.2 0.5	20	-0.05	+0.05		● ●	● ●			● ●	● ●		KGH$^{R}_{L}$ ...4 KGHS$^{R}_{L}$ ...4
		GH	4520-02 4520-05	-	2	4.5	7.5	0.2 0.5	20	-0.05	+0.05						● ●			
		GH	5020-02 5020-05	-	2	5	7.5	0.2 0.5	20	-0.05	+0.05		● ●	● ●			● ●	● ●		KGH$^{R}_{L}$ ...5 KGHS$^{R}_{L}$ ...5
		GH	5520-02 5520-05	-	2	5.5	7.5	0.2 0.5	20	-0.05	+0.05						● ●			
		GH	6020-02 6020-05	-	2	6	7.5	0.2 0.5	20	-0.05	+0.05		● ●	● ●			● ●	● ●		
		GH	6520-02 6520-05	-	2	6.5	7.5	0.2 0.5	20	-0.05	+0.05						● ●			
		GH	7020-02 7020-05	-	2	7	7.5	0.2 0.5	20	-0.05	+0.05		● ●	● ●			● ●	● ●		KGH$^{R}_{L}$ ...7
		GH	7520-02 7520-05	-	2	7.5	7.5	0.2 0.5	20	-0.05	+0.05						● ●			
		GH	8020-02 8020-05	-	2	8	7.5	0.2 0.5	20	-0.05	+0.05		● ●	● ●			● ●	● ●		
		GH	10025-05	-	2	10	7.5	0.5	25	-0.05	+0.05		●	●						KGH$^{R}_{L}$ ...10
		GH	12025-05	-	2	12	7.5	0.5	25	-0.05	+0.05		●	●				●		
		GH	4020-05	S01020 T01020	2	4	7.5	0.5	20	-0.05	+0.05				●	●				KGH$^{R}_{L}$ ...4 KGHS$^{R}_{L}$ ...4
		GH	5020-05	S01020 T01020	2	5	7.5	0.5	20	-0.05	+0.05				●	●				KGH$^{R}_{L}$ ...5 KGHS$^{R}_{L}$ ...5
		GH	6020-05	T01020	2	6	7.5	0.5	20	-0.05	+0.05					●				
		GH	7020-05	T01020	2	7	7.5	0.5	20	-0.05	+0.05					●				KGH$^{R}_{L}$ ...7
		GHU	40-20	-	2	4	7.5	0.25	20	-0.05	+0.05	●							●	KGH$^{R}_{L}$ ...4 KGHS$^{R}_{L}$ ...4
		GHU	50-20	-	2	5	7.5	0.3	20	-0.05	+0.05	●							●	KGH$^{R}_{L}$ ...5 KGHS$^{R}_{L}$ ...5
		GHU	60-20	-	2	6	7.5	0.3	20	-0.05	+0.05	●							●	
		GA	30	-	2	3	5	0.2	25	-0.05	+0.05	○							○	KGA$^{R}_{L}$ ...3
		GA	40	-	2	4	5	0.25	25	-0.05	+0.05	○							○	KGA$^{R}_{L}$ ...4
		GA	50	-	2	5	5	0.3	30	-0.05	+0.05	○							○	KGA$^{R}_{L}$ ...5

Recommended cutting conditions ➡ G65

● : Standard item ○ : Check availability

KGH (External grooving)



Right-hand shown

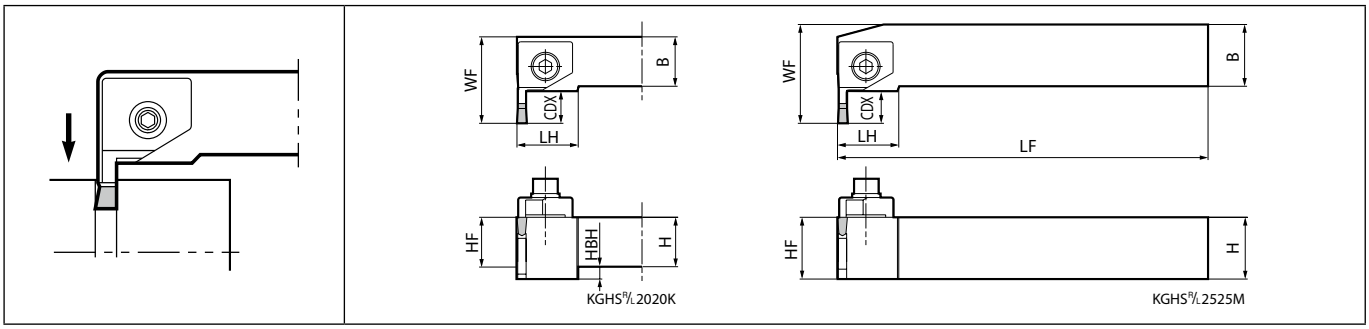
Toolholder dimensions

Description		Availability		Dimension (mm)									Clamp	Clamp bolt	Spring	Washer	Wrench	Applicable inserts ➡ G61
		R	L	CDX	H	B	LH	HF	HBH	LF	WF (min.)	WF (max.)						
KGHR/L	2020K-4	●	●	13	20	20	33.5	20	5	125	24.5	24.8	CGH-1R/L	HH6X25	SP-6	W-6	LW-5	GH4.20-.. GHU40-20
	2525M-4	●	●		25	25		25	-	150								
KGHR/L	2020K-5	●	●	13	20	20	33.5	20	5	125	25	25.8	CGH-1R/L	HH6X25	SP-6	W-6	LW-5	GH5.20-.. , GHU50-20 GH6.20-.. , GHU60-20
	2525M-5	●	●		25	25		25	-	150								
	3225P-5	●	●		32			32		170								
KGHR/L	2020K-7	●	●	13	20	20	33.5	20	7	125	24.5	25	CGH-2R/L	HH6X25	SP-6	W-6	LW-5	GH7.20-.. GH8020-..
	2525M-7	●	●		25	25		25	-	150								
KGHR/L	2525M-10	●	●	17	25	25	41	25	-	150	25.5	26.5	CGH-3R/L	HH6X25	SP-6	W-6	LW-5	GH10025-05 GH12025-05
	3225P-10	●			32			32		170								

CDX shows available grooving depth.
WF of KGHR/L Toolholder depends on the insert's edge width.
Clamp : CGH-○R for Right-hand Toolholder and CGH-○L for Left-hand Toolholder.

● : Standard item

KGHS (External grooving)



Right-hand shown

Toolholder dimensions

Description		Availability		Dimension (mm)								Spare parts					Applicable inserts ➡ G61
		R	L	CDX	H	B	LH	HF	HBH	LF	WF	Clamp	Clamp bolt	Spring	Washer	Wrench	
KGHSR/L	2020K-4	●	●	13	20	20	25	20	5	125	35	CGH-1 1/4R	HH6X25	SP-6	W-6	LW-5	GH4.20-.. GHU40-20
	2525M-4	●	●		25	25		25	-	150	40						
KGHSR/L	2020K-5	●	●	13	20	20	25	20	5	125	35	CGH-1 1/4R	HH6X25	SP-6	W-6	LW-5	GH5.20-.. , GHU50-20 GH6.20-.. , GHU60-20
	2525M-5	●	●		25	25		25	-	150	40						

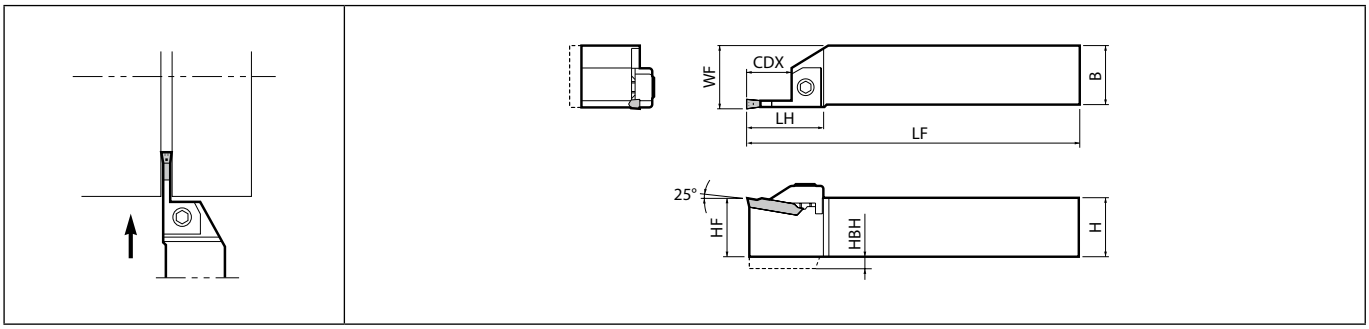
CDX shows available grooving depth.
Clamp : CGH-○L for Right-hand Toolholder and CGH-○R for Left-hand Toolholder.

Rake Angle (α) after Installment of GH / GHU insert

When using GH○○-○○		When using GHU○○-○○	
α	Insert Grades	α	Insert Grades
0°	A65, A66N, PT600M	10°	TN60 CR9025
10°	TC40N		
20°	TN90, TC60M PR930 KW10		

● : Standard item

KGA (External grooving / Deep grooving)



Right-hand shown

Toolholder dimensions

Description		Availability R	Availability L	Dimension (mm) CDX	H	B	LH	HF	HBH	LF	WF	Spare parts: Clamp bolt	Clamp	Spring	Wrench	Applicable inserts ➡ G61
KGA R/L	2020K-3	○	○	20	20	20	37	20	5	125	21.5	HH6X20	CGA-3 R/L	SP-6	LW-5	GA30
	2525M-3	○	○		25	25		25	-	150	26.5					
KGAR	2020K-4	○		20	20	20	37	20	5	125	21.5	HH6X20	CGA-4R	SP-6	LW-5	GA40
	2525M-4	○			25	25		25	-	150	26.5					
KGAR	2020K-5	○		25	20	20	42	20	5	125	21.5	HH6X20	CGA-5R	SP-6	LW-5	GA50
	2525M-5	○			25	25		25	-	150	26.5					

CDX shows available grooving depth.
Clamp : CGA-○R for Right-hand Toolholder and CGA-○L for Left-hand Toolholder.

○ : Check availability

Recommended cutting conditions

GH inserts - ground chipbreaker

Workpiece material	Recommended insert grades (Vc: m/min)							(1) f for grooving (mm/rev) (2) f for turning (mm/rev) (3) ap for turning (mm)				Remarks
	Cermet		PVD coated carbide	Carbide	Ceramic							
	TC40N	TC60M	PR930	KW10	A65	A66N	PT600M	GH 40~50...	GH 55~70...	GH 75~80...	GH 100~120...	
Carbon steel	☆ 150~220	☆ 100~150	★ 80~180	-	-	-	-	(1) 0.07~0.2 (2) 0.07~0.15 (3) Max. 1.0	(1) 0.07~0.2 (2) 0.07~0.15 (3) Max. 1.0	(1) 0.1~0.25 (2) 0.1~0.2 (3) Max. 1.5	(1) 0.15~0.3 (2) 0.15~0.25 (3) Max. 2.0	Coolant
Alloy steel	☆ 130~200	☆ 80~130	★ 80~160	-	-	-	-	(1) 0.07~0.18 (2) 0.07~0.13 (3) Max. 1.0	(1) 0.07~0.18 (2) 0.07~0.13 (3) Max. 1.0	(1) 0.1~0.23 (2) 0.1~0.18 (3) Max. 1.5	(1) 0.15~0.27 (2) 0.15~0.22 (3) Max. 2.0	
Stainless steel	-	☆ 60~100	★ 60~130	-	-	-	-	(1) 0.07~0.16 (2) 0.07~0.13 (3) Max. 1.0	(1) 0.07~0.16 (2) 0.07~0.13 (3) Max. 1.0	(1) 0.1~0.21 (2) 0.1~0.18 (3) Max. 1.5	(1) 0.15~0.25 (2) 0.15~0.22 (3) Max. 2.0	
Cast iron	-	-	-	★ 60~100	☆ 150~300	☆ 150~300	☆ 150~300	KW10 (1) 0.07~0.2 (2) 0.07~0.15 (3) Max. 1.0 A65/A66N (1) 0.03~0.07 (2) Not recom. (3) Not recom.	KW10 (1) 0.07~0.2 (2) 0.07~0.15 (3) Max. 1.0 A65/A66N (1) 0.03~0.07 (2) Not recom. (3) Not recom.	KW10 (1) 0.1~0.25 (2) 0.1~0.2 (3) Max. 1.5 A65/A66N (1) 0.05~0.09 (2) Not recom. (3) Not recom.	KW10 (1) 0.15~0.3 (2) 0.15~0.25 (3) Max. 2.0 A65/A66N (1) 0.05~0.09 (2) Not recom. (3) Not recom.	
Aluminum alloys	-	-	-	★ 150~400	-	-	-	(1) 0.07~0.2 (2) 0.07~0.15 (3) Max. 1.0	(1) 0.07~0.2 (2) 0.07~0.15 (3) Max. 1.0	(1) 0.1~0.25 (2) 0.1~0.2 (3) Max. 1.5	(1) 0.15~0.3 (2) 0.15~0.25 (3) Max. 2.0	
Brass	-	-	-	★ 150~300	-	-	-	(1) 0.07~0.2 (2) 0.07~0.15 (3) Max. 1.0	(1) 0.07~0.2 (2) 0.07~0.15 (3) Max. 1.0	(1) 0.1~0.25 (2) 0.1~0.2 (3) Max. 1.5	(1) 0.15~0.3 (2) 0.15~0.25 (3) Max. 2.0	
Hard materials	-	-	-	-	☆ 40~80	☆ 40~80	☆ 40~80	(1) 0.02~0.05 (2) 0.01~0.03 (3) Max. 0.1	(1) 0.02~0.05 (2) 0.01~0.03 (3) Max. 0.2	(1) 0.02~0.05 (2) 0.01~0.04 (3) Max. 0.2		

* Above cutting condition is for external grooving. Set both cutting speed and feed 10% lower for internal grooving.

★:1st recommendation ☆:2nd recommendation

GHU Inserts - molded chipbreaker

Workpiece material	Recommended insert grades (Vc: m/min)		(1) f for gooving (mm/rev) (2) f for turning (mm/rev) (3) ap for turning (mm)			Remarks
	Cermet	CVD coated carbide				
	TN60	CR9025	GHU 40-20	GHU 50-20	GHU 60-20	
Carbon steel	☆ 130~200	☆ 80~180	(1) 0.06~0.12 (2) 0.05~0.1 (3) Max. 1.0	(1) 0.06~0.12 (2) 0.05~0.1 (3) Max. 1.0	(1) 0.06~0.15 (2) 0.05~0.12 (3) Max. 1.5	Coolant
Alloy steel	☆ 100~180	☆ 80~160	(1) 0.06~0.12 (2) 0.05~0.1 (3) Max. 1.0	(1) 0.06~0.12 (2) 0.05~0.1 (3) Max. 1.0	(1) 0.06~0.15 (2) 0.05~0.12 (3) Max. 1.5	
Stainless steel	-	☆ 60~130	(1) 0.06~0.1 (2) 0.05~0.08 (3) Max. 0.8	(1) 0.06~0.1 (2) 0.05~0.08 (3) Max. 0.8	(1) 0.06~0.12 (2) 0.05~0.1 (3) Max. 1.2	

* Above cutting condition is for external grooving. Set both cutting speed and feed 10% lower for internal grooving.

★:1st recommendation ☆:2nd recommendation

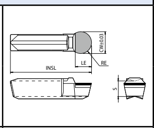
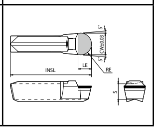
GA inserts - molded chipbreaker

Workpiece material	Recommended insert grades (Vc: m/min)		(1) f for grooving (mm/rev) (2) f for turning (mm/rev) (3) ap for turning (mm)			Remarks
	Cermet	CVD coated carbide				
	TN60	CR9025	GA 30	GA 40	GA 50	
Carbon steel	☆ 130~200	★ 80~180	(1) 0.06~0.18 (2) 0.05~0.15 (3) Max. 0.8	(1) 0.06~0.21 (2) 0.05~0.17 (3) Max. 1.0	(1) 0.06~0.25 (2) 0.05~0.2 (3) Max. 1.3	Coolant
Alloy steel	☆ 100~180	★ 80~160	(1) 0.06~0.15 (2) 0.05~0.12 (3) Max. 0.3	(1) 0.06~0.18 (2) 0.05~0.15 (3) Max. 0.5	(1) 0.06~0.22 (2) 0.05~0.18 (3) Max. 0.8	
Stainless steel	-	★ 60~130	(1) 0.06~0.1 (2) 0.05~0.08 (3) Max. 0.8	(1) 0.06~0.1 (2) 0.05~0.08 (3) Max. 0.8	(1) 0.06~0.12 (2) 0.05~0.1 (3) Max. 1.2	

★:1st recommendation ☆:2nd recommendation

GMGW

Workpiece material	KPD001	
Carbon steel / Alloy steel		P
Stainless steel		M
Cast iron		K
Non-ferrous metals	●	N
Titanium alloy	●	S
Hard materials (~ 40HRC)		H
Hard materials (40HRC ~)		H

Insert		Description	No. of edges	Dimension (mm) CW	S	RE	INSL	LE	Tolerance (mm) CW min.	CW max.	PCD - KPD001	Applicable toolholder ➡ G67
		GMGW 6030-30R	1	6	5.5	3	30	4.5	- 0.03	+ 0.03	●	KGMWR/L2525M-6
		GMGW 8030-40R	1	8	5.5	4	30	6	- 0.03	+ 0.03	●	KGMWR/L2525M-8
		GMGW 8030-40R-HR	1	8	5.5	4	30	5	- 0.03	+ 0.03	●	KGMWR/L2525M-8

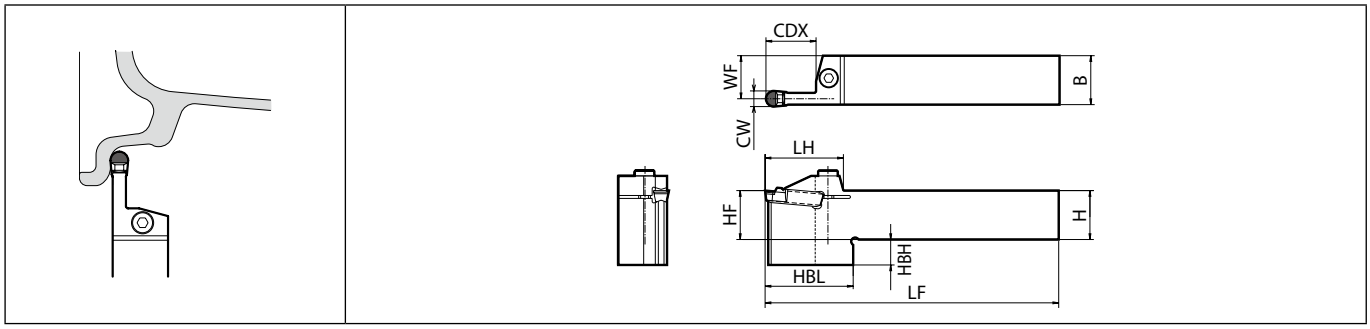
GMGW inserts are exclusively used for KGMW toolholder. It cannot be used for other toolholder because of its different installation angle.
GMGW inserts Edge Preparation : R-honed Cutting Edge.

Recommended cutting conditions ➡ G67

● : Standard item

CBN & PCD Inserts are sold in 1 piece boxes

KGMW (External grooving / Face grooving / Copying)



Right-hand shown

Toolholder dimensions

Description	Availability		Dimension (mm)									Spare parts		Applicable inserts G66
												Clamp bolt	Wrench	
	R	L	CDX	H	B	LH	HF	HBH	HBL	LF	WF			
KGMW R/L 2525M-6	●	●	25	25	25	40	25	13	55	150	22.8	HH6X25	LW-5	GMGW6030-30R
KGMW R/L 2525M-8	●	●	25	25	25	40	25	13	55	150	22	HH6X25	LW-5	GMGW8030-40R (-HR)

Recommended cutting conditions

Workpiece material	Recommended insert grades (Vc: m/min)	(1) f for grooving (mm/rev) (2) f for turning (mm/rev) (3) ap for turning (mm)
	PCD	
	KPD001	
Aluminum	★ 150~2,700	(1) 0.05 ~ 0.3 (2) 0.2 ~ 0.8 (3) Max. 3

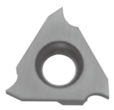
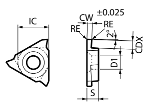
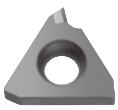
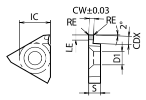
★ :1st recommendation

● : Standard item

G
Grooving
External
Internal
Face

TGF

	Carbide PVD PR1215	Carbide PVD PR930	Carbide KW10	Cermet TC40N	PCD KPD001	
Carbon steel / Alloy steel	●	○				P
Stainless steel	●	○				M
Cast iron			●			K
Non-ferrous metals			●		●	N
Titanium alloy			●		●	S
Hard materials (~ 40HRC)	●	○				H
Hard materials (40HRC ~)						H

Insert		Description		No. of edges	Dimension (mm) CW	CDX	IC	S	D1	RE	LE	Tolerance (mm) CW min.	CW max.	Carbide PVD PR1215	Carbide PVD PR930	Carbide - KW10	Cermet - TC40N	PCD - KPD001	Applicable toolholder
		TGF32R	033-005	3	0.33	0.8	9.525	3.18	4.6	0.05	-	- 0.025	+ 0.025	□	□	□			KTGFR....-16 KTGFR....-16F S...-KTGFL16
			050-005		0.5	1.2				0.05				□	□	□	□		
			075-010		0.75	2				0.1				□	□	□	□		
			095-010		0.95	2				0.1				□	□	□	□		
			100-010		1	2				0.1				□	□	□	□		
			120-010		1.2	2				0.1				□					
			125-010		1.25	2				0.1				□	□	□	□		
			140-010		1.4	2				0.1				□					
			145-010		1.45	2				0.1				□	□	□	□		
			150-010		1.5	2				0.1				□	□	□	□		
			175-010		1.75	2				0.1				□	□	□	□		
			200-010		2	2.5				0.1				□	□	□	□		
			250-010		2.5	2.5				0.1				□	□	□	□		
		TGF32L	050-005		0.5	1.2				0.05				□	□				KTGFL....-16 KTGFL....-16F
			075-010		0.75	2				0.1				□	□				
			095-010		0.95	2				0.1				□	□				
			100-010		1	2				0.1				□	□				
			120-010		1.2	2				0.1				□					
			125-010		1.25	2				0.1				□	□				
			140-010		1.4	2				0.1				□					
			145-010		1.45	2				0.1				□	□				
			150-010		1.5	2				0.1				□	□				
			175-010		1.75	2				0.1				□	□				
			200-010		2	2.5				0.1				□	□				
			250-010		2.5	2.5				0.1				□	□				
	 1-edge	TGF32R	125-010	1	1.25	2	9.525	3.18	4.6	0.1	1.7	- 0.03	+ 0.03					□	KTGFR....-16 KTGFR....-16F S...-KTGFL16
			150-010		1.5	2					1.7							□	
			200-010		2	2.5					1.9							□	

Right-hand shown
CDX shows available grooving depth.

Recommended cutting conditions

Workpiece material	Recommended insert grades (Vc: m/min) Cermet TC40N	MEGACOAT PR1215	PVD coated carbide PR930	PVD coated carbide PR1115	Carbide KW10	PCD KPD001 (KPD010)	(1) f for grooving (mm/rev) (2) f for turning (mm/rev) (3) ap for turning (mm) TGF32R/L 033~050-005	TGF32R/L 075~095-010	TGF32R/L 100~145-010	TGF32R/L 150~250-010	Remarks
Carbon steel	☆ 150~220	★ 80~180	☆ 80~180	☆ 80~180	-	-	(1) 0.01~0.05 (2) Not recom. (3) Not recom.	(1) 0.02~0.07 (2) Not recom. (3) Not recom.	(1) 0.03~0.08 (2) 0.03~0.06 (3) Max. 0.2	(1) 0.03~0.08 (2) 0.03~0.06 (3) Max. 0.2	Coolant
Alloy steel	☆ 130~200	★ 80~160	☆ 80~160	☆ 80~160	-	-	(1) 0.01~0.04 (2) Not recom. (3) Not recom.	(1) 0.02~0.06 (2) Not recom. (3) Not recom.	(1) 0.03~0.07 (2) 0.02~0.05 (3) Max. 0.2	(1) 0.03~0.07 (2) 0.02~0.05 (3) Max. 0.2	
Stainless steel	-	☆ 60~130	☆ 60~130	★ 60~130	-	-	(1) 0.01~0.04 (2) Not recom. (3) Not recom.	(1) 0.02~0.06 (2) Not recom. (3) Not recom.	(1) 0.03~0.07 (2) 0.02~0.05 (3) Max. 0.2	(1) 0.02~0.07 (2) 0.02~0.05 (3) Max. 0.2	
Cast iron	-	-	-	-	★ 60~100	-	(1) 0.01~0.05 (2) Not recom. (3) Not recom.	(1) 0.02~0.07 (2) Not recom. (3) Not recom.	(1) 0.03~0.08 (2) 0.03~0.06 (3) Max. 0.2	(1) 0.03~0.08 (2) 0.03~0.06 (3) Max. 0.2	
Aluminum alloys	-	-	-	-	★ 150~400	★ 150~2,000	(1) 0.01~0.05 (2) Not recom. (3) Not recom.	(1) 0.02~0.07 (2) Not recom. (3) Not recom.	(1) 0.03~0.08 (2) 0.03~0.06 (3) Max. 0.2	(1) 0.03~0.08 (2) 0.03~0.06 (3) Max. 0.2	
Brass	-	-	-	-	★ 150~300	★ 200~800	(1) 0.01~0.04 (2) Not recom. (3) Not recom.	(1) 0.02~0.06 (2) Not recom. (3) Not recom.	(1) 0.03~0.07 (2) 0.02~0.05 (3) Max. 0.2	(1) 0.03~0.07 (2) 0.02~0.05 (3) Max. 0.2	

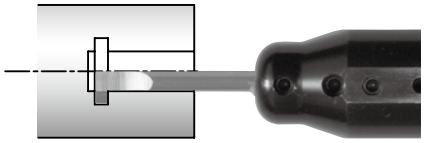
★ :1st recommendation ☆ :2nd recommendation

CBN & PCD Inserts are sold in 1 piece boxes

□ : Deleted from the next catalog

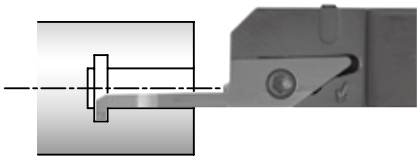
Small diameter internal grooving

EZ bar and system tip-bars



Type	EZG
Min. bore diameter	ø3~ø8
Edge width (mm)	0.5~2.0
Grooving depth (mm)	1.0~2.0
See Page	**G71**

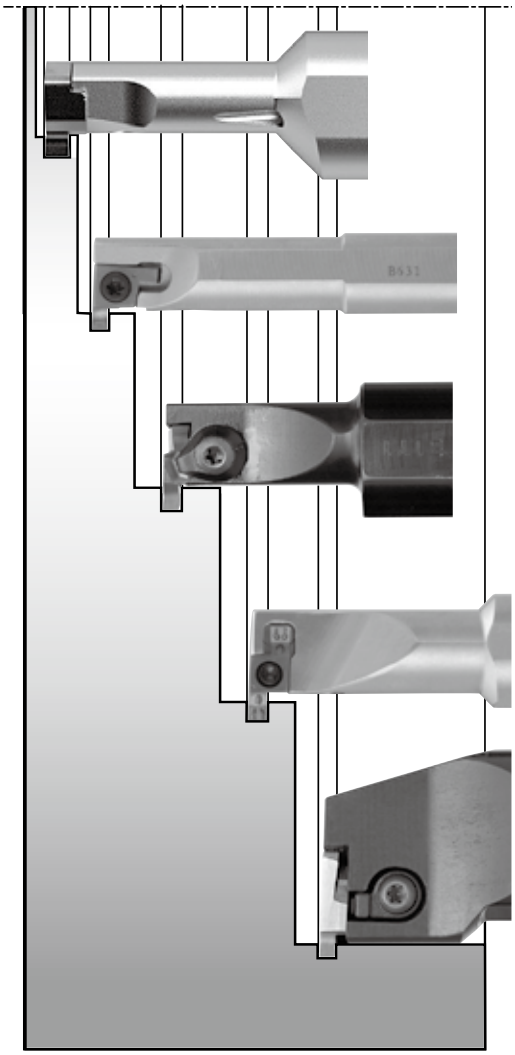
EZ bars



Type	VNG
Min. bore diameter	ø4~ø7
Edge width (mm)	1.0~2.0
Grooving depth (mm)	0.8~2.0
See Page	**G73**

System tip-bars

Internal Grooving ø8~ - shallow grooving



Type	SIGC
Min. bore diameter	ø8~ø12
Edge width (mm)	1.0~3.0
Grooving depth (mm)	1.5~2.2
See Page	**G76,G77**

1-edge

Ground chipbreaker

Type	SIGE
Min. bore diameter	ø8~ø12
Edge width (mm)	1.0~3.0
Grooving depth (mm)	1.5~2.2
See Page	**G81~G83**

2-edge

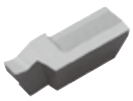
Ground chipbreaker

2-edge

Ground chipbreaker Full-R

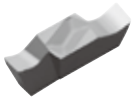
Type	GIV
Min. bore diameter	ø12~ø40
Edge width (mm)	1.0~5.0
Grooving depth (mm)	1.7~6.3
See Page	**G86~G88**

1-edge



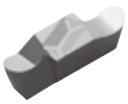
Ground chipbreaker

2-edge



Ground chipbreaker

2-edge



Ground chipbreaker Full-R

Type	SIGE
Min. bore diameter	ø14~ø40
Edge width (mm)	1.0~5.0
Grooving depth (mm)	2.5~6.5
See Page	**G81~G83**

2-edge

Molded chipbreaker

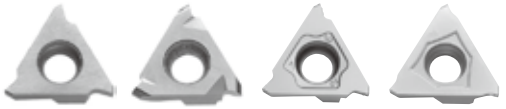
2-edge

Ground chipbreaker

2-edge

Ground chipbreaker Full-R

Type	KIGBA
Min. bore diameter	ø35~ø40
Edge width (mm)	0.33~4.8
Grooving depth (mm)	0.8~2.8
See Page	**G89**



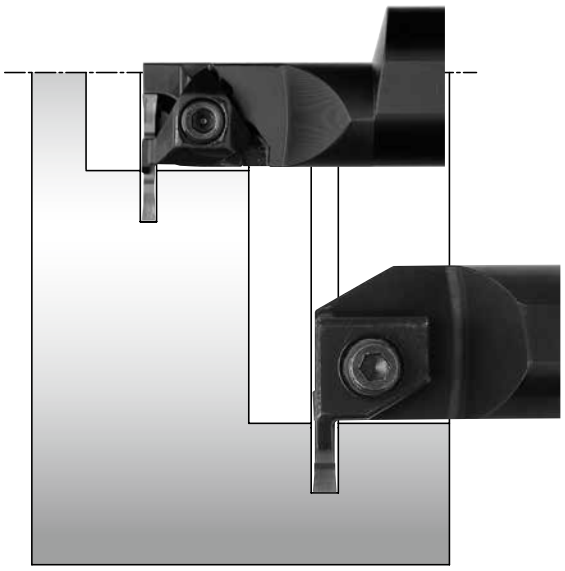
Ground chipbreaker

Ground chipbreaker Full-R

GM chipbreaker

MY chipbreaker

Summary deep grooving



Type	KGIA
Min. bore diameter	ø32~ø66
Edge width (mm)	3.0~5.0
Grooving depth (mm)	10~15
See Page	**G97**

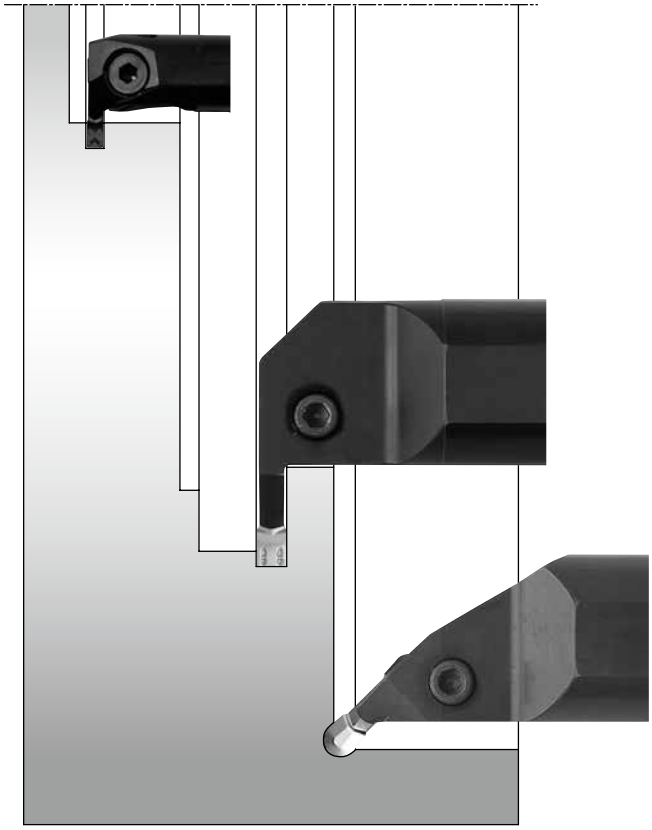
Molded chipbreaker

Type	KIGH
Min. bore diameter	ø45~ø65
Edge width (mm)	4.0~8.0
Grooving depth (mm)	12
See Page	**G93**

Ground chipbreaker

Molded chipbreaker

Summary internal grooving & turning ø20~

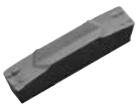


Type	KGDI
Min. bore diameter	ø18~ø40
Edge width (mm)	2.0~5.0
Grooving depth (mm)	4.5~11.0
See Page	**G91**

GMI chipbreaker

Molded chipbreaker
Full-R

Type	KIGM-8
Min. bore diameter	ø65
Edge width (mm)	8.0
Grooving depth (mm)	20
See Page	**G95**



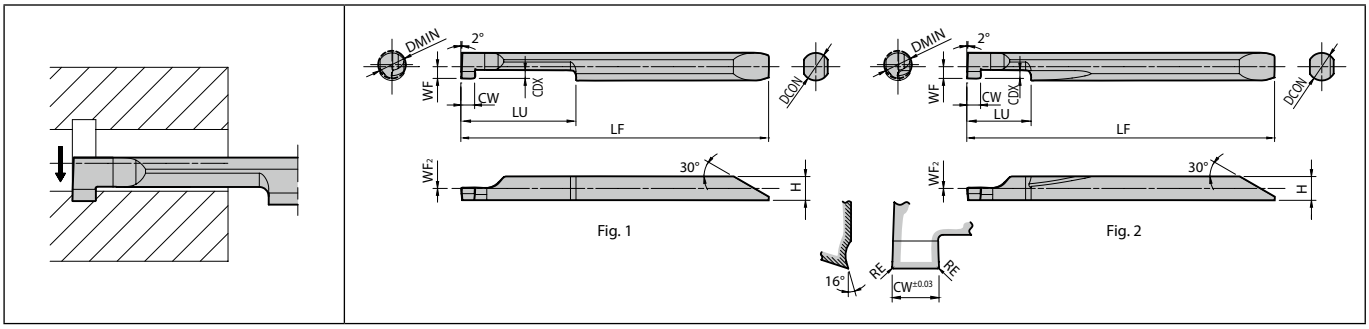
Molded chipbreaker

Type	KIGMU-8
Min. bore diameter	ø65
Edge width (mm)	8.0
Grooving depth (mm)	2.2
See Page	**G95**

Ground chipbreaker

Molded chipbreaker
Full-R

EZG (Internal grooving)



Right-hand shown

Dimensions

Description		No. of edges	Dimension (mm)									Fig.	Tolerance (mm)				Carbide			Applicable sleeve ➡ F38~F43
			DMIN	CW	CDX	RE	DCON	H	LF	LU	WF	WF_2		CW min.	CW max.	RE min.	RE max.	PVD		-	
																		PR1225		GW05	
																		R	L	R	
EZGR/L	040040-050 040040-100 040040-150 040040-200	1	4	0.5 1 1.5 2	1	0.05	4	3.45	44.7	12	1.7	0	2	-0.03	+0.03	-0.013	+0.013	● ● ● ●	□ □ □ □	● ● ● ●	EZH040...
EZGR/L	050050-100 050050-150 050050-200	1	5	1 1.5 2	1.5	0.05	5	4.3	52.8	20	2.15	0	1	-0.03	+0.03	-0.013	+0.013	● ● ●	□ □ □	● ● ●	EZH050...
EZGR/L	060060-100 060060-150 060060-200	1	6	1 1.5 2	2	0.05	6	5.15	60.7	20	2.65	0	1	-0.03	+0.03	-0.013	+0.013	● ● ●	□ □ □	● ● ●	EZH060...
EZGR/L	070070-100 070070-150 070070-200	1	7	1 1.5 2	2	0.05	7	6.2	63.7	25	3.05	0	1	-0.03	+0.03	-0.013	+0.013	● ● ●	□ □ □	● ● ●	EZH070...
EZGR/L	080070-100 080070-150 080070-200	1	8	1 1.5 2	2	0.05	7	6.2	63.7	25	3.45	0	1	-0.03	+0.03	-0.013	+0.013	● ● ●	□ □ □	● ● ●	
EZGR	030030-050S 030030-100S	1	3	0.5 1	0.8	0.05	3	2.5	38.7	5	1.25	0	2	-0.03	+0.03	-0.013	+0.013	● ●			EZH030...
EZGR	040040-050S 040040-100S 040040-150S 040040-200S	1	4	0.5 1 1.5 2	1	0.05	4	3.45	44.7	8	1.7	0	2	-0.03	+0.03	-0.013	+0.013	● ● ● ●			EZH040...
EZGR	050050-100S 050050-150S 050050-200S	1	5	1 1.5 2	1.5	0.05	5	4.3	52.8	10	2.15	0	2	-0.03	+0.03	-0.013	+0.013	● ● ●			EZH050...
EZGR	060060-100S 060060-150S 060060-200S	1	6	1 1.5 2	2	0.05	6	5.15	60.7	10	2.65	0	2	-0.03	+0.03	-0.013	+0.013	● ● ●			EZH060...
EZGR	070070-100S 070070-150S 070070-200S	1	7	1 1.5 2	2	0.05	7	6.2	63.7	10	3.05	0	2	-0.03	+0.03	-0.013	+0.013	● ● ●			EZH070...
EZGR	080070-100S 080070-150S 080070-200S	1	8	1 1.5 2	2	0.05	7	6.2	63.7	10	3.45	0	2	-0.03	+0.03	-0.013	+0.013	● ● ●			

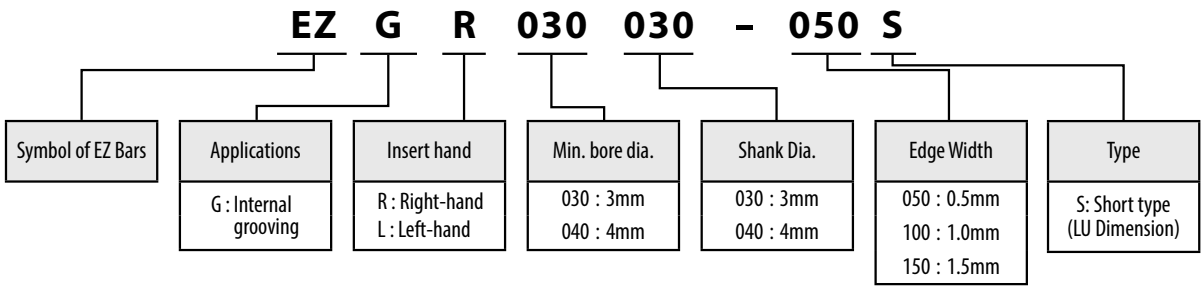
CDX shows available grooving depth.

Recommended cutting conditions ➡ G144

● : Standard item □ : Deleted from the next catalog

EZ bars are sold in 1 piece boxes

EZ Bars Identification System

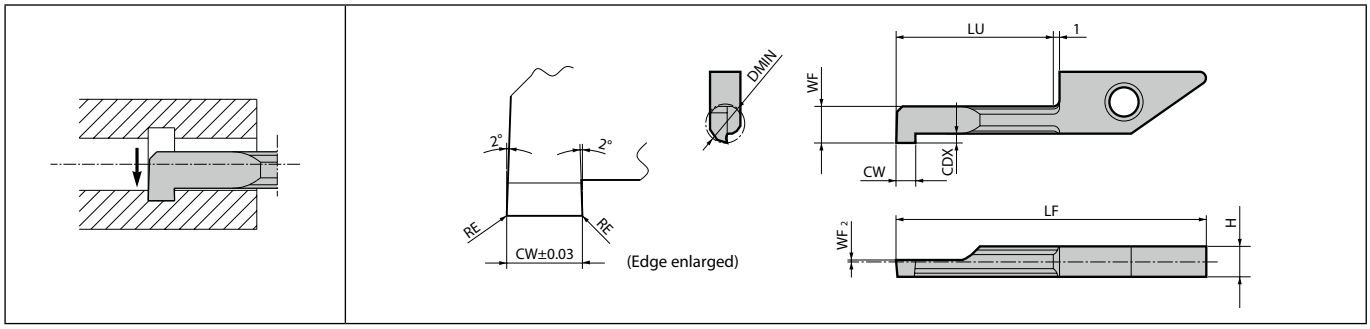


Applicable Sleeves

Sleeve							Applicable Insert for Small Dia. Internal Grooving		Applicable Machine Manufacturer
EZH-CT (Adjustable overhang length with coolant hole) ➡ F38, F39		EZH-HP (Adjustable overhang length) ➡ F40, F41		EZH-ST ➡ F42, F43		Sleeve Shank Dia. DCON(mm)	EZG	Shank Dia. DCON(mm)	
-		-		EZH	03012ST-80	12	EZG_ 030030-...	3	(General purpose)
					04012ST-80		EZG_ 040040-...	4	
					05012ST-80		EZG_ 050050-...	5	
					06012ST-80		EZG_ 060060-...	6	
					07012ST-80		EZG_ 070070-...	7	
							EZG_ 080070-...	8	
-		EZH	03016HP-100	EZH	03016ST-100	16	EZG_ 030030-...	3	(General purpose)
			04016HP-100		04016ST-100		EZG_ 040040-...	4	
			05016HP-100		05016ST-100		EZG_ 050050-...	5	
			06016HP-100		06016ST-100		EZG_ 060060-...	6	
			07016HP-100		07016ST-100		EZG_ 070070-...	7	
							EZG_ 080070-...	8	
EZH	03019CT-120	EZH	03019HP-120	EZH	03019ST-120	19.05	EZG_ 030030-...	3	Citizen Machinery
	04019CT-120		04019HP-120		04019ST-120		EZG_ 040040-...	4	
	05019CT-120		05019HP-120		05019ST-120		EZG_ 050050-...	5	
	06019CT-120		06019HP-120		06019ST-120		EZG_ 060060-...	6	
	07019CT-120		07019HP-120		07019ST-120		EZG_ 070070-...	7	
							EZG_ 080070-...	8	
EZH	03020CT-120	EZH	03020HP-120	EZH	03020ST-120	20	EZG_ 030030-...	3	Eguro Tsugami Citizen Machinery (General purpose)
	04020CT-120		04020HP-120		04020ST-120		EZG_ 040040-...	4	
	05020CT-120		05020HP-120		05020ST-120		EZG_ 050050-...	5	
	06020CT-120		06020HP-120		06020ST-120		EZG_ 060060-...	6	
	07020CT-120		07020HP-120		07020ST-120		EZG_ 070070-...	7	
							EZG_ 080070-...	8	
EZH	03022CT-135	EZH	03022HP-135	EZH	03022ST-135	22	EZG_ 030030-...	3	Star Micronics Nomura DS Tsugami
	04022CT-135		04022HP-135		04022ST-135		EZG_ 040040-...	4	
	05022CT-135		05022HP-135		05022ST-135		EZG_ 050050-...	5	
	06022CT-135		06022HP-135		06022ST-135		EZG_ 060060-...	6	
	07022CT-135		07022HP-135		07022ST-135		EZG_ 070070-...	7	
							EZG_ 080070-...	8	
EZH	03025.0CT-135	EZH	03025.0HP-135	EZH	03025.0ST-135	25	EZG_ 030030-...	3	Eguro Tsugami Citizen Machinery (General purpose)
	04025.0CT-135		04025.0HP-135		04025.0ST-135		EZG_ 040040-...	4	
	05025.0CT-135		05025.0HP-135		05025.0ST-135		EZG_ 050050-...	5	
	06025.0CT-135		06025.0HP-135		06025.0ST-135		EZG_ 060060-...	6	
	07025.0CT-135		07025.0HP-135		07025.0ST-135		EZG_ 070070-...	7	
							EZG_ 080070-...	8	
EZH	03025.4CT-120	EZH	03025.4HP-120	EZH	03025.4ST-120	25.4	EZG_ 030030-...	3	Citizen Machinery
	04025.4CT-120		04025.4HP-120		04025.4ST-120		EZG_ 040040-...	4	
	05025.4CT-120		05025.4HP-120		05025.4ST-120		EZG_ 050050-...	5	
	06025.4CT-120		06025.4HP-120		06025.4ST-120		EZG_ 060060-...	6	
	07025.4CT-120		07025.4HP-120		07025.4ST-120		EZG_ 070070-...	7	
							EZG_ 080070-...	8	

· Choose sleeves (DCB) to meet with DCON dimension of Internal Grooving Inserts.
· Adjustment Pin cannot be installed to **EZH-ST** sleeves.
To adjust overhang of the bar, please use **EZH-CT / HP** Sleeves.
· Machine manufacturers in random order.

VNG



Right-hand shown

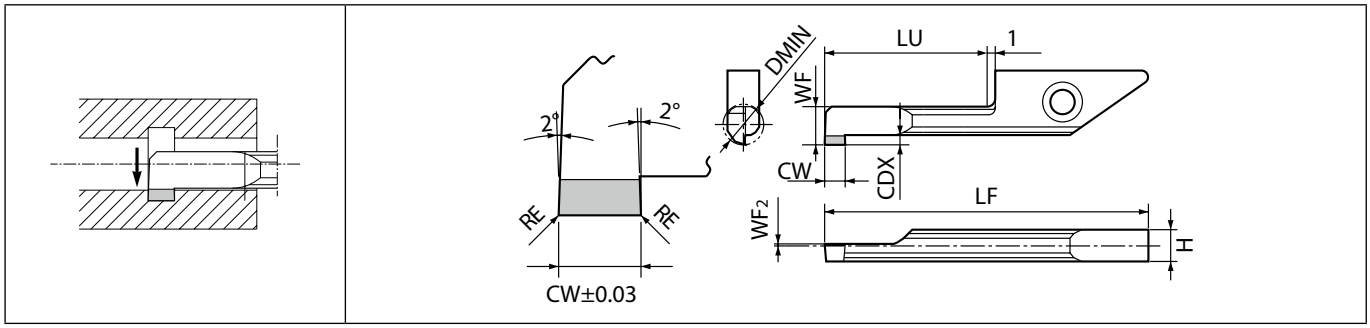
Dimensions

Description	No. of edges	Dimension (mm)									Tolerance (mm)		Carbide			Applicable toolholder F48~F51
		DMIN	CW	CDX	RE	H	LF	LU	WF	WF_2	CW min.	CW max.	PVD PR1225	PVD PR930	- KW10	
VNGR 0410-11	1	4	1	0.8	0.05	3.9	30.8	11	3.5	0.1	-0.03	+0.03	●	●	●	SVNR...-12N SVNSR...-12-..N S...-SVNR12N S...-SVNR12SN
VNGR 0420-11			2										●	●	●	
VNGR 0510-11	1	5	1	1	0.05	3.9	30.8	11	4.4	0.1	-0.03	+0.03	●	●	●	
VNGR 0520-11			2										●	●	●	
VNGR 0610-20	1	6	1	1.8	0.05	3.9	39.8	20	5.2	0.3	-0.03	+0.03	●	●	●	
VNGR 0620-20			2										●	●	●	
VNGR 0710-20	1	7	1	2	0.05	3.9	39.8	20	6.2	0.3	-0.03	+0.03	●	●	●	
VNGR 0720-20			2										●	●	●	

CDX shows available grooving depth.
WF_2 indicates the cutting edge is above the Tool's Center Position.

Recommended cutting conditions G144

VNG



Right-hand shown

Dimensions

Description	No. of edges	Dimension (mm)									Tolerance (mm)		PCD	Applicable toolholder F48~F51
		DMIN	CW	CDX	RE	H	LF	LU	WF	WF_2	CW min.	CW max.	- KPD001	
VNGR 0410-11NB	1	4	1	0.8	0.05	3.9	30.8	11	3.5	0.1	-0.03	+0.03	MTO	SVNR...-12N SVNSR...-12-..N S...-SVNR12N S...-SVNR12SN
VNGR 0420-11NB			2										MTO	
VNGR 0510-11NB	1	5	1	1	0.05	3.9	30.8	11	4.4	0.1	-0.03	+0.03	MTO	
VNGR 0520-11NB			2										MTO	
VNGR 0610-20NB	1	6	1	1.8	0.05	3.9	39.8	20	5.2	0.3	-0.03	+0.03	MTO	
VNGR 0620-20NB			2										MTO	
VNGR 0710-20NB	1	7	1	2	0.05	3.9	39.8	20	6.2	0.3	-0.03	+0.03	MTO	
VNGR 0720-20NB			2										MTO	

CDX shows available grooving depth.
WF_2 indicates the cutting edge is above the Tool's Center Position.

● : Standard item MTO : Made to order

System tip-bars are sold in 5 piece boxes

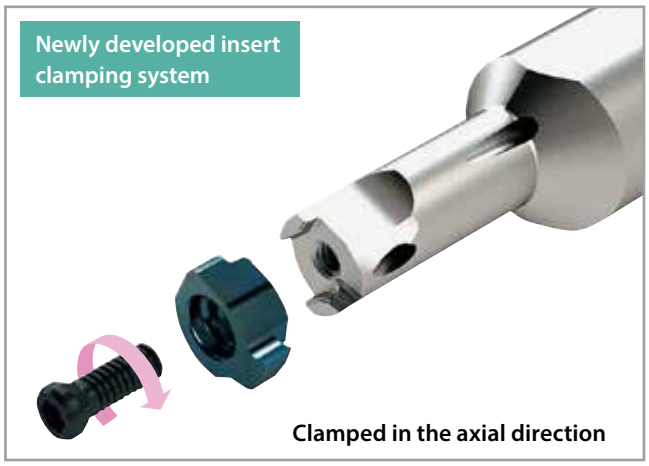
SIGC

Newly developed clamping system ensures a firm insert hold to provide high-precision machining. Excellent chip evacuation with double coolant holes and optimized flute shape with a ø8 mm minimum cutting diameter.

1 Firm insert clamping system provides high-precision machining

Firm clamping action by pulling the bottom surface of the insert in axial direction
Precise machining is achieved by ensuring a firm clamp on the insert

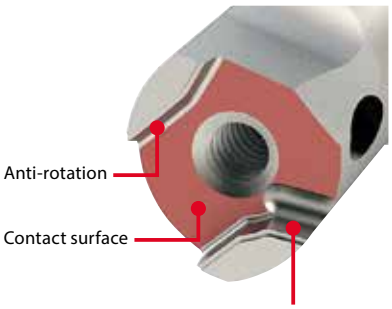
Newly developed insert clamping system



Clamped in the axial direction

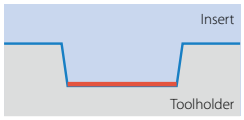
Clamping part (image)

Firm clamping is available due to large contact surface



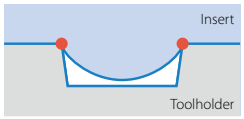
Supports cutting force with the surface of insert holder.

SIGC



Bottom surface contact

Competitor A



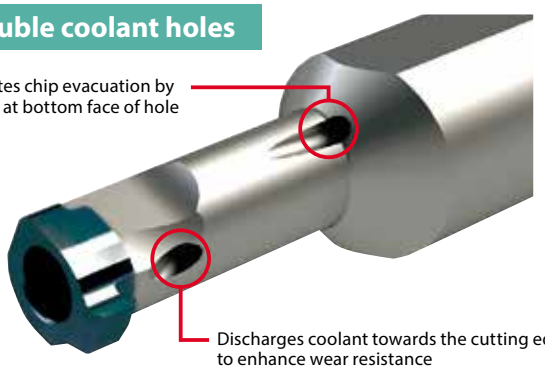
Point contact

2 Excellent chip evacuation

Excellent chip evacuation with double coolant holes and optimized flute shape

Double coolant holes

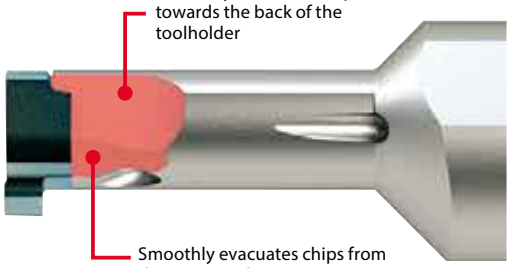
Promotes chip evacuation by aiming at bottom face of hole



Discharges coolant towards the cutting edge to enhance wear resistance

Flute shape

Smoothly evacuates chips towards the back of the toolholder

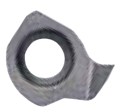
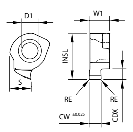
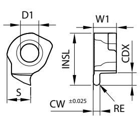


Smoothly evacuates chips from the cutting edge

Provides a better solution when facing chip evacuation difficulties in small internal grooving.
Prevents chip crunching.

GC

Material			PR1535	PR1725	
Carbon steel / Alloy steel			○	●	P
Stainless steel			●	○	M
Cast iron					K
Non-ferrous metals					N
Titanium alloy					S
Hard materials (~ 40HRC)					H
Hard materials (40HRC ~)					H

Insert	Description		No. of edges	Dimension (mm) CW	CDX	S	D1	RE	INSL	W1	Tolerance (mm) CW min.	CW max.	Carbide PVD PR1535	PR1725	Applicable toolholder (G76,G77)
 	GC08R	100-005	1	1	1.5	3.5	2.7	0.05	7.7	3.4	- 0.025	+ 0.025	●	●	SIGCR08...
		120-005		1.2				0.05					●	●	
		125-005		1.25				0.05					●	●	
		150-010		1.5				0.1					●	●	
		200-010		2				0.1					●	●	
	GC08L	100-005		1				0.05					●	●	SIGCL08...
		120-005		1.2				0.05					●	●	
		125-005		1.25				0.05					●	●	
		150-010		1.5				0.1					●	●	
		200-010		2				0.1					●	●	
	GC10R	100-005	1	1	2.2	4.4	3.5	0.05	9.6	4.7	- 0.025	+ 0.025	●	●	SIGCR10...
		120-005		1.2				0.05					●	●	
		125-005		1.25				0.05					●	●	
		145-010		1.45				0.1					●	●	
		150-010		1.5				0.1					●	●	
		200-010		2				0.1					●	●	
		250-020		2.5				0.2					●	●	
		300-020		3				0.2					●	●	
	GC10L	100-005		1				0.05					●	●	SIGCL10...
		120-005		1.2				0.05					●	●	
		125-005		1.25				0.05					●	●	
		145-010		1.45				0.1					●	●	
		150-010		1.5				0.1					●	●	
		200-010		2				0.1					●	●	
		250-020		2.5				0.2					●	●	
		300-020		3				0.2					●	●	
	GC12R	100-005	1	1	2.2	5.4	3.5	0.05	11.6	4.7	- 0.025	+ 0.025	●	●	SIGCR12...
		120-005		1.2				0.05					●	●	
		125-005		1.25				0.05					●	●	
		145-010		1.45				0.1					●	●	
		150-010		1.5				0.1					●	●	
		200-010		2				0.1					●	●	
		250-020		2.5				0.2					●	●	
		300-020		3				0.2					●	●	
	GC12L	100-005		1				0.05					●	●	SIGCL12...
		120-005		1.2				0.05					●	●	
		125-005		1.25				0.05					●	●	
		145-010		1.45				0.1					●	●	
		150-010		1.5				0.1					●	●	
		200-010		2				0.1					●	●	
		250-020		2.5				0.2					●	●	
		300-020		3				0.2					●	●	
  Full R	GC08R	100-050R	1	1	1.5	3.5	2.7	0.5	7.7	3.4	- 0.025	+ 0.025	●	●	SIGCR08...
		200-100R		2				1					●	●	
	GC10R	100-050R	1	1	2.2	4.4	3.5	0.5	9.6	4.7	- 0.025	+ 0.025	●	●	SIGCR10...
		200-100R		2				1					●	●	
	GC12R	100-050R	1	1	2.2	5.4	3.5	0.5	11.6	4.7	- 0.025	+ 0.025	●	●	SIGCR12...
		200-100R		2				1					●	●	

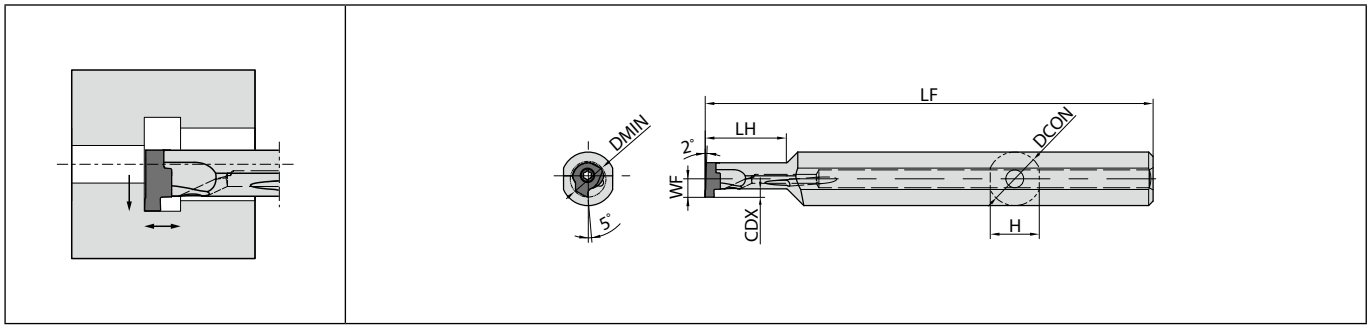
Right-hand shown
CDX shows available grooving depth.

Recommended cutting conditions G144

● : Standard item

GC type inserts are sold in 5 piece boxes

SIGC Excellent bar (Internal grooving)



Right-hand shown | Right-hand Insert for Right-hand Toolholder, Left-hand Insert for Left-hand Toolholder.

Toolholder dimensions

Description	Availability R	Availability L	Dimension (mm) DMIN	DCON	CDX	H	LH	LF	WF	Coolant hole	Spare parts Screw	Spare parts Wrench	Applicable inserts G75
SIGC$^{R/L}$ 0812-EH	●	●	8	12	1.5	11	18	100	4.1	Yes	SB-2270T$^{R/L}$	FT-7	GC08$^{R/L}$...
SIGC$^{R/L}$ 1016-EH	●	●	10	16	2.2	15	21	100	5	Yes	SB-3070T$^{R/L}$	FT-8	GC10$^{R/L}$...
SIGC$^{R/L}$ 1216-EH	●	●	12	16	2.2	15	25	110	6	Yes	SB-3070T$^{R/L}$	FT-8	GC12$^{R/L}$...

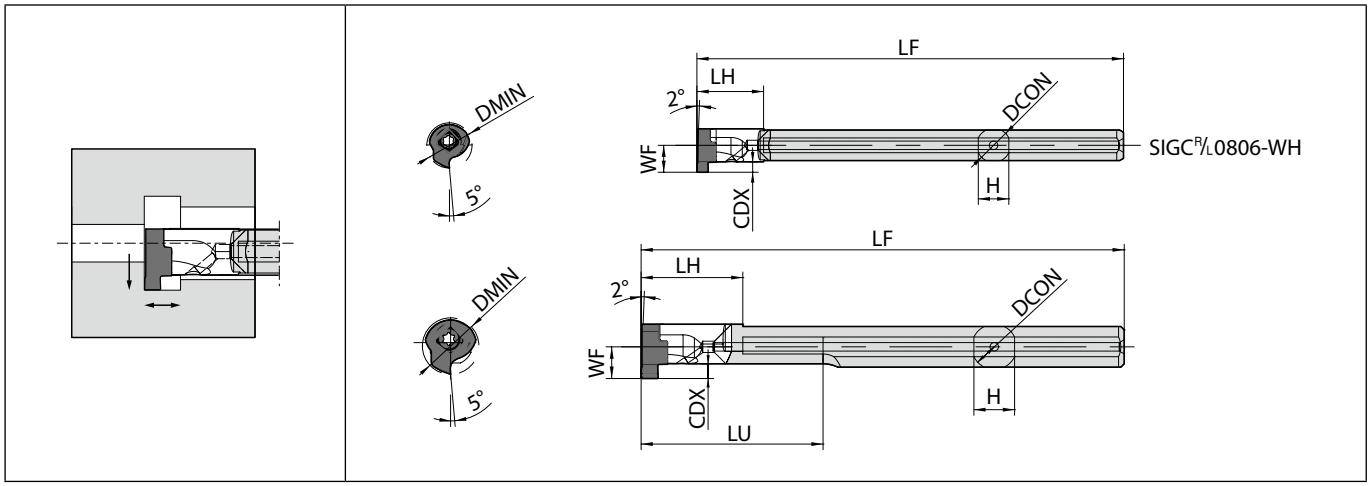
Setting the insert
- Use compressed air or other measures to remove chips from the insert pocket.
- Mount the insert into the toolholder ensure the bottom makes contact with the end of the toolholder's surface.
- Keeping the insert seated, tighten the insert clamp screw at an appropriate torque.

Recommended tightening torque : 0.8 N·m (SB-2270T$^{R/L}$), 1.2 N·m (SB-3070T$^{R/L}$)
L-hand clamp screw for L-hand toolholder

GC**R-***	GC**L-***
LOCK Right-hand screw	LOCK Left-hand screw
Toolholder : SIGCR....-.. Clamp Screw : SB-....TR	Toolholder : SIGCL....-.. Clamp Screw : SB-....TL

● : Standard item

SIGC Carbide shank bar (Internal grooving)



Right-hand shown | Right-hand Insert for Right-hand Toolholder, Left-hand Insert for Left-hand Toolholder.

Toolholder dimensions

Description		Availability R	Availability L	Dimension (mm) DMIN	DCON	CDX	H	LH	LF	LU	WF	Coolant hole	Spare parts Screw	Spare parts Wrench	Applicable inserts G75
SIGC R/L	0806-WH	●	●	8	6	1.5	5.4	12	75	-	4.8	Yes	SB-2270T R/L	FT-7	GC08 R/L...
SIGC R/L	1008-WH-L85	●	●	10	8	2.2	7.2	18	85	32	5.6	Yes	SB-3070T R/L	FT-8	GC10 R/L...
	1008-WH-L100	●							100	45			SB-3070TR		
SIGC R/L	1210-WH-L95	●		12	10	2.2	9.2	18	95	32	6.6	Yes	SB-3070T R/L	FT-8	GC12 R/L...
	1210-WH-L110	●	●						110	45					

Setting the insert
- Use compressed air or other measures to remove chips from the insert pocket.
- Mount the insert into the toolholder ensure the bottom makes contact with the end of the toolholder's surface.
- Keeping the insert seated, tighten the insert clamp screw at an appropriate torque.

Recommended tightening torque : 0.8 N·m (SB-2270T R/L), 1.2 N·m (SB-3070T R/L)
L-hand clamp screw for L-hand toolholder

GC**R-***	GC**L-***
LOCK Right-hand screw	LOCK Left-hand screw
Toolholder : SIGCR....-.. Clamp Screw : SB-....TR	Toolholder : SIGCL....-.. Clamp Screw : SB-....TL

Applicable Sleeves

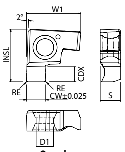
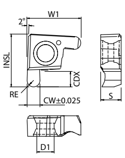
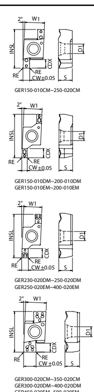
Shank Size (Hole Dia.: mm)	06 (6 mm)	08 (8 mm)	10 (10 mm)	12 (12 mm)	16 (16 mm)
Toolholder Description	SIGC R/L 0806-WH	SIGC R/L 1008-WH-L85 SIGCR 1008-WH-L100	SIGCR 1210-WH-L95 SIGC R/L 1210-WH-L110	SIGC R/L 0812-EH	SIGC R/L 1016-EH SIGC R/L 1216-EH
SH Sleeves (For Boring Bars)	SH 06...	SH 08...	SH 10...	SH 12...	SH 16...
SHC Sleeves (Coolant Sleeve)	–	SHC 08...	SHC 10...	SHC 12...	SHC 16...
SHA Sleeves	–	SHA 08...	SHA 10...	SHA 12...	–
EZH Sleeves (For EZ Bars)	EZH 06...ST/CT/HP...	EZH 08...ST/CT/HP...	–	–	–

* Remove the positioning pin when mounting SIGC to the EZH-CT/HP Sleeve
Positioning function is not available

● : Standard item

GE

Material		PR1025	PR1225	KW10	TN6020	ISO
Carbon steel / Alloy steel		◔	◕		○	P
Stainless steel		◔	◕			M
Cast iron				◔		K
Non-ferrous metals				◕		N
Titanium alloy				◕		S
Hard materials (~ 40HRC)		○	●			H
Hard materials (40HRC ~)						H

Insert	Description	No. of edges	Dimension (mm) CW	CDX	S	D1	RE	INSL	W1	Tolerance (mm) CW min.	CW max.	Carbide PVD PR1025	PR1225	Carbide - KW10	Cermet - TN6020	Applicable toolholder ➡ G81~G83
  2-edge	GER 100-005A	2	1	1.5	2.58	2.5	0.05	6.5	6.69	- 0.025	+ 0.025	□	●	●	●	SIGER0808A-EH SIGER0808A-WH
	GER 120-005A		1.2				0.05					□	●		●	
	GER 125-005A		1.25				0.05					□	●	●		
	GER 150-010A		1.5				0.1					□	●	●	●	
	GER 200-010A		2				0.1					□	●	●	●	
	GEL 100-005A		1				0.05						●			SIGEL0808A-EH SIGEL0808A-WH
	GEL 120-005A		1.2				0.05						●			
	GEL 125-005A		1.25				0.05						●			
	GEL 150-010A		1.5				0.1						●	●		
	GEL 200-010A		2				0.1						●			
	GER 100-005B	2	1	2.2	3.18	2.7	0.05	8.2	8.46	- 0.025	+ 0.025	□	●	●	●	SIGER....B-EH SIGER....B-WH SIGER....B-WH-90
	GER 120-005B		1.2				0.05					□	●	●	●	
	GER 125-005B		1.25				0.05					□	●	●		
	GER 145-010B		1.45				0.1					□	●	●	●	
	GER 150-010B		1.5				0.1					□	●	●	●	
	GER 200-010B		2				0.1					□	●	●	●	
	GER 250-020B		2.5				0.2					□	●	●	●	
	GER 300-020B		3				0.2					□	●	●	●	
	GEL 100-005B		1				0.05					□	●	●		SIGEL....B-EH SIGEL....B-WH
	GEL 120-005B		1.2				0.05						●			
	GEL 125-005B		1.25				0.05						●			
	GEL 145-010B		1.45				0.1						●			
	GEL 150-010B		1.5				0.1						●		●	
	GEL 200-010B		2				0.1					□	●	●	●	
	GEL 250-020B		2.5				0.2					□	●		●	
	GEL 300-020B		3				0.2					□	●	●	●	
  2-edge / Full R	GER 100-050AR	2	1	1.5	2.58	2.5	0.5	6.5	6.69	- 0.025	+ 0.025	□	●	●		SIGER0808A-EH SIGER0808A-WH
	GER 200-100AR		2				1					□	●			
	GER 100-050BR	2	1	2.2	3.18	2.7	0.5	8.2	8.46	- 0.025	+ 0.025	□	●	●		SIGER....B-EH SIGER....B-WH SIGER....B-WH-90
	GER 200-100BR		2				1					□	●	●		
  2-edge / Molded Chipbreaker	GER 150-010CM	2	1.5	2.5	4.05	2.8	0.1	11.48	5.8	- 0.05	+ 0.05	□	●			SIGER....C-EH SIGER....C-WH SIGER....C-WH-90
	GER 200-010CM		2				0.1					□	●			
	GER 250-020CM		2.5				0.2					□	●			
	GER 300-020CM		3				0.2					□	●			
	GER 350-020CM		3.5				0.2					□	●			
	GER 150-010DM	2	1.5	3	5.05	3.4	0.1	16.44	6.8	- 0.05	+ 0.05	□	●			SIGER2020D-EH
	GER 200-010DM		2	3.2			0.1					□	●			
	GER 230-020DM		2.3	3.2			0.2					□	●			
	GER 250-020DM		2.5	3.2			0.2					□	●			
	GER 300-020DM		3	4.5			0.2					□	●			
	GER 350-020DM		3.5	4.5			0.2					□	●			
	GER 400-020DM		4	4.5			0.2					□	●			

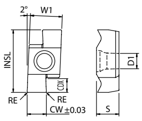
Right-hand shown
CDX shows available grooving depth.

Recommended cutting conditions ➡ G145

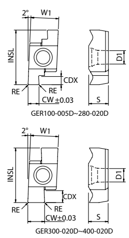
●: Standard item □: Deleted from the next catalog

GE

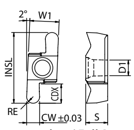
Work material	PR1025	PR1225	GW15	TN6020	
Carbon steel / Alloy steel	○	●		○	P
Stainless steel	○	●			M
Cast iron			○		K
Non-ferrous metals			●		N
Titanium alloy			●		S
Hard materials (~ 40HRC)	○	●			H
Hard materials (40HRC ~)					H

2-edge

2-edge

2-edge / Full R

Insert	Description		No. of edges	CW	CDX	S	D1	RE	INSL	W1	Tolerance (mm) CW min.	Tolerance (mm) CW max.	Carbide PVD PR1025	Carbide PVD PR1225	Carbide - GW15	Cermet - TN6020	Applicable toolholder ➡ G81~G83
2-edge	GER	100-005C	2	1	2.5	4.05	3.1	0.05	11.48	5.8	- 0.03	+ 0.03	□	●	●	●	SIGER....C-EH SIGER....C-WH SIGER....C-WH-90
		120-005C		1.2				0.05					□	●	●	●	
		125-005C		1.25				0.05					□	●	●	●	
		140-005C		1.4				0.05					□	●	●	●	
		145-010C		1.45				0.1					□	●	●		
		150-010C		1.5				0.1					□	●	●	●	
		170-010C		1.7				0.1					□	●	●		
		185-010C		1.85				0.1						●	●		
		195-010C		1.95				0.1						●	●		
		200-010C		2				0.1					□	●	●	●	
		250-020C		2.5				0.2					□	●	●	●	
		300-020C		3				0.2					□	●	●	●	
		350-020C		3.5				0.2					□	●	●		
	GEL	100-005C		1				0.05					□	●	●	●	SIGEL....C-EH SIGEL....C-WH
		120-005C		1.2				0.05					□	●			
		125-005C		1.25				0.05					□	●	●		
		145-010C		1.45				0.1					□	●			
		150-010C		1.5				0.1					□	●	●		
		200-010C		2				0.1					□	●	●		
		250-020C		2.5				0.2						●	●	●	
		300-020C		3				0.2						●		●	
		350-020C		3.5				0.2					□	●			
2-edge	GER	100-005D	2	1	2.5	5.05	3.6	0.05	16.44	6.8	- 0.03	+ 0.03	□	●	●	●	SIGER2020D-EH
		140-005D		1.4	2.5			0.05					□	●	●	●	
		145-010D		1.45	2.5			0.1					□	●	●	●	
		150-010D		1.5	3			0.1					□	●	●	●	
		170-010D		1.7	3			0.1						●	●	●	
		185-010D		1.85	3			0.1					□	●	●		
		195-010D		1.95	3			0.1					□	●	●		
		200-010D		2	3.2			0.1					□	●	●	●	
		225-010D		2.25	3.2			0.1					□	●	●		
		230-020D		2.3	3.2			0.2						●	●	●	
		250-020D		2.5	3.2			0.2					□	●	●	●	
		280-020D		2.8	3.2			0.2					□	●	●		
		300-020D		3	4.5			0.2					□	●	●	●	
		330-020D		3.3	4.5			0.2					□	●	●		
		350-020D		3.5	4.5			0.2						●	●		
		400-020D		4	4.5			0.2						●	●	●	
	GEL	100-005D		1	2.5			0.05						●	●		SIGEL2020D-EH
		140-005D		1.4	2.5			0.05						●			
		145-010D		1.45	2.5			0.1					□	●			
		150-010D		1.5	3			0.1					□	●	●	●	
		170-010D		1.7	3			0.1						●			
		200-010D		2	3.2			0.1						●		●	
		225-010D		2.25	3.2			0.1						●			
		230-020D		2.3	3.2			0.2						●			
		250-020D		2.5	3.2			0.2					□	●		●	
		300-020D		3	4.5			0.2						●	●	●	
		400-020D		4	4.5			0.2						●			
2-edge / Full R	GER	200-100CR	2	2	2.5	4.05	3.1	1	11.48	5.8	- 0.03	+ 0.03	□	●	●		SIGER....C-EH SIGER....C-WH(-..)
		250-125CR		2.5				1.25					□	●	●		
		300-150CR		3				1.5					□	●	●		
	GER	200-100DR	2	2	3.2	5.05	3.6	1	16.44	6.8	- 0.03	+ 0.03	□	●	●		SIGER2020D-EH
		300-150DR		3	4.5			1.5					□	●	●		

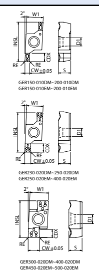
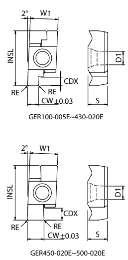
Right-hand shown
CDX shows available grooving depth.

Recommended cutting conditions ➡ G145

● : Standard item □ : Deleted from the next catalog

GE/GER

	PR1025	PR1225	GW15	TN6020	
Carbon steel / Alloy steel	○	●		○	P
Stainless steel	○	●			M
Cast iron			○		K
Non-ferrous metals			●		N
Titanium alloy			●		S
Hard materials (~ 40HRC)	○	●			H
Hard materials (40HRC ~)					H

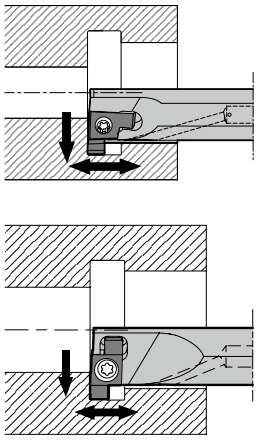
Insert		Description		No. of edges	Dimension (mm)							Tolerance (mm)		Carbide			Cermet	Applicable toolholder ➡ G81
					CW	CDX	S	D1	RE	INSL	W1	CW min.	CW max.	PVD		-	-	
														PR1025	PR1225	GW15	TN6020	
	 2-edge / Molded Chipbreaker	GER	150-010EM	2	1.5	3	5.55	4.4	0.1	21.66	9.54	- 0.05	+ 0.05	□	●			SIGER....E-EH
			200-010EM		2	3.2			0.1					□	●			
			250-020EM		2.5	4.5			0.2					□	●			
			300-020EM		3	4.5			0.2					□	●			
			350-020EM		3.5	5.5			0.2					□	●			
			400-020EM		4	5.5			0.2					□	●			
			450-020EM		4.5	6.5			0.2						●			
			500-020EM		5	6.5			0.2					□	●			
	 2-edge	GER	100-005E	2	1	2.5	5.55	4.6	0.05	21.66	9.54	- 0.03	+ 0.03	□	●	●	●	SIGER....E-EH
			150-010E		1.5	3			0.1					□	●	●	●	
			170-010E		1.7	3			0.1					□	●	●	●	
			185-010E		1.85	3			0.1					□	●	●	●	
			195-010E		1.95	3			0.1					□	●	●		
			200-010E		2	3.2			0.1					□	●	●	●	
			225-010E		2.25	3.2			0.1						●	●	●	
			230-020E		2.3	3.2			0.2						●	●	●	
			250-020E		2.5	4.5			0.2					□	●	●	●	
			275-020E		2.75	4.5			0.2						●	●		
			280-020E		2.8	4.5			0.2					□	●	●	●	
			300-020E		3	4.5			0.2					□	●	●	●	
			330-020E		3.3	4.5			0.2					□	●	●	●	
			350-020E		3.5	5.5			0.2					□	●	●	●	
			400-020E		4	5.5			0.2					□	●	●	●	
			430-020E		4.3	5.5			0.2						●	●	●	
			450-020E		4.5	6.5			0.2						●	●	●	
			460-020E		4.6	6.5			0.2					□	●	●		
			500-020E		5	6.5			0.2					□	●	●	●	
		GEL	100-005E		1	2.5			0.05						●			SIGEL....E-EH
			150-010E		1.5	3			0.1					□	●	●		
			170-010E		1.7	3			0.1						●			
			185-010E		1.85	3			0.1					□	●			
			195-010E		1.95	3			0.1					□	●			
			200-010E		2	3.2			0.1					□	●	●		
			230-020E		2.3	3.2			0.2								●	
			250-020E		2.5	4.5			0.2						●	●	●	
			280-020E		2.8	4.5			0.2					□	●			
			300-020E		3	4.5			0.2					□	●	●	●	
			330-020E		3.3	4.5			0.2					□	●			
			350-020E		3.5	5.5			0.2					□	●		●	
			400-020E		4	5.5			0.2					□	●	●		
			500-020E		5	6.5			0.2					□	●			

Right-hand shown
CDX shows available grooving depth.

Recommended cutting conditions ➡ G145

●: Standard item □: Deleted from the next catalog

SIGE Excellent bar (Internal grooving)



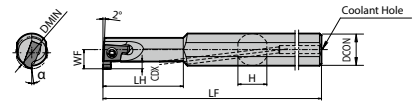


Fig. 1

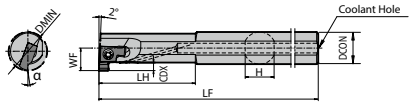


Fig. 2

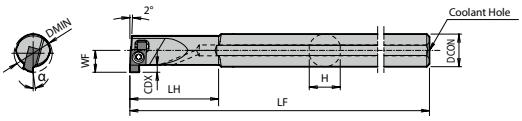
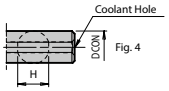


Fig. 3



1612C-EH shank is 3 face cut type (top, bottom and one side)

Fig. 4

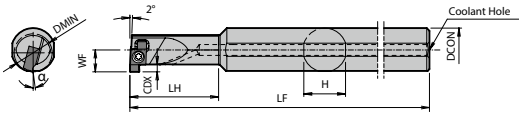


Fig. 5

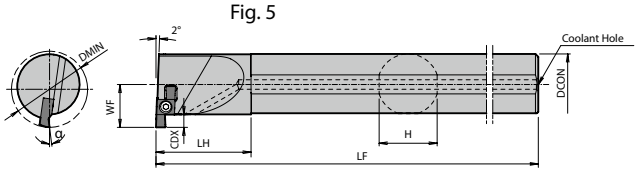


Fig. 6

Right-hand shown | Right-hand Insert for Right-hand Toolholder, Left-hand Insert for Left-hand Toolholder.

Toolholder dimensions

Description		Availability R	Availability L	Dimension (mm) DMIN	DCON	CDX	H	LH	LF	WF	Coolant hole	Fig.	Spare parts: Screw	Wrench	Wrench	Wrench	Applicable inserts ➡ G78~G80
SIGE R/L	0808A-EH	●	●	8	8	1.5	7.2	20	100	4.8	Yes	1	SB-2045TRN	-	-	FT-6	GE R/L...A / AR
SIGE R/L	1010B-EH	●	●	10	10	2.2	9	25	125	6.2	Yes	1	SB-2255TR	-	DT-7	-	GE R/L...B GE R/L...BR
	1210B-EH	●	●	12				30		7		2					
SIGE R/L	1412C-EH	●	●	14	12	2.5	11.4	33	150	8	Yes	3	SB-2570TR	-	-	FT-8	GE R/L...C GE R/L...CM GE R/L...CR
	1612C-EH	●	●	16				20		8.5		4					
	1616C-EH	●	●		16		15	36	160	9		5					
SIGE R/L	2020D-EH	●	●	20	20	4.5	19	40	180	12.1	Yes	5	SB-3080TR	-	-	FT-10	GE R/L...D / DM / DR
SIGE R/L	2525E-EH	●	●	25	25	6.5	24	45	200	15.6	Yes	5	SB-4085TR	FT-15	-	-	GE R/L...E GE R/L...EM
	3232E-EH	●	●	32	32		30.4	55	220	19		5					
	4032E-EH	●	●	40				45	250	23		6					

CDX shows the distance from the toolholder to the cutting edge. Available Groove Depth : „CDX" of Insert.

Applicable sleeve ➡ **F149, F150**

Features

Large chip pocket screw clamp toolholder design enables excellent chip evacuation

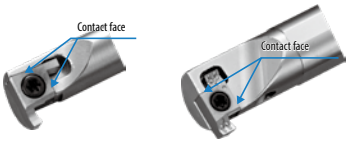
Screw Clamp

Conventional Clamp

Cost effective chip control from a molded chipbreaker

GER...M

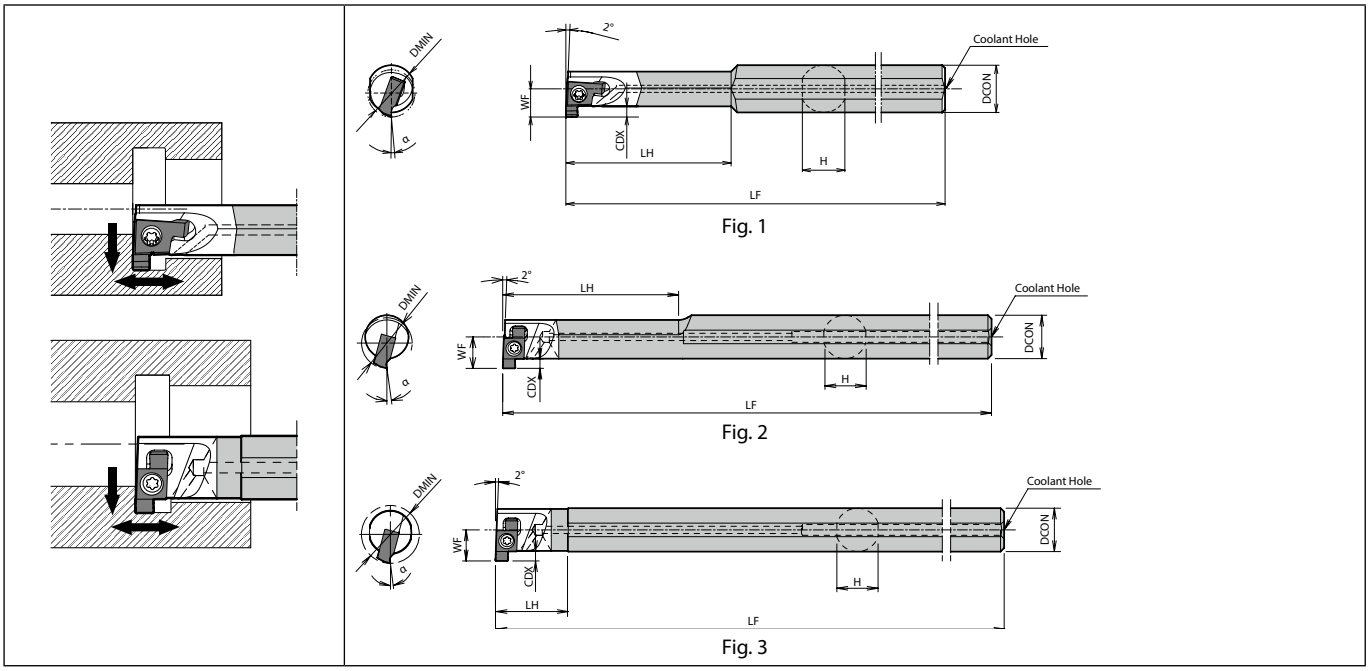
Cutting edge is free from contact face



An 8mm minimum bore diameter with a 2-edge design

● : Standard item

SIGE Carbide shank bar (Internal grooving)



Right-hand shown | Right-hand Insert for Right-hand Toolholder, Left-hand Insert for Left-hand Toolholder.

Toolholder dimensions

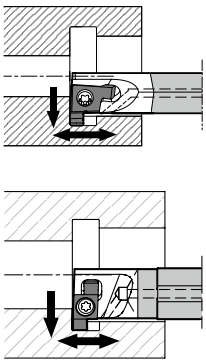
Description		Availability R	Availability L	Dimension (mm) DMIN	DCON	CDX	H	LH	LF	WF	Coolant hole	Fig.	Spare parts Screw	Spare parts Wrench	Spare parts Wrench	Applicable inserts G78,G79
SIGE$^{R}_{L}$	0808A-WH	●	●	8	8	1.5	7.2	28	125	4.8	Yes	1	SB-2045TRN	-	FT-6	GE$^{R}_{L}$...A / AR
SIGE$^{R}_{L}$	1010B-WH	●	●	10	10	2.2	9	35	125	6.2	Yes	1	SB-2255TR	DT-7	-	GE$^{R}_{L}$...B
	1210B-WH	●	●	12				45	140	7						GE$^{R}_{L}$...BR
SIGE$^{R}_{L}$	1412C-WH	●	●	14	12	2.5	11.4	50	150	8.7	Yes	2	SB-2570TR	-	FT-8	GE$^{R}_{L}$...C
	1612C-WH	●	●	16				20	180	8.5		3				GE$^{R}_{L}$...CM GE$^{R}_{L}$...CR

CDX shows the distance from the toolholder to the cutting edge. Available Groove Depth : „CDX" of Insert.

Applicable sleeve **F149, F150**

● : Standard item

SIGE Carbide shank bar (Internal grooving / for automatic lathe)



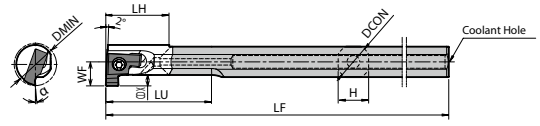


Fig. 1

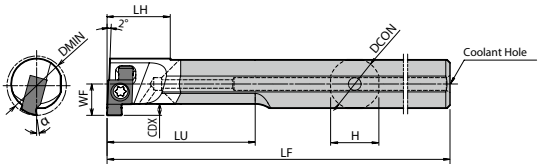


Fig. 2

Right-hand shown | Right-hand Insert for Right-hand Toolholder.

Toolholder dimensions

Description		Availability	Dimension (mm)								Coolant hole	Fig.	Spare parts		Applicable inserts ⇨ G78,G79
													Screw	Wrench	
		R	DMIN	DCON	CDX	H	LH	LF	LU	WF					
SIGER	1008B-WH-90	●	10	8	2.2	7.2	15	90	25	5.6	Yes	1	SB-2255TR	FT-7	GE^{R}/L...B GE^{R}/L...BR
	1210B-WH-90	●	12	10		9.4			30	6.6					
SIGER	1412C-WH-90	●	14	12	2.5	11.4	15	90	35	7.4	Yes	2	SB-2570TR	FT-8	GE^{R}/L...C / CM/ CR

CDX shows the distance from the toolholder to the cutting edge.
LH shows minimum overhang length.

Applicable sleeve ⇨ **F149, F150**

Applicable Insert & Rake Angle (α) after Installment of Insert

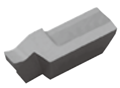
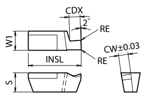
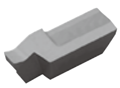
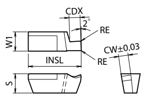
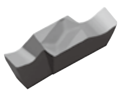
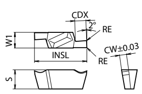
Toolholder Description		Applicable Insert & Rake Angle (α) after Installment of Insert			
		Ground Chipbreaker	α	Molded Chipbreaker	α
SIGE^{R}/L	0808A-EH	GE^{R}/L100-005A~GE^{R}/L200-010A GER100-050AR~GER200-100AR	5°	-	-
	1010B-EH	GE^{R}/L100-005B~GE^{R}/L300-020B GER100-050BR~GER200-100BR	5°	-	-
	1210B-EH				
	1412C-EH	GE^{R}/L100-005C~GE^{R}/L350-020C GER200-100CR~GER300-150CR	8°	GER150-010CM~GER350-020CM	10°
	1612C-EH				
	1616C-EH				
	2020D-EH	GE^{R}/L100-005D~GE^{R}/L400-020D GER200-100DR~GER300-150DR	9°	GER150-010DM~GER400-020DM	10°
	2525E-EH	GE^{R}/L100-005E~GE^{R}/L500-020E	10°	GER150-010EM~GER500-020EM	10°
	3232E-EH				
	4032E-EH				
SIGE^{R}/L	0808A-WH	GE^{R}/L100-005A~GE^{R}/L200-010A GER100-050AR~GER200-100AR	5°	-	-
	1010B-WH	GE^{R}/L100-005B~GE^{R}/L300-020B GER100-050BR~GER200-100BR	5°	-	-
	1210B-WH				
	1008B-WH-90				
	1210B-WH-90				
	1412C-WH	GE^{R}/L100-005C~GE^{R}/L350-020C GER200-100CR~GER300-150CR	8°	GER150-010CM~GER350-020CM	10°
	1612C-WH				
	1412C-WH-90				

α indicates the rake angle at the center of the edge width after installing insert.

● : Standard item

GV

Work material	PR1225	PR930	KW10	TC40N	TC60M	
Carbon steel / Alloy steel	●	○				P
Stainless steel	●	○				M
Cast iron			●			K
Non-ferrous metals			●			N
Titanium alloy			●			S
Hard materials (~ 40HRC)	●	○				H
Hard materials (40HRC ~)						H

Insert		Description		No. of edges	CW	CDX	S	RE	INSL	W1	Tolerance (mm) CW min.	Tolerance (mm) CW max.	Carbide PVD PR1225	Carbide PVD PR930	Carbide - KW10	Cermet - TC40N	Cermet - TC60M	Applicable toolholder ➡ G86~G88
	 1-edge	GVR	100-020SS	1	1	2.3	3	0.2	9	3.6	- 0.03	+ 0.03	●	●	●		●	GIVR1216-1SS
			125-020SS		1.25								●	●	●		●	
			145-020SS		1.45								●	●	●		●	
			200-020SS		2								●	●	●		●	
			250-020SS		2.5								●	●	●		●	
			300-020SS		3								●	●	●		●	
		GVL	100-020SS		1								●		●			GIVL1216-1SS
			125-020SS		1.25								●		●			
			145-020SS		1.45								●		●			
			200-020SS		2								●		●			
			250-020SS		2.5								●		●			
			300-020SS		3								●		●			
	 1-edge	GVR	100-020S	1	1	2.3	4	0.2	11	4	- 0.03	+ 0.03	●	●	●	●	●	GIVR1420-1S GIVR1412-1SE
			125-020S		1.25								●	●	●	●	●	
			145-020S		1.45								●	●	●	●	●	
			185-020S		1.85								●	●	●	●	●	
			200-020S		2								●	●	●	●	●	
			250-020S		2.5								●	●	●	●	●	
			340-020S		3.4								●	●	●	●	●	
		GVL	100-020S		1								●	●	●	●		GIVL1420-1S GIVL1412-1SE
			125-020S		1.25										●	●		
			145-020S		1.45										●			
			185-020S		1.85										●			
			200-020S		2								●	●	●	●		
			250-020S		2.5								●		●			
			340-020S		3.4										●			
	 2-edge	GVR	100-020A	2	1	2.3	5	0.2	12	4	- 0.03	+ 0.03	●	●	●	●	●	GIVR1620-1A GIVR1612-1AE GIVR1616-1AW
			125-020A		1.25								●	●	●	●	●	
			145-020A		1.45								●	●	●	●	●	
			185-020A		1.85								●	●	●	●	●	
			200-020A		2								●	●	●	●	●	
			250-020A		2.5								●	●	●	●	●	
			300-020A		3								●	●	●	●	●	
			340-020A		3.4								●	●	●	●	●	
		GVL	100-020A		1								●	●	●	●	●	GIVL1620-1A GIVL1612-1AE GIVL1616-1AW
			125-020A		1.25								●		●	●		
			145-020A		1.45								●		●	●	●	
			185-020A		1.85								●		●			
			200-020A		2								●	●	●	●	●	
			250-020A		2.5								●		●			
			300-020A		3										●			
			340-020A		3.4										●			

Right-hand shown
CDX shows available grooving depth.

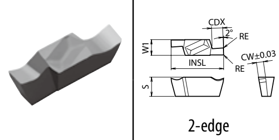
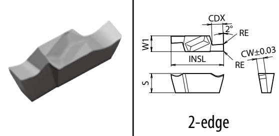
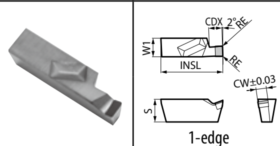
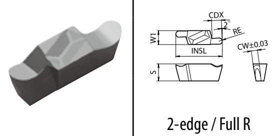
Recommended cutting conditions ➡ G146

G
Grooving
External
Internal
Face

● : Standard item

GV

Workpiece material	PR1225	PR930	KW10	TC40N	TC60M	KPD010	
Carbon steel / Alloy steel	●	○					P
Stainless steel	●	○					M
Cast iron			●				K
Non-ferrous metals			●			●	N
Titanium alloy			●			●	S
Hard materials (~ 40HRC)	●	○					H
Hard materials (40HRC ~)							H

Insert		Description		No. of edges	Dimension (mm) CW	CDX	S	RE	INSL	W1	Tolerance (mm) CW min.	CW max.	Carbide PVD PR1225	PR930	- KW10	Cermet - TC40N	TC60M	PCD - KPD010	Applicable toolholder ➡ G86~G88
	2-edge	GVR	145-020B	2	1.45	2.8	5.5	0.2	15	4.5	- 0.03	+ 0.03	●	●	●	●	●		GIVR2025-1B GIVR2016-1BE GIVR2020-1BW
			185-020B		1.85	2.8							●	●	●	●	●		
			200-020B		2	3.2							●	●	●	●	●		
			230-020B		2.3	3.2							●	●	●	●	●		
			250-020B		2.5	3.2							●	●	●	●	●		
			280-020B		2.8	3.2							●	●	●	●	●		GIVR2025-2B GIVR2016-2BE GIVR2020-2BW
			300-020B		3	4.2							●	●	●	●	●		
			340-020B		3.4	4.2							●	●	●	●	●		
			400-020B		4	4.2							●	●	●	●	●		
		GVL	145-020B		1.45	2.8							●	●	●	●	●		GIVL2025-1B GIVL2016-1BE GIVL2020-1BW
			185-020B		1.85	2.8										●	●		
			200-020B		2	3.2							●	●	●	●	●		
			230-020B		2.3	3.2							●	●			●		
			250-020B		2.5	3.2							●	●	●	●	●		
			280-020B		2.8	3.2										●			GIVL2025-2B GIVL2016-2BE GIVL2020-2BW
			300-020B		3	4.2							●	●	●	●	●		
			400-020B		4	4.2									●				
	2-edge	GVR	280-020C	2	2.8	4.5	6.5	0.2	21	5.8	- 0.03	+ 0.03	●	●	●	●	●		GIVR.....-1C GIVR.....-1CE GIVR.....-1CW
			300-020C		3	4.5							●	●	●	●	●		
			340-020C		3.4	5.5							●	●	●	●	●		
			400-020C		4	5.5							●	●	●	●	●		GIVR.....-2C GIVR.....-2CE GIVR.....-2CW
			430-020C		4.3	6.3							●	●	●	●	●		
			460-020C		4.6	6.3							●	●	●	●			
			500-020C		5	6.3							●	●	●	●	●		
		GVL	280-020C		2.8	4.5							●		●	●	●		GIVL.....-1C GIVL.....-1CE GIVL.....-1CW
			300-020C		3	4.5							●	●	●	●	●		
			340-020C		3.4	5.5							●	●	●	●	●		
			400-020C		4	5.5							●	●	●	●	●		GIVL.....-2C GIVL.....-2CE GIVL.....-2CW
			430-020C		4.3	6.3									●	●	●		
			460-020C		4.6	6.3									●				
			500-020C		5	6.3							●	●	●		●		
	1-edge	GVR	145-020A	1	1.45	2.3	5	0.2	12	4	- 0.03	+ 0.03						●	GIVR1620-1A GIVR1612-1AE GIVR1616-1AW
			200-020A		2													●	
		GVR	200-020B	1	2	3.2	5.5	0.2	15	4.5	- 0.03	+ 0.03						●	GIVR2025-1B GIVR2016-1BE GIVR2020-1BW
			250-020B		2.5													●	
	2-edge / Full R	GVR	200-100AR	2	2	2.3	5	1	12	4	- 0.03	+ 0.03	●	●	●		●		GIVR1620-1A GIVR1612-1AE GIVR1616-1AW
			250-125AR		2.5			1.25					●	●	●		●		
			300-150AR		3			1.5					●	●	●		●		
		GVL	200-100AR		2			1					●	●					GIVL1620-1A GIVL1612-1AE GIVL1616-1AW
		GVR	200-100BR	2	2	3.2	5.5	1	15	4.5	- 0.03	+ 0.03	●	●	●		●		GIVR2025-1B GIVR2016-1BE GIVR2020-1BW
			300-150BR		3	4.2		1.5					●	●	●		●		GIVR2025-2B GIVR2016-2BE GIVR2020-2BW

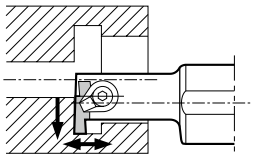
Right-hand shown
CDX shows available grooving depth.

Recommended cutting conditions ➡ G146

●: Standard item

CBN & PCD Inserts are sold in 1 piece boxes

GIV Steel shank bar (Internal grooving)



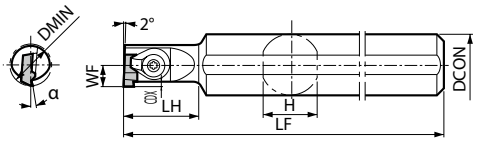
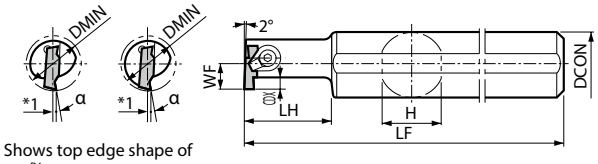


Fig. 1



Shows top edge shape of GIV$^{R}_{L}$1620-1A
(No jaw part under Insert)

Fig. 2

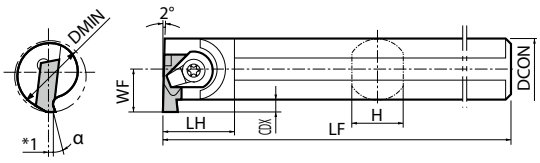


Fig. 3

Right-hand shown | Right-hand Insert for Right-hand Toolholder, Left-hand Insert for Left-hand Toolholder.

Toolholder dimensions

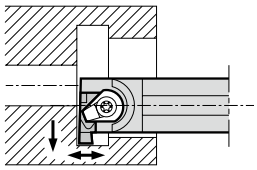
Description		Availability R	Availability L	Dimension (mm) DMIN	DCON	CDX	H	LH	LF	WF	Fig.	Spare parts: Clamp set	Clamp set	Wrench	Wrench	Wrench	Applicable inserts G84,G85
GIV$^{R}_{L}$	1216-1SS	●	●	12	16	2.2	15	20	150	6	1	CPS-4V	-	-	-	FT-10	GV$^{R}_{L}$...-020SS
GIV$^{R}_{L}$	1420-1S	●	●	14	20	2.2	19	24	150	7	1	CPS-5F	-	-	FT-15	-	GV$^{R}_{L}$...-020S
GIV$^{R}_{L}$	1620-1A	●	●	16	20	2.2	19	28	160	8	2	CPS-5V	-	-	FT-15	-	GV$^{R}_{L}$...-...A(R)
GIV$^{R}_{L}$	2025-1B	●	●	20	25	*1 2.8	23	35	180	10	2	CPS-5V	-	-	FT-15	-	GV$^{R}_{L}$145 ~ 250-...B(R)
	2025-2B	●	●			*2 3.2											GV$^{R}_{L}$280 ~ 400-...B(R)
GIV$^{R}_{L}$	2532-1C	●	●	25	32	*3 4.5	30	43	200	12.5	2	-	CPS-6V	LW-3	-	-	GV$^{R}_{L}$280 ~ 340-020C
	2532-2C	●	●			*4 5.5											GV$^{R}_{L}$400 ~ 500-020C
	3232-1C	●	●	32		*3 4.5		52	220	16							GV$^{R}_{L}$280 ~ 340-020C
	3232-2C	●	●			*4 5.5											GV$^{R}_{L}$400 ~ 500-020C
GIV$^{R}_{L}$	4032-1C	●	●	40	32	*3 4.5	30	43	250	21	3	-	CPS-6V	LW-3	-	-	GV$^{R}_{L}$280 ~ 340-020C
	4032-2C	●	●			*4 5.5				22.2							GV$^{R}_{L}$400 ~ 500-020C

GIV are designed to set the cutting edge height 1mm above the center height.
CDX shows available grooving depth.

*1. GV$^{R}_{L}$200~250-020B Insert can be used up to a Groove Depth 3.2mm.
*2. GV$^{R}_{L}$300~400-020B Insert can be used up to a Groove Depth 4.2mm.
*3. GV$^{R}_{L}$340-020C Insert can be used up to a Groove Depth 5.5mm.
*4. GV$^{R}_{L}$430~500-020C Insert can be used up to a Groove Depth 6.3mm.
If you need any of insert groove depth specified in *1 to *4, modify the dimension CDX of toolholder.

● : Standard item

GIV-E Excellent bar (Internal grooving)



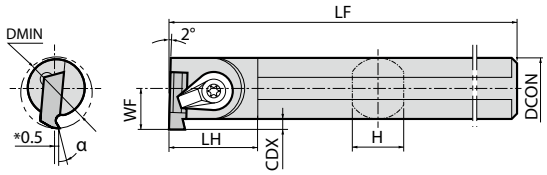
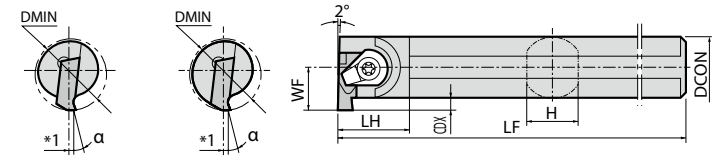


Fig. 1



Shows top edge shape of GIV$^{R}_{L}$1612-1AE
(No jaw part under Insert)

Fig. 2

Right-hand shown | Right-hand Insert for Right-hand Toolholder, Left-hand Insert for Left-hand Toolholder.

Toolholder dimensions

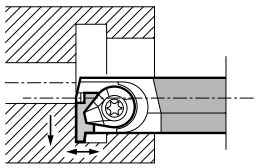
Description		Availability R	Availability L	Dimension (mm) DMIN	DCON	CDX	H	LH	LF	WF	Fig.	Spare parts: Clamp set	Clamp set	Wrench	Wrench	Applicable inserts G84,G85
GIV$^{R}_{L}$	1412-1SE	●	●	14	12	1.7	11.4	18	150	7.7	1	CPS-5F	-	-	FT-15	GV$^{R}_{L}$...-020S
GIV$^{R}_{L}$	1612-1AE	●	●	16	12	2.2	11.4	19	150	8.2	2	CPS-5V	-	-	FT-15	GV$^{R}_{L}$....-...A(R)
GIV$^{R}_{L}$	2016-1BE	●	●	20	16	*1 2.8	15.2	20	180	11.2	2	CPS-5V	-	-	FT-15	GV$^{R}_{L}$145 ~ 250-...B(R)
	2016-2BE	●	●			*5 3.2		19		11.7						GV$^{R}_{L}$280 ~ 400-...B(R)
GIV$^{R}_{L}$	2520-1CE	●	●	25	20	*6 4.5	19	25	200	14.5	2	-	CPS-6V	LW-3	-	GV$^{R}_{L}$280 ~ 340-020C
	2720-2CE	●	●	27		*4 5.5				16.2						GV$^{R}_{L}$400 ~ 500-020C
	3225-1CE	●	●	32	25	*7 4.5	24	24	220	17.5						GV$^{R}_{L}$280 ~ 340-020C
	3225-2CE	●	●			*4 5.5				18.7						GV$^{R}_{L}$400 ~ 500-020C
	4032-1CE	●	●	40	32	*7 4.5	31	29	240	21						GV$^{R}_{L}$280 ~ 340-020C
	4032-2CE	●	●			*4 5.5				22.2						GV$^{R}_{L}$400 ~ 500-020C

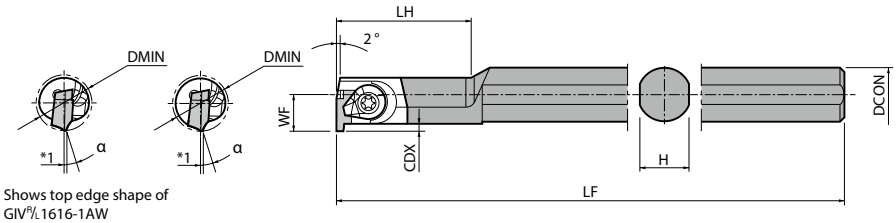
GIV-E are designed to set the cutting edge height 1mm above the center height. (0.5mm for GIV$^{R}_{L}$1612-1AE)
CDX shows available grooving depth.

*1. GV$^{R}_{L}$200~250-020B Insert can be used up to a Groove Depth 3.2mm.
*4. GV$^{R}_{L}$430~500-020C Insert can be used up to a Groove Depth 6.3mm.
*5. GV$^{R}_{L}$300~400-020B Insert can be used up to a Groove Depth 3.8mm. (When using GIV$^{R}_{L}$2016-2BE)
*6. GV$^{R}_{L}$340-020C Insert can be used up to a Groove Depth 4.7mm. (When using GIV$^{R}_{L}$2520-1CE)
*7. GV$^{R}_{L}$340-020C Insert can be used up to a Groove Depth 5.3mm. (When using GIV$^{R}_{L}$3225-1CE, GIV$^{R}_{L}$4032-1CE)
If you need any of insert groove depth specified in *1 to *7, modify the dimension CDX of toolholder.

● : Standard item

GIV-W Carbide shank bar (Internal grooving)





Shows top edge shape of GIV$^{R}_{L}$1616-1AW (No jaw part under Insert)

Right-hand shown | Right-hand Insert for Right-hand Toolholder, Left-hand Insert for Left-hand Toolholder.

Toolholder dimensions

Description		Availability		Dimension (mm)							Spare parts				Applicable inserts ➡ G84,G85
											Clamp set	Clamp set	Wrench	Wrench	
		R	L	DMIN	DCON	CDX	H	LH	LF	WF					
GIV$^{R}_{L}$	1616-1AW	●	●	16	16	2.2	15	48	175	10.6	CPS-5V	-	-	FT-15	GV$^{R}_{L}$...-...A(R)
GIV$^{R}_{L}$	2020-1BW	●	●	20	20	*1 2.8	19	60	220	14.6	CPS-5V	-	-	FT-15	GV$^{R}_{L}$145 ~ 250-...B(R)
	2020-2BW	●	●			*2 3.2									GV$^{R}_{L}$280 ~ 400-...B(R)
GIV$^{R}_{L}$	2525-1CW	●	●	25	25	*3 4.5	24	70	260	19.1	-	CPS-6V	LW-3	-	GV$^{R}_{L}$280 ~ 340-020C
	2525-2CW	●	●			*4 5.5									GV$^{R}_{L}$400 ~ 500-020C

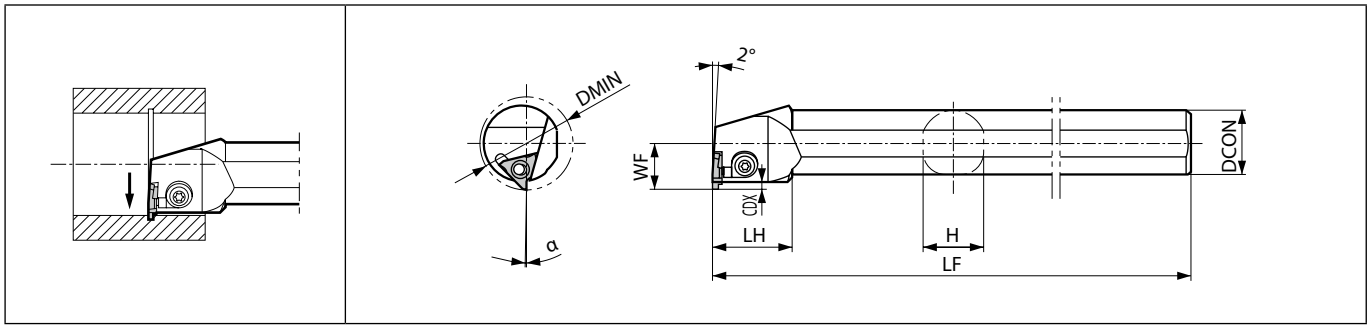
GIV-W are designed to set the cutting edge height 1mm above the center height.
CDX shows available grooving depth.
*1. GV$^{R}_{L}$200~250-020B Insert can be used up to a Groove Depth 3.2mm.
*2. GV$^{R}_{L}$300~400-020B Insert can be used up to a Groove Depth 4.2mm.
*3. GV$^{R}_{L}$340-020C Insert can be used up to a Groove Depth 5.5mm.
*4. GV$^{R}_{L}$430~500-020C Insert can be used up to a Groove Depth 6.3mm.
If you need any of insert groove depth specified in *1 to *4, modify the dimension CDX of toolholder.

Applicable Insert & Rake Angle (α) after Installment of Insert

Toolholder Description	Insert Description ➡ G84,G85		Rake Angle (α)	
	General Grooving (Square)	Full-R Grooving (Round)	TC40N	TN90,TC60M PR930,PR1225 KW10
GIV$^{R}_{L}$...1SS	GV$^{R}_{L}$100~300-020SS	-	10°	15°
GIV$^{R}_{L}$...1S	GV$^{R}_{L}$100~340-020S	-	10°	15°
GIV$^{R}_{L}$...1SE	GV$^{R}_{L}$100~340-020S	-	3°	8°
GIV$^{R}_{L}$...1A(□)	GV$^{R}_{L}$100~340-020A	GV$^{R}_{L}$200-100AR~300-150AR	3°	8°
GIV$^{R}_{L}$...1B(□)	GV$^{R}_{L}$145~250-020B	GV$^{R}_{L}$200-100BR	4°	9°
GIV$^{R}_{L}$...2B(□)	GV$^{R}_{L}$280~400-020B	GV$^{R}_{L}$300-150BR		
GIV$^{R}_{L}$...1C(□)	GV$^{R}_{L}$280~340-020C	-	5°	10°
GIV$^{R}_{L}$...2C(□)	GV$^{R}_{L}$400~500-020C	-		

● : Standard item

KIGBA (Internal grooving / Shallow grooving)

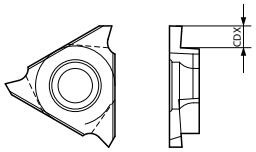


Right-hand shown | Left-hand Insert for Right-hand Toolholder, Right-hand Insert for Left-hand Toolholder.

Toolholder dimensions

Description	Availability		Dimension (mm)							Spare parts		Applicable inserts G6~G12
	R	L	DMIN	DCON	CDX	H	LH	LF	WF	Clamp set	Wrench	
KIGBA$^{R}/_{L}$ 3525-16	●	●	35	25	2.8	23	30	220	17.5	LGBA-16$^{L}/_{R}$S	FT-15	GBA32$^{L}/_{R}$ type
KIGBA$^{R}/_{L}$ 4032-22	●	●	40	32	3	30	30	250	23	LGBA-22$^{L}/_{R}$S	FT-15	GBA43$^{L}/_{R}$ type

CDX shows the distance from the toolholder to the cutting edge.
Available Grooving Depth depends on the insert.
KIGBA$^{R}/_{L}$ 3525-16 : CDX of the applicable insert (GBA32)
4032-22 : CDX of the applicable insert (GBA43) (1) 2.0 mm (CDX < 3.0 mm) (2) 3.0 mm (CDX ≥ 3.0 mm)
Clamp Set : LGBA-○○LS for Right-hand Toolholder, and LGBA-○○RS for Left-hand Toolholder.



Rake Angle (α) after Installment of GBA insert

GBA32$^{R}/_{L}$○○○-○○○		GBA43$^{R}/_{L}$○○○-○○○		GBA43$^{R}/_{L}$○○○-○○○R (Full-R)		
α	Insert Grades	α	Insert Grades	α	Insert Grades	Full-R Description
+1°	TN620, TN90, PV7040 PR930, PR1215, PR1625, PR905 KPD001, KPD010	-9°	KBN510, KBN525	+1°	TN620, TN90, PV7040 PR930, PR1215, PR1625, PR905	050R~150R
		+1°	TN620, TC40N, TN90, PV7040, PR930, PR1215, PR1625, PR905 KPD001, KPD010	+5°	TN620, TN90, PV7040 PR930, PR1215, PR1625, PR905	200R
+11°	KW10					
		+11°	KW10		KW10	050R~200R

Rake Angle (α) after Installment of GBA-GM insert

α	Insert Description
+1°	GBA43$^{R}/_{L}$150-020GM
+6°	GBA43$^{R}/_{L}$175-020GM ~ GBA43$^{R}/_{L}$265-030GM
+3°	GBA43$^{R}/_{L}$300-030GM ~ GBA43$^{R}/_{L}$400-040GM

α indicates the rake angle at the center of the edge width, after installing insert.

Rake Angle (α) after Installment of GBA-MY insert

α	Insert Description
+6°	GBA43$^{R}/_{L}$175-020MY ~ GBA43$^{R}/_{L}$350-030MY
+5°	GBA43$^{R}/_{L}$400-040MY

α indicates the rake angle at the center of the edge width, after installing insert.

● : Standard item

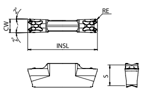
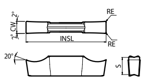
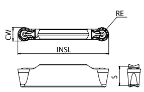
G

Grooving

External
Internal
Face

GDM/GDG

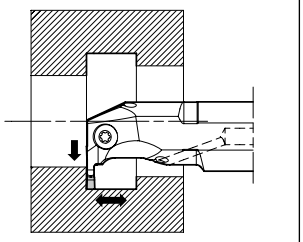
Material		PR1215	PR1225	PR1535	GW15	TN620	TN90	
Carbon steel / Alloy steel		◔	◕	◔		●	○	P
Stainless steel		◔	◔	◕				M
Cast iron		◕						K
Non-ferrous metals					◕			N
Titanium alloy					◕			S
Hard materials (~ 40HRC)								H
Hard materials (40HRC ~)								H

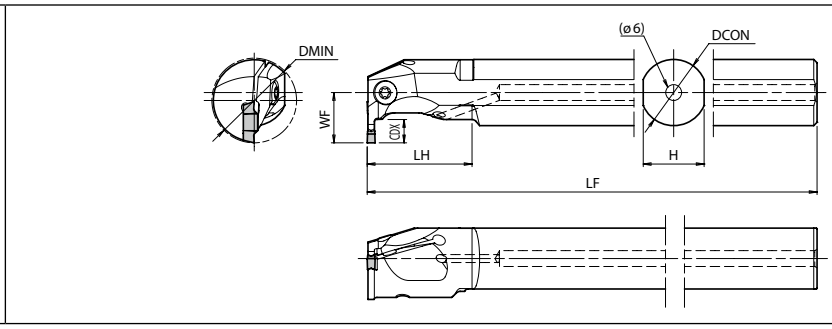
Insert		Description		No. of edges	Dimension (mm) CW	S	RE	INSL	Tolerance (mm) CW min.	CW max.	Carbide PVD PR1215	PR1225	PR1535	Carbide - GW15	Cermet - TN620	TN90	Applicable toolholder ➡ G91
	 General purpose	GDM	2013N-020GMI	2	2	4.3	0.2	13.5	- 0.03	+ 0.03	●	●	●		●		KGDIR/L...-2
		GDM	3015N-040GMI	2	3	4.6	0.4	15.5	- 0.03	+ 0.03	●	●	●		●		KGDIR/L...-3
		GDM	4020N-040GMI	2	4	4.3	0.4	20	- 0.03	+ 0.03	●	●	●		●		KGDIR/L...-4
		GDM	5020N-040GMI	2	5	4.3	0.4	20	- 0.04	+ 0.04	●	●	●		●		KGDIR/L...-4
			5020N-080GMI				0.8				●	●	●		●		KGDIR/L...-5
	 Low cutting force	GDG	3015N-020GS	2	3	4.6	0.2	15.6	- 0.02	+ 0.02				●			KGDIR/L...-3
		GDG	4020N-040GS	2	4	4.3	0.4	20	- 0.02	+ 0.02	●	●	●	●	●	●	KGDIR/L...-4
		GDG	5020N-040GS	2	5	4.3	0.4	20	- 0.02	+ 0.02	●	●	●	●	●	●	KGDIR/L...-4 KGDIR/L...-5
	 Full R	GDM	3015N-150R-CM	2	3	4.6	1.5	16.3	- 0.03	+ 0.03	●	●	●		●		KGDIR/L...-3
		GDM	4020N-200R-CM	2	4	4.3	2	20	- 0.03	+ 0.03	●	●	●		●	●	KGDIR/L...-4
		GDM	5020N-250R-CM	2	5	4.3	2.5	21	- 0.04	+ 0.04	●	●	●		●	●	KGDIR/L...-4 KGDIR/L...-5

Recommended cutting conditions ➡ G147

● : Standard item

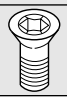
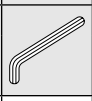
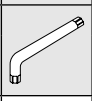
KGDI (Internal grooving)





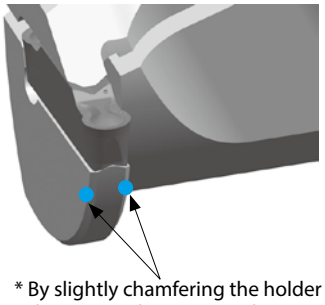
Right-hand shown

Toolholder dimensions

Description		Availability R	Availability L	Dimension (mm) DMIN with GMI/GS	DMIN with CM	DMIN * with CM	DCON	CDX	H	LH	LF	WF	CW min.	CW max.	Coolant hole	Spare parts: Clamp screw (Torx)	Spare parts: Screw	Spare parts: Wrench	Spare parts: Wrench	Applicable inserts ⇒ G90
																				
KGDI R/L	1816B-2	●	●	18	-	-	16	4.5	15	25	150	9.5	2	2	Yes	-	GS-50	LW-3	-	GDM2013N-020GMI
	2520B-2	●	●	25			20	6	18	30	180	14.5								
	3225B-2	●	●	32			25	7	23	40	200	19				SB-5TR	-	-	LTW-20	
KGDI R/L	2016B-3	●	●	20	21	-	16	5.5	15	25	150	11.5	3	3	Yes	-	GS-50	LW-3	-	GDM3015N-...
	2520B-3	●	●	25	26		20	6	18	30	180	14.5								
	3225B-3	●	●	32	33		25	8	23	40	200	19				SB-5TR	-	-	LTW-20	
KGDI R/L	3225B-4	●	●	32	40	34	25	8.5	23	40	200	19	4	5	Yes	SB-5TR	-	-	LTW-20	GDM4020N-...
	4032B-4	●	●	40	48	42	32	11	29	50	220	23.5								
KGDI R/L	3225B-5	●	●	32	37	34	25	8.5	23	40	200	19	5	5	Yes	SB-5TR	-	-	LTW-20	GDM5020N-...
	4032B-5	●	●	40	45	42	32	11	29	50	220	23.5								

* Possible by slightly chamfering toolholder's tip about 0.5 mm

Additional processing of toolholder tip when CM chipbreaker is installed



* By slightly chamfering the holder tip of about 0.5 mm, the cutting diameter can be minimized.

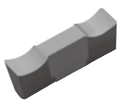
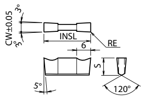
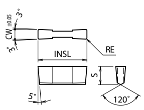
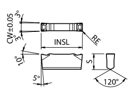
● : Standard item

GH/GHU

Cutting edge preparation

Symbol	Specification	Example	
S	Chamfered and R-honed	S01020	0.10mm × 20° chamfered and R-honed
T	Chamfered	T01020	0.10mm × 20° chamfered

Work material	CR9025	PR930	KW10	A66N	PT600M	A65	TC40N	TC60M	TN60	
Carbon steel / Alloy steel		✖								P
Stainless steel		◐								M
Cast iron			◐		●	○				K
Non-ferrous metals			◐							N
Titanium alloy			◐							S
Hard materials (~ 40HRC)		●								H
Hard materials (40HRC ~)				○	●					H

Insert		Description		Edge preparation type	No. of edges	Dimension (mm) CW	S	RE	INSL	Tolerance (mm) CW min.	CW max.	Carbide CVD CR9025	Carbide PVD PR930	Carbide - KW10	Ceramic PVD A66N	Ceramic PVD PT600M	Ceramic - A65	Cermet - TC40N	Cermet - TC60M	Cermet - TN60	Applicable toolholder ➡ G93
		GH	4020-02 4020-05	-	2	4	7.5	0.2 0.5	20	- 0.05	+ 0.05		● ●	● ●				● ●	● ●		KIGHR4532B-4 KIGHR5540B-4 KIGHR6550B-4
		GH	4520-02 4520-05	-	2	4.5	7.5	0.2 0.5	20	- 0.05	+ 0.05							● ●			
		GH	5020-02 5020-05	-	2	5	7.5	0.2 0.5	20	- 0.05	+ 0.05		● ●	● ●				● ●	● ●		KIGHR4532B-5 KIGHR5540B-5 KIGHR6550B-5
		GH	5520-02 5520-05	-	2	5.5	7.5	0.2 0.5	20	- 0.05	+ 0.05							● ●			
		GH	6020-02 6020-05	-	2	6	7.5	0.2 0.5	20	- 0.05	+ 0.05		● ●	● ●				● ●	● ●		
		GH	6520-02 6520-05	-	2	6.5	7.5	0.2 0.5	20	- 0.05	+ 0.05							● ●			
		GH	7020-02 7020-05	-	2	7	7.5	0.2 0.5	20	- 0.05	+ 0.05		● ●	● ●				● ●	● ●		KIGHR5540B-7 KIGHR6550B-7
		GH	7520-02 7520-05	-	2	7.5	7.5	0.2 0.5	20	- 0.05	+ 0.05							● ●			
		GH	8020-02 8020-05	-	2	8	7.5	0.2 0.5	20	- 0.05	+ 0.05		● ●	● ●				● ●	● ●		
		GH	4020-05	S01020 T01020	2	4	7.5	0.5	20	- 0.05	+ 0.05				● 	 ●	 ●				KIGHR4532B-4 KIGHR5540B-4 KIGHR6550B-4
		GH	5020-05	S01020 T01020	2	5	7.5	0.5	20	- 0.05	+ 0.05				● 	 ●	 ●				KIGHR4532B-5 KIGHR5540B-5 KIGHR6550B-5
		GH	6020-05	T01020	2	6	7.5	0.5	20	- 0.05	+ 0.05						●				
		GH	7020-05	T01020	2	7	7.5	0.5	20	- 0.05	+ 0.05						●				KIGHR5540B-7 KIGHR6550B-7
	 Molded Chipbreaker	GHU	40-20	-	2	4	7.5	0.25	20	- 0.05	+ 0.05	●								●	KIGHR4532B-4 KIGHR5540B-4 KIGHR6550B-4
		GHU	50-20	-	2	5	7.5	0.3	20	- 0.05	+ 0.05	●								●	KIGHR4532B-5 KIGHR5540B-5 KIGHR6550B-5
		GHU	60-20	-	2	6	7.5	0.3	20	- 0.05	+ 0.05	●								●	

Recommended cutting conditions ➡ G65

● : Standard item

KIGH (Internal grooving / Deep grooving)

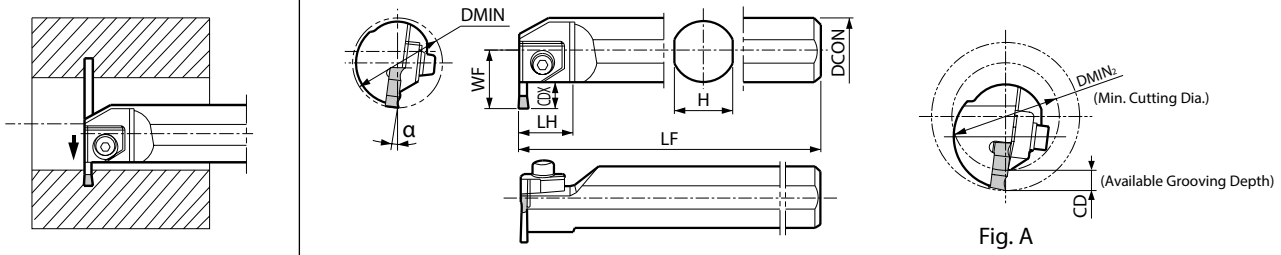


Fig. A

Right-hand shown

Toolholder dimensions

Description		Availability	Dimension (mm)							Spare parts					Applicable inserts ⇒ G92
										Clamp (L)	Clamp bolt	Spring	Washer	Wrench	
		R	DMIN	DCON	CDX	H	LH	LF	WF						
KIGHR	4532B-4	●	45	32	12	30	27	200	28.2	CGH-1L	HH6X25	SP-6	W-6	LW-5	GH4020-... / GHU40-... GH4520-...
	5540B-4	●	55	40		38		250	32.3						
	6550B-4	●	65	50		48		300	37.3						
KIGHR	4532B-5	●	45	32	12	30	27	200	28.2	CGH-1L	HH6X25	SP-6	W-6	LW-5	GH5020-... / GHU50-... / GH5520-... GH6020-... / GHU60-... / GH6520-...
	5540B-5	●	55	40		38		250	32.3						
	6550B-5	●	65	50		48		300	37.3						
KIGHR	5540B-7	●	55	40	12	38	27	250	32.3	CGH-2L	HH6X25	SP-6	W-6	LW-5	GH7020-... / GH7520-... / GH8020-...

CDX shows the distance from the toolholder to the cutting edge. For the available grooving depth (CD), ref. to „List of Min. Available Cutting Diameter and Groove Depth".
LH depends on the insert's edge width.

Rake Angle (α) after Installment of GH / GHU insert

GH○○○○-○○		GHU○○-○○	
α	Insert Grades	α	Insert Grades
-5°	A65, A66N, PT600M	+5°	TN60 CR9025
+5°	TC40N		
+15°	TN90, TC60M PR930 KW10		

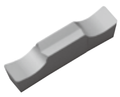
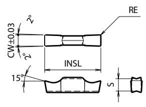
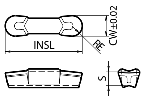
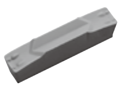
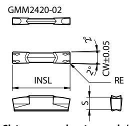
List of the Min. Cutting Diameter and Grooving Depth (Refer to Fig. A)

Toolholder Description		DMIN2 (Min. Cutting Dia.)					
KIGHR	4532B-○	ø110	ø70	ø65	ø60	ø55	ø45
	5540B-○	ø70	ø60	ø55			
	6550B-○	ø65					
Available Grooving Depth CD (mm)		12	11.5	11	10	9	Under 8

● : Standard item

GMM/GMG/GMGA

Work material	CR9025	PR905	PR915	PR930	KW10	TN90	
Carbon steel / Alloy steel			○	●			P
Stainless steel			●	○			M
Cast iron		●			○		K
Non-ferrous metals					●		N
Titanium alloy					●		S
Hard materials (~ 40HRC)			○	●			H
Hard materials (40HRC ~)							H

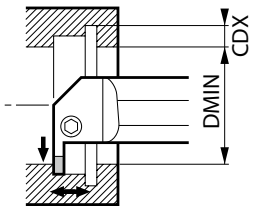
Insert		Description		No. of edges	Dimension (mm)				Tolerance (mm)		Carbide					Cermet	Applicable toolholder ➡ G95
					CW	S	RE	INSL	CW min.	CW max.	CVD CR9025	PVD PR905	PVD PR915	PVD PR930	- KW10	- TN90	
	 Sharp cutting oriented / Precision class (ground chipbreaker)	GMG	8030-050MG	2	8	5.5	0.5	30	- 0.03	+ 0.03	○	○		○	○	○	KIGMR/L6540B-8 KIGMUR6540B-8
	 Full R / Sharp cutting oriented / Precision class	GMGA	8030-400R	2	8	5.5	4	30	- 0.02	+ 0.02					○		
	 Chip control oriented / M class	GMM	8030-080MW	2	8	5.5	0.8	30	- 0.05	+ 0.05	○	○	○	○	○		

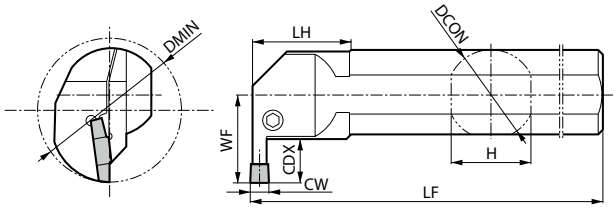
If using a full-R insert with KIGM-8 toolholder, you need to modify the corner of insert adapter of toolholder.

Recommended cutting conditions ➡ G143

○ : Check availability

KIGM-8 (Internal grooving)





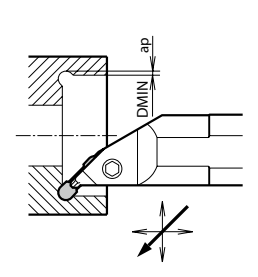
Right-hand shown

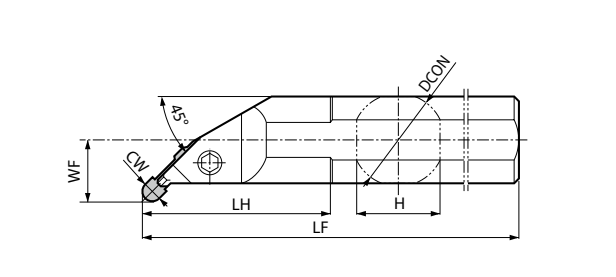
Toolholder dimensions

Description	Availability		Dimension (mm)									Spare parts		Applicable inserts G94
	R	L	DMIN	DCON	CDX	H	LH	LF	WF	CW min.	CW max.	Clamp bolt	Wrench	
KIGM R/L 6540B-8	○	○	65	40	20	36	41	300	41	8	8	HH6X20	LW-5	GM..8030-...

CDX shows available grooving depth.

KIGMU-8 (Internal grooving / Undercut grooving)





Right-hand shown

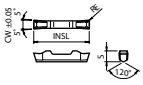
Toolholder dimensions

Description	Availability	Dimension (mm)									Spare parts		Applicable inserts G94
	R	DMIN	DCON	H	LH	ap	LF	WF	CW min.	CW max.	Clamp bolt	Wrench	
KIGMUR 6540B-8	○	65	40	36	83	2.2	300	26	8	8	HH6X20	LW-5	GM..8030-...

CDX shows available grooving depth.
ap shows the distance from the internal face of the workpiece.

○ : Check availability

GIA

				Carbon steel / Alloy steel					●	○	P
				Stainless steel					●	○	M
				Cast iron							K
				Non-ferrous metals							N
				Titanium alloy							S
				Hard materials (~ 40HRC)					●	○	H
				Hard materials (40HRC ~)							
Insert		Description	No. of edges	Dimension (mm) CW	S	RE	INSL	Tolerance (mm) CW min.	CW max.	Carbide CVD CR9025	Cermet - TN60	Applicable toolholder G97
	 Molded Chipbreaker	GIA 30	2	3	5	0.2	25	-0.05	+0.05	○	○	KGIAR3232B-3 KGIAR4332B-3 KGIAR5140B-3
		GIA 40	2	4	5	0.25	25	-0.05	+0.05	○	○	KGIAR3232B-4 KGIAR4332B-4 KGIAR5140B-4
		GIA 50	2	5	5	0.3	30	-0.05	+0.05	○	○	KGIAR5640B-5 KGIAR6650B-5

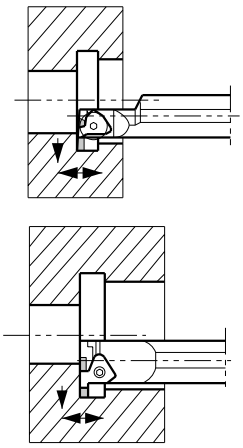
GIA inserts - molded chipbreaker

Workpiece material	Recommended insert grades (Vc: m/min) Cermet TN60	CVD Coated carbide CR9025	(1) f for grooving (mm/rev) (2) f for turning (mm/rev) (3) ap for turning (mm) GIA 30	GIA 40	GIA 50	Remarks
Carbon steel	☆ 60~120	★ 60~120	(1) 0.04~0.08 (2) 0.02~0.08 (3) Max. 0.3	(1) 0.04~0.09 (2) 0.02~0.08 (3) Max. 0.4	(1) 0.05~0.1 (2) 0.05~0.08 (3) Max. 0.5	Coolant
Alloy steel	☆ 60~100	★ 60~100	(1) 0.04~0.07 (2) 0.02~0.07 (3) Max. 0.3	(1) 0.04~0.07 (2) 0.02~0.07 (3) Max. 0.4	(1) 0.05~0.08 (2) 0.05~0.08 (3) Max. 0.5	
Stainless steel	-	★ 60~80	(1) 0.04~0.07 (2) 0.02~0.07 (3) Max. 0.3	(1) 0.04~0.07 (2) 0.02~0.07 (3) Max. 0.4	(1) 0.05~0.08 (2) 0.05~0.08 (3) Max. 0.5	

★:1st recommendation ☆:2nd recommendation

○ : Check availability

KGIA (Internal grooving / Deep grooving)



Integral type

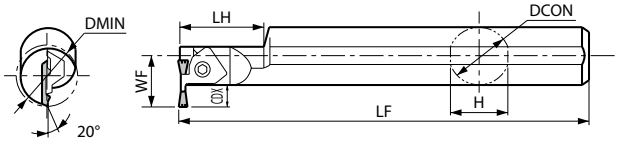


Fig. 1

Separate type

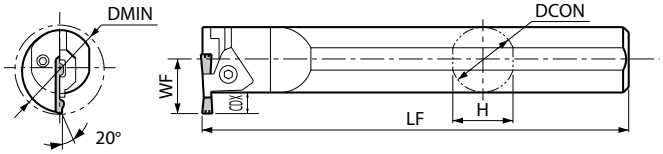


Fig. 2

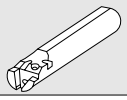
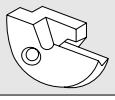
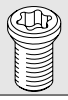
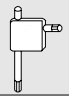
Right-hand shown

Toolholder dimensions

Description		Availability	Dimension (mm)							Fig.	Spare parts				Applicable inserts G96
											Clamp bolt	Clamp	Spring	Wrench	
		R	DMIN	DCON	CDX	H	LH	LF	WF						
KGIAR	3232B-3	○	32	32	10	30.4	45	200	26.5	1	HH5X15	CGIA-3R	SP-5	LW-4	GIA30
	4332B-3	○	43			30	-		26.3	2					
	5140B-3	○	51	40		38		250	30.3						
KGIAR	3232B-4	○	32	32	10	30.4	45	200	26.5	1	HH5X15	CGIA-4R	SP-5	LW-4	GIA40
	4332B-4	○	43			30	-		26.3	2					
	5140B-4	○	51	40		38		250	30.3						
KGIAR	5640B-5	○	56	40	15	38	-	250	35.3	2	HH5X15	CGIA-5R	SP-5	LW-4	GIA50
	6650B-5	○	66	50		48		300	40.3						

CDX shows available grooving depth.

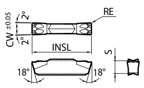
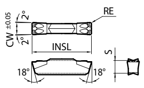
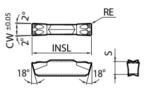
Composition

Type	Spare Parts / Toolholder Description		Toolholder	Blade	Clamp Screw	Wrench
						
Integral Type	KGIAR	3232B-3	-	-	-	-
Separate Type		4332B-3	KGIAR32H	BGIAR43-3	SB-40140TR	FT-15
		5140B-3	KGIAR40H	BGIAR51-3		
Integral Type		3232B-4	-	-	-	-
Separate Type		4332B-4	KGIAR32H	BGIAR43-4	SB-40140TR	FT-15
		5140B-4	KGIAR40H	BGIAR51-4		
Separate Type		5640B-5	KGIAR40H	BGIAR56-5	SB-40140TR	FT-15
		6650B-5	KGIAR50H	BGIAR66-5		

○ : Check availability

GMM-V

Workpiece material	CR9025	PR905	PR915	PR930	KW10	TN90	
Carbon steel / Alloy steel			○	●			P
Stainless steel			●	○			M
Cast iron		●			○		K
Non-ferrous metals					●		N
Titanium alloy					●		S
Hard materials (~ 40HRC)			○	●			H
Hard materials (40HRC ~)							H

Insert		Description	No. of edges	Dimension (mm) CW	S	RE	INSL	Tolerance (mm) CW min.	CW max.	Carbide CVD CR9025	PVD PR905	PR915	PR930	- KW10	Cermet - TN90	Applicable toolholder
	 Chip control oriented / M class	GMM 3015-040V	2	3	4.3	0.4	15.5	- 0.05	+ 0.05	○	○	○	○	○	○	KIGM^R/L....B-3V
	 Chip control oriented / M class	GMM 4020-040V	2	4	4.3	0.4	20	- 0.05	+ 0.05	○	○	○	○	○	○	KIGM^R/L....B-4V
	 Chip control oriented / M class	GMM 5020-080V	2	5	4.3	0.8	20	- 0.05	+ 0.05	○	○	○	○	○		KIGM^R/L....B-4V

It is not recommended to use this for KIGM-V Internal Grooving Toolholders which require GMM...V type inserts with the 18˚ front relief angle, because the relief angle of the insert used for GMM4020-04 toolholder is 10˚.

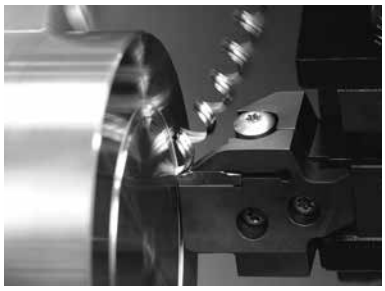
Recommended cutting conditions ➡ G143

G
Grooving
External
Internal
Face

○ : Check availability

External dia. of the groove DAXN / DAXX

External dia. of the groove within DAXN ~ DAXX are the available range for the initial grooving on the unprocessed workpiece (Ref. to Fig. 1)



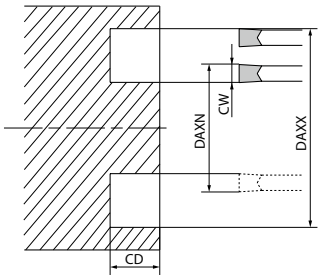
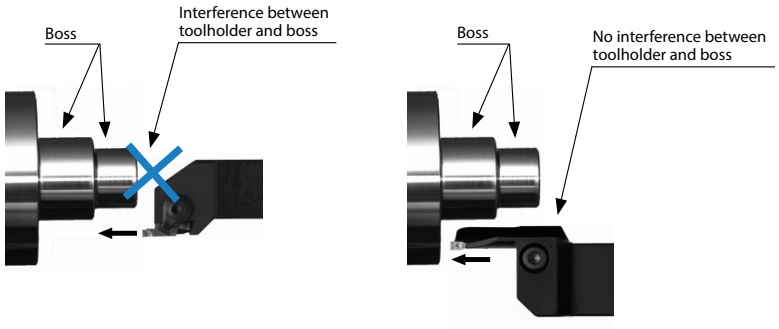


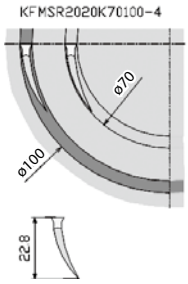
Fig.1

Caution for face grooving

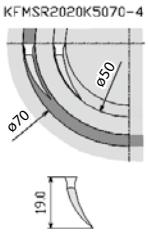
1. When face grooving, the suitable toolholder depends on the length of the boss



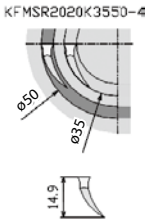
2. Selection of face grooving toolholder



Shape of below jaw



Shape of below jaw

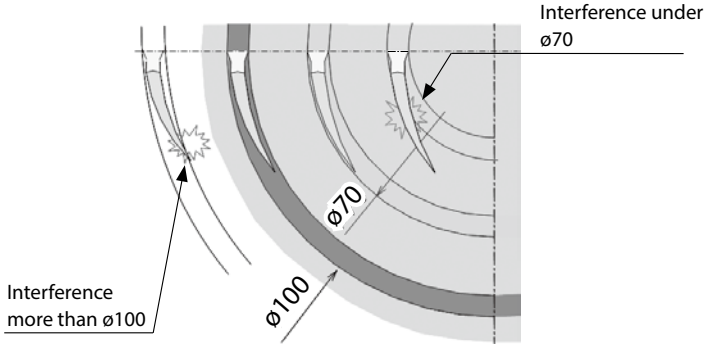


Shape of below jaw

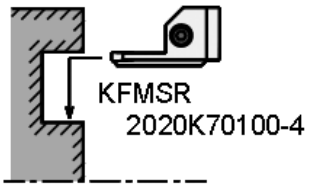
Wider grooving (turning) should be performed from the outside inwards

3. Interference of face grooving toolholder

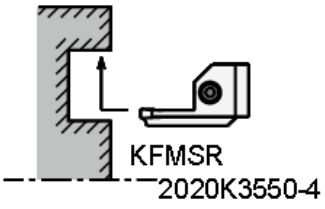
e.g.) KFMSR2525M70100-4



Good



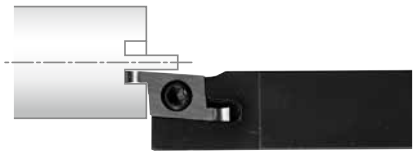
Bad



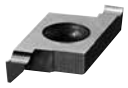
Example of usage for the face grooving toolholder

When face grooving, KFMSR2525M70100-4 should be between ø70~ø100 for grooving the outer diameter at first.
If the workpiece is machined at a diameter ø100 or ø70, the jaw of toolholder interferes with the workpiece.

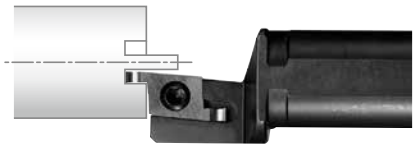
Small diameter face grooving ø6~



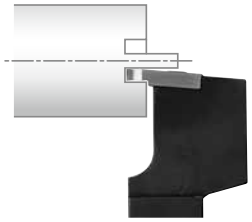
Type	STW
External dia. of the groove (min.)	ø6
Edge width (mm)	0.5~2.0
Grooving depth (mm)	1.0~3.0
See Page	**G106**



Twin-bars for horizontal type



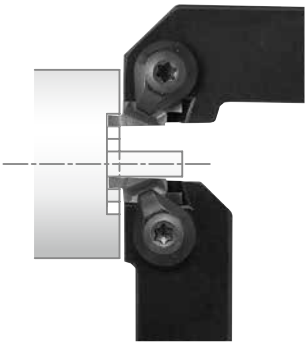
Type	S..-STW
External dia. of the groove (min.)	ø6
Edge width (mm)	0.5~2.0
Grooving depth (mm)	1.0~3.0
See Page	**G107**



Type	STWS
External dia. of the groove (min.)	ø6
Edge width (mm)	0.5~2.0
Grooving depth (mm)	1.0~3.0
See Page	**G109**

Twin-bars for vertical type

Small diameter face grooving ø8~

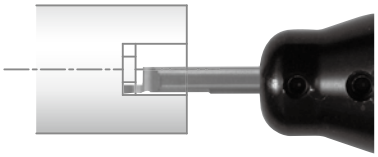


Type	GFVS-AA
External dia. of the groove (min.)	ø8
Edge width (mm)	1.0~3.0
Grooving depth (mm)	2.2
See Page	**G125**

Type	GFVT-AA
External dia. of the groove (min.)	ø8
Edge width (mm)	1.0~3.0
Grooving depth (mm)	2.2
See Page	**G125**

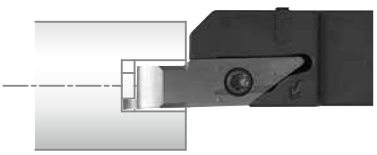
Ground chipbreaker

Small diameter face grooving ø5~, ø8~



Type	EZFG
External dia. of the groove (min.)	ø5, ø 6, ø 8
Edge width (mm)	1.0~3.0
Grooving depth (mm)	1.5~3.0
See Page	**G103**

EZ bars

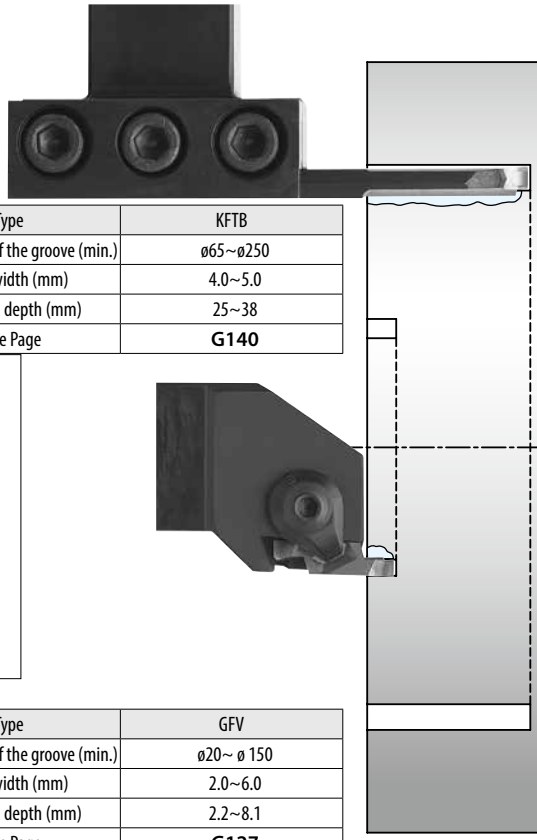


Type	VNFG
External dia. of the groove (min.)	ø 8
Edge width (mm)	1.0~3.0
Grooving depth (mm)	2.0~3.0
See Page	**G105**

System tip-bars

Face grooving ø20~


Molded chipbreaker



Type	GFVS
External dia. of the groove (min.)	ø35~ø150
Edge width (mm)	2.5~6.0
Grooving depth (mm)	4.6~8.1
See Page	**G129**

Type	KFTB
External dia. of the groove (min.)	ø65~ø250
Edge width (mm)	4.0~5.0
Grooving depth (mm)	25~38
See Page	**G140**


Ground chipbreaker


Ground chipbreaker
Full-R

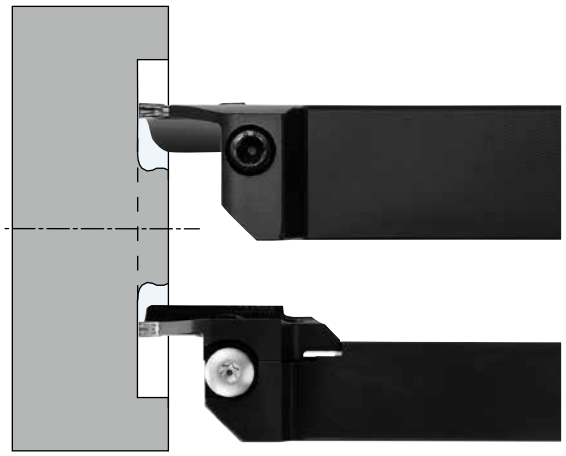

Ground chipbreaker


Ground chipbreaker
Full-R

Type	GFV
External dia. of the groove (min.)	ø20~ ø 150
Edge width (mm)	2.0~6.0
Grooving depth (mm)	2.2~8.1
See Page	**G127**

Type	GFVT
External dia. of the groove (min.)	ø35~ø150
Edge width (mm)	2.5~6.0
Grooving depth (mm)	4.6~8.1
See Page	**G130**

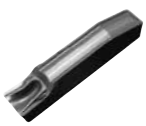
KGDF face grooving ø25~



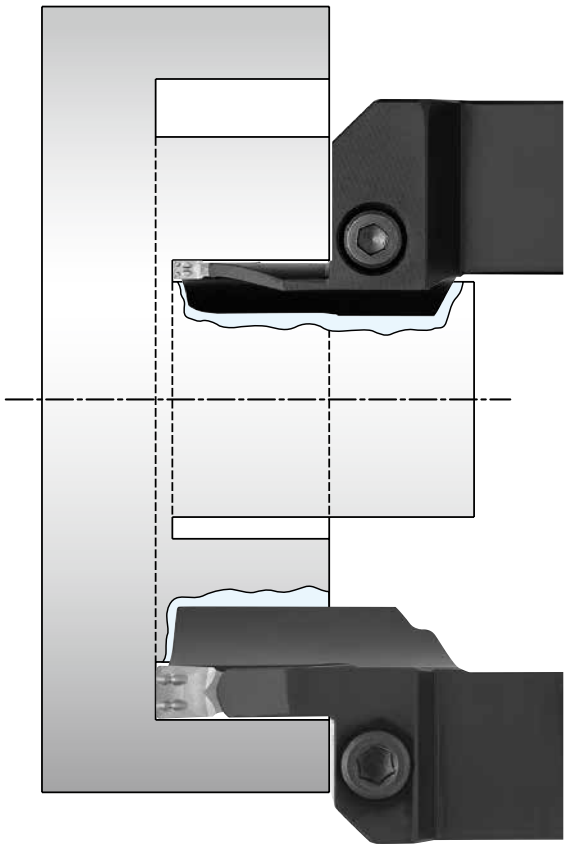
Type	KGDF-Z
External dia. of the groove (min.)	ø50
Edge width (mm)	3.0~5.0
Grooving depth (mm)	15
See Page	**G118**

Type	*KGDF
External dia. of the groove (min.)	ø25
Edge width (mm)	2.0~6.0
Grooving depth (mm)	6~32
See Page	**G114~G117**

* The separate type toolholders can accept all the blades if their hand is matching.

Grooving and turning GM	Deep grooving and turning DM	High feed GH	Full-R CM
			

Face grooving & turning ø25~

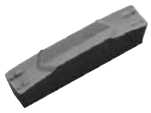


Type	KFMS
External dia. of the groove (min.)	ø25~ø235
Edge width (mm)	3.0~6.0
Grooving depth (mm)	13~32
See Page	**G135**

Molded chipbreaker

Type	KFMS-8
External dia. of the groove (min.)	ø54~ø155
Edge width (mm)	8.0
Grooving depth (mm)	25
See Page	**G138**

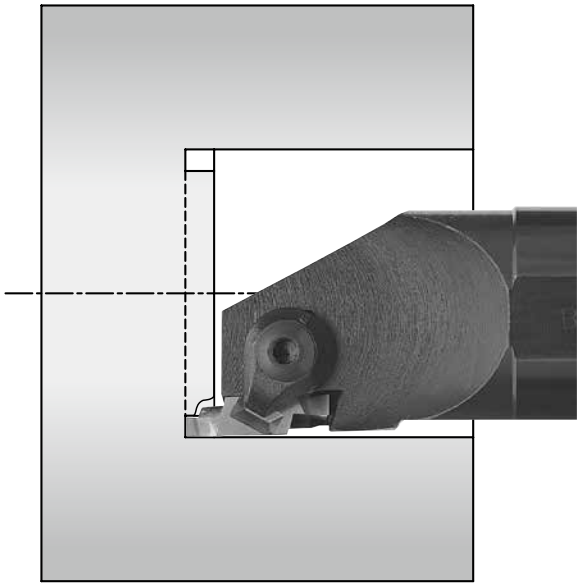
Molded chipbreaker



Ground chipbreaker

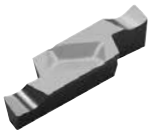
Molded chipbreaker
Full-R

Face grooving ø35~

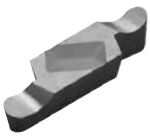


Type	GIFV
External dia. of the groove (min.)	ø35~ ø 50
Edge width (mm)	2.0~6.0
Grooving depth (mm)	2.2~8.1
See Page	**G133**

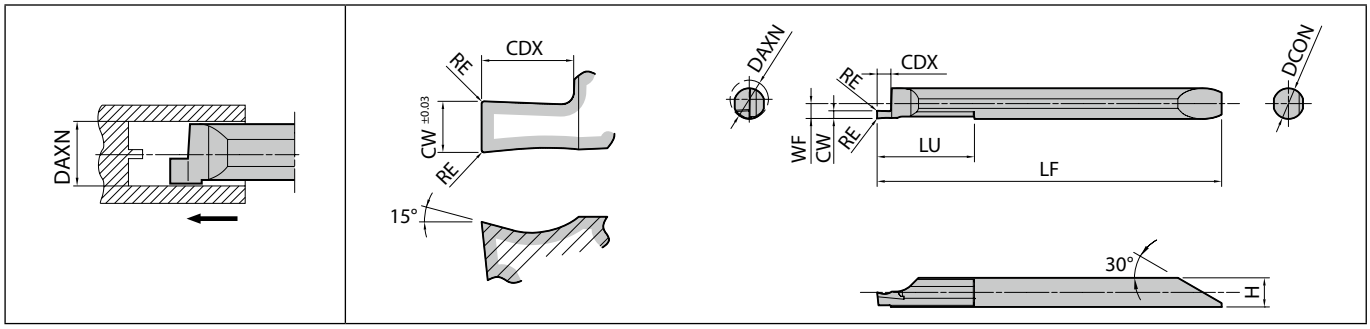
Ground chipbreaker



Ground chipbreaker
Full-R



EZFG (Internal grooving / Face grooving)



Right-hand shown

Dimensions

Description	No. of edges	External dia.of the groove (mm) DAXN (min.)	Dimension (mm) CW	CDX	RE	DCON	H	LF	LU	WF	Tolerance (mm) CW min.	CW max.	RE min.	RE max.	Carbide PVD PR1225 R	PVD PR1225 L	- GW05 R	Applicable sleeve F38~F43
EZFG R/L 050040-100	1	5	1	1.5	0.05	4	3.8	45	12	1.9	-0.03	+0.03	-0.013	+0.013	●	●	●	EZH040...
EZFG R/L 050040-150			1.5	2											●	●	●	
EZFG R/L 060050-100	1	6	1	1.5	0.05	5	4.8	53.2	15	2.4	-0.03	+0.03	-0.013	+0.013	●	●	●	EZH050...
EZFG R/L 060050-150			1.5	2.5											●	●	●	
EZFG R/L 060050-200			2	3											●	●	●	
EZFG R/L 080070-100	1	8	1	2	0.05	7	6.8	64.2	25	3.4	-0.03	+0.03	-0.013	+0.013	●	●	●	EZH070...
EZFG R/L 080070-150			1.5	2.5											●	●	●	
EZFG R/L 080070-200			2	3											●	●	●	
EZFG R/L 080070-300			3	3											●	●	●	

CDX shows available grooving depth.

Recommended cutting conditions **G104**

EZ Bars Identification System

EZ FG R 050 040 – 100

Symbol of EZ Bars	Applications	Insert hand	External dia. of the groove (min.)	Shank Dia.	Edge Width
	FG : Face Grooving	R : Right-hand L : Left-hand	050 : 5mm 060 : 6mm 080 : 8mm	040 : 4mm 050 : 5mm 070 : 7mm	100 : 1.0mm 150 : 1.5mm 200 : 2.0mm 300 : 3.0mm

● : Standard item

EZ bars are sold in 1 piece boxes

Applicable sleeves

Sleeve				Applicable insert for internal face grooving		Applicable machine manufacturer
EZH-CT (Adjustable overhang length with coolant hole) ➡ F39	EZH-HP (Adjustable overhang length) ➡ F41	EZH-ST ➡ F43	Sleeve shank dia. DCON(mm)	EZFG	Shank dia. DCON(mm)	
-	-	EZH 04012ST-80	12	EZFG$^{R/L}$ 050040-...	4	(General purpose)
		05012ST-80		EZFG$^{R/L}$ 060050-...	5	
		07012ST-80		EZFG$^{R/L}$ 080070-...	7	
-	EZH 04016HP-100	EZH 04016ST-100	16	EZFG$^{R/L}$ 050040-...	4	(General purpose)
	05016HP-100	05016ST-100		EZFG$^{R/L}$ 060050-...	5	
	07016HP-100	07016ST-100		EZFG$^{R/L}$ 080070-...	7	
EZH 04019CT-120	EZH 04019HP-120	EZH 04019ST-120	19.05	EZFG$^{R/L}$ 050040-...	4	Citizen Machinery
05019CT-120	05019HP-120	05019ST-120		EZFG$^{R/L}$ 060050-...	5	
07019CT-120	07019HP-120	07019ST-120		EZFG$^{R/L}$ 080070-...	7	
EZH 04020CT-120	EZH 04020HP-120	EZH 04020ST-120	20	EZFG$^{R/L}$ 050040-...	4	Eguro Tsugami Citizen Machinery (General purpose)
05020CT-120	05020HP-120	05020ST-120		EZFG$^{R/L}$ 060050-...	5	
07020CT-120	07020HP-120	07020ST-120		EZFG$^{R/L}$ 080070-...	7	
EZH 04022CT-135	EZH 04022HP-135	EZH 04022ST-135	22	EZFG$^{R/L}$ 050040-...	4	Star Micronics Nomura DS Tsugami
05022CT-135	05022HP-135	05022ST-135		EZFG$^{R/L}$ 060050-...	5	
07022CT-135	07022HP-135	07022ST-135		EZFG$^{R/L}$ 080070-...	7	
EZH 04025.0CT-135	EZH 04025.0HP-135	EZH 04025.0ST-135	25	EZFG$^{R/L}$ 050040-...	4	Eguro Tsugami Citizen Machinery (General purpose)
05025.0CT-135	05025.0HP-135	05025.0ST-135		EZFG$^{R/L}$ 060050-...	5	
07025.0CT-135	07025.0HP-135	07025.0ST-135		EZFG$^{R/L}$ 080070-...	7	
EZH 04025.4CT-120	EZH 04025.4HP-120	EZH 04025.4ST-120	25.4	EZFG$^{R/L}$ 050040-...	4	Citizen Machinery
05025.4CT-120	05025.4HP-120	05025.4ST-120		EZFG$^{R/L}$ 060050-...	5	
07025.4CT-120	07025.4HP-120	07025.4ST-120		EZFG$^{R/L}$ 080070-...	7	

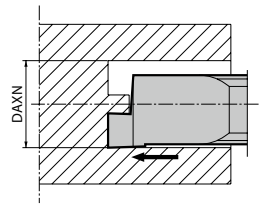
· Choose sleeves (DCB) to meet with DCON dimension of Face Grooving Inserts.
· Adjustment Pin cannot be installed to **EZH-ST** sleeves. To adjust overhang of the bar, please use **EZH-CT / HP** sleeves.
· Machine manufacturers in random order

Recommended cutting conditions

Workpiece material	Insert grades		EZFG$^{R/L}$ 050040-100 EZFG$^{R/L}$ 060050-100 EZFG$^{R/L}$ 080070-100	EZFG$^{R/L}$ 050040-150 EZFG$^{R/L}$ 060050-150 EZFG$^{R/L}$ 080070-150	EZFG$^{R/L}$ 060050-200 EZFG$^{R/L}$ 080070-200	EZFG$^{R/L}$ 080070-300	Remarks
	MEGACOAT	Carbide					
	PR1225	GW05	f (mm/rev)				
Carbon steel / Alloy steel	★ 30~100	-	~0.02	~0.03	~0.04	~0.05	Coolant
Stainless steel	★ 30~80	-	~0.01	~0.02	~0.02	~0.03	
Non-ferrous metals	-	★ ~300	~0.03	~0.05	~0.06	~0.08	

★ : 1st recommendation

VNFG (Internal grooving / Face grooving)



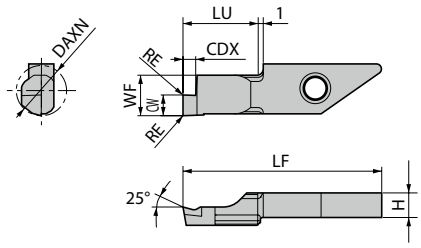


Fig. 1

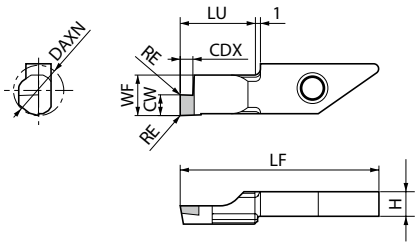


Fig. 2

Right-hand shown

Dimensions

Description	No. of edges	External dia.of the groove (mm)		Dimension (mm)							Tolerance (mm)		Fig.	Carbide			PCD	Applicable toolholder ➡ F48~F51
		DAXN (min.)	DAXX (max.)	CW	CDX	RE	H	LF	LU	WF	CW min.	CW max.		PVD		-	-	
														PR1225	PR930	KW10	KPD001	
VNFGR 0810-10 0820-10 0830-10	1	8 (0)	∞ (∞)	1 2 3	2 2 3	0.05	3.9	29.6	10	7.3	-0.03	+0.03	1	● ● ●	● ● ●	● ● ●		SVNR...-12N S...-SVNR12N S...-SVNR12SN
VNFGR 0820-10NB 0830-10NB	1			2 3	2 3	0.05	3.9	29.6	10	7.3	-0.03	+0.03	2				MTO MTO	

CDX shows available grooving depth.
External dia. of the groove DAXN (0) means that you can make the initial groove within DAXN ~ DAXX and then widen it to the center.

Recommended cutting conditions

Workpiece material	Recommended insert grades (Vc: m/min)			VNFG0810	VNFG0820	VNFG0830	Remarks
	MEGACOAT	PVD Coated Carbide	Carbide				
	PR1225	PR930	KW10	f (mm/rev)			
Carbon steel / Alloy steel	★ 30~100	☆ 30~100		~0.02	~0.04	~0.05	Coolant
Stainless steel	★ 30~100	☆ 30~80		~0.01	~0.02	~0.03	
Non-ferrous metals			★ ~300	~0.04	~0.06	~0.08	

★:1st recommendation ☆:2nd recommendation

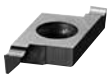
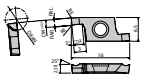
● : Standard item MTO : Made to order

System tip-bars are sold in 5 piece boxes

CBN & PCD Inserts are sold in 1 piece boxes

TWFG (Face grooving, Horizontal type)

Carbon steel / Alloy steel	○	●	P
Stainless steel	○	●	M
Cast iron			K
Non-ferrous metals		●	N
Titanium alloy			S
Hard materials (~ 40HRC)			H
Hard materials (40HRC ~)			

Insert		Description	No. of edges	External dia. of the groove (mm)		Dimension (mm)			Tolerance (mm)		Angle (°)	Carbide			Applicable toolholder ➡ G106 G107
				DAXN (min.)	DAXX (max.)	CW	CDX	RE	CW min.	CW max.	RA	PVD PR1025	PVD PR1535	- KW10	
		TWFGL 050 080 100 125 150 180 200	2	6 (0)	∞ (∞)	0.5 0.8 1 1.25 1.5 1.8 2	1 1.5 2.2 2.2 2.2 3 3	0.05	- 0.03	+ 0.03	1.5 1.5 2 2 2 2 2	● ● ● ● ● ● ●	● ● ● ● ● ● ●	● ● ● ● ● ● ●	STWL.....-15 S...-STWL15

CDX shows available grooving depth.
External dia. of the groove DAXN (0) means that you can make the initial groove within DAXN ~ DAXX and then widen it to the center.
Left-hand shown

Recommended cutting conditions ➡ G109

STW (Face grooving, Square shank for horizontal type insert)

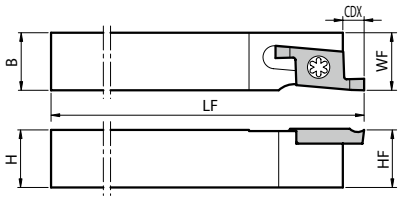


Fig. 1

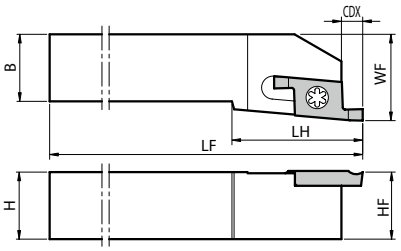


Fig. 2

Left-hand shown | Left-hand Insert for Left-hand Toolholder. | (For right-hand toolholder for boring, See page **F56**.)

Toolholder dimensions

Description		Availability	Dimension (mm)								Fig.	Spare parts		Applicable inserts ➡ G106
			L	CDX	H	B	LH	HF	LF	WF		Screw	Wrench	
STWL	1010F-15	●	3		10	10	-	10	85	10	1	SB-3080TR	LTW-10S	TWFGL...
	1212F-15	●			12	12		12		12				
	1212K-15	●							125					
	1616K-15	●			16	16		16		16				
STWL	2020K-15	●	3		20	20	25	20	125	25	2	SB-3080TR	LTW-10S	TWFGL...
	2525M-15	●			25	25		25	150	32				

CDX shows the distance from the toolholder to the cutting edge. Available Groove Depth : „CDX" of Insert.

● : Standard item

Twin-bars are sold in 5 piece boxes

STW (Face grooving, Round shank for horizontal type insert)

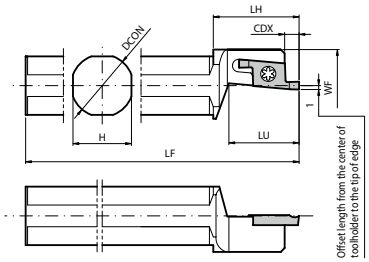


Fig. 1

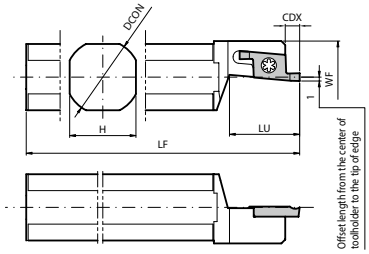


Fig. 2

Left-hand shown | Left-hand Insert for Left-hand Toolholder. | (For right-hand toolholder for boring, See page **F57**.)

Toolholder dimensions

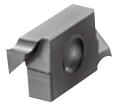
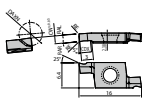
Description		Availability	Dimension (mm)							Coolant hole	Fig.	Spare parts		Applicable inserts ⇒ **G106**
												Screw	Wrench	
		L	DCON	CDX	H	LH	LF	LU	WF					
S12F-	STWL15	●	12	3	11	22	80	18	20	No	1	SB-3080TR	LTW-10S	TWFGL...
S14H-	STWL15	●	14		13		100							
S15F-	STWL15	●	15.875		15		85							
S16F-	STWL15	●	16											
S19G-	STWL15	●	19.05	3	17	-	90	18	18.5	No	2	SB-3080TR	LTW-10S	TWFGL...
S19K-	STWL15	●					120							
S20G-	STWL15	●	20		18		90		19.5					
S20K-	STWL15	●					120							
S22K-	STWL15	●	22		20		125	22	21.5					
S25.0J-	STWL15	●	25		23		110		24.5					
S25K-	STWL15	●	25.4				120		25					

CDX shows the distance from the toolholder to the cutting edge. Available Groove Depth : „CDX" of Insert.

● : Standard item

TWFGT (Face grooving, Vertical type)

Carbon steel / Alloy steel											○	●		P
Stainless steel											○	●		M
Cast iron														K
Non-ferrous metals													●	N
Titanium alloy														S
Hard materials (~ 40HRC)														H
Hard materials (40HRC ~)														

Insert		Description		No. of edges	External dia. of the groove (mm)		Dimension (mm)			Tolerance (mm)		Angle (°)	Carbide			Applicable toolholder ➡ G109
					DAXN (min.)	DAXX (max.)	CW	CDX	RE	CW min.	CW max.	RA R/L	PVD PR1025	PVD PR1535	- KW10	
		TWFGTR	050	2	6 (0)	∞ (∞)	0.5	1	0.05	- 0.03	+ 0.03	1.5	●	●	●	STWSR.....-15T
			080				0.8	1.5				1.5	●	●	●	
			100				1	2.2				2	●	●	●	
			125				1.25	2.2				2	●	●	●	
			150				1.5	2.2				2	●	●	●	
			180				1.8	3				2	●	●	●	
			200				2	3				2	●	●	●	

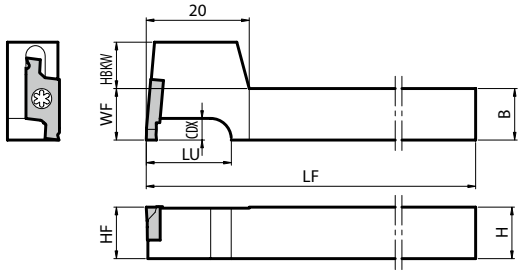
CDX shows available grooving depth.
External dia. of the groove DAXN (0) means that you can make the initial groove within DAXN ~ DAXX and then widen it to the center.
Right-hand shown

Recommended cutting conditions ➡ G109

● : Standard item

Twin-bars are sold in 5 piece boxes

STWS (Face grooving, Square shank for vertical type , L-shape)



Right-hand shown

Toolholder dimensions

Description		Availability	Dimension (mm)								Spare parts		Applicable inserts G108
											Screw	Wrench	
		R	H	B	LU	HF	HBKW	LF	CDX	WF			
STWSR	1010F-15T	●	10	10	16	10	9	85	3	10	SB-3080TR	LTW-10S	TWFGTR...
	1010JX-15T	●						120					
	1212F-15T	●	12	12		12	7	85		12			
	1212JX-15T	●						120					
	1616JX-15T	●	16	16	20	16	3			16			

CDX shows the distance from the toolholder to the cutting edge. Available Groove Depth : „CDX" of Insert.

Recommended cutting conditions TWFG / TWFGT

Workpiece material	Recommended insert grades (Vc:m/min)			TWFGL050 TWFGL080 TWFGL100 TWFGTR050 TWFGTR080 TWFGTR100	TWFGL125 TWFGL150 TWFGTR125 TWFGTR150	TWFGL180 TWFGL200 TWFGTR180 TWFGTR200	Remarks
	MEGACOAT	PVD coated carbide	Carbide				
	PR1535	PR1025	KW10	f (mm/rev)			
Carbon steel / Alloy steel	★ 30~100	☆ 30~100	-	~0.02	~0.03	~0.04	Coolant
Stainless steel	★ 30~80	☆ 30~80	-	~0.01	~0.02	~0.02	
Non-ferrous metals	-	-	★ ~300	~0.03	~0.04	~0.06	

★ :1st recommendation ☆ :2nd recommendation

● : Standard item

KGDF: Face grooving

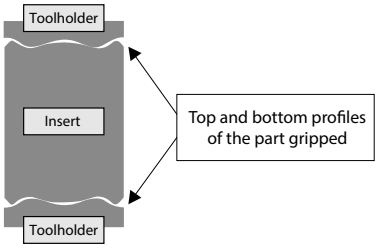
Separate type toolholder (toolholder + blade) and Integral type toolholder are available.
Adaptable to a wide range of face grooving applications by changing blades

Separate type toolholder

Insert clamping system "W grip"

Unique "W Grip" (insert anti-slip structure) provides stable machining quality

1. Prevents abnormal machining surface and / or insert breakage resulting from slip of insert.
2. Improves repetitive installation accuracy of insert (GDFM and GDFMS inserts are not applicable to KGD external grooving, cut-off and KGDI internal grooving toolholders.)

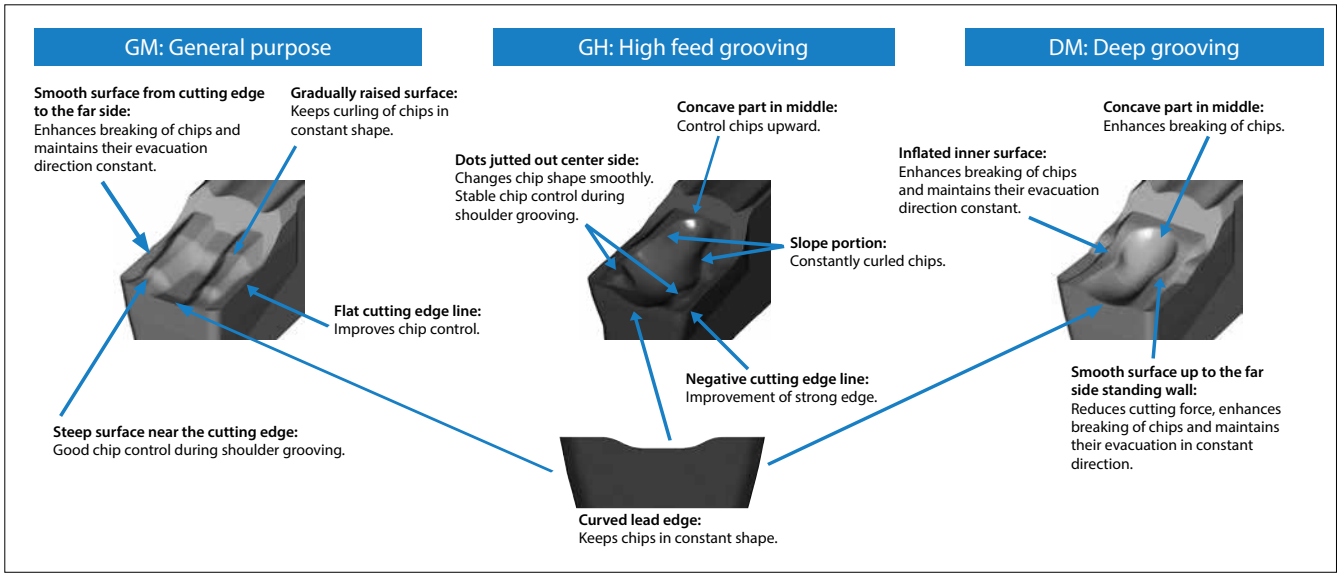


W grip technology

Smooth chip control

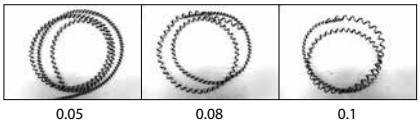
For general purpose GM chipbreaker, for high feed grooving GH chipbreaker, for deep grooving DM chipbreaker

Advantages of chipbreaker



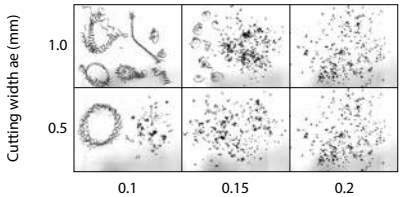
Chip control of GM chipbreaker

Face grooving (ø62)



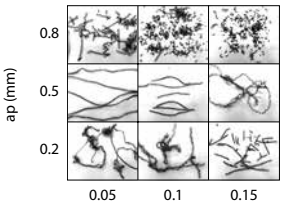
Feed rate f (mm/rev)

Side grooving



f (mm/rev)

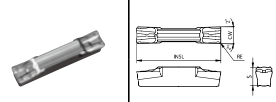
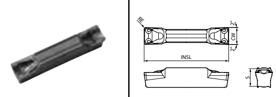
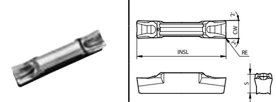
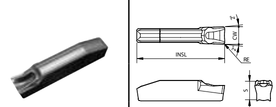
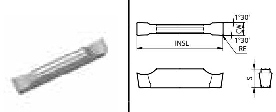
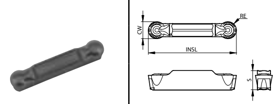
Turning



f (mm/rev)

Cutting conditions: Vc = 150 m/min, f = 0.05 ~ 0.2 mm/rev, GDFM5020N-040GM, SCM415, wet

GDFM/GDMFS

Insert		Description		No. of edges	CW	S	RE	INSL	CW min.	CW max.	PR1215	PR1225	GW15	TN620	TN90	Applicable toolholder
		Carbon steel / Alloy steel									○	◕		●	○	P
		Stainless steel									○	◕				M
		Cast iron									◕					K
		Non-ferrous metals											◕			N
		Titanium alloy											○			S
		Hard materials (~ 40HRC)														H
		Hard materials (40HRC ~)														H
					Dimension (mm)				Tolerance (mm)		Carbide PVD	Carbide PVD	Carbide -	Cermet -	Cermet -	Applicable toolholder G114 ~ G120
	General purpose	GDFM	2020N-020GM	2	2	3.9	0.2	21	- 0.03	+ 0.03	●	●			●	KGDFR/L...-2...
		GDFM	3020N-030GM	2	3	4.3	0.3	20	- 0.03	+ 0.03	●	●			●	KGDFR/L...-3...
		GDFM	4020N-040GM	2	4	4.5	0.4	20	- 0.03	+ 0.03	●	●			●	KGDFR/L...-4...
		GDFM	5020N-040GM	2	5	4.5	0.4	20	- 0.04	+ 0.04	●	●			●	KGDFR/L...-5...
			5020N-080GM				0.8				●	●			●	
		GDFM	6020N-040GM	2	6	4.5	0.4	20	- 0.04	+ 0.04	●	●			●	KGDFR/L...-6...
			6020N-080GM				0.8				●	●			●	
	High feed	GDFM	4020N-040GH	2	4	4.5	0.4	20	- 0.03	+ 0.03	●	●				KGDFR/L...-4...
		GDFM	5020N-040GH	2	5	4.5	0.4	20	- 0.04	+ 0.04	●	●				KGDFR/L...-5...
			5020N-080GH				0.8				●	●				
		GDFM	6020N-040GH	2	6	4.5	0.4	20	- 0.04	+ 0.04	●	●				KGDFR/L...-6...
			6020N-080GH				0.8				●	●				
	Deep grooving	GDFM	3020N-030DM	2	3	4.3	0.3	20	- 0.03	+ 0.03	●	●			●	KGDFR/L...-3...
		GDFM	4020N-040DM	2	4	4.5	0.4	20	- 0.03	+ 0.03	●	●			●	KGDFR/L...-4...
		GDFM	5020N-040DM	2	5	4.5	0.4	20	- 0.04	+ 0.04	●	●			●	KGDFR/L...-5...
		GDFM	6020N-040DM	2	6	4.5	0.4	20	- 0.04	+ 0.04	●	●			●	KGDFR/L...-6...
	Deep grooving / 1-edge	GDFMS	3020N-030DM	1	3	4.3	0.3	20	- 0.03	+ 0.03	●	●			●	KGDFR/L...-3...
		GDFMS	4020N-040DM	1	4	4.5	0.4	20	- 0.03	+ 0.03	●	●			●	KGDFR/L...-4...
		GDFMS	5020N-040DM	1	5	4.5	0.4	20	- 0.04	+ 0.04	●	●			●	KGDFR/L...-5...
		GDFMS	6020N-040DM	1	6	4.5	0.4	20	- 0.04	+ 0.04	●	●			●	KGDFR/L...-6...
	Non-Ferrous Metals	GDFG	3020N-020GS	2	3	4.3	0.2	20	- 0.2	+ 0.2			●			KGDFR/L...-3...
		GDFG	4020N-040GS	2	4	4.5	0.4	20	- 0.2	+ 0.2			●			KGDFR/L...-4...
		GDFG	5020N-040GS	2	5	4.5	0.4	20	- 0.2	+ 0.2			●			KGDFR/L...-5...
		GDFG	6020N-040GS	2	6	4.5	0.4	20	- 0.2	+ 0.2			●			KGDFR/L...-6...
	Full R	GDFM	3020N-150R-CM	2	3	4.3	1.5	20	- 0.03	+ 0.03	●	●		●		KGDFR/L...-3...
		GDFM	4020N-200R-CM	2	4	4.5	2	21	- 0.03	+ 0.03	●	●		●		KGDFR/L...-4...
		GDFM	5020N-250R-CM	2	5	4.5	2.5	21	- 0.04	+ 0.04	●	●		●		KGDFR/L...-5...
		GDFM	6020N-300R-CM	2	6	4.5	3	22	- 0.04	+ 0.04	●	●		●		KGDFR/L...-6...

GDFM40/50/60-CM differs from other descriptions in length (INSL) to avoid interference of a toolholder with workpiece.

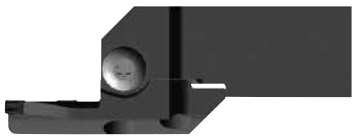
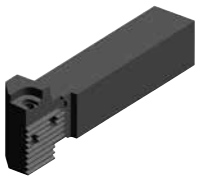
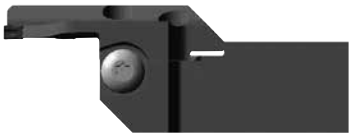
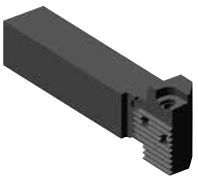
Recommended cutting conditions ➡ G122

Inserts identification system

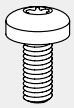
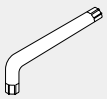
GDF	M	S	30	20	N	-	030	DM
Series	Tolerance symbol	No. of edge	Edge width	Insert length	Hand of tool		Corner-R(RE)	Chipbreaker symbol
	M : M Class	No indication : 2-edge	20 : 2mm	20 : 20mm	N : Neutral		020 : 0.2mm	GM : Grooving and turning
		S : 1-edge	30 : 3mm				030 : 0.3mm	DM : Deep grooving
			⋮				040 : 0.4mm	GH : High feed grooving
							150R : 1.5mm (Full-R)	CM : Full-R

● : Standard item

KGDF: Toolholder assembly identification

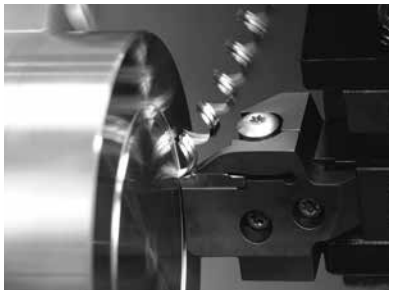
Unit description (Unit description is not printed.)	Blade (Blade Description is printed.)	Toolholder (Toolholder Description is printed.)
Left-hand : KGDFL…S	Left-hand : KGDFL…-C	Right-hand : KGDR…-C
 Left-hand shown	 Left-hand shown	 Right-hand shown
Right-hand : KGDFR…S	Right-hand : KGDFR…-C	Left-hand : KGDL…-C
 Right-hand shown	 Right-hand shown	 Left-hand shown

- Right-hand blade for left-hand toolholder, left-hand blade for right-hand toolholder.
- The unit description is not printed on the product. It is printed on the box label.
- Combination of the toolholder and blade (both separately sold) can make up the corresponding assembly.
- The insert clamping screw (BH6X10TR), blade fixing screw (SB-60120TR) and wrench (LTW-25) which are included in the toolholder can be used.

Clamp Bolt (for Insert Clamp)	Clamp Screw (for Blade)	Wrench
		
BH6X10TR	SB-60120TR	LTW-25

External dia. of the groove DAXN / DAXX

External dia. of the groove within DAXN ~ DAXX are the available range for the initial grooving on the unprocessed workpiece (Ref. to Fig. 1).
Then, you can widen it up to the center towards the inside (excluding the models listed in the right table)
and towards the outside according to machine limits.



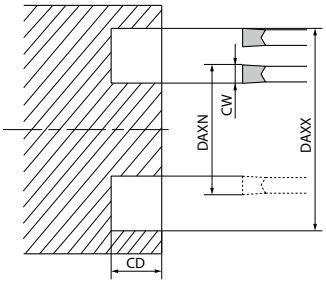
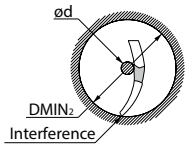


Fig. 1

Limit of Turning toward Center

Turning towards the Center causes the toolholder to interfere with the groove wall depending on the initial cut's diameter.

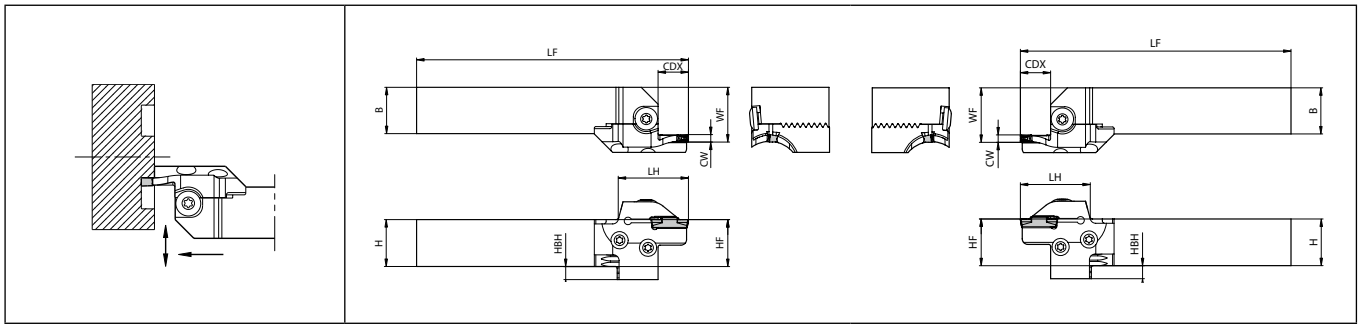


Remaining Boss Dia.ød

Description \ DMIN2	25	26	27	28 and over
	ød (mm)			
KGDF$^{R}/_{L}$-25-3A-C + KGD$^{L}/_{R}$2020-C KGDF$^{R}/_{L}$-25-3A-C + KGD$^{L}/_{R}$2525-C	4	2	0	0 (No remaining Boss)
KGDF$^{R}/_{L}$-25-4A-C + KGD$^{L}/_{R}$2020-C KGDF$^{R}/_{L}$-25-4A-C + KGD$^{L}/_{R}$2525-C	6	3	0	
KGDF$^{R}/_{L}$-25-5B-C + KGD$^{L}/_{R}$2020-C KGDF$^{R}/_{L}$-25-5B-C + KGD$^{L}/_{R}$2525-C	7	4	1	
KGDF$^{R}/_{L}$-25-6B-C + KGD$^{L}/_{R}$2020-C KGDF$^{R}/_{L}$-25-6B-C + KGD$^{L}/_{R}$2525-C	9	4	1	

e.g.)
Toolholder assembled from KGDFR-25-3A-C and KGDL2020-C with ø25 as first cut towards the center, it will cause a rubbing with the toolholder cartridge if ød is 4.0mm.

KGDF (Face grooving / 0° separate type)



Right-hand shown
(Right-hand blade and left-hand toolholder)

Left-hand shown
(Left-hand blade and right-hand toolholder)

Toolholder dimensions (Blade and toolholder)

Shank angle	Cutting width CW (mm)	Shank size (mm)	Max. depth of cut CDX(mm)	External dia. of the groove (mm) DAXN (min.)	DAXX (max.)	Blade description G121	Toolholder description G42	Dimension (mm) H	B	LH	HF	HBH	LF	WF
0°	2	□20	6	25	30	KGDFR	-25-2A-C	20	20	33	20	12	115	24.5
				30	35		-30-2A-C							
				35	45		-35-2A-C							
				45	60		-45-2A-C							
				60	80		-60-2A-C							
				80	100		-80-2A-C							
				100	130		-100-2A-C							
			13	25	30	KGDFR	-25-2B-C			36			118	
				30	35		-30-2B-C							
				35	45		-35-2B-C							
			15	45	60		-45-2B-C			38			120	
				60	80		-60-2B-C							
				80	100		-80-2B-C							
				100	130		-100-2B-C							
		□25	6	25	30	KGDFR	-25-2A-C	25	25	33	25	7	140	29.5
				30	35		-30-2A-C							
				35	45		-35-2A-C							
				45	60		-45-2A-C							
				60	80		-60-2A-C							
				80	100		-80-2A-C							
				100	130		-100-2A-C							
			13	25	30	KGDFR	-25-2B-C			36			143	
				30	35		-30-2B-C							
				35	45		-35-2B-C							
			15	45	60		-45-2B-C			38			145	
				60	80		-60-2B-C							
				80	100		-80-2B-C							
				100	130		-100-2B-C							
		□32	6	25	30	KGDFR	-25-2A-C	32	32	33	32	-	160	36.5
				30	35		-30-2A-C							
				35	45		-35-2A-C							
				45	60		-45-2A-C							
				60	80		-60-2A-C							
				80	100		-80-2A-C							
				100	130		-100-2A-C							
			13	25	30	KGDFR	-25-2B-C			36			163	
				30	35		-30-2B-C							
				35	45		-35-2B-C							
			15	45	60		-45-2B-C			38			165	
				60	80		-60-2B-C							
				80	100		-80-2B-C							
				100	130		-100-2B-C							

Applicable inserts G111

1. KGDF: Right-hand blade for left-hand toolholder, left-hand blade for right-hand toolholder.
   The toolholder is applicable for all blade with suitable hand.
2. CDX: Maximum depth to which processing can be made. (If the CDX is 20 mm or more, the maximum groove-depth of groove made by the 2-edge insert will be 18 mm.)
   Above toolholders are applicable to Cut-off, too.
3. The insert clamping Screw (BH6X10TR), blade fixing Screw (SB-60120TR) and Wrench (LTW-25) which are included in the toolholder can be used.

Toolholder dimensions (Blade and toolholder)

Shank angle	Cutting width CW (mm)	Shank size (mm)	Max. depth of cut CDX(mm)	External dia. of the groove (mm) DAXN (min.)	DAXX (max.)	Blade description G121	Toolholder description G42	Dimension (mm) H	B	LH	HF	HBH	LF	WF
0°	3	□20	13	25	30	KGDF$^{R}_{L}$ -25-3A-C	KGD$^{L}_{R}$2020-C	20	20	36	20	12	118	24.5
				30	40	-30-3A-C								
				40	50	-40-3A-C								
			15	50	65	KGDF$^{R}_{L}$ -50-3B-C				38			120	
				65	85	-65-3B-C								
				85	110	-85-3B-C								
				110	145	-110-3B-C								
			22	50	65	KGDF$^{R}_{L}$ -50-3C-C				45			127	
				65	85	-65-3C-C								
			25	85	110	-85-3C-C				48			130	
				110	145	-110-3C-C								
		□25	13	25	30	KGDF$^{R}_{L}$ -25-3A-C	KGD$^{L}_{R}$2525-C	25	25	36	25	7	143	29.5
				30	40	-30-3A-C								
				40	50	-40-3A-C								
			15	50	65	KGDF$^{R}_{L}$ -50-3B-C				38			145	
				65	85	-65-3B-C								
				85	110	-85-3B-C								
				110	145	-110-3B-C								
			22	50	65	KGDF$^{R}_{L}$ -50-3C-C				45			152	
				65	85	-65-3C-C								
			25	85	110	-85-3C-C				48			155	
				110	145	-110-3C-C								
		□32	13	25	30	KGDF$^{R}_{L}$ -25-3A-C	KGD$^{L}_{R}$3232-C	32	32	36	32	-	163	36.5
				30	40	-30-3A-C								
				40	50	-40-3A-C								
			15	50	65	KGDF$^{R}_{L}$ -50-3B-C				38			165	
				65	85	-65-3B-C								
				85	110	-85-3B-C								
				110	145	-110-3B-C								
			22	50	65	KGDF$^{R}_{L}$ -50-3C-C				45			172	
				65	85	-65-3C-C								
			25	85	110	-85-3C-C				48			175	
				110	145	-110-3C-C								
0°	4	□20	13	25	35	KGDF$^{R}_{L}$ -25-4A-C	KGD$^{L}_{R}$2020-C	20	20	36	20	12	118	24.5
			15	35	50	KGDF$^{R}_{L}$ -35-4B-C				38			120	
				50	70	-50-4B-C								
				70	100	-70-4B-C								
				100	150	-100-4B-C								
				150	220	-150-4B-C								
				220	∞	-220-4B-C								
			25	35	50	KGDF$^{R}_{L}$ -35-4C-C				48			130	
				50	70	-50-4C-C								
				70	100	-70-4C-C								
				100	150	-100-4C-C								
				150	220	-150-4C-C								
				220	∞	-220-4C-C								
		□25	13	25	35	KGDF$^{R}_{L}$ -25-4A-C	KGD$^{L}_{R}$2525-C	25	25	36	25	7	143	29.5
			15	35	50	KGDF$^{R}_{L}$ -35-4B-C				38			145	
				50	70	-50-4B-C								
				70	100	-70-4B-C								
				100	150	-100-4B-C								
				150	220	-150-4B-C								
				220	∞	-220-4B-C								
			25	35	50	KGDF$^{R}_{L}$ -35-4C-C				48			155	
				50	70	-50-4C-C								
				70	100	-70-4C-C								
				100	150	-100-4C-C								
				150	220	-150-4C-C								
				220	∞	-220-4C-C								
		□32	13	25	35	KGDF$^{R}_{L}$ -25-4A-C	KGD$^{L}_{R}$3232-C	32	32	36	32	-	163	36.5
			15	35	50	KGDF$^{R}_{L}$ -35-4B-C				38			165	
				50	70	-50-4B-C								
				70	100	-70-4B-C								
				100	150	-100-4B-C								
				150	220	-150-4B-C								
				220	∞	-220-4B-C								
			25	35	50	KGDF$^{R}_{L}$ -35-4C-C				48			175	
				50	70	-50-4C-C								
				70	100	-70-4C-C								
				100	150	-100-4C-C								
				150	220	-150-4C-C								
				220	∞	-220-4C-C								

Applicable inserts ⇨ **G111**

1. KGDF: Right-hand blade for left-hand toolholder, left-hand blade for right-hand toolholder.
   The toolholder is applicable for all blade with suitable hand.
2. CDX: Maximum depth to which processing can be made. (If the CDX is 20 mm or more, the maximum groove-depth of groove made by the 2-edge insert will be 18 mm.)
   Above toolholders are applicable to Cut-off, too.
3. The insert clamping Screw (BH6X10TR), blade fixing Screw (SB-60120TR) and Wrench (LTW-25) which are included in the toolholder can be used.

Toolholder dimensions (Blade and toolholder)

Shank angle	Cutting width CW (mm)	Shank size (mm)	Max. depth of cut CDX(mm)	External dia. of the groove (mm) DAXN (min.)	DAXX (max.)	Blade description G121	Toolholder description G42	Dimension (mm) H	B	LH	HF	HBH	LF	WF
0°	5	□20	15	25	35	KGDF$^{R}_{L}$ -25-5B-C	KGD$^{L}_{R}$2020-C	20	20	38	20	12	120	24.5
				35	50	-35-5B-C								
				50	75	-50-5B-C								
				75	115	-75-5B-C								
				115	180	-115-5B-C								
				180	235	-180-5B-C								
				235	∞	-235-5B-C								
			20	25	35	KGDF$^{R}_{L}$ -25-5C-C				43			125	
			25	35	50	-35-5C-C				48			130	
				50	75	-50-5C-C								
				75	115	-75-5C-C								
				115	180	-115-5C-C								
				180	235	-180-5C-C								
				235	∞	-235-5C-C								
			32	75	115	KGDF$^{R}_{L}$ -75-5D-C				55			137	
				115	180	-115-5D-C								
				180	235	-180-5D-C								
				235	∞	-235-5D-C								
		□25	15	25	35	KGDF$^{R}_{L}$ -25-5B-C	KGD$^{L}_{R}$2525-C	25	25	38	25	7	145	29.5
				35	50	-35-5B-C								
				50	75	-50-5B-C								
				75	115	-75-5B-C								
				115	180	-115-5B-C								
				180	235	-180-5B-C								
				235	∞	-235-5B-C								
			20	25	35	KGDF$^{R}_{L}$ -25-5C-C				43			150	
			25	35	50	-35-5C-C				48			155	
				50	75	-50-5C-C								
				75	115	-75-5C-C								
				115	180	-115-5C-C								
				180	235	-180-5C-C								
				235	∞	-235-5C-C								
			32	75	115	KGDF$^{R}_{L}$ -75-5D-C				55			162	
				115	180	-115-5D-C								
				180	235	-180-5D-C								
				235	∞	-235-5D-C								
		□32	15	25	35	KGDF$^{R}_{L}$ -25-5B-C	KGD$^{L}_{R}$3232-C	32	32	38	32	-	165	36.5
				35	50	-35-5B-C								
				50	75	-50-5B-C								
				75	115	-75-5B-C								
				115	180	-115-5B-C								
				180	235	-180-5B-C								
				235	∞	-235-5B-C								
			20	25	35	KGDF$^{R}_{L}$ -25-5C-C				43			170	
			25	35	50	-35-5C-C				48			175	
				50	75	-50-5C-C								
				75	115	-75-5C-C								
				115	180	-115-5C-C								
				180	235	-180-5C-C								
				235	∞	-235-5C-C								
			32	75	115	KGDF$^{R}_{L}$ -75-5D-C				55			182	
				115	180	-115-5D-C								
				180	235	-180-5D-C								
				235	∞	-235-5D-C								

1. KGDF: Right-hand blade for left-hand toolholder, left-hand blade for right-hand toolholder.
   The toolholder is applicable for all blade with suitable hand.
2. CDX: Maximum depth to which processing can be made. (If the CDX is 20 mm or more, the maximum groove-depth of groove made by the 2-edge insert will be 18 mm.)
   Above toolholders are applicable to Cut-off, too.

Applicable inserts G111

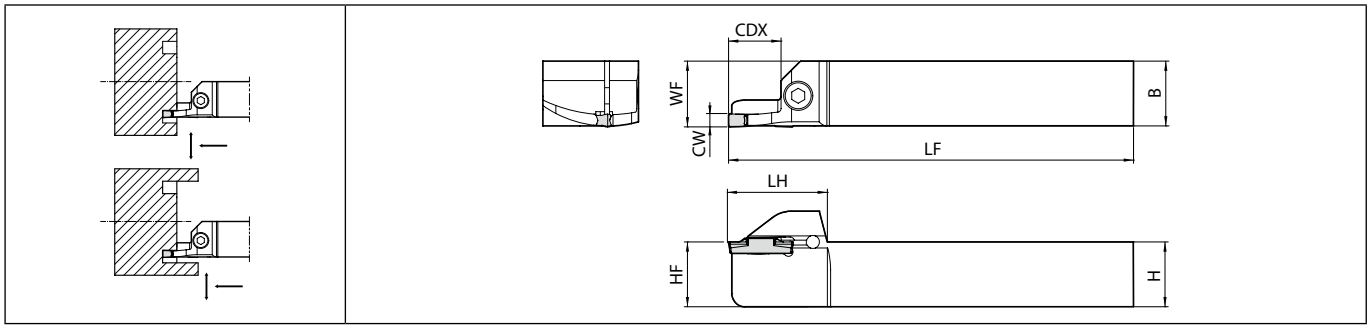
Toolholder dimensions (Blade and toolholder)

Shank angle	Cutting width CW (mm)	Shank size (mm)	Max. depth of cut CDX(mm)	External dia. of the groove (mm) DAXN (min.)	DAXX (max.)	Blade description G121	Toolholder description G42	Dimension (mm) H	B	LH	HF	HBH	LF	WF
0°	6	□20	15	25	35	KGDF$^{R}_{L}$ -25-6B-C	KGD$^{L}_{R}$2020-C	20	20	38	20	12	120	24.5
				35	50	-35-6B-C								
				50	75	-50-6B-C								
				75	115	-75-6B-C								
				115	180	-115-6B-C								
				180	235	-180-6B-C								
				235	∞	-235-6B-C								
			20	25	35	KGDF$^{R}_{L}$ -25-6C-C				43			125	
			25	35	50	-35-6C-C				48			130	
				50	75	-50-6C-C								
				75	115	-75-6C-C								
				115	180	-115-6C-C								
				180	235	-180-6C-C								
				235	∞	-235-6C-C								
			32	75	115	KGDF$^{R}_{L}$ -75-6D-C				55			137	
				115	180	-115-6D-C								
				180	235	-180-6D-C								
				235	∞	-235-6D-C								
		□25	15	25	35	KGDF$^{R}_{L}$ -25-6B-C	KGD$^{L}_{R}$2525-C	25	25	38	25	7	145	29.5
				35	50	-35-6B-C								
				50	75	-50-6B-C								
				75	115	-75-6B-C								
				115	180	-115-6B-C								
				180	235	-180-6B-C								
				235	∞	-235-6B-C								
			20	25	35	KGDF$^{R}_{L}$ -25-6C-C				43			150	
			25	35	50	-35-6C-C				48			155	
				50	75	-50-6C-C								
				75	115	-75-6C-C								
				115	180	-115-6C-C								
				180	235	-180-6C-C								
				235	∞	-235-6C-C								
			32	75	115	KGDF$^{R}_{L}$ -75-6D-C				55			162	
				115	180	-115-6D-C								
				180	235	-180-6D-C								
				235	∞	-235-6D-C								
		□32	15	25	35	KGDF$^{R}_{L}$ -25-6B-C	KGD$^{L}_{R}$3232-C	32	32	38	32	-	165	36.5
				35	50	-35-6B-C								
				50	75	-50-6B-C								
				75	115	-75-6B-C								
				115	180	-115-6B-C								
				180	235	-180-6B-C								
				235	∞	-235-6B-C								
			20	25	35	KGDF$^{R}_{L}$ -25-6C-C				43			170	
			25	35	50	-35-6C-C				48			175	
				50	75	-50-6C-C								
				75	115	-75-6C-C								
				115	180	-115-6C-C								
				180	235	-180-6C-C								
				235	∞	-235-6C-C								
			32	75	115	KGDF$^{R}_{L}$ -75-6D-C				55			182	
				115	180	-115-6D-C								
				180	235	-180-6D-C								
				235	∞	-235-6D-C								

1. KGDF: Right-hand blade for left-hand toolholder, left-hand blade for right-hand toolholder.
   The toolholder is applicable for all blade with suitable hand.
2. CDX: Maximum depth to which processing can be made. (If the CDX is 20 mm or more, the maximum groove-depth of groove made by the 2-edge insert will be 18 mm.)
   Above toolholders are applicable to Cut-off, too.

Applicable inserts G111

KGDF-Z (Face grooving)

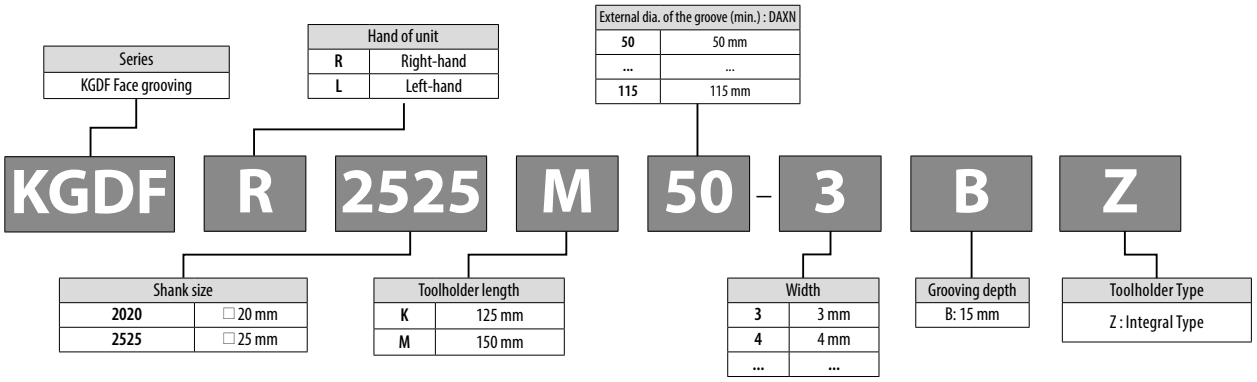


Right-hand shown

Toolholder dimensions

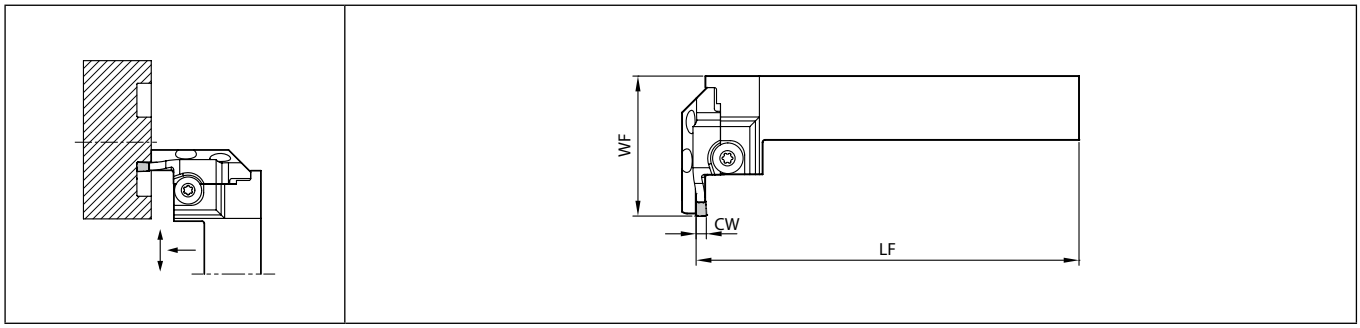
Description		Availability R	Availability L	External dia.of the groove (mm) DAXN (min.)	DAXX (max.)	Dimension (mm) CW	CDX	H	B	LH	HF	LF	WF	Spare parts: Clamp bolt	Spare parts: Wrench	Applicable inserts G111
KGDF R/L	2020K50-3B-Z	●	●	50	65	3	15	20	20	30.5	20	125	20.3	HH5X16	LW-4	GDFM 3020... GDFMS 3020... GDFG 3020...
	2020K65-3B-Z	●	●	65	85											
	2020K85-3B-Z	●	●	85	110											
	2020K110-3B-Z	●	●	110	145											
	2525M50-3B-Z	●	●	50	65			25	25		25	150	25.3			
	2525M65-3B-Z	●	●	65	85											
	2525M85-3B-Z	●	●	85	110											
	2525M110-3B-Z	●	●	110	145											
KGDF R/L	2020K50-4B-Z	●	●	50	70	4	15	20	20	30.5	20	125	20.3	HH5X16	LW-4	GDFM 4020... GDFMS 4020... GDFG 4020...
	2020K70-4B-Z	●	●	70	100											
	2020K100-4B-Z	●	●	100	150											
	2525M50-4B-Z	●	●	50	70			25	25		25	150	25.3			
	2525M70-4B-Z	●	●	70	100											
	2525M100-4B-Z	●	●	100	150											
KGDF R/L	2020K50-5B-Z	●	●	50	75	5	15	20	20	30.5	20	125	20.3	HH5X16	LW-4	GDFM 5020... GDFMS 5020... GDFG 5020...
	2020K75-5B-Z	●	●	75	115											
	2020K115-5B-Z	●	●	115	180											
	2525M50-5B-Z	●	●	50	75			25	25		25	150	25.3			
	2525M75-5B-Z	●	●	75	115											
	2525M115-5B-Z	●	●	115	180											

KGDF-Z toolholder identification system



● : Standard item

KGDF (Face grooving / 90° separate type)



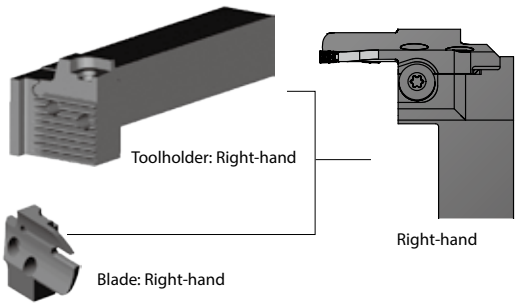
Right-hand shown (Right-hand blade and right-hand toolholder)

Toolholder dimensions (Blade and toolholder)

Shank angle	Cutting width CW (mm)	Shank size (mm)	Max. depth of cut CDX(mm)	External dia. of the groove (mm) DAXN (min.)	DAXX (max.)	Blade description G121	Toolholder description G42	Dimension (mm) LF	WF
90°	2	□20	6	25	30	KGDFR -25-2A-C	KGDSR2020-C	125	49.7
				30	35	-30-2A-C			
				35	45	-35-2A-C			
				45	60	-45-2A-C			
				60	80	-60-2A-C			
				80	100	-80-2A-C			
				100	130	-100-2A-C			
			13	25	30	KGDFR -25-2B-C			52.7
			15	30	35	-30-2B-C			54.7
				35	45	-35-2B-C			
				45	60	-45-2B-C			
				60	80	-60-2B-C			
				80	100	-80-2B-C			
				100	130	-100-2B-C			
		□25	6	25	30	KGDFR -25-2A-C	KGDSR2525-C	150	49.7
				30	35	-30-2A-C			
				35	45	-35-2A-C			
				45	60	-45-2A-C			
				60	80	-60-2A-C			
				80	100	-80-2A-C			
				100	130	-100-2A-C			
			13	25	30	KGDFR -25-2B-C			52.7
			15	30	35	-30-2B-C			54.7
				35	45	-35-2B-C			
				45	60	-45-2B-C			
				60	80	-60-2B-C			
				80	100	-80-2B-C			
				100	130	-100-2B-C			
90°	3	□20	13	25	30	KGDF$^{R}_{L}$ -25-3A-C	KGDS$^{R}_{L}$2020-C	125	52.7
				30	40	-30-3A-C			
				40	50	-40-3A-C			
			15	50	65	KGDF$^{R}_{L}$ -50-3B-C			54.7
				65	85	-65-3B-C			
				85	110	-85-3B-C			
				110	145	-110-3B-C			
			22	50	65	KGDF$^{R}_{L}$ -50-3C-C			59.7
				65	85	-65-3C-C			
			25	85	110	-85-3C-C			61.7
				110	145	-110-3C-C			
		□25	13	25	30	KGDF$^{R}_{L}$ -25-3A-C	KGDS$^{R}_{L}$2525-C	150	52.7
				30	40	-30-3A-C			
				40	50	-40-3A-C			
			15	50	65	KGDF$^{R}_{L}$ -50-3B-C			54.7
				65	85	-65-3B-C			
				85	110	-85-3B-C			
				110	145	-110-3B-C			
			22	50	65	KGDF$^{R}_{L}$ -50-3C-C			59.7
				65	85	-65-3C-C			
			25	85	110	-85-3C-C			61.7
				110	145	-110-3C-C			

Shank angle	Cutting width CW (mm)	Shank size (mm)	Max. depth of cut CDX(mm)	External dia. of the groove (mm) DAXN (min.)	DAXX (max.)	Blade description G121	Toolholder description G42	Dimension (mm) LF	WF
90°	4	□20	13	25	35	KGDFR -25-4A-C	KGDS$^{R}_{L}$2020-C	125	52.7
			15	35	50	KGDFR -35-4B-C			54.7
				50	70	-50-4B-C			
				70	100	-70-4B-C			
				100	150	-100-4B-C			
				150	220	-150-4B-C			
				220	∞	-220-4B-C			
			25	35	50	KGDFR -35-4C-C			64.7
				50	70	-50-4C-C			
				70	100	-70-4C-C			
				100	150	-100-4C-C			
				150	220	-150-4C-C			
				220	∞	-220-4C-C			
		□25	13	25	35	KGDFR -25-4A-C	KGDS$^{R}_{L}$2525-C	150	52.7
			15	35	50	KGDFR -35-4B-C			54.7
				50	70	-50-4B-C			
				70	100	-70-4B-C			
				100	150	-100-4B-C			
				150	220	-150-4B-C			
				220	∞	-220-4B-C			
			25	35	50	KGDFR -35-4C-C			64.7
				50	70	-50-4C-C			
				70	100	-70-4C-C			
				100	150	-100-4C-C			
				150	220	-150-4C-C			
				220	∞	-220-4C-C			

Applicable inserts G111



· KGDF 90° type is not available as unit (Toolholder + blade). Please purchase toolholder and blade separately.
· Right-hand Blade for Right-hand Toolholder, Left-hand Blade for Left-hand Toolholder.
· The insert clamping Screw (BH6X10TR), blade fixing Screw (SB-60120TR) and Wrench (LTW-25) which are included in the toolholder can be used.

Toolholder dimensions (Blade and toolholder)

Shank angle	Cutting width CW (mm)	Shank size (mm)	Max. depth of cut CDX(mm)	External dia. of the groove (mm) DAXN (min.)	DAXX (max.)	Blade description G121	Toolholder description G42	Dimension (mm) LF	WF
90°	5	□20	15	25	35	KGDF$^{R/L}$ -25-5B-C	KGDS$^{R/L}$2020-C	125	54.7
				35	50	-35-5B-C			
				50	75	-50-5B-C			
				75	115	-75-5B-C			
				115	180	-115-5B-C			
				180	235	-180-5B-C			
				235	∞	-235-5B-C			
			20	25	35	KGDF$^{R/L}$ -25-5C-C			59.7
			25	35	50	-35-5C-C			64.7
				50	75	-50-5C-C			
				75	115	-75-5C-C			
				115	180	-115-5C-C			
				180	235	-180-5C-C			
				235	∞	-235-5C-C			
			32	75	115	KGDF$^{R/L}$ -75-5D-C			71.7
				115	180	-115-5D-C			
				180	235	-180-5D-C			
				235	∞	-235-5D-C			
		□25	15	25	35	KGDF$^{R/L}$ -25-5B-C	KGDS$^{R/L}$2525-C	150	54.7
				35	50	-35-5B-C			
				50	75	-50-5B-C			
				75	115	-75-5B-C			
				115	180	-115-5B-C			
				180	235	-180-5B-C			
				235	∞	-235-5B-C			
			20	25	35	KGDF$^{R/L}$ -25-5C-C			59.7
			25	35	50	-35-5C-C			64.7
				50	75	-50-5C-C			
				75	115	-75-5C-C			
				115	180	-115-5C-C			
				180	235	-180-5C-C			
				235	∞	-235-5C-C			
			32	75	115	KGDF$^{R/L}$ -75-5D-C			71.7
				115	180	-115-5D-C			
				180	235	-180-5D-C			
				235	∞	-235-5D-C			

Shank angle	Cutting width CW (mm)	Shank size (mm)	Max. depth of cut CDX(mm)	External dia. of the groove (mm) DAXN (min.)	DAXX (max.)	Blade description G121	Toolholder description G42	Dimension (mm) LF	WF
90°	6	□20	15	25	35	KGDF$^{R/L}$ -25-6B-C	KGDS$^{R/L}$2020-C	125	54.7
				35	50	-35-6B-C			
				50	75	-50-6B-C			
				75	115	-75-6B-C			
				115	180	-115-6B-C			
				180	235	-180-6B-C			
				235	∞	-235-6B-C			
			20	25	35	KGDF$^{R/L}$ -25-6C-C			59.7
			25	35	50	-35-6C-C			64.7
				50	75	-50-6C-C			
				75	115	-75-6C-C			
				115	180	-115-6C-C			
				180	235	-180-6C-C			
				235	∞	-235-6C-C			
			32	75	115	KGDF$^{R/L}$ -75-6D-C			71.7
				115	180	-115-6D-C			
				180	235	-180-6D-C			
				235	∞	-235-6D-C			
		□25	15	25	35	KGDF$^{R/L}$ -25-6B-C	KGDS$^{R/L}$2525-C	150	54.7
				35	50	-35-6B-C			
				50	75	-50-6B-C			
				75	115	-75-6B-C			
				115	180	-115-6B-C			
				180	235	-180-6B-C			
				235	∞	-235-6B-C			
			20	25	35	KGDF$^{R/L}$ -25-6C-C			59.7
			25	35	50	-35-6C-C			64.7
				50	75	-50-6C-C			
				75	115	-75-6C-C			
				115	180	-115-6C-C			
				180	235	-180-6C-C			
				235	∞	-235-6C-C			
			32	75	115	KGDF$^{R/L}$ -75-6D-C			71.7
				115	180	-115-6D-C			
				180	235	-180-6D-C			
				235	∞	-235-6D-C			

· KGDF 90° type is not available as unit (Toolholder + blade). Please purchase toolholder and blade separately.
· Right-hand Blade for Right-hand Toolholder, Left-hand Blade for Left-hand Toolholder.
· The insert clamping Screw (BH6X10TR), blade fixing Screw (SB-60120TR) and Wrench (LTW-25) which are included in the toolholder can be used.

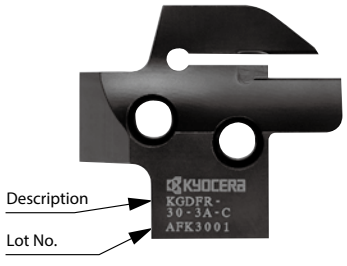
Applicable inserts G111

Face grooving blade identification system

KGDF R – 25 – 3 A – C

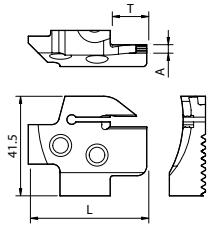
- **Hand of blade**: R : Right-hand, L : Left-hand
- **Width**: 2: 2 mm, 3: 3 mm, 4: 4 mm, 5: 5 mm, 6: 6 mm
- **Blade symbol**: C: Applicable to toolholder with suffix "-C"
- **External dia. of the groove (min.): DAXN**: Indicates the minimum external diameter suitable for the initial face grooving.
- **Grooving depth**:

A: 6/13mm B: 13/15mm	2-edge insert (1-edge insert can also be used.)
C : 20mm~25mm D : 32mm	1-edge insert



Example of printing of blade description

Blade dimensions

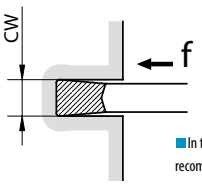
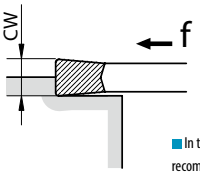
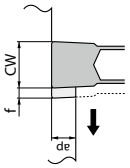
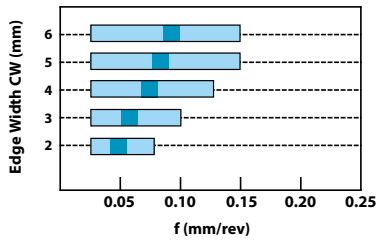
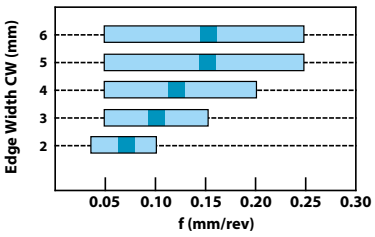
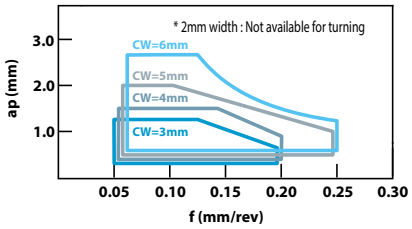
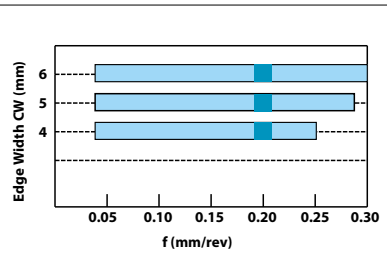
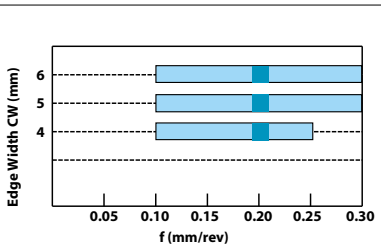
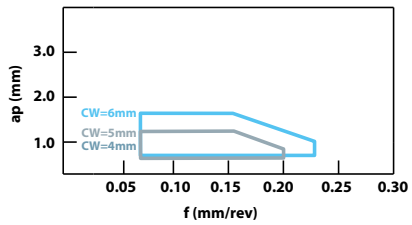
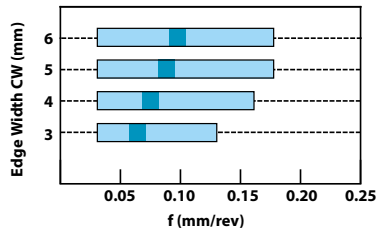
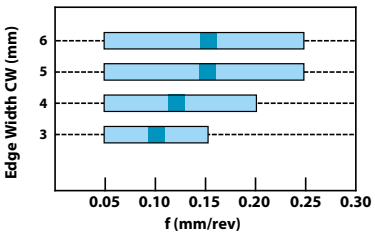
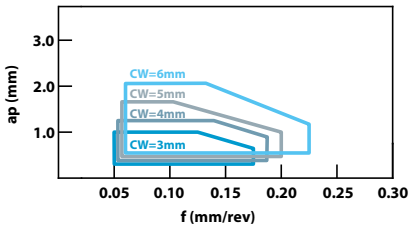
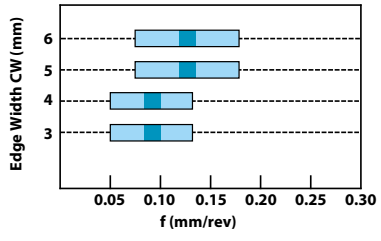
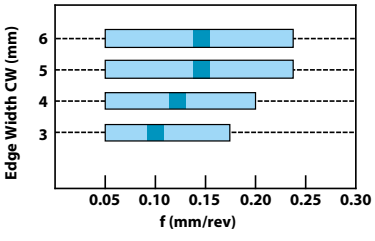
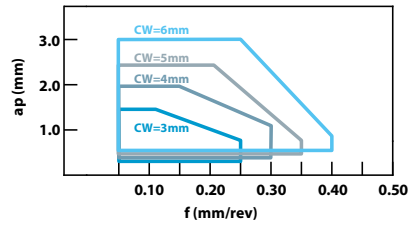
Shape	Blade description	Availability R	Availability L	External dia. of the groove (mm) DAXN (min.)	External dia. of the groove (mm) DAXX (max.)	Dimension (mm) L	Dimension (mm) T	Dimension (mm) A	Cutting width CW (mm)	Applicable inserts G111	Applicable toolholder G42
	KGDFR -25-2A-C	●		25	30	44.35	6	1.5	2	GDFM 2020N-020GM	KGD$^{L}/_{R}$....-C KGDS$^{R}/_{L}$.....-C
	KGDFR -30-2A-C	●		30	35						
	KGDFR -35-2A-C	●		35	45						
	KGDFR -45-2A-C	●		45	60						
	KGDFR -60-2A-C	●		60	80						
	KGDFR -80-2A-C	●		80	100						
	KGDFR -100-2A-C	●		100	130						
	KGDFR -25-2B-C	●		25	30	47.35	13				
	KGDFR -30-2B-C	●		30	35	49.35	15				
	KGDFR -35-2B-C	●		35	45						
	KGDFR -45-2B-C	●		45	60						
	KGDFR -60-2B-C	●		60	80						
	KGDFR -80-2B-C	●		80	100						
	KGDFR -100-2B-C	●		100	130						
	KGDF$^{R}/_{L}$ -25-3A-C	●	●	25	30	47.35	13	2	3	GDFM 3020... GDFMS 3020... GDFG 3020...	
	KGDF$^{R}/_{L}$ -30-3A-C	●	●	30	40						
	KGDF$^{R}/_{L}$ -40-3A-C	●	●	40	50						
	KGDF$^{R}/_{L}$ -50-3B-C	●	●	50	65	49.35	15				
	KGDF$^{R}/_{L}$ -65-3B-C	●	●	65	85						
	KGDF$^{R}/_{L}$ -85-3B-C	●	●	85	110						
	KGDF$^{R}/_{L}$ -110-3B-C	●	●	110	145						
	KGDF$^{R}/_{L}$ -50-3C-C	●	●	50	65	56.35	22				
	KGDF$^{R}/_{L}$ -65-3C-C	●	●	65	85						
	KGDF$^{R}/_{L}$ -85-3C-C	●	●	85	110	59.35	25				
	KGDF$^{R}/_{L}$ -110-3C-C	●	●	110	145						
	KGDF$^{R}/_{L}$ -25-4A-C	●	●	25	35	47.35	13	3	4	GDFM 4020... GDFMS 4020... GDFG 4020...	
	KGDF$^{R}/_{L}$ -35-4B-C	●	●	35	50	49.35	15				
	KGDF$^{R}/_{L}$ -50-4B-C	●	●	50	70						
	KGDF$^{R}/_{L}$ -70-4B-C	●	●	70	100						
	KGDF$^{R}/_{L}$ -100-4B-C	●	●	100	150						
	KGDF$^{R}/_{L}$ -150-4B-C	●	●	150	220						
	KGDF$^{R}/_{L}$ -220-4B-C	●	●	220	∞						
	KGDF$^{R}/_{L}$ -35-4C-C	●	●	35	50	59.35	25				
	KGDF$^{R}/_{L}$ -50-4C-C	●	●	50	70						
	KGDF$^{R}/_{L}$ -70-4C-C	●	●	70	100						
	KGDF$^{R}/_{L}$ -100-4C-C	●	●	100	150						
	KGDF$^{R}/_{L}$ -150-4C-C	●	●	150	220						
	KGDF$^{R}/_{L}$ -220-4C-C	●	●	220	∞						
	KGDF$^{R}/_{L}$ -25-5B-C	●	●	25	35	49.35	15	4	5	GDFM 5020... GDFMS 5020... GDFG 5020...	
	KGDF$^{R}/_{L}$ -35-5B-C	●	●	35	50						
	KGDF$^{R}/_{L}$ -50-5B-C	●	●	50	75						
	KGDF$^{R}/_{L}$ -75-5B-C	●	●	75	115						
	KGDF$^{R}/_{L}$ -115-5B-C	●	●	115	180						
	KGDF$^{R}/_{L}$ -180-5B-C	●	●	180	235						
	KGDF$^{R}/_{L}$ -235-5B-C	●	●	235	∞						
	KGDF$^{R}/_{L}$ -25-5C-C	●	●	25	35	54.35	20				
	KGDF$^{R}/_{L}$ -35-5C-C	●	●	35	50	59.35	25				
	KGDF$^{R}/_{L}$ -50-5C-C	●	●	50	75						
	KGDF$^{R}/_{L}$ -75-5C-C	●	●	75	115						
	KGDF$^{R}/_{L}$ -115-5C-C	●	●	115	180						
	KGDF$^{R}/_{L}$ -180-5C-C	●	●	180	235						
	KGDF$^{R}/_{L}$ -235-5C-C	●	●	235	∞						
	KGDF$^{R}/_{L}$ -75-5D-C	●	●	75	115	66.35	32				
	KGDF$^{R}/_{L}$ -115-5D-C	●	●	115	180						
	KGDF$^{R}/_{L}$ -180-5D-C	●	●	180	235						
	KGDF$^{R}/_{L}$ -235-5D-C	●	●	235	∞						
	KGDF$^{R}/_{L}$ -25-6B-C	●	●	25	35	49.35	15	5	6	GDFM 6020... GDFMS 6020... GDFG 6020...	
	KGDF$^{R}/_{L}$ -35-6B-C	●	●	35	50						
	KGDF$^{R}/_{L}$ -50-6B-C	●	●	50	75						
	KGDF$^{R}/_{L}$ -75-6B-C	●	●	75	115						
	KGDF$^{R}/_{L}$ -115-6B-C	●	●	115	180						
	KGDF$^{R}/_{L}$ -180-6B-C	●	●	180	235						
	KGDF$^{R}/_{L}$ -235-6B-C	●	●	235	∞						
	KGDF$^{R}/_{L}$ -25-6C-C	●	●	25	35	54.35	20				
	KGDF$^{R}/_{L}$ -35-6C-C	●	●	35	50	59.35	25				
	KGDF$^{R}/_{L}$ -50-6C-C	●	●	50	75						
	KGDF$^{R}/_{L}$ -75-6C-C	●	●	75	115						
	KGDF$^{R}/_{L}$ -115-6C-C	●	●	115	180						
	KGDF$^{R}/_{L}$ -180-6C-C	●	●	180	235						
	KGDF$^{R}/_{L}$ -235-6C-C	●	●	235	∞						
	KGDF$^{R}/_{L}$ -75-6D-C	●	●	75	115	66.35	32				
	KGDF$^{R}/_{L}$ -115-6D-C	●	●	115	180						
	KGDF$^{R}/_{L}$ -180-6D-C	●	●	180	235						
	KGDF$^{R}/_{L}$ -235-6D-C	●	●	235	∞						

● : Standard item

Recommended cutting conditions

Workpiece material	Recommended insert grades (Vc: m/min)				Remarks
	Cermet		MEGACOAT		
	TN620	TN90	PR1225	PR1215	
Carbon steel	☆ 60~200	☆ 80~200	★ 60~160	☆ 80~160	Coolant
Alloy steel	☆ 60~160	☆ 70~160	★ 60~150	☆ 60~150	
Stainless steel	-	-	★ 50~120	☆ 50~120	
Cast iron	-	-	-	★ 80~160	

★ : 1st recommendation ☆ : 2nd recommendation

	Grooving	Shoulder grooving (side grooving)	Turning
Chipbreaker	 In the graph below indicates the most recommended value of feed (f)	 In the graph below indicates the most recommended value of feed (f)	
GM (Grooving, turning)			
GH (Grooving, turning, high feed grooving)			
DM (Deep grooving, turning)			
CM (Copying)			

When shoulder grooving
- If ap is set smaller, set feed higher.
- If ap is set larger, set feed lower.

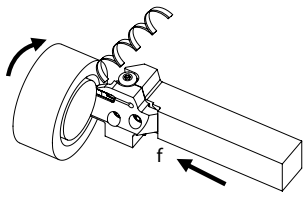
Workpiece material: S50C

1. The above values are based on the condition that the CDX of toolholder is 15 mm or less.

Guide for face grooving

1. Toolholder selection

Check the range of applicable "external diameter of the groove" as well as the groove width and depth.

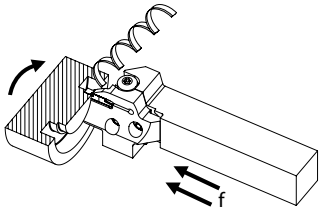
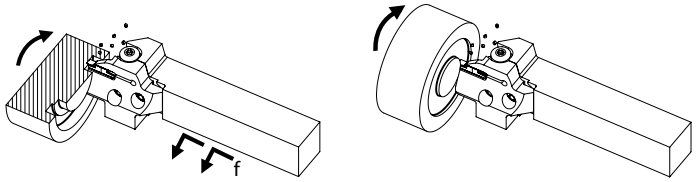


2. Cutting conditions (Feed rate: f)

When machining on steel, set the feed rate (f) so that chips are created in a helical form in cut-off.

3. How to widen the groove (plunge milling and turning)

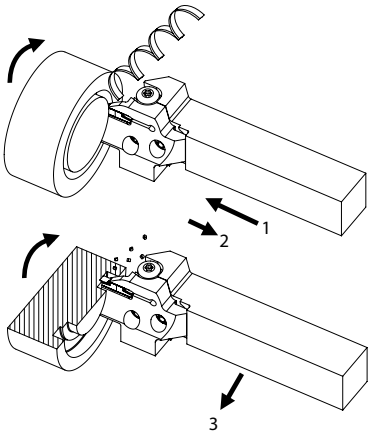
Start machining from the outside and then proceed to the inside.
Chip control will be better in this way.

Plunge milling (Grooving + side grooving)	Turning
	

4. Guide for turning

A. When the cutting amount (ap) is over 0.5 mm

1. Perform plunge milling.
2. Return the cutting by 0.1 mm. Failure to pull the tool back before traverse machining will result in an unbalanced load applied on only one side of the cutting edge.
3. Perform turning (Ref. to Fig. 1)



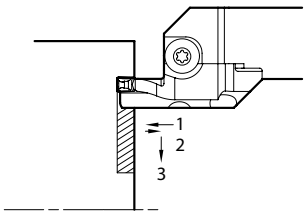


Fig. 1

When widening the face groove width (Ref. to Fig. 2).
Apply the "step turning".
Then perform finishing.

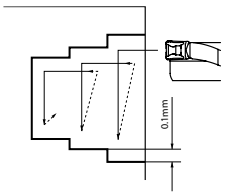
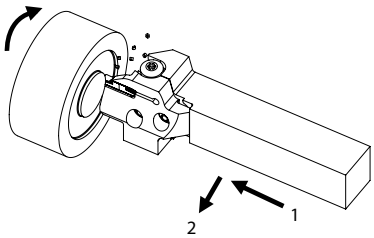


Fig. 2

B. When the cutting amount (ap) is under 0.5 mm

1. Perform Plunge milling.
2. Perform turning.
   Machining without interruption is possible.
   (Ref. to Fig. 3)



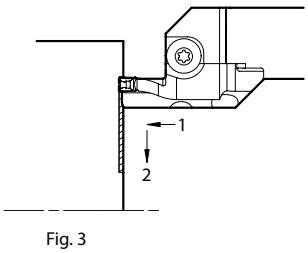
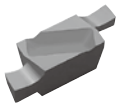
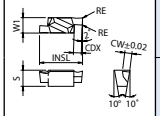


Fig. 3

GVF-AA

Carbon steel / Alloy steel	●	○		P
Stainless steel	●	○		M
Cast iron			◕	K
Non-ferrous metals			◕	N
Titanium alloy			◕	S
Hard materials (~ 40HRC)	●	○		H
Hard materials (40HRC ~)				

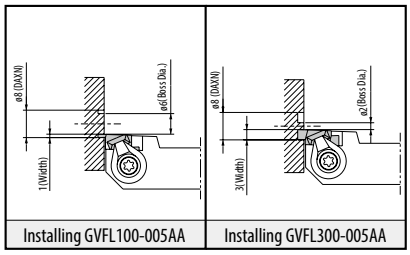
Insert		Description	No. of edges	Dimension (mm)						Tolerance (mm)		Carbide		Applicable toolholder ➡ G125
				CW	CDX	S	RE	INSL	W1	CW min.	CW max.	PVD PR1225	PVD PR930	- KW10	
		GVFR 100-005AA	2	1	2.2	4.5	0.05	12	4.3	-0.02	+0.02	●	●	●	GFVSL....-08AA GFVTL....-08AA
		GVFR 200-005AA		2								●	●	●	
		GVFR 300-005AA		3								●	●	●	
		GVFL 100-005AA		1								●	●	●	GFVSR....-08AA GFVTR....-08AA
		GVFL 200-005AA		2								●	●	●	
		GVFL 300-005AA		3								●	●	●	

CDX shows available grooving depth.
GVF$^{R}_{L}$...005AA inserts are not compatible with GVF$^{R}_{L}$...—○○○A (See Page **G126**) inserts because their Side Relief Angle is 10°.

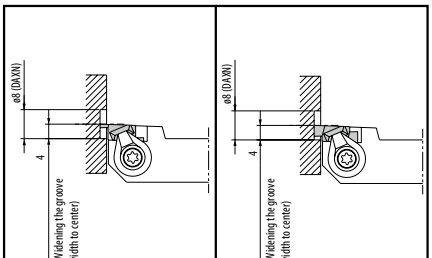
External dia. of the groove of GFVS-AA (apply to GFVT-AA)

Description	External dia. of the groove (mm)		Applicable inserts
	DAXN (min.)	DAXX (max.)	
GFVS$^{R}_{L}$ 2020K-08AA	8	∞	GVF$^{L}_{R}$...-...AA
2525M-08AA	(0)	(∞)	

- It is available to infinity ∞ in case of machining the first groove bigger than DAXN.
- When machining towards the outer diameter then there is no MAX. limit to the further groove machining.
- When machining the initial groove on the face at DAXN ø8
  If the initial groove is made smaller than this, the toolholder interferes with the workpiece.
- When widening the groove width to inner diameter.
  For machining up to the center of the workpiece regardless of insert width.



Installing GVFL100-005AA | Installing GVFL300-005AA



Installing GVFL100-005AA | Installing GVFL300-005AA

Recommended cutting conditions GFVS-AA / GFVT-AA

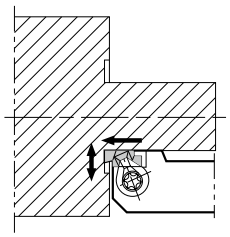
Workpiece material	Recommended insert grades (Vc: m/min)			Grooving	Turning*		Remarks
	MEGACOAT	PVD coated carbide	Carbide				
	PR1225	PR930	KW10	f (mm/rev)	ap (mm)	f (mm/rev)	
Carbon steel / Alloy steel	★ 50~100	☆ 50~100		0.01~0.05	Max. 0.5	0.01~0.05	Coolant
Stainless steel	★ 50~80	☆ 50~80		0.01~0.03	Max. 0.3	0.01~0.02	
Non-ferrous metals			★ ~200	0.01~0.08	Max. 0.5	0.01~0.08	

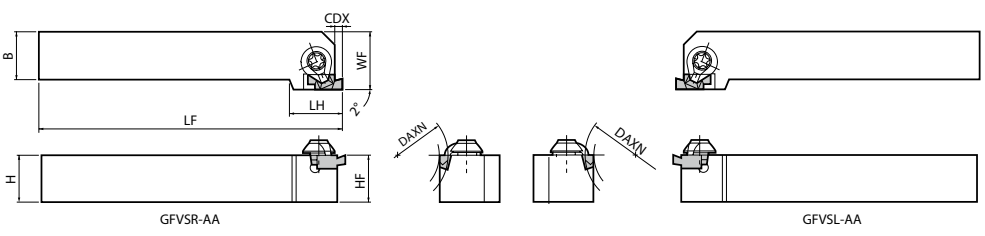
* ap has to be set for less than corner-R(RE) when turning of edge width 1.0 mm (GVF$^{R}_{L}$100-005AA).

★:1st recommendation ☆:2nd recommendation

● : Standard item

GFVS-AA (Face grooving)





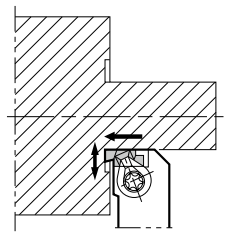
Left-hand Insert for Right-hand Toolholder, Right-hand Insert for Left-hand Toolholder.

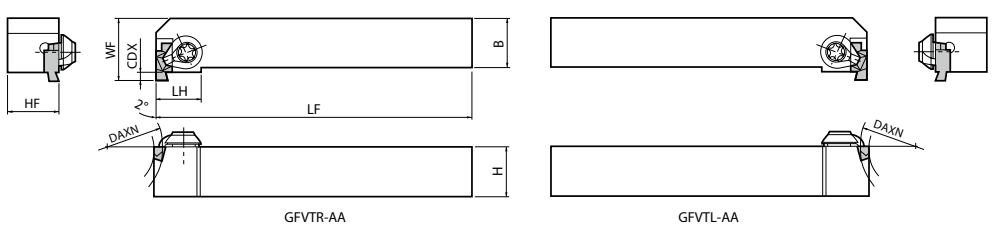
Toolholder dimensions

Description		Availability R	Availability L	External dia. of the groove (mm) DAXN (min.)	DAXX (max.)	Dimension (mm) CDX	H	B	LH	HF	LF	WF	Spare parts: Clamp set	Spare parts: Wrench	Applicable inserts G124
GFVS$^{R}/_{L}$	2020K-08AA	●	●	8	∞	2.2	20	20	18	20	125	25	CPS-5V	FT-15	GVF$^{L}/_{R}$...-...AA
	2525M-08AA	●	●	(0)	(∞)		25	25		25	150	32			

CDX shows available grooving depth.
The value ( ) of External dia. of the groove (DAXX) is the maximum outer diameter value after the initial groove between DAXN ~ DAXX. (It is possible to widen the groove to infinity ∞).
The value ( ) of External dia. of the groove (DAXN) is the minimum diameter of the boss which remains in the center when widening the groove width to a smaller value after the initial groove between DAXN ~ DAXX.

GFVT-AA (Face grooving)





Left-hand Insert for Right-hand Toolholder, Right-hand Insert for Left-hand Toolholder.

Toolholder dimensions

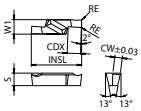
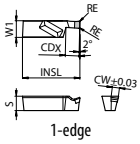
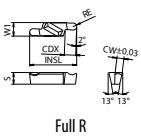
Description		Availability R	Availability L	External dia. of the groove (mm) DAXN (min.)	DAXX (max.)	Dimension (mm) CDX	H	B	LH	HF	LF	WF	Spare parts: Clamp set	Spare parts: Wrench	Applicable inserts G124
GFVT$^{R}/_{L}$	2020K-08AA	●	●	8	∞	2.2	20	20	14	20	125	25	CPS-5V	FT-15	GVF$^{L}/_{R}$...-...AA
	2525M-08AA	●	●	(0)	(∞)		25	25		25	150	32			

CDX shows available grooving depth.
The value ( ) of External dia. of the groove (DAXX) is the maximum outer diameter value after the initial groove between DAXN ~ DAXX. (It is possible to widen the groove to infinity ∞).
The value ( ) of External dia. of the groove (DAXN) is the minimum diameter of the boss which remains in the center when widening the groove width to a smaller value after the initial groove between DAXN ~ DAXX.

● : Standard item

GVF

		P	M	K	N	S	H
Carbon steel / Alloy steel		●	◔				
Stainless steel		●	◔				
Cast iron				●			
Non-ferrous metals				●		●	
Titanium alloy				●		●	
Hard materials (~ 40HRC)		●	○				
Hard materials (40HRC ~)							

Insert		Description		No. of edges	Dimension (mm) CW	CDX	S	RE	INSL	W1	Tolerance (mm) CW min.	CW max.	Carbide PVD PR1225	Carbide PVD PR930	Carbide - KW10	Cer-met - TC40N	Cer-met - TC60M	PCD - KPD010	Applicable toolholder ⇒ G127~G129
		GVFR	200-020A	2	2	2.3	4.5	0.2	12	4.3	-0.03	+0.03	●	●	●	●	●		GFVR....-201A GIFVR....-201A
			230-020A		2.3								●		●	●			
			250-020A		2.5								●	●	●	●	●		
			270-020A		2.7								●		●				
			290-020A		2.9								●	●	●	●			
			340-020A		3.4								●	●	●	●			
		GVFL	200-020A		2								●	●	●	●	●		GFVL....-201A GIFVL....-201A
			230-020A		2.3								●		●				
			250-020A		2.5								●	●	●	●			
			270-020A		2.7								●		●				
			290-020A		2.9								●		●	●			
			340-020A		3.4								●	●	●				
		GVFR	250-020B	2	2.5	4.8	5	0.2	20	5.8	-0.03	+0.03	●	●	●	●	●		GFVR....-..1B *1 GFVSL....-..1B GFVTL....-..1B GIFVR....-..1B
			300-020B		3	4.8							●	●	●	●	●		
			350-020B		3.5	4.8							●	●	●	●	●		
			400-020B		4	5.3							●	●	●	●	●		GFVR....-..2B *2 GFVSL....-..2B GFVTL....-..2B GIFVR....-..2B
			430-020B		4.3	5.3							●		●	●	●		
			460-020B		4.6	5.3							●		●	●			
			490-020B		4.9	5.3							●	●	●	●	●		
		GVFL	250-020B		2.5	4.8							●	●	●	●	●		GFVL....-..1B *3 GFVSR....-..1B GFVTR....-..1B GIFVL....-..1B
			300-020B		3	4.8							●	●	●	●	●		
			350-020B		3.5	4.8							●	●	●	●	●		
			400-020B		4	5.3							●	●	●	●	●		GFVL....-..2B *4 GFVSR....-..2B GFVTR....-..2B GIFVL....-..2B
			430-020B		4.3	5.3							●	●	●	●	●		
			460-020B		4.6	5.3							●		●	●			
			490-020B		4.9	5.3							●	●	●	●	●		
		GVFR	350-040C	2	3.5	6.8	7	0.4	27	7	-0.03	+0.03	●	●	●	●	●		GFVR....-..1C *5 GFVSL....-..1C GFVTL....-..1C GIFVR....-..1C
			400-040C		4	6.8							●	●	●	●	●		
			450-040C		4.5	6.8							●	●	●	●	●		
			500-040C		5	8.3							●	●	●	●	●		GFVR....-..2C GFVSL....-..2C GFVTL....-..2C GIFVR....-..2C
			550-040C		5.5	8.3							●	●	●		●		
			600-040C		6	8.3							●	●	●	●			
		GVFL	350-040C		3.5	6.8							●	●	●	●	●		GFVL....-..1C GFVSR....-..1C GFVTR....-..1C GIFVL....-..1C
			400-040C		4	6.8							●	●	●	●	●		
			450-040C		4.5	6.8							●	●	●	●	●		
			500-040C		5	8.3							●	●	●	●	●		GFVL....-..2C GFVSR....-..2C GFVTR....-..2C GIFVL....-..2C
			550-040C		5.5	8.3							●	●	●		●		
			600-040C		6	8.3							●	●	●	●			
	 1-edge	GVFR	250-020B	1	2.5	4.8	5	0.2	20	5.8	-0.03	+0.03						●	*1
			300-020B		3	4.8												●	
			400-020B		4	5.3												MTO	*2
		GVFL	250-020B		2.5	4.8												●	*3
			300-020B		3	4.8												●	
			400-020B		4	5.3												MTO	*4
		GVFR	350-040C	1	3.5	6.8	7	0.4	27	7	-0.03	+0.03						MTO	*5
	 Full R	GVFR	200-100AR	2	2	2.3	4.5	1	12	4.3	-0.03	+0.03	●	●	●				GFVR....-201A GIFVR....-201A
			250-125AR		2.5			1.25					●	●	●				
			300-150AR		3			1.5					●	●	●				
		GVFL	200-100AR		2			1					●	●	●				GFVL....-201A GIFVL....-201A
			250-125AR		2.5			1.25					●		●				
			300-150AR		3			1.5					●	●	●				
		GVFR	300-150BR	2	3	4.8	5	1.5	20	5.8	-0.03	+0.03	●	●	●				*1
			400-200BR		4	5.3		2					●	●	●				*2
		GVFL	300-150BR		3	4.8		1.5					●	●	●				*3
			400-200BR		4	5.3		2					●	●	●				*4

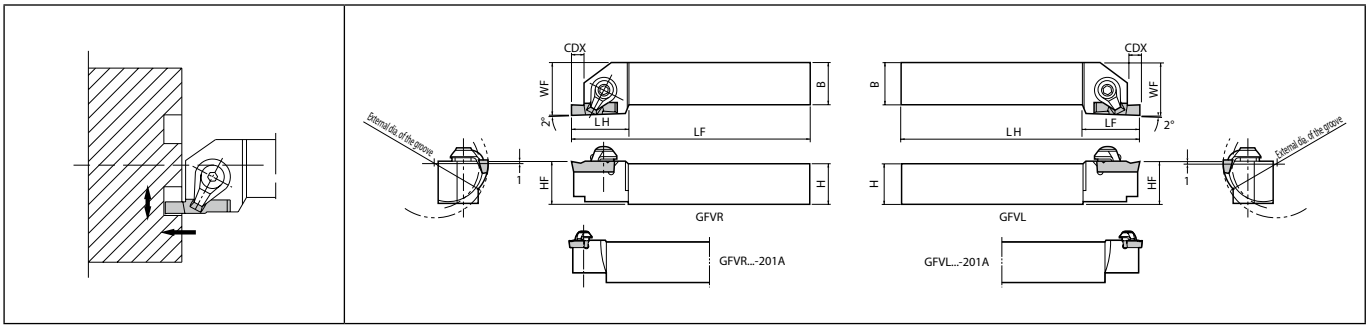
Right-hand shown
CDX shows available grooving depth.

● : Standard item MTO : Made to order

Recommended cutting conditions ⇒ G146

CBN & PCD Inserts are sold in 1 piece boxes

GFV (Face grooving)



Right-hand Insert for Right-hand Toolholder, Left-hand Insert for Left-hand Toolholder.

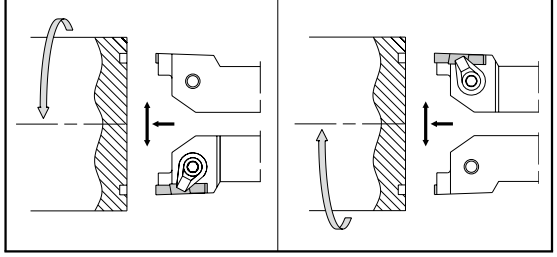
Toolholder dimensions

Description		Availability R	Availability L	External dia. of the groove (mm) DAXN (min.)	DAXX (max.)	Dimension (mm) CDX	H	B	LH	HF	LF	WF	Spare parts: Clamp set	Clamp set	Wrench	Wrench	Applicable inserts G126
GFV$^{R}_{L}$	2020K-201A	●	●	20 (12)	∞ (∞)	2.2	20	20	20	21	125	25	CPS-5V	-	-	FT-15	GVF$^{R}_{L}$200 ~ 340-...A
	2525M-201A	●	●				25	25	23	26	150	32					GVF$^{R}_{L}$200 ~ 300-...AR
GFV$^{R}_{L}$	2020K-351B	●	●	35 (25)	50 (∞)	4.6	20	20	28	21	125	25	-	CPS-6V	LW-3	-	GVF$^{R}_{L}$250 ~ 350-...B
	2525M-351B	●	●				25	25	30	26	150	32					GVF$^{R}_{L}$300-150BR
	2020K-352B	●	●			5.1	20	20	28	21	125	25					GVF$^{R}_{L}$400 ~ 490-...B
	2525M-352B	●	●				25	25	30	26	150	32					GVF$^{R}_{L}$400-200BR
	2020K-501B	●	●	50 (25)	70 (∞)	4.6	20	20	28	21	125	25					GVF$^{R}_{L}$250 ~ 350-...B
	2525M-501B	●	●				25	25	30	26	150	32					GVF$^{R}_{L}$300-150BR
	2020K-502B	●	●			5.1	20	20	28	21	125	25					GVF$^{R}_{L}$400 ~ 490-...B
	2525M-502B	●	●				25	25	30	26	150	32					GVF$^{R}_{L}$400-200BR
	2020K-701B	●	●	70 (25)	100 (∞)	4.6	20	20	28	21	125	25					GVF$^{R}_{L}$250 ~ 350-...B
	2525M-701B	●	●				25	25	30	26	150	32					GVF$^{R}_{L}$300-150BR
	2020K-702B	●	●			5.1	20	20	28	21	125	25					GVF$^{R}_{L}$400 ~ 490-...B
	2525M-702B	●	●				25	25	30	26	150	32					GVF$^{R}_{L}$400-200BR
GFV$^{R}_{L}$	2525M-501C	●	●	50 (25)	70 (∞)	6.6	25	25	35	26	150	32	-	CPS-8V	LW-4	-	GVF$^{R}_{L}$350 ~ 450-...C
	2525M-502C	●	●			8.1											GVF$^{R}_{L}$500 ~ 600-...C
	2525M-701C	●	●	70 (25)	100 (∞)	6.6											GVF$^{R}_{L}$350 ~ 450-...C
	2525M-702C	●	●			8.1											GVF$^{R}_{L}$500 ~ 600-...C
	2525M-1001C	●	●	100 (25)	150 (∞)	6.6											GVF$^{R}_{L}$350 ~ 450-...C
	2525M-1002C	●	●			8.1											GVF$^{R}_{L}$500 ~ 600-...C
	2525M-1501C	●	●	150 (25)	250 (∞)	6.6											GVF$^{R}_{L}$350 ~ 450-...C
	2525M-1502C	●	●			8.1											GVF$^{R}_{L}$500 ~ 600-...C

CDX shows available grooving depth.
The value ( ) of External dia. of the groove (DAXX) is the maximum outer diameter value after the initial groove between DAXN ~ DAXX. (It is possible to widen the groove to infinity ∞).
The value ( ) of External dia. of the groove (DAXN) is the minimum diameter of the boss which remains in the center when widening the groove width to a smaller value after the initial groove between DAXN ~ DAXX.
Standard toolholders are designed with the edge position 1.0 mm above the center. When using non-standard toolholders, set the edge position 1.0 mm above the center.

Selection of Toolholder & Insert

Toolholder	Right-hand	Toolholder	Left-hand
Insert	Right-hand	Insert	Left-hand



● : Standard item

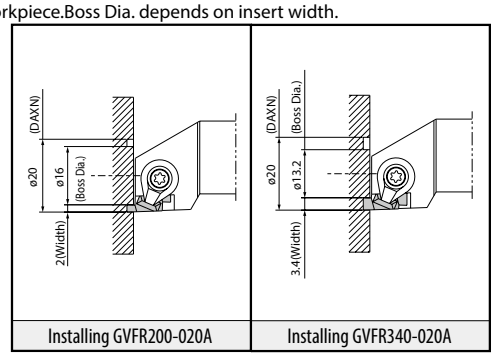
External dia. of the groove of GFV

(1) e.g.) GFV$^{R}/_{L}$...-201A

Description	External dia.of the groove (mm) DAXN (min.)	DAXX (max.)	Applicable inserts
GFV$^{R}/_{L}$ 2020K-201A 2525M-201A	20 (12)	∞ (∞)	GVF$^{R}/_{L}$200 ~ 340-...A GVF$^{R}/_{L}$200 ~ 300-...AR

- It is available to infinity ∞ in case of machining the first groove bigger than DAXN.
- When machining towards the outer diameter then there is no MAX. limit to the further groove machining.
- When machining the initial groove on the face at DAXN ø20

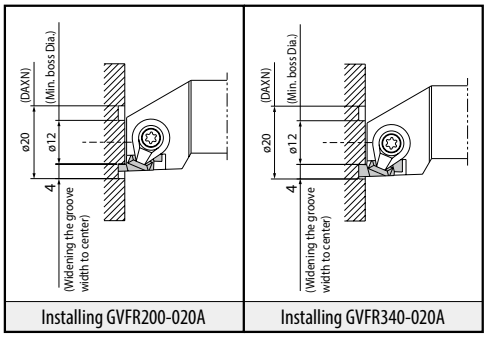
If the initial groove is made smaller than this, the toolholder interferes with the workpiece.Boss Dia. depends on insert width.



Installing GVFR200-020A | Installing GVFR340-020A

- When widening the groove width to inner diameter.

Face groove diameter DAXN (12) is the limit; the toolholder interferes with the workpiece in case of smaller than ø12.The toolholder interferes with the workpiece when closer to the center.



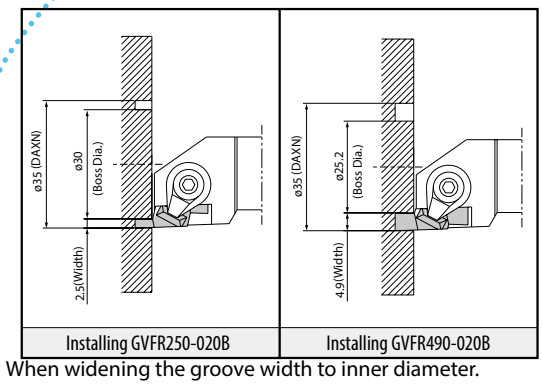
Installing GVFR200-020A | Installing GVFR340-020A

(2) e.g.) GFV$^{R}/_{L}$...-351B/352B (same as GFV$^{R}/_{L}$...-○○○B or GFV$^{R}/_{L}$...-○○○C)

Description	External dia.of the groove (mm) DAXN (min.)	DAXX (max.)	Applicable inserts
GFV$^{R}/_{L}$ 2020K-351B 2525M-351B 2020K-352B 2525M-352B	35 (25)	50 (∞)	GVF$^{R}/_{L}$250 ~ 350-...B GVF$^{R}/_{L}$300-150BR GVF$^{R}/_{L}$400 ~ 490-...B GVF$^{R}/_{L}$400-200BR

- It is possible to widen the groove to infinity ∞ when machining the initial groove within DAXN ~ DAXX and then widening to outer diameter.
- When machining the initial groove on the face at DAXN ø35

If the initial groove is made smaller than this, the toolholder interferes with the workpiece.Boss Dia. depends on insert width.

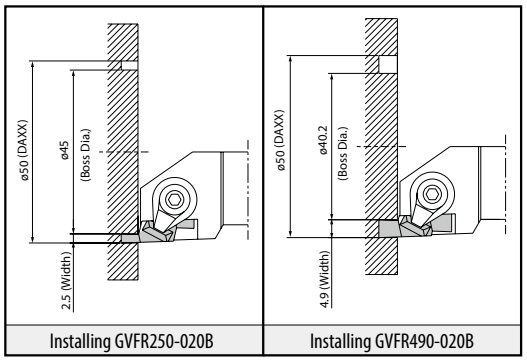


Installing GVFR250-020B | Installing GVFR490-020B

- When widening the groove width to inner diameter.

- When machining the initial groove on the face at DAXX ø50.

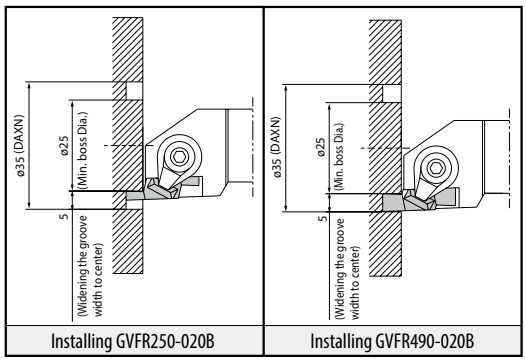
If the initial groove is made larger than this, the toolholder interferes with the workpiece.Boss Dia. depends on insert width.



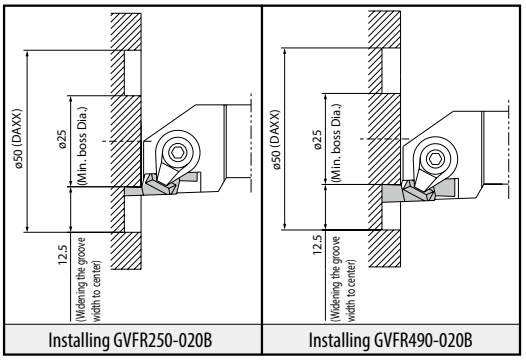
Installing GVFR250-020B | Installing GVFR490-020B

- When widening the groove width to inner diameter.

ø25 Boss Dia. is the limitation regardless of insert width,
even widening the groove width to the center from the initial groove at DAXN (ø35) or DAXX (ø50).
The toolholder interferes with the workpiece when closer to the center.

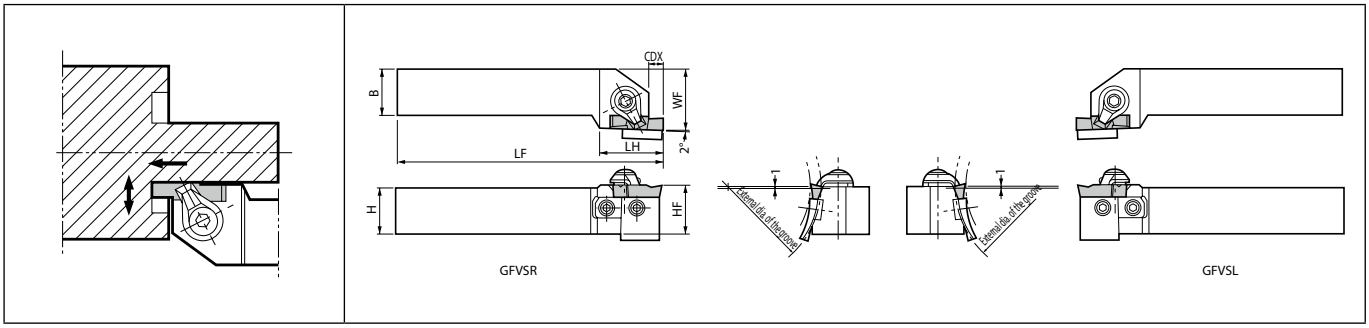


Installing GVFR250-020B | Installing GVFR490-020B



Installing GVFR250-020B | Installing GVFR490-020B

GFVS (Face grooving)



Left-hand Insert for Right-hand Toolholder, Right-hand Insert for Left-hand Toolholder.
This toolholder can machine various face grooving diameters by replacing the blade.

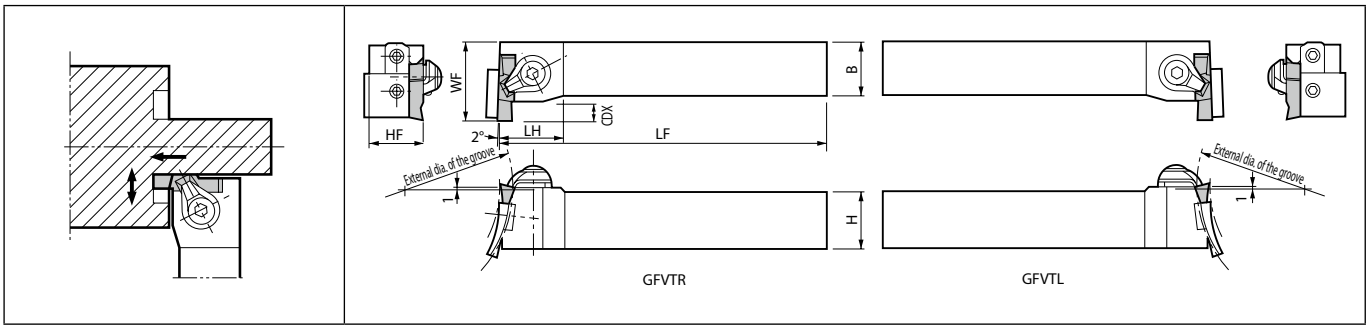
Toolholder dimensions

Description		Availability R	Availability L	External dia. of the groove (mm) DAXN (min.)	External dia. of the groove (mm) DAXX (max.)	Dimension (mm) CDX	H	B	LH	HF	LF	WF	Spare parts: Blade	Spare parts: Bolt	Spare parts: Clamp set	Spare parts: Wrench	Applicable inserts ⇒ G126
GFVS$^{R}_{L}$	2020K-351B	●	●	35 (25)	50 (∞)	5.1 (4.6)	20	20	30	21	125	25	SF$^{R}_{L}$-351B	HH4X12	CPS-6V	LW-3	GVF$^{L}_{R}$250 ~ 350-...B
	2525M-351B	●	●				25	25	32	26	150	32					GVF$^{L}_{R}$300-150BR
	2020K-352B	●	●			5.1 (5.1)	20	20	30	21	125	25	SF$^{R}_{L}$-352B				GVF$^{L}_{R}$400 ~ 490-...B
	2525M-352B	●	●				25	25	32	26	150	32					GVF$^{L}_{R}$400-200BR
	2020K-501B	●	●	50 (25)	70 (∞)	5.1 (4.6)	20	20	30	21	125	25	SF$^{R}_{L}$-501B				GVF$^{L}_{R}$250 ~ 350-...B
	2525M-501B	●	●				25	25	32	26	150	32					GVF$^{L}_{R}$300-150BR
	2020K-502B	●	●			5.1 (5.1)	20	20	30	21	125	25	SF$^{R}_{L}$-502B				GVF$^{L}_{R}$400 ~ 490-...B
	2525M-502B	●	●				25	25	32	26	150	32					GVF$^{L}_{R}$400-200BR
	2020K-701B	●	●	70 (25)	100 (∞)	5.1 (4.6)	20	20	30	21	125	25	SF$^{R}_{L}$-701B				GVF$^{L}_{R}$250 ~ 350-...B
	2525M-701B	●	●				25	25	32	26	150	32					GVF$^{L}_{R}$300-150BR
	2020K-702B	●	●			5.1 (5.1)	20	20	30	21	125	25	SF$^{R}_{L}$702B				GVF$^{L}_{R}$400 ~ 490-...B
	2525M-702B	●	●				25	25	32	26	150	32					GVF$^{L}_{R}$400-200BR
GFVS$^{R}_{L}$	2525M-501C	●	●	50 (25)	70 (∞)	8.1 (*5.1)	25	25	32	26	150	32	SF$^{R}_{L}$-501C	HH4X12	CPS-8V	LW-4	GVF$^{L}_{R}$350 ~ 450-...C
	2525M-502C	●	●			8.1 (8.1)							SF$^{R}_{L}$-502C				GVF$^{L}_{R}$500 ~ 600-...C
	2525M-701C	●	●	70 (25)	100 (∞)	8.1 (*5.1)							SF$^{R}_{L}$-701C				GVF$^{L}_{R}$350 ~ 450-...C
	2525M-702C	●	●			8.1 (8.1)							SF$^{R}_{L}$-702C				GVF$^{L}_{R}$500 ~ 600-...C
	2525M-1001C	●	●	100 (25)	150 (∞)	8.1 (*5.1)							SF$^{R}_{L}$-1001C				GVF$^{L}_{R}$350 ~ 450-...C
	2525M-1002C	●	●			8.1 (8.1)							SF$^{R}_{L}$-1002C				GVF$^{L}_{R}$500 ~ 600-...C
	2525M-1501C	●	●	150 (25)	250 (∞)	8.1 (*5.1)							SF$^{R}_{L}$-1501C				GVF$^{L}_{R}$350 ~ 450-...C
	2525M-1502C	●	●			8.1 (8.1)							SF$^{R}_{L}$-1502C				GVF$^{L}_{R}$500 ~ 600-...C

CDX shows available grooving depth.
The value ( ) of External dia. of the groove (DAXX) is the maximum outer diameter value after the initial groove between DAXN ~ DAXX. (It is possible to widen the groove to infinity ∞).
The value ( ) of External dia. of the groove (DAXN) is the minimum diameter of the boss which remains in the center when widening the groove width to a smaller value after the initial groove between DAXN ~ DAXX.
Standard toolholders are designed with the edge position 1.0 mm above the center. When using non-standard toolholders, set the edge position 1.0 mm above the center.
CDX shows the distance from the toolholder to the cutting edge. The grooving depth is the mentioned in ( ).
GFVS is composed of a base-holder and a blade. If the blade should be damaged, replace it with a new blade as listed in the table on **G131**.
(e.g.) GFVSR2020K-HB + SFR-351B = GFVSR2020K-351B
*GVF$^{L}_{R}$400~450-040C: CDX is 6.6

● : Standard item

GFVT (Face grooving)



Left-hand Insert for Right-hand Toolholder, Right-hand Insert for Left-hand Toolholder.
This toolholder can machine various face grooving diameters by replacing the blade.

Toolholder dimensions

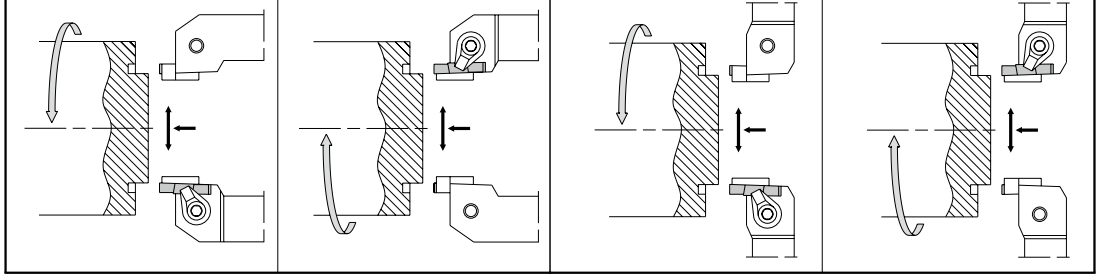
Description		Availability R	Availability L	External dia. of the groove (mm) DAXN (min.)	DAXX (max.)	Dimension (mm) CDX	H	B	LH	HF	LF	WF	Spare parts: Blade	Bolt	Clamp set	Wrench	Applicable inserts G126
GFVT$^{R}_{L}$	2020K-351B	●	●	35 (25)	50 (∞)	5.1 (4.6)	20	20	22	21	125	30	SF$^{R}_{L}$-351B	HH4X12	CPS-6V	LW-3	GVF$^{L}_{R}$250 ~ 350-...B
	2525M-351B	●	●				25	25	25	26	150	35					GVF$^{L}_{R}$300-150BR
	2020K-352B	●	●			5.1 (5.1)	20	20	22	21	125	30	SF$^{R}_{L}$-352B				GVF$^{L}_{R}$400 ~ 490-...B
	2525M-352B	●	●				25	25	25	26	150	35					GVF$^{L}_{R}$400-200BR
	2020K-501B	●	●	50 (25)	70 (∞)	5.1 (4.6)	20	20	22	21	125	30	SF$^{R}_{L}$-501B				GVF$^{L}_{R}$250 ~ 350-...B
	2525M-501B	●	●				25	25	25	26	150	35					GVF$^{L}_{R}$300-150BR
	2020K-502B	●	●			5.1 (5.1)	20	20	22	21	125	30	SF$^{R}_{L}$-502B				GVF$^{L}_{R}$400 ~ 490-...B
	2525M-502B	●	●				25	25	25	26	150	35					GVF$^{L}_{R}$400-200BR
	2020K-701B	●	●	70 (25)	100 (∞)	5.1 (4.6)	20	20	22	21	125	30	SF$^{R}_{L}$-701B				GVF$^{L}_{R}$250 ~ 350-...B
	2525M-701B	●	●				25	25	25	26	150	35					GVF$^{L}_{R}$300-150BR
	2020K-702B	●	●			5.1 (5.1)	20	20	22	21	125	30	SF$^{R}_{L}$-702B				GVF$^{L}_{R}$400 ~ 490-...B
	2525M-702B	●	●				25	25	25	26	150	35					GVF$^{L}_{R}$400-200BR
GFVT$^{R}_{L}$	2525M-501C	●	●	50 (25)	70 (∞)	8.1 (*5.1)	25	25	27	26	150	38	SF$^{R}_{L}$-501C	HH4X12	CPS-8V	LW-4	GVF$^{L}_{R}$350 ~ 450-...C
	2525M-502C	●	●			8.1 (8.1)							SF$^{R}_{L}$-502C				GVF$^{L}_{R}$500 ~ 600-...C
	2525M-701C	●	●	70 (25)	100 (∞)	8.1 (*5.1)							SF$^{R}_{L}$-701C				GVF$^{L}_{R}$350 ~ 450-...C
	2525M-702C	●	●			8.1 (8.1)							SF$^{R}_{L}$-702C				GVF$^{L}_{R}$500 ~ 600-...C
	2525M-1001C	●	●	100 (25)	150 (∞)	8.1 (*5.1)							SF$^{R}_{L}$-1001C				GVF$^{L}_{R}$350 ~ 450-...C
	2525M-1002C	●	●			8.1 (8.1)							SF$^{R}_{L}$-1002C				GVF$^{L}_{R}$500 ~ 600-...C
	2525M-1501C	●	●	150 (25)	250 (∞)	8.1 (*5.1)							SF$^{R}_{L}$-1501C				GVF$^{L}_{R}$350 ~ 450-...C
	2525M-1502C	●	●			8.1 (8.1)							SF$^{R}_{L}$-1502C				GVF$^{L}_{R}$500 ~ 600-...C

CDX shows available grooving depth.
The value ( ) of External dia. of the groove (DAXX) is the maximum outer diameter value after the initial groove between DAXN ~ DAXX. (It is possible to widen the groove to infinity ∞).
The value ( ) of External dia. of the groove (DAXN) is the minimum diameter of the boss which remains in the center when widening the groove width to a smaller value after the initial groove between DAXN ~ DAXX.
Standard toolholders are designed with the edge position 1.0 mm above the center. When using non-standard toolholders, set the edge position 1.0 mm above the center.
CDX shows the distance from the toolholder to the cutting edge. The grooving depth is the mentioned in ( ).
GFVT is composed of a base-holder and a blade. If the blade should be damaged, replace it with a new blade as listed in the table on **G131**.
(e.g.) GFVTR2020K-HB + SFR-351B = GFVTR2020K-351B
*GVF$^{L}_{R}$400~450-040C: CDX is 6.6

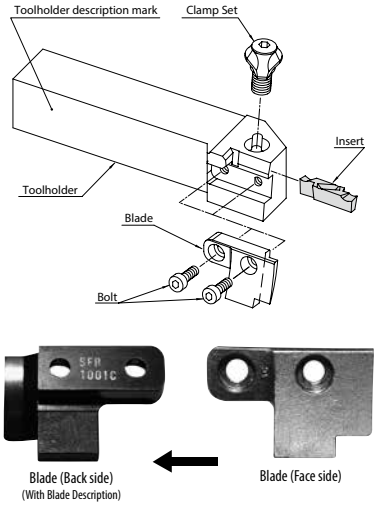
● : Standard item

Selection of Toolholder & Insert

GFVS				GFVT			
Toolholder	Right-hand	Toolholder	Left-hand	Toolholder	Right-hand	Toolholder	Left-hand
Insert	Left-hand	Insert	Right-hand	Insert	Left-hand	Insert	Right-hand



Combination of Base-Holder & Blade

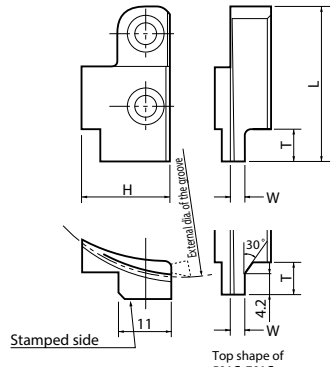
Toolholder Description (Stamped below)	Stock R	Stock L	Blade Description	Toolholder Description (Unit Description)	Example of installation (GFVS)	How to refer to the face grooving toolholder and blade
GFVS$^{R}_{L}$2020K-HB GFVT$^{R}_{L}$2020K-HB	●	●	SF$^{R}_{L}$ -351B	GFVS$^{R}_{L}$2020K -351B GFVT$^{R}_{L}$2020K -352B		Q : Though "GFVSR2525M-HC" is marked on the face grooving toolholder, the size of cutting dia. is unknown. How could it be found out? A : Take off the blade. Description of the blade is listed on the back of the blade. Using the description, check the description of the toolholder in the catalog. If "SFR-1001C" is integrated to "GFVSR2525M-HC", the description of the toolholder is "GVFSR2525M-1001C".
			-352B			
			-501B	-501B		
			-502B	-502B		
			-701B	-701B		
			-702B	-702B		
GFVS$^{R}_{L}$2525M-HB GFVT$^{R}_{L}$2525M-HB	●	●	SF$^{R}_{L}$ -351B	GFVS$^{R}_{L}$2525M -351B GFVT$^{R}_{L}$2525M -352B		
			-352B			
			-501B	-501B		
			-502B	-502B		
			-701B	-701B		
			-702B	-702B		
GFVS$^{R}_{L}$2525M-HC GFVT$^{R}_{L}$2525M-HC	●	●	SF$^{R}_{L}$ -501C	GFVS$^{R}_{L}$2525M -501C GFVT$^{R}_{L}$2525M -502C		
			-502C			
			-701C	-701C		
			-702C	-702C		
			-1001C	-1001C		
			-1002C	-1002C		
			-1501C	-1501C		
			-1502C	-1502C		

· Right-hand Blade for Right-hand Toolholder, Left-hand Blade for Left-hand Toolholder.

· Installation of GFVT is also pursuing example of installation of GFVS.

● : Standard item

Blade Dimensions

Shape	Description	Stock R	Stock L	Dimension (mm) L	H	T	W	External dia. of the groove (mm) DAXN (min.)	DAXX (max.)	Applicable Inserts	Applicable Toolholders
	SF$^{R}_{L}$ -351B	●	●	30.5	11	4.7	2.0	35	50	GVF$^{L}_{R}$250~350-020B GVF$^{L}_{R}$300-150BR	GFV(S/T)$^{R}_{L}$○○○○□ -○○○B (Toolholder Stamp GFV(S/T)$^{R}_{L}$○○○○□-HB)
	-352B	●	●				3.4			GVF$^{L}_{R}$400~490-020B GVF$^{L}_{R}$400-200BR	
	SF$^{R}_{L}$ -501B	●	●		15		2.0	50	70	GVF$^{L}_{R}$250~350-020B GVF$^{L}_{R}$300-150BR	
	-502B	●	●				3.4			GVF$^{L}_{R}$400~490-020B GVF$^{L}_{R}$400-200BR	
	SF$^{R}_{L}$ -701B	●	●		17		2.0	70	100	GVF$^{L}_{R}$250~350-020B GVF$^{L}_{R}$300-150BR	
	-702B	●	●				3.4			GVF$^{L}_{R}$400~490-020B GVF$^{L}_{R}$400-200BR	
	SF$^{R}_{L}$ -501C	●	●	35	15	7.5	2.8	50	70	GVF$^{L}_{R}$350~450-040C	GFV(S/T)$^{R}_{L}$○○○○□ -○○○C (Toolholder Stamp GFV(S/T)$^{R}_{L}$○○○○□-HC)
	-502C	●	●				4.3			GVF$^{L}_{R}$500~600-040C	
	SF$^{R}_{L}$ -701C	●	●		20		2.8	70	100	GVF$^{L}_{R}$350~450-040C	
	-702C	●	●				4.3			GVF$^{L}_{R}$500~600-040C	
	SF$^{R}_{L}$ -1001C	●	●		23		2.8	100	150	GVF$^{L}_{R}$350~450-040C	
	-1002C	●	●				4.3			GVF$^{L}_{R}$500~600-040C	
	SF$^{R}_{L}$ -1501C	●	●		23		2.8	150	250	GVF$^{L}_{R}$350~450-040C	
	-1502C	●	●				4.3			GVF$^{L}_{R}$500~600-040C	

● Right-hand shown

· Right-hand Blade for Right-hand Toolholder, Left-hand Blade for Left-hand Toolholder.

External dia. of the groove of GFVS / GFVT

e.g.) GFVS$^{R}_{L}$...-351B/352B

(same as GFVS$^{R}_{L}$...-○○○B, ...-○○○C ➡ G129

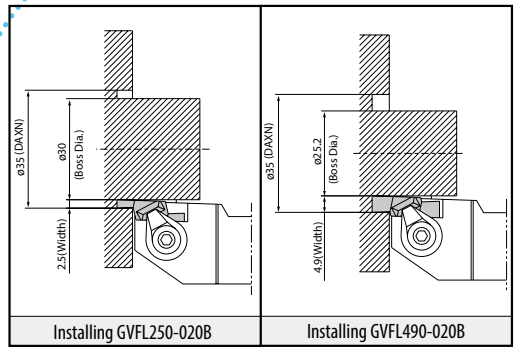
GFVT$^{R}_{L}$...-○○○B, ...-○○○C ➡ G130)

Description	External dia.of the groove (mm) DAXN (min.)	DAXX (max.)	Applicable inserts
GFVS$^{R}_{L}$ 2020K-351B 2525M-351B 2020K-352B 2525M-352B	35 (25)	50 (∞)	GVF$^{L}_{R}$250 ~ 350-...B GVF$^{L}_{R}$300-150BR GVF$^{L}_{R}$400 ~ 490-...B GVF$^{L}_{R}$400-200BR

●It is possible to widen the groove to infinity ∞ when machining the initial groove within DAXN ~ DAXX and then widening to outer diameter.

●When machining the initial groove on the face at DAXN ø35

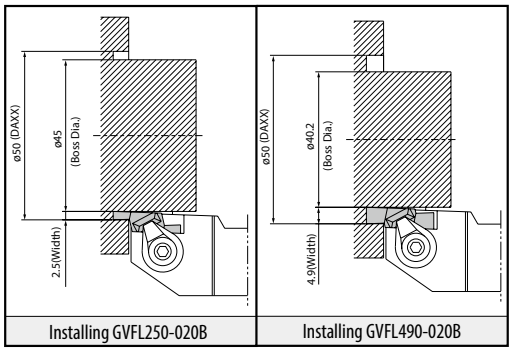
If the initial groove is made smaller than this, the toolholder interferes with the workpiece.Boss Dia. depends on insert width.



Installing GVFL250-020B | Installing GVFL490-020B

●When machining the initial groove on the face at DAXX ø50

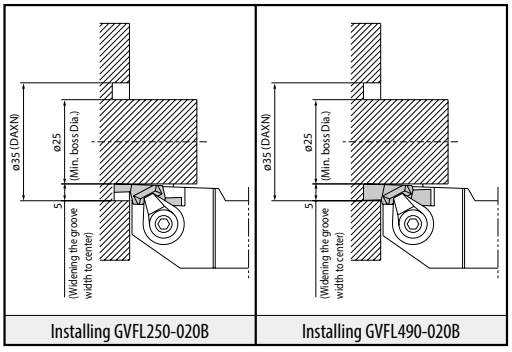
If the initial groove is made larger than this, the toolholder interferes with the workpiece.Boss Dia. depends on insert width.



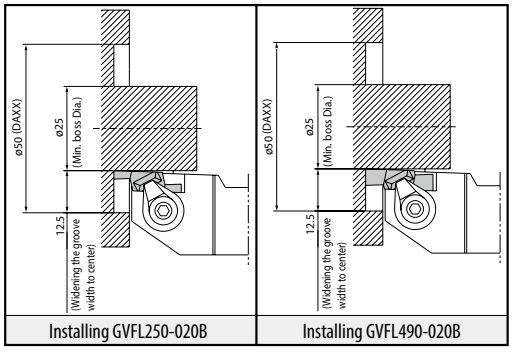
Installing GVFL250-020B | Installing GVFL490-020B

●When widening the groove width to inner diameter

ø25 Boss Dia. is the limitation regardless of insert width, even widening the groove width to the center from the initial groove at DAXN (ø35) or DAXX (ø50). The toolholder interferes with the workpiece when closer to the center.



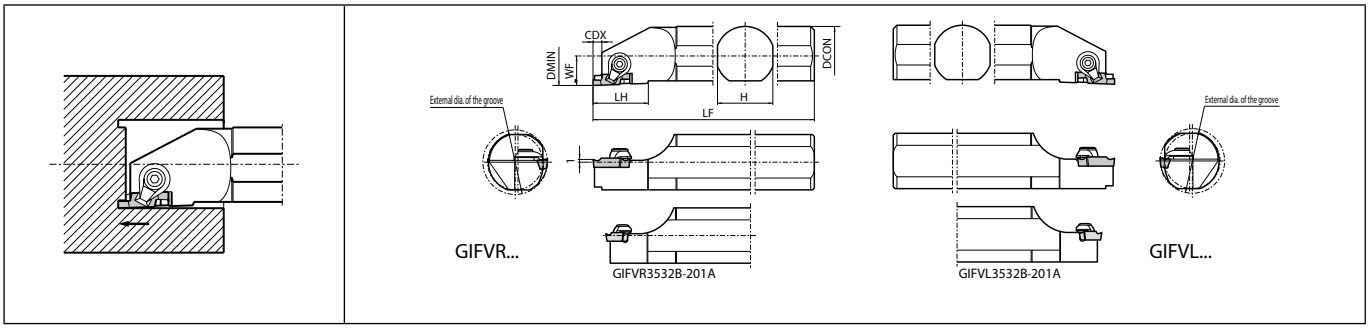
Installing GVFL250-020B | Installing GVFL490-020B



Installing GVFL250-020B | Installing GVFL490-020B

● : Standard item R : Right-hand only L : Left-hand only □ : Check availability

GIFV (Face grooving)



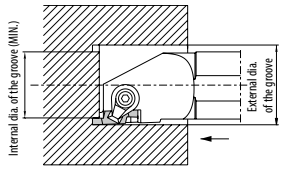
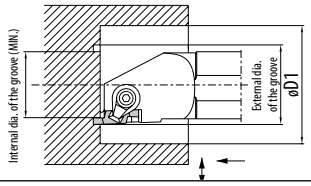
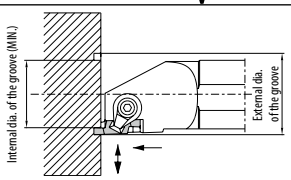
Right-hand Insert for Right-hand Toolholder, Left-hand Insert for Left-hand Toolholder.

Toolholder dimensions

Description		Availability R	Availability L	External dia. of the groove (mm) DAXN (min.)	External dia. of the groove (mm) DAXX (max.)	Dimension (mm) DMIN	DCON	CDX	H	LH	LF	WF	Spare parts Clamp set	Spare parts Clamp set	Spare parts Wrench	Spare parts Wrench	Applicable inserts G126
GIFV$^{R}_{L}$	3532B-201A	●	●	35 (12)	∞ (∞)	35	32	2.2	30	23	250	16	CPS-5V	-	-	FT-15	GVF$^{R}_{L}$...-...A(R)
GIFV$^{R}_{L}$	3532B-351B	●	●	35 (25)	50 (∞)	35	32	4.6	30	30	250	16	-	CPS-6V	LW-3	-	GVF$^{R}_{L}$250 ~ 350-...B(R)
	3532B-352B	●	●					5.1									GVF$^{R}_{L}$400 ~ 490-...B(R)
	5032B-501B	●	●	50 (25)	70 (∞)	50		4.6									GVF$^{R}_{L}$250 ~ 350-...B(R)
	5032B-502B	●						5.1									GVF$^{R}_{L}$400 ~ 490-...B(R)
GIFV$^{R}_{L}$	5032B-501C	●	●	50 (25)	70 (∞)	50	32	6.6	30	35	250	16	-	CPS-8V	LW-4	-	GVF$^{R}_{L}$350 ~ 450-040C
	5032B-502C	●	●					8.1									GVF$^{R}_{L}$500 ~ 600-040C

CDX shows available grooving depth.
Standard toolholders are designed with the edge position 1.0 mm above the center.

External dia. of the groove depends on the application.

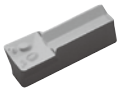
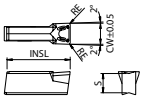
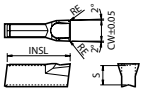
Applications	Description		Internal dia. of the groove (min.)	External dia. of the groove DAXN [min.]	External dia. of the groove DAXX [max.]	External dia. of the groove (max.)	Remarks
	GIFV$^{R}_{L}$	3532B-201A	-	35	∞	∞	-
	GIFV$^{R}_{L}$	3532B-351B			50		
		3532B-352B					
		5032B-501B		50	70		
		5032B-502B					
	GIFV$^{R}_{L}$	5032B-501C					
		5032B-502C					
	GIFV$^{R}_{L}$	3532B-201A	12	35	∞	∞	If øD1 ≥ 58-2CW, the Face Grooving Dia. can be expanded to Internal dia. of the groove (min.) toward the Center. CW = Edge Width If øD1 ≥ 75-2CW, the Face Grooving Dia. can be expanded to Internal dia. of the groove (min.) toward the Center. CW = Edge Width
	GIFV$^{R}_{L}$	3532B-351B	25		50		
		3532B-352B					
		5032B-501B		50	70		
		5032B-502B					
	GIFV$^{R}_{L}$	5032B-501C					
		5032B-502C					
	GIFV$^{R}_{L}$	3532B-201A	12	35	∞	∞	-
	GIFV$^{R}_{L}$	3532B-351B	25		50		
		3532B-352B					
		5032B-501B		50	70		
		5032B-502B					
	GIFV$^{R}_{L}$	5032B-501C					
		5032B-502C					

The value ( ) of External dia. of the groove (max.) is the maximum outer diameter value after the initial groove between DAXN ~ DAXX (It is possible to widen the groove to infinity ∞).
The value ( ) of Internal dia. of the groove (min.) is the minimum diameter of the boss which remains in the center when widening the groove width to a smaller value after the initial groove between DAXN ~ DAXX.

● : Standard item

FMM/FMN

Carbon steel / Alloy steel	P
Stainless steel	M
Cast iron	K
Non-ferrous metals	N
Titanium alloy	S
Hard materials (~ 40HRC)	H
Hard materials (40HRC ~)	

Insert		Description		No. of edges	Dimension (mm)				Tolerance (mm)		Carbide					Cermet	Applicable toolholder ➡ G135,G136
					CW	S	RE	INSL	CW min.	CW max.	CVD	PVD			-	-	
											CR9025	PR905	PR915	PR930	KW10	TN90	
	 Chip control oriented / M class	FMM	30-04	1	3	3.5	0.3	12	-0.05	+0.05	●	●	●	●	●	●	KFMS$^{R}_{L}$...-3
		FMM	40-04	1	4	3.5	0.4	12	-0.05	+0.05	●	●	●	●	●	●	KFMS$^{R}_{L}$...-4
		FMM	50-04	1	5	3.5	0.4	12	-0.05	+0.05	●	●	●	●	●	●	KFMS$^{R}_{L}$...-5
		FMM	60-04	1	6	3.5	0.4	12	-0.05	+0.05	●	●		●	●	●	
	 Sharp cutting oriented / M class	FMN	3	1	3	3.5	0.25	12	-0.05	+0.05	●			●	●	●	KFMS$^{R}_{L}$...-3
		FMN	4	1	4	3.5	0.25	12	-0.05	+0.05	●			●	●	●	KFMS$^{R}_{L}$...-4
		FMN	5	1	5	3.5	0.25	12	-0.05	+0.05	●			●	●	●	KFMS$^{R}_{L}$...-5
		FMN	6	1	6	3.5	0.25	12	-0.05	+0.05	●			●	●		

FMN inserts are only for Deep Grooving and not applicable for Turning.

Recommended cutting conditions

Workpiece material	Recommended insert grades (Vc: m/min)						Face gooving (FMM / FMN)			Turning (FMM)			Remarks
	Cermet	CVD coated carbide	PVD coated carbide			Carbide	Edge width (mm)			Edge width (mm)			
	TN90	CR9025	PR915	PR930	PR905	KW10	3.0	4.0	5.0 / 6.0	3.0	4.0	5.0 / 6.0	
							f (mm/rev)			f (mm/rev)			
Carbon steel	☆ 100~220	☆ 80~200	☆ 80~200	★ 80~200	-	-	0.03~0.05	0.03~0.08	0.05~0.10	0.05~0.10	0.05~0.25	0.10~0.30	Coolant
Alloy steel	☆ 80~200	☆ 70~180	☆ 70~180	★ 70~180	-	-	0.03~0.05	0.03~0.08	0.05~0.10	0.05~0.10	0.05~0.25	0.10~0.30	
Stainless steel	☆ 70~160	☆ 60~150	★ 60~150	☆ 60~150	-	-	0.03~0.05	0.03~0.08	0.05~0.10	0.05~0.10	0.05~0.25	0.10~0.30	
Cast iron	-	-	-	-	★ 80~180	☆ 70~150	0.03~0.05	0.03~0.08	0.05~0.10	0.05~0.10	0.05~0.25	0.10~0.30	
Aluminum alloys	-	-	-	-	-	★ 200~500	0.03~0.05	0.03~0.08	0.05~0.10	0.05~0.10	0.05~0.25	0.10~0.30	
Brass	-	-	-	-	-	★ 100~200	0.03~0.05	0.03~0.08	0.05~0.10	0.05~0.10	0.05~0.25	0.10~0.30	

• Set the feed rate 1/100 of edge width on the first groove and check chip evacuation.
• FMN type Inserts are only for deep grooving, and when used for turning, set to ap = 0.2 mm and under.

★:1st recommendation ☆:2nd recommendation

Refer to the notes below for turning conditions

ap and f of FMM

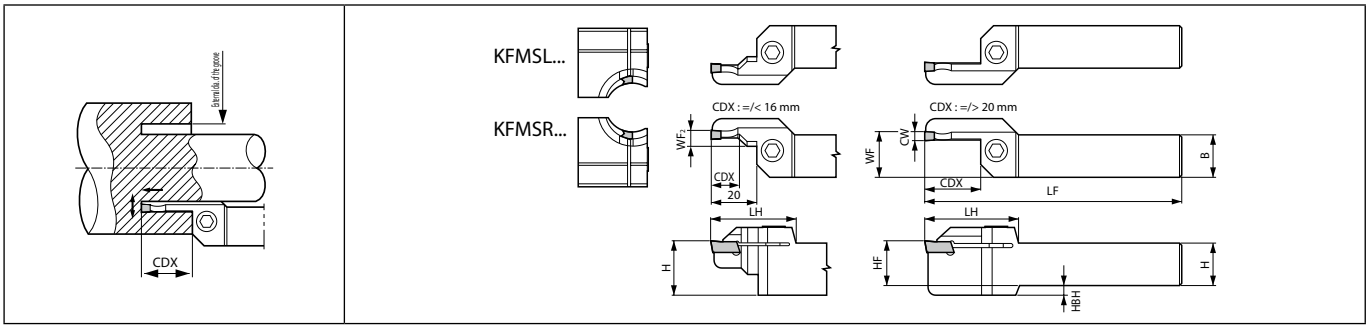
	Recommended cutting conditions	
ap (MAX.) (mm)	under 50% of edge width	ap ≤ 0.5CW
f (MAX.) (mm/rev)	under 3~5% of edge width	f ≤ [0.03(Min.) ~ 0.05(Max.)]cw

ap x f should be as follows.

Load (mm^2) \ Edge Width(mm)	3.0	4.0	5.0	6.0	
ap x f	~0.09	~0.14	~0.25	~0.36	ap x f ≤ $0.01CW^2$

● : Standard item

KFMS (Face grooving)



Toolholder dimensions

Description		Availability R	Availability L	External dia. of the groove (mm) DAXN (min.)	DAXX (max.)	Dimension (mm) CDX	H	B	LH	HF	HBH	LF	WF	WF_2	CW	Spare parts: Clamp bolt	Spare parts: Wrench	Applicable inserts ⇒ G134
KFMS R/L	2020K2530-3	●		25	30	13	20	20	39	20	-	125	20.7	6.1	3	HH5X20	LW-4	FMM30-03 FMN3
	2020K3040-3	●		30	40													
	2020K4050-3	●		40	50													
	2020K5065-3	●		50	65	22			41					-				
	2020K6585-3	●		65	85													
	2020K85110-3	●		85	110	25			44		5							
	2020K110145-3	●		110	145				44									
	2525M2530-3	●	●	25	30	13	25	25	39	25	-	150	25.7	6.1		HH5X25		
	2525M3040-3	●	●	30	40													
	2525M4050-3	●	●	40	50													
	2525M5065-3	●	●	50	65	22			41					-				
	2525M6585-3	●	●	65	85													
	2525M85110-3	●	●	85	110	25			44									
	2525M110145-3	●	●	110	145													
KFMS R/L	2020K2535-4	●		25	35	12	20	20	39	20	-	125	20.7	7.1	4	HH5X20	LW-4	FMM40-04 FMN4
	2020K3550-4	●		35	50	20								-				
	2020K5070-4	●		50	70	25			44		5							
	2020K70100-4	●		70	100													
	2020K100150-4	●		100	150													
	2020K150220-4	●		150	220													
	2020K220800-4	●		220	∞													
	2525M2535-4	●	●	25	35	12	25	25	39	25	-	150	25.7	7.1		HH5X25		
	2525M3550-4	●	●	35	50	20								-				
	2525M5070-4	●	●	50	70	25			44									
	2525M70100-4	●	●	70	100													
	2525M100150-4	●	●	100	150													
	2525M150220-4	●	●	150	220													
	2525M220800-4	●	●	220	∞													

CDX shows available grooving depth.
External dia. of the groove : The diameter range of the initial groove.
KFMS will be switched to KGDF=> **G114 ~ G118**

● : Standard item

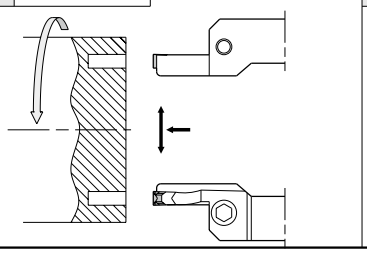
Toolholder dimensions

Description		Availability R	Availability L	External dia. of the groove (mm) DAXN (min.)	DAXX (max.)	Dimension (mm) CDX	H	B	LH	HF	HBH	LF	WF	WF2	CW	Spare parts: Clamp bolt	Spare parts: Wrench	Applicable inserts G134
KFMSR/L	2020K2535-5	●		25	35	20	20	20	39	20	-	125	20.7 (21.2)	-	5 (6)	HH5X20	LW-4	FMM50-04 FMN5 FMM60-04 FMN6
	2020K3550-5	●		35	50													
	2020K5075-5	●		50	75	25			44		5							
	2020K75115-5	●		75	115													
	2020K115180-5	●		115	180													
	2020K180235-5	●		180	235													
	2020K235800-5	●		235	∞													
	2525M2535-5	●	●	25	35	20	25	25	39	25	-	150	25.7 (26.2)			HH5X25		
	2525M3550-5	●	●	35	50													
	2525M5075-5	●	●	50	75	25			44									
	2525M75115-5	●	●	75	115	32			51									
	2525M115180-5	●	●	115	180													
	2525M180235-5	●	●	180	235													
	2525M235800-5	●	●	235	∞													

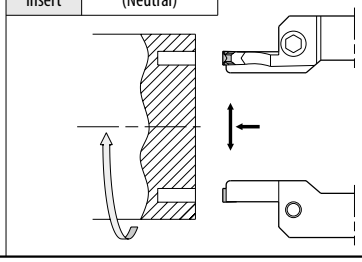
CDX shows available grooving depth.
External dia. of the groove : The diameter range of the initial groove.
For KFMSR/L...-5 toolholder can hold a 6 mm width insert. ( ) value shows the dimension of a 6mm width insert.
KFMS will be switched to KGDF=> **G114 ~ G118**

Selection of Toolholder & Insert

Toolholder	Right-hand
Insert	(Neutral)

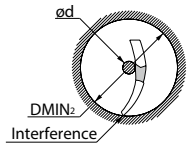


Toolholder	Left-hand
Insert	(Neutral)



Limit of Turning toward Center

Turning towards the Center causes the toolholder to interfere with the groove wall depending on the initial cut's diameter.



Remaining Boss Dia. ød

Description	DMIN2 \ ød (mm)	25	26	27	28 and over
KFMSR/L 2020K2530-3 KFMSR/L 2525M2530-3		4	2	0	0
KFMSR/L 2020K2535-4 KFMSR/L 2525M2535-4		6	3	0	(No remaining Boss)
KFMSR/L 2020K2535-5 KFMSR/L 2525M2535-5		7 *(5)	4 *(2)	1 *(0)	

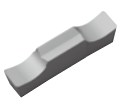
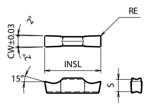
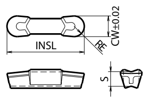
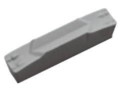
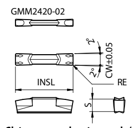
e.g.)
KFMSR 2525M2530-3 with ø25 as first cut towards the center, it will cause a rubbing with the toolholder cartridge if ød is 4.0mm.

*( ) value shows the Dimension using FMM60-04 Insert.

● : Standard item

GMM/GMG/GMGA

Work material	CR9025	PR905	PR915	PR930	KW10	TN90	
Carbon steel / Alloy steel			◌	◉			P
Stainless steel			◉	◌			M
Cast iron		◉			◌		K
Non-ferrous metals					◉		N
Titanium alloy					◉		S
Hard materials (~ 40HRC)			○	●			H
Hard materials (40HRC ~)							H

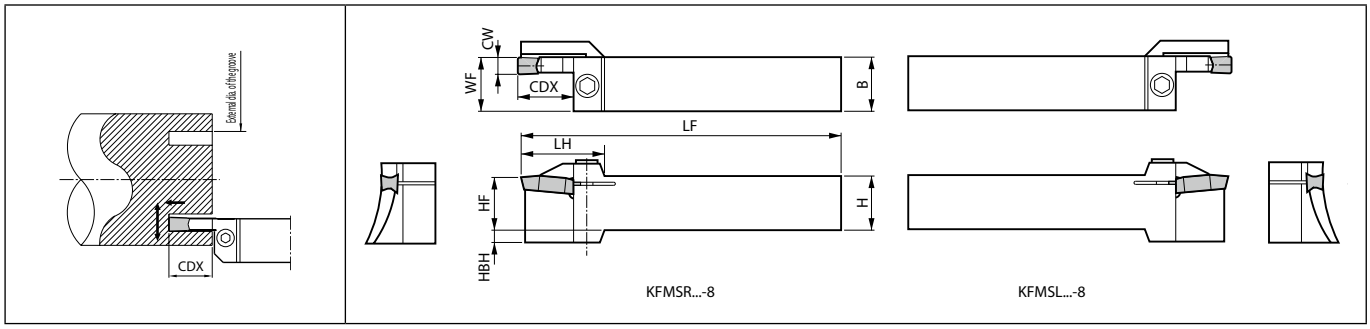
Insert		Description	No. of edges	Dimension (mm) CW	S	RE	INSL	Tolerance (mm) CW min.	CW max.	Carbide CVD CR9025	Carbide PVD PR905	PR915	PR930	Carbide - KW10	Cermet - TN90	Applicable toolholder ➡ G138
	 Sharp cutting oriented / Precision class (ground chipbreaker)	GMG 8030-050MG	2	8	5.5	0.5	30	- 0.03	+ 0.03	○	○		○	○	○	KFMS R/L...-8
	 Full R / Sharp cutting oriented / Precision class	GMGA 8030-400R	2	8	5.5	4	30	- 0.02	+ 0.02					○		KFMS R/L...-8
	 Chip control oriented / M class	GMM 8030-080MW	2	8	5.5	0.8	30	- 0.05	+ 0.05	○	○	○	○	○		KFMS R/L...-8

If using a full-R insert with KFMS-8 toolholder, you need to modify the corner of insert adapter of toolholder.

Recommended cutting conditions ➡ G143

○ : Check availability

KFMS-8 (Face grooving)



Toolholder dimensions

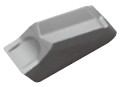
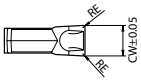
Description		Availability R	Availability L	External dia. of the groove (mm) DAXN (min.)	External dia. of the groove (mm) DAXX (max.)	Dimension (mm) CDX	H	B	LH	HF	HBH	LF	WF	CW	Spare parts: Clamp bolt	Spare parts: Wrench	Applicable inserts G137
KFMS R/L	2525M5464-8	●	●	54 (0)	64 (∞)	25	25	25	41	25	-	150	26	8	HH6X25	LW-5	GMG8030-050MG GMGA8030-400R GMM8030-080MW
	2525M6382-8	●	●	63 (0)	82 (∞)						2.4						
	2525M80115-8	●	●	80 (0)	115 (∞)				40		6						
	2525M105160-8	●	●	105 (0)	160 (∞)												
	2525M155510-8	●	●	155 (0)	510 (∞)				43								
	3232P155510-8	●					32	32		32	-	170	33				

CDX shows available grooving depth.
The value ( ) of External dia. of the groove (DAXX) is the maximum outer diameter value after the initial groove between DAXN ~ DAXX. (It is possible to widen the groove to infinity ∞).
The value ( ) of External dia. of the groove (DAXN) is the minimum diameter of the boss which remains in the center when widening the groove width to a smaller value after the initial groove between DAXN ~ DAXX.

● : Standard item

FTK

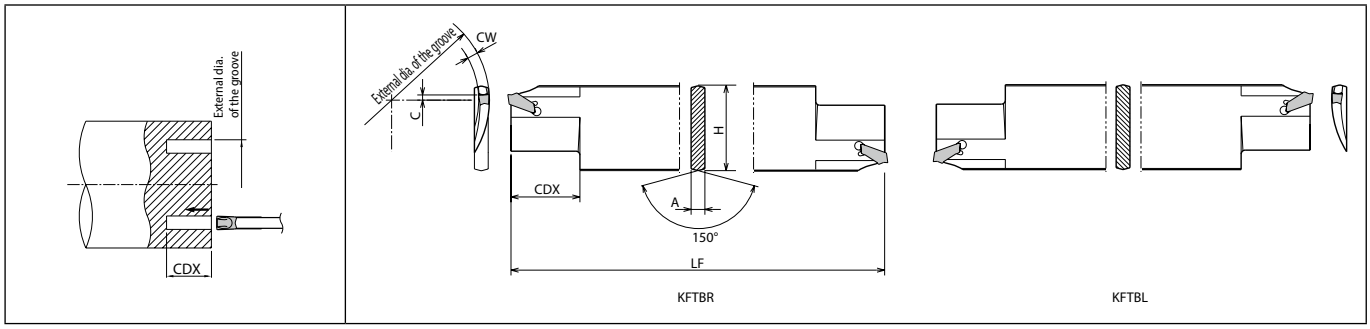
								Carbon steel / Alloy steel		●		P
								Stainless steel		●		M
								Cast iron			●	K
								Non-ferrous metals			●	N
								Titanium alloy			●	S
								Hard materials (~ 40HRC)		○		H
								Hard materials (40HRC ~)				

Insert		Description		No. of edges	Dimension (mm)		Tolerance (mm)		Carbide			Applicable toolholder ➡ G140
					CW	RE	CW min.	CW max.	CVD CR9025	PVD PR930	- KW10	
		FTK 4		1	4	0.25	- 0.05	+ 0.05	●	●	●	KFTB®L...-4S
		FTK 5		1	5	0.25	- 0.05	+ 0.05	●	●	●	KFTB®L...-5S

Recommended cutting conditions ➡ G146

● : Standard item

KFTB (Face grooving blade)



Toolholder dimensions

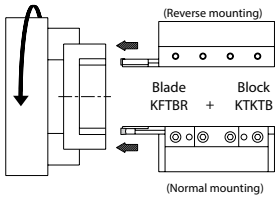
Description		Availability R	Availability L	External dia.of the groove (mm) DAXN (min.)	DAXX (max.)	Dimension (mm) CDX	H	A	C	LF	CW	Applicable inserts G139	Applicable tool block H50, H51
KFTB R/L	65100-4S	●	●	65	100	25	32	5.2	4	150	4	FTK4	KPKTB..-32JCT KTKTB..-32 KTKTBF..-32
	90150-4S	●	●	90	150	30			0				
	150250-4S	●	●	140	250	30							
	250800-4S	●	●	230	∞			3.2					
KFTB R/L	90150-5S	●	●	90	150	30	32	5.2	0	150	5	FTK5	
	150250-5S	●	●	150	250	32							
	250800-5S	●	●	250	∞	38		4					

CDX shows available grooving depth.
External dia. of the groove : The diameter range of the initial groove.
The insert has Self-Clamping system and it is not suitable for tight tolerance grooves (tolerance±0.05mm).
Lightly tap an Insert with a Plastic hammer. (End of insert does not touch toolholder.)
KFTB R/L 65100-4S toolholder is designed with the edge position 4 mm above the Center.
Dimension H shows virtual apex distance.

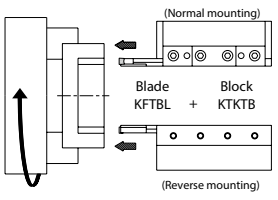
Selection of Blade and Insert

Combination of Blade + KTKTB

Blade	Right-hand
Insert	Neutral

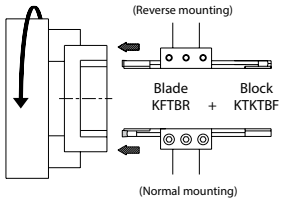


Blade	Left-hand
Insert	Neutral

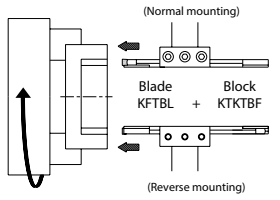


Combination of Blade + KTKTBF

Blade	Right-hand
Insert	Neutral



Blade	Left-hand
Insert	Neutral



● : Standard item

GBA inserts - ground chipbreaker

Workpiece material	Recommended insert grades (Vc: m/min)											(1) f for grooving (mm/rev) (2) f for turning (mm/rev) (3) ap for turning (mm)					Remarks
	MEGACOAT cermet	Cermet			MEGACOAT	MEGACOAT NANO	PVD coated carbide		Carbide	CBN	PCD						
	PV7040	TN620	TC40N	TN90	PR1215	PR1625	PR930	PR905	KW10	KBN510 KBN525	KPD001 (KPD010)	GBA○○R/L 033~120-...	GBA○○R/L 125~225-...	GBA○○R/L 230~325-...	GBA○○R/L 330~350-...	GBA○○R/L 400~480-...	
Carbon steel	☆ 150~240	★ 80~220	☆ 150~220	☆ 150~220	★ 80~200	★ 80~180	☆ 80~180	-	-	-	-	(1) 0.03~0.08 (2) Not recom. (3) Not recom.	(1) 0.04~0.09 (2) 0.04~0.09 (3) Max. 0.3	(1) 0.05~0.1 (2) 0.05~0.1 (3) Max. 0.5	(1) 0.05~0.12 (2) 0.05~0.1 (3) Max. 0.5	(1) 0.05~0.12 (2) 0.05~0.1 (3) Max. 0.8	Coolant
Alloy steel	☆ 130~220	★ 80~200	☆ 130~200	☆ 130~200	★ 80~180	★ 80~160	☆ 80~160	-	-	-	-	(1) 0.03~0.07 (2) Not recom. (3) Not recom.	(1) 0.04~0.08 (2) 0.04~0.08 (3) Max. 0.3	(1) 0.05~0.09 (2) 0.05~0.09 (3) Max. 0.5	(1) 0.05~0.1 (2) 0.05~0.1 (3) Max. 0.5	(1) 0.05~0.1 (2) 0.05~0.1 (3) Max. 0.8	
Stainless steel	-	-	-	☆ 70~150	☆ 60~150	★ 60~130	☆ 60~130	-	-	-	-	(1) 0.03~0.07 (2) Not recom. (3) Not recom.	(1) 0.04~0.08 (2) 0.04~0.08 (3) Max. 0.3	(1) 0.05~0.09 (2) 0.05~0.09 (3) Max. 0.5	(1) 0.05~0.1 (2) 0.05~0.1 (3) Max. 0.5	(1) 0.05~0.1 (2) 0.05~0.1 (3) Max. 0.8	
Cast iron	-	-	-	-	-	-	-	★ 80~180	☆ 60~120	★ 150~400	-	(1) 0.03~0.08 (2) Not recom. (3) Not recom.	(1) 0.04~0.09 (2) 0.04~0.09 (3) Max. 0.3	(1) 0.05~0.1 (2) 0.05~0.1 (3) Max. 0.5	(1) 0.05~0.12 (2) 0.05~0.1 (3) Max. 0.5	(1) 0.05~0.12 (2) 0.05~0.1 (3) Max. 0.8	
Aluminum alloys	-	-	-	-	-	-	-	-	★ 150~400	-	★ 150~2,000	(1) 0.05~0.12 (2) Not recom. (3) Not recom.	(1) 0.05~0.15 (2) 0.05~0.15 (3) Max. 0.5	(1) 0.05~0.15 (2) 0.05~0.15 (3) Max. 0.8	(1) 0.08~0.15 (2) 0.08~0.15 (3) Max. 0.8	(1) 0.08~0.15 (2) 0.08~0.15 (3) Max. 0.8	
Brass	-	-	-	-	-	-	-	-	★ 150~300	-	★ 200~800	(1) 0.05~0.12 (2) Not recom. (3) Not recom.	(1) 0.05~0.15 (2) 0.05~0.15 (3) Max. 0.5	(1) 0.05~0.15 (2) 0.05~0.15 (3) Max. 0.8	(1) 0.08~0.15 (2) 0.08~0.15 (3) Max. 0.8	(1) 0.08~0.15 (2) 0.08~0.15 (3) Max. 0.8	
Hard materials	-	-	-	-	-	-	-	-	-	★ 80~120	-	-	(1) 0.02~0.05 (2) Not recom. (3) Not recom.	(1) 0.03~0.07 (2) 0.01~0.04 (3) Max. 0.1	-	-	

* Above cutting condition is for external grooving. Set both cutting speed and feed 10% lower for internal grooving.

★:1st recommendation ☆:2nd recommendation

GBA inserts - GM chipbreaker

Workpiece material	Recommended insert grades (Vc: m/min)			(1) f for grooving (mm/rev) (2) f for turning (mm/rev) (3) ap for turning (mm)					Remarks
	Cermet	MEGACOAT NANO	MEGACOAT	GBA43R/L 140-010GM	GBA43R/L 150-020GM	GBA43R/L 175-020GM~230-020GM	GBA43R/L 250-030GM~ 350-030GM	GBA43R/L 400-040GM	
	TN620	PR1625	PR1215						
Carbon steel	★ 80~240	★ 80~220	☆ 80~220	(1) 0.03~0.1 (2) 0.03~0.08 (3) Max. 0.2	(1) 0.03~0.12 (2) 0.03~0.08 (3) Max. 0.3	(1) 0.03~0.12 (2) 0.03~0.09 (3) Max. 0.3	(1) 0.04~0.15 (2) 0.05~0.1 (3) Max. 0.5	(1) 0.05~0.15 (2) 0.05~0.1 (3) Max. 0.8	Coolant
Alloy steel	★ 80~220	★ 80~200	☆ 80~200	(1) 0.03~0.1 (2) 0.03~0.08 (3) Max. 0.2	(1) 0.03~0.12 (2) 0.03~0.08 (3) Max. 0.3	(1) 0.03~0.12 (2) 0.03~0.09 (3) Max. 0.3	(1) 0.04~0.15 (2) 0.05~0.1 (3) Max. 0.5	(1) 0.05~0.15 (2) 0.05~0.1 (3) Max. 0.8	
Stainless steel	-	★ 60~150	☆ 60~150	(1) 0.03~0.1 (2) 0.03~0.08 (3) Max. 0.2	(1) 0.03~0.1 (2) 0.03~0.08 (3) Max. 0.3	(1) 0.03~0.1 (2) 0.03~0.09 (3) Max. 0.3	(1) 0.04~0.12 (2) 0.05~0.1 (3) Max. 0.5	(1) 0.04~0.12 (2) 0.05~0.1 (3) Max. 0.8	

* Above cutting condition is for external grooving. Set both cutting speed and feed 20% lower for internal grooving.

★:1st recommendation ☆:2nd recommendation

GBA inserts - MY chipbreaker

Workpiece material	Recommended insert grades (Vc: m/min)	(1) f for grooving (mm/rev) (2) f for turning (mm/rev) (3) ap for turning (mm)					Remarks
	Cermet	GBA43R/L 175-020MY~200-020MY	GBA43R/L 230-020MY~265-030MY	GBA43R/L 300-030MY	GBA43R/L 330-030MY~350-030MY	GBA43R/L 400-040MY	
	TN6020						
Carbon steel	☆ 150~220	(1) 0.03~0.08 (2) 0.03~0.08 (3) Max. 0.3	(1) 0.04~0.09 (2) 0.04~0.09 (3) Max. 0.3	(1) 0.05~0.1 (2) 0.05~0.1 (3) Max. 0.5	(1) 0.05~0.12 (2) 0.05~0.1 (3) Max. 0.5	(1) 0.05~0.12 (2) 0.05~0.1 (3) Max. 0.8	Coolant
Alloy steel	☆ 130~200	(1) 0.03~0.07 (2) 0.03~0.1 (3) Max. 0.3	(1) 0.04~0.08 (2) 0.04~0.08 (3) Max. 0.3	(1) 0.05~0.09 (2) 0.05~0.09 (3) Max. 0.5	(1) 0.05~0.1 (2) 0.05~0.1 (3) Max. 0.5	(1) 0.05~0.1 (2) 0.05~0.1 (3) Max. 0.8	
Stainless steel	☆ 70~150	(1) 0.03~0.07 (2) 0.03~0.1 (3) Max. 0.3	(1) 0.04~0.08 (2) 0.04~0.08 (3) Max. 0.3	(1) 0.05~0.09 (2) 0.05~0.09 (3) Max. 0.5	(1) 0.05~0.1 (2) 0.05~0.1 (3) Max. 0.5	(1) 0.05~0.1 (2) 0.05~0.1 (3) Max. 0.8	

* Above cutting condition is for external grooving. Set both cutting speed and feed 10% lower for internal grooving.

★:1st recommendation ☆:2nd recommendation

GBF

Workpiece material	Recommended insert grades (Vc: m/min)			(1) f for grooving (mm/rev)				Remarks
	MEGACOAT	MEGACOAT NANO	Carbide	(2) f for turning (mm)				
	PR1215	PR1535	GW15	(3) ap for turning (mm)				
				GBF32R/L 025 – 053	GBF32R/L 065 – 095	GBF32R/L 100 – 145	GBF3R/L 150 – 300	
Carbon steel	★ 80~180	☆ 70~160	-	(1) 0.01~0.05	(1) 0.02~0.07	(1) 0.03~0.08	(1) 0.03~0.08	Coolant
				(2) Not recom.	(2) Not recom.	(2) 0.03~0.06	(2) 0.03~0.06	
				(3) Not recom.	(3) Not recom.	(3) Max. 0.2	(3) Max. 0.2	
Alloy steel	★ 80~180	☆ 70~160	-	(1) 0.01~0.04	(1) 0.02~0.06	(1) 0.03~0.07	(1) 0.03~0.07	
				(2) Not recom.	(2) Not recom.	(2) 0.02~0.05	(2) 0.02~0.05	
				(3) Not recom.	(3) Not recom.	(3) Max. 0.2	(3) Max. 0.2	
Stainless steel	☆ 60~130	★ 50~120	-	(1) 0.01~0.04	(1) 0.02~0.06	(1) 0.03~0.07	(1) 0.03~0.07	
				(2) Not recom.	(2) Not recom.	(2) 0.02~0.05	(2) 0.02~0.05	
				(3) Not recom.	(3) Not recom.	(3) Max. 0.2	(3) Max. 0.2	
Cast iron	-	-	★ 60~100	(1) 0.01~0.05	(1) 0.02~0.07	(1) 0.03~0.08	(1) 0.03~0.08	
				(2) Not recom.	(2) Not recom.	(2) 0.03~0.06	(2) 0.03~0.06	
				(3) Not recom.	(3) Not recom.	(3) Max. 0.2	(3) Max. 0.2	
Aluminum	-	-	★ 150~400	(1) 0.01~0.05	(1) 0.02~0.07	(1) 0.03~0.08	(1) 0.03~0.08	
				(2) Not recom.	(2) Not recom.	(2) 0.03~0.06	(2) 0.03~0.06	
				(3) Not recom.	(3) Not recom.	(3) Max. 0.2	(3) Max. 0.2	
Brass	-	-	★ 150~300	(1) 0.01~0.04	(1) 0.02~0.06	(1) 0.03~0.07	(1) 0.03~0.07	
				(2) Not recom.	(2) Not recom.	(2) 0.02~0.05	(2) 0.02~0.05	
				(3) Not recom.	(3) Not recom.	(3) Max. 0.2	(3) Max. 0.2	

★:1st recommendation ☆:2nd recommendation

GBF-000F inserts (RE=0.00)

Workpiece Material	Recommended insert grades (Vc: m/min)			(1) f for grooving (mm/rev)				Remarks
	MEGACOAT	MEGACOAT NANO	Carbide	(2) f for turning (mm)				
	PR1215	PR1535	GW15	(3) ap for turning (mm)				
				GBF32R/L 025 ~ 053 - 000F	GBF32R/L 065 ~ 095 - 000F	GBF32R/L 100 ~ 145 - 000F	GBF32R/L 150 ~ 200 - 000F	
Carbon steel	★ 80 ~ 180	☆ 70 ~ 160	-	(1) 0.005~0.03	(1) 0.01~0.04	(1) 0.01~0.05	(1) 0.01~0.05	Coolant
				(2) Not recom.	(2) Not recom.	(2) 0.01~0.04	(2) 0.01~0.04	
				(3) Not recom.	(3) Not recom.	(3) MAX. 0.2	(3) MAX. 0.2	
Alloy steel	★ 80 ~ 180	☆ 70 ~ 160	-	(1) 0.005~0.025	(1) 0.01~0.03	(1) 0.01~0.04	(1) 0.01~0.04	
				(2) Not recom.	(2) Not recom.	(2) 0.01~0.03	(2) 0.01~0.03	
				(3) Not recom.	(3) Not recom.	(3) MAX. 0.2	(3) MAX. 0.2	
Stainless steel	☆ 60 ~ 130	★ 50 ~ 120	-	(1) 0.005~0.02	(1) 0.01~0.025	(1) 0.01~0.03	(1) 0.01~0.03	
				(2) Not recom.	(2) Not recom.	(2) 0.01~0.025	(2) 0.01~0.025	
				(3) Not recom.	(3) Not recom.	(3) MAX. 0.2	(3) MAX. 0.2	
Cast iron	-	-	★ 60 ~ 100	(1) 0.005~0.03	(1) 0.01~0.04	(1) 0.01~0.05	(1) 0.01~0.05	
				(2) Not recom.	(2) Not recom.	(2) 0.01~0.04	(2) 0.01~0.04	
				(3) Not recom.	(3) Not recom.	(3) MAX. 0.2	(3) MAX. 0.2	
Aluminum	-	-	★ 150 ~ 400	(1) 0.005~0.03	(1) 0.01~0.04	(1) 0.01~0.05	(1) 0.01~0.05	
				(2) Not recom.	(2) Not recom.	(2) 0.01~0.04	(2) 0.01~0.04	
				(3) Not recom.	(3) Not recom.	(3) MAX. 0.2	(3) MAX. 0.2	
Brass	-	-	★ 150 ~ 300	(1) 0.01~0.03	(1) 0.01~0.04	(1) 0.01~0.05	(1) 0.01~0.05	
				(2) Not recom.	(2) Not recom.	(2) 0.01~0.04	(2) 0.01~0.04	
				(3) Not recom.	(3) Not recom.	(3) MAX. 0.2	(3) MAX. 0.2	

★:1st recommendation ☆:2nd recommendation

GBF-GL inserts

Workpiece Material	Recommended insert rades (Vc : m/min)		(1) f for grooving (mm/rev)				Remarks
	MEGACOAT	MEGACOAT NANO	(2) f for turning (mm)				
	PR1215	PR1535	(3) ap for turning (mm)				
			GBF32R075 - 005GL	GBF32R095 - 100-005GL	GBF32R150 - 200-010GL	GBF32R300 - 010GL	
Carbon Steel	★ 80 ~ 180	☆ 70 ~ 160	(1) 0.02~0.07	(1) 0.03~0.08	(1) 0.03~0.08	(1) 0.04~0.1	Coolant
			(2) Not recom.	(2) 0.03~0.06	(2) 0.03~0.06	(2) 0.04~0.08	
			(3) Not recom.	(3) MAX. 0.2	(3) MAX. 0.3	(3) MAX. 0.5	
Alloy Steel	★ 80 ~ 180	☆ 70 ~ 160	(1) 0.02~0.06	(1) 0.03~0.07	(1) 0.03~0.07	(1) 0.04~0.09	
			(2) Not recom.	(2) 0.03~0.06	(2) 0.03~0.06	(2) 0.04~0.08	
			(3) Not recom.	(3) MAX. 0.2	(3) MAX. 0.3	(3) MAX. 0.5	
Stainless Steel	☆ 60 ~ 130	★ 50 ~ 120	(1) 0.02~0.06	(1) 0.03~0.07	(1) 0.03~0.07	(1) 0.04~0.09	
			(2) Not recom.	(2) 0.03~0.06	(2) 0.03~0.06	(2) 0.04~0.08	
			(3) Not recom.	(3) MAX. 0.2	(3) MAX. 0.3	(3) MAX. 0.5	

★:1st recommendation ☆:2nd recommendation

GMG / GMM / GMN / GMGA

Workpiece material	Recommended insert grades (Vc: m/min)						Grooving				Turning				Remarks
	Cermet	CVD coated carbide	PVD coated carbide			Carbide	Edge width (mm)				Edge width (mm)				
	TN90	CR9025	PR915	PR930	PR905	KW10	2.0~3.0	4.0	5.0	6.0 / 8.0	2.0~3.0	4.0	5.0	6.0 / 8.0	
							f (mm/rev)				f (mm/rev)				
Carbon steel	☆ 100~220	☆ 80~200	☆ 80~200	★ 80~200	-	-	0.05~0.15	0.10~0.25	0.15~0.35	0.20~0.35	0.10~0.20	0.15~0.30	0.20~0.40	0.25~0.40	Coolant
Alloy steel	☆ 80~200	☆ 70~180	☆ 70~180	★ 70~180	-	-	0.05~0.15	0.10~0.25	0.15~0.35	0.20~0.35	0.10~0.20	0.15~0.30	0.20~0.40	0.25~0.40	
Stainless steel	☆ 70~160	☆ 60~150	★ 60~150	☆ 60~150	-	-	0.05~0.15	0.10~0.20	0.15~0.35	0.20~0.35	0.10~0.20	0.15~0.25	0.20~0.40	0.25~0.40	
Cast iron	-	-	-	-	★ 100~200	☆ 70~150	0.05~0.20	0.10~0.30	0.15~0.40	0.20~0.40	0.10~0.25	0.15~0.35	0.20~0.45	0.25~0.45	
Aluminum alloys	-	-	-	-	-	★ 200~500	0.05~0.20	0.08~0.25	0.10~0.25	0.12~0.30	0.10~0.20	0.10~0.25	0.10~0.25	0.15~0.30	
Brass	-	-	-	-	-	★ 100~200	0.05~0.15	0.08~0.20	0.10~0.25	0.12~0.30	0.10~0.20	0.10~0.25	0.10~0.25	0.15~0.30	

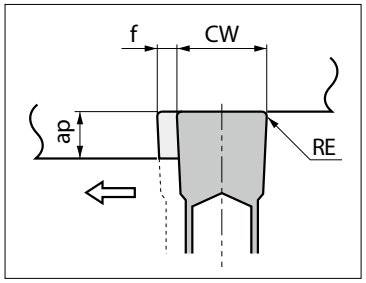
★:1st recommendation ☆:2nd recommendation

Refer to the notes below for turning conditions

1. When using KGM toolholder

	Recommended cutting conditions	
ap (MAX.) (mm)	80% or under of edge width	ap ≤ 0.8CW
f (MAX.) (mm/rev)	10% or under of edge width	f ≤ 0.1CW

(ap) x (f) shall not exceed 1/2 of ap (MAX.) x f (MAX.)



Load(mm²) \ Edge width(mm)	2.0~2.5	3.0	4.0	5.0	6.0	8.0
ap x f	~0.20	~0.36	~0.64	~1.00	~1.44	~2.56

ap x f ≤ $\frac{1}{2}$ x 0.8CW x 0.1CW=0.04CW²

2. When using KGM-T toolholder (Deep grooving type) - use 90% of KGM conditions

3. When using KGMM / KGMS / KFMS-8 Toolholder

	Recommended cutting conditions	
ap (MAX.) (mm)	50% or under of edge width	ap ≤ 0.5CW
f (MAX.) (mm/rev)	4% or under of edge width	f ≤ 0.04CW

(ap) x (f) should be as follows. (50% or under of KGM)

Load(mm²) \ Edge width(mm)	2.0~2.5	3.0	4.0	5.0	6.0	8.0
ap x f	~0.10	~0.18	~0.32	~0.50	~0.72	~1.28

ap x f ≤ 0.02CW²

4. When using KIGM toolholder

	Recommended cutting conditions	
ap (MAX.) (mm)	70% or under of Edge Width	ap ≤ 0.7CW
f (MAX.) (mm/rev)	8% or under of Edge Width	f ≤ 0.08CW

(ap) x (f) should be as follows: 70% or under of KGM

Load(mm²) \ Edge width(mm)	3.0	4.0	5.0
ap x f	~0.25	~0.44	~0.70

ap×f ≤ 0.04CW²

GMG / GMM / GMGA 8030 - face grooving

Workpiece material	Recommended insert grades (Vc: m/min)						Face grooving			Turning			Remarks
	Cermet	CVD coated carbide	PVD coated carbide			Carbide	Edge width (mm)			Edge width (mm)			
	TN90	CR9025	PR915	PR930	PR905	KW10	8.0			8.0			
							f (mm/rev)			f (mm/rev)			
Carbon steel	☆ 100~220	☆ 80~160	☆ 80~160	★ 80~160	-	-	0.1~0.2			0.1~0.25			Coolant
Alloy steel	☆ 80~160	☆ 70~160	☆ 70~160	★ 70~160	-	-	0.1~0.2			0.1~0.25			
Stainless steel	☆ 70~140	☆ 60~130	★ 60~130	☆ 60~130	-	-	0.1~0.2			0.1~0.25			
Cast iron	-	-	-	-	★ 80~180	☆ 70~130	0.1~0.3			0.1~0.35			
Aluminum alloys	-	-	-	-	-	★ 200~300	0.08~0.25			0.08~0.30			
Brass	-	-	-	-	-	★ 100~150	0.08~0.25			0.08~0.30			

★:1st recommendation ☆:2nd recommendation

EZG

Workpiece material	Insert grades (Vc : m/min)		EZGR030030-...S	EZG$^{R}_{L}$040040-... EZG$^{R}_{L}$050050-... EZG$^{R}_{L}$040040-...S EZG$^{R}_{L}$050050-...S	EZG$^{R}_{L}$060060-... EZG$^{R}_{L}$070070-... EZG$^{R}_{L}$080070-... EZG$^{R}_{L}$060060-...S EZG$^{R}_{L}$070070-...S EZG$^{R}_{L}$080070-...S	Remarks
	MEGACOAT	Carbide				
	PR1225	GW05	f (mm/rev)			
Carbon steel / Alloy steel	★ 30~100	-	~0.02	~0.03	~0.05	Coolant
Stainless steel	★ 30~80	-	~0.01	~0.02	~0.03	
Non-ferrous metals	-	★ ~300	-	~0.05	~0.08	

★:1st recommendation

G

Grooving

VNG

Workpiece material	Recommended insert grades (Vc : m/min)			VNG04 VNG05	VNG06 VNG07	Remarks
	MEGACOAT	PVD Coated carbide	Carbide			
	PR1225	PR930	KW10	f (mm/rev)		
Carbon steel / Alloy steel	★ 30~100	☆ 30~100		~0.03	~0.05	Coolant
Stainless steel	★ 30~80	☆ 30~80		~0.02	~0.03	
Non-ferrous metals			★ ~300	~0.05	~0.08	

★:1st recommendation ☆:2nd recommendation

SIGC

Workpiece material	Recommended insert grades (Vc : m/min)		(1) f for grooving (mm/rev)			Remarks
	MEGACOAT NANO PLUS	MEGACOAT NANO	(2) f for turning (mm/rev)			
	PR1725	PR1535	(3) ap for turning (mm)			
			GC08$^{R}_{L}$...	GC10$^{R}_{L}$, GC12$^{R}_{L}$ 100 ~ 200...	GC10$^{R}_{L}$, GC12$^{R}_{L}$ 250 ~ 300...	
Carbon steel	★ 50~80	☆ 50~80	(1) 0.01~0.03	(1) 0.02~0.04	(1) 0.02~0.04	Coolant
			(2) 0.01~0.03	(2) 0.02~0.04	(2) 0.02~0.04	
			(3) Max. 0.05	(3) Max. 0.05	(3) Max. 0.1	
Alloy steel	★ 50~80	☆ 50~80	(1) 0.01~0.03	(1) 0.02~0.04	(1) 0.02~0.04	
			(2) 0.01~0.03	(2) 0.02~0.04	(2) 0.02~0.04	
			(3) Max. 0.05	(3) Max. 0.05	(3) Max. 0.1	
Stainless steel	☆ 50~80	★ 50~80	(1) 0.01~0.03	(1) 0.01~0.03	(1) 0.01~0.03	
			(2) 0.01~0.03	(2) 0.01~0.03	(2) 0.01~0.03	
			(3) Max. 0.05	(3) Max. 0.05	(3) Max. 0.1	

★:1st recommendation ☆:2nd recommendation

Ground chipbreaker: GE$^{R}/_{L}$…A(R), GE$^{R}/_{L}$…B(R)

Workpiece material	Recommended insert grades (Vc : m/min)				(1) f for grooving (mm/rev)			Remarks
	Cermet	MEGACOAT	PVD coated carbide	Carbide	(2) f for turning (mm/rev)			
	TN6020	PR1225	PR1025	KW10	(3) ap for turning (mm)			
					GE$^{R}/_{L}$ 100~200-010A 100~200-100AR	GE$^{R}/_{L}$ 100~200-010B 100~200-100BR	GE$^{R}/_{L}$ 250~300-020B	
Carbon steel	☆ 50~80	★ 50~80	☆ 50~80	-	(1) 0.01~0.03	(1) 0.02~0.04	(1) 0.02~0.04	Coolant
					(2) 0.01~0.03	(2) 0.02~0.04	(2) 0.02~0.04	
					(3) Max. 0.05	(3) Max. 0.05	(3) Max. 0.1	
Alloy steel	☆ 50~80	★ 50~80	☆ 50~80	-	(1) 0.01~0.03	(1) 0.02~0.04	(1) 0.02~0.04	
					(2) 0.01~0.03	(2) 0.02~0.04	(2) 0.02~0.04	
					(3) Max. 0.05	(3) Max. 0.05	(3) Max. 0.1	
Stainless steel	-	★ 50~80	☆ 50~80	-	(1) 0.01~0.03	(1) 0.01~0.03	(1) 0.01~0.03	
					(2) 0.01~0.03	(2) 0.01~0.03	(2) 0.01~0.03	
					(3) Max. 0.05	(3) Max. 0.05	(3) Max. 0.1	
Cast iron	-	-	-	★ 50~80	(1) 0.01~0.03	(1) 0.02~0.04	(1) 0.02~0.04	
					(2) 0.01~0.03	(2) 0.02~0.04	(2) 0.02~0.04	
					(3) Max. 0.05	(3) Max. 0.05	(3) Max. 0.1	
Aluminum	-	-	-	★ 50~100	(1) 0.01~0.03	(1) 0.02~0.04	(1) 0.02~0.04	
					(2) 0.01~0.03	(2) 0.02~0.04	(2) 0.02~0.04	
					(3) Max. 0.1	(3) Max. 0.1	(3) Max. 0.2	
Brass	-	-	-	★ 50~100	(1) 0.01~0.03	(1) 0.02~0.04	(1) 0.02~0.04	
					(2) 0.01~0.03	(2) 0.02~0.04	(2) 0.02~0.04	
					(3) Max. 0.1	(3) Max. 0.1	(3) Max. 0.2	

* Use PVD coated grade or carbide for turning with edge width 1mm. (GE$^{R}/_{L}$100-005A / 100-005B) ★:1st recommendation ☆:2nd recommendation

Ground chipbreaker: GE$^{R}/_{L}$…C(R), GE$^{R}/_{L}$…D(R), GE$^{R}/_{L}$…E

Workpiece material	Recommended insert grades (Vc : m/min)				(1) f for grooving (mm/rev)						Remarks
	Cermet	MEGACOAT	PVD coated carbide	Carbide	(2) f for turning (mm/rev)						
	TN6020	PR1225	PR1025	GW15	(3) ap for turning (mm)						
					GE$^{R}/_{L}$ 100~200-010C 200-100CR	GE$^{R}/_{L}$ 250~350-020C 250~300-150CR					
					GE$^{R}/_{L}$ 100~145-010D	GE$^{R}/_{L}$ 150~195-010D	GE$^{R}/_{L}$ 200~280-020D 200-100DR		GE$^{R}/_{L}$ 300~400-020D 300-150DR		
					GE$^{R}/_{L}$ 100-010E	GE$^{R}/_{L}$ 150~195-010E	GE$^{R}/_{L}$ 200~225-010E 230-020E	GE$^{R}/_{L}$ 250~330-020E		GE$^{R}/_{L}$ 350~430-020E	GE$^{R}/_{L}$ 450~500-020E
Carbon steel	☆ 120~180	★ 60~140	☆ 60~140	-	(1) 0.03~0.08	(1) 0.03~0.08	(1) 0.04~0.09	(1) 0.04~0.09	(1) 0.05~0.12	(1) 0.05~0.12	(1) 0.05~0.12
					(2) 0.03~0.08	(2) 0.03~0.08	(2) 0.04~0.09	(2) 0.04~0.09	(2) 0.05~0.1	(2) 0.05~0.1	(2) 0.05~0.1
					(3) Max. 0.3	(3) Max. 0.3	(3) Max. 0.3	(3) Max. 0.3	(3) Max. 0.5	(3) Max. 0.5	(3) Max. 0.5
Alloy steel	☆ 100~160	★ 60~120	☆ 60~120	-	(1) 0.03~0.07	(1) 0.03~0.07	(1) 0.04~0.08	(1) 0.04~0.08	(1) 0.05~0.1	(1) 0.05~0.1	(1) 0.05~0.1
					(2) 0.03~0.1	(2) 0.03~0.1	(2) 0.04~0.08	(2) 0.04~0.08	(2) 0.05~0.1	(2) 0.05~0.1	(2) 0.05~0.1
					(3) Max. 0.3	(3) Max. 0.3	(3) Max. 0.3	(3) Max. 0.3	(3) Max. 0.5	(3) Max. 0.5	(3) Max. 0.5
Stainless steel	☆ 70~130	★ 60~110	☆ 60~110	-	(1) 0.03~0.07	(1) 0.03~0.07	(1) 0.04~0.08	(1) 0.04~0.08	(1) 0.05~0.1	(1) 0.05~0.1	(1) 0.05~0.1
					(2) 0.03~0.1	(2) 0.03~0.1	(2) 0.04~0.08	(2) 0.04~0.08	(2) 0.05~0.1	(2) 0.05~0.1	(2) 0.05~0.1
					(3) Max. 0.3	(3) Max. 0.3	(3) Max. 0.3	(3) Max. 0.3	(3) Max. 0.5	(3) Max. 0.5	(3) Max. 0.5
Cast iron	-	-	-	★ 60~100	(1) 0.03~0.08	(1) 0.03~0.08	(1) 0.04~0.09	(1) 0.04~0.09	(1) 0.05~0.12	(1) 0.05~0.12	(1) 0.05~0.12
					(2) 0.03~0.08	(2) 0.03~0.08	(2) 0.04~0.09	(2) 0.04~0.09	(2) 0.05~0.1	(2) 0.05~0.1	(2) 0.05~0.1
					(3) Max. 0.3	(3) Max. 0.3	(3) Max. 0.3	(3) Max. 0.3	(3) Max. 0.5	(3) Max. 0.5	(3) Max. 0.5
Aluminum	-	-	-	★ 150~300	(1) 0.05~0.12	(1) 0.05~0.12	(1) 0.05~0.15	(1) 0.05~0.15	(1) 0.08~0.15	(1) 0.08~0.15	(1) 0.08~0.15
					(2) 0.05~0.12	(2) 0.05~0.12	(2) 0.05~0.15	(2) 0.05~0.15	(2) 0.08~0.15	(2) 0.08~0.15	(2) 0.08~0.15
					(3) Max. 0.5	(3) Max. 0.5	(3) Max. 0.5	(3) Max. 0.5	(3) Max. 0.8	(3) Max. 0.8	(3) Max. 0.8
Brass	-	-	-	★ 100~250	(1) 0.05~0.12	(1) 0.05~0.12	(1) 0.05~0.15	(1) 0.05~0.15	(1) 0.08~0.15	(1) 0.08~0.15	(1) 0.08~0.15
					(2) 0.05~0.12	(2) 0.05~0.12	(2) 0.05~0.15	(2) 0.05~0.15	(2) 0.08~0.15	(2) 0.08~0.15	(2) 0.08~0.15
					(3) Max. 0.5	(3) Max. 0.5	(3) Max. 0.5	(3) Max. 0.5	(3) Max. 0.8	(3) Max. 0.8	(3) Max. 0.8

* Use PVD coated grade or carbide for turning with edge width 1mm. (GE$^{R}/_{L}$ 100-010C / 100-010D / 100-010E) ★:1st recommendation ☆:2nd recommendation

Molded chipbreakers: GER…CM, GER…DM, GER…EM

Workpiece material	Recommended insert grades (Vc : m/min)				(1) f for grooving (mm/rev)						Remarks
	Cermet	MEGACOAT	PVD coated carbide	Carbide	(2) f for turning (mm/rev)						
	TN6020	PR1225	PR1025	GW15	(3) ap for turning (mm)						
					GER 150~200-010CM	GER 250~350-020CM					
					GER 150~200-010DM		GER 230~250-020DM	GER 300~400-020DM			
					GER 150~200-010EM			GER 250~300-020EM	GER 350~400-020EM	GER 450~500-020EM	
Carbon steel	-	★ 60~160	☆ 60~160	-	(1) 0.03~0.1	(1) 0.03~0.12	(1) 0.04~0.12	(1) 0.05~0.12	(1) 0.05~0.12	(1) 0.05~0.12	Coolant
					(2) 0.03~0.1	(2) 0.03~0.1	(2) 0.04~0.1	(2) 0.05~0.1	(2) 0.05~0.1	(2) 0.05~0.1	
					(3) Max.1.0	(3) Max.1.5	(3) Max.1.5	(3) Max.1.5	(3) Max.1.5	(3) Max.1.5	
Alloy steel	-	★ 60~140	☆ 60~140	-	(1) 0.03~0.1	(1) 0.03~0.1	(1) 0.04~0.12	(1) 0.05~0.12	(1) 0.05~0.12	(1) 0.05~0.12	
					(2) 0.03~0.1	(2) 0.03~0.1	(2) 0.04~0.1	(2) 0.05~0.1	(2) 0.05~0.1	(2) 0.05~0.1	
					(3) Max.1.0	(3) Max.1.5	(3) Max.1.5	(3) Max.1.5	(3) Max.1.5	(3) Max.1.5	
Stainless steel	-	★ 60~110	☆ 60~110	-	(1) 0.03~0.08	(1) 0.03~0.08	(1) 0.04~0.08	(1) 0.05~0.1	(1) 0.05~0.1	(1) 0.05~0.1	
					(2) 0.03~0.1	(2) 0.03~0.1	(2) 0.04~0.1	(2) 0.05~0.1	(2) 0.05~0.1	(2) 0.05~0.1	
					(3) Max.1.0	(3) Max.1.5	(3) Max.1.5	(3) Max.1.5	(3) Max.1.5	(3) Max.1.5	

★: 1st recommendation ☆: 2nd recommendation

GV Inserts - ground chipbreaker

Workpiece material	Recommended insert grades (Vc: m/min)						f (mm/rev) = (1) grooving, (2) turning ap (mm) = (3) turning							Remarks
	Cermet			MEGA COAT	PVD coated carbide	Carbide	GV$^{R}_{L}$ 100~300-...SS 100~300-...S	GV$^{R}_{L}$ 145~185-...B	GV$^{R}_{L}$ 200~280-...B	GV$^{R}_{L}$ 300~400-...B				
	TN90	TC40N	TC60M	PR1225	PR930	KW10	GV$^{R}_{L}$ 100~340-...A 200~300-...AR		GV$^{R}_{L}$ 200-100BR	GV$^{R}_{L}$ 300-150BR	GV$^{R}_{L}$ 280~300-...C	GV$^{R}_{L}$ 340~400-...C	GV$^{R}_{L}$ 430~500-...C	
Carbon steel	☆ 120~180	☆ 120~180	☆ 80~120	★ 80~160	☆ 80~140	-	(1) 0.03~0.08 (2) 0.03~0.08 (3) Max. 0.3	(1) 0.03~0.08 (2) 0.03~0.08 (3) Max. 0.3	(1) 0.04~0.09 (2) 0.04~0.09 (3) Max. 0.3	(1) 0.05~0.12 (2) 0.05~0.1 (3) Max. 0.5	(1) 0.04~0.09 (2) 0.04~0.09 (3) Max. 0.3	(1) 0.05~0.12 (2) 0.05~0.1 (3) Max. 0.5	(1) 0.05~0.12 (2) 0.05~0.1 (3) Max. 0.5	Coolant
Alloy steel	☆ 100~160	☆ 100~160	☆ 80~100	★ 80~140	☆ 80~120	-	(1) 0.03~0.07 (2) 0.03~0.1 (3) Max. 0.3	(1) 0.03~0.07 (2) 0.03~0.1 (3) Max. 0.3	(1) 0.04~0.08 (2) 0.04~0.08 (3) Max. 0.3	(1) 0.05~0.1 (2) 0.05~0.1 (3) Max. 0.5	(1) 0.04~0.08 (2) 0.04~0.08 (3) Max. 0.3	(1) 0.05~0.1 (2) 0.05~0.1 (3) Max. 0.5	(1) 0.05~0.1 (2) 0.05~0.1 (3) Max. 0.5	
Stainless steel	☆ 70~130	-	☆ 60~100	★ 60~130	☆ 60~110	-	(1) 0.03~0.07 (2) 0.03~0.1 (3) Max. 0.3	(1) 0.03~0.07 (2) 0.03~0.1 (3) Max. 0.3	(1) 0.04~0.08 (2) 0.04~0.08 (3) Max. 0.3	(1) 0.05~0.1 (2) 0.05~0.1 (3) Max. 0.5	(1) 0.04~0.08 (2) 0.04~0.08 (3) Max. 0.3	(1) 0.05~0.1 (2) 0.05~0.1 (3) Max. 0.5	(1) 0.05~0.1 (2) 0.05~0.1 (3) Max. 0.5	
Cast iron	-	-	-	-	-	★ 60~100	(1) 0.03~0.08 (2) 0.03~0.08 (3) Max. 0.3	(1) 0.03~0.08 (2) 0.03~0.08 (3) Max. 0.3	(1) 0.04~0.09 (2) 0.04~0.09 (3) Max. 0.3	(1) 0.05~0.12 (2) 0.05~0.1 (3) Max. 0.5	(1) 0.04~0.09 (2) 0.04~0.09 (3) Max. 0.3	(1) 0.05~0.12 (2) 0.05~0.1 (3) Max. 0.5	(1) 0.05~0.12 (2) 0.05~0.1 (3) Max. 0.5	
Aluminum alloys	-	-	-	-	-	★ 150~300	(1) 0.05~0.12 (2) 0.05~0.12 (3) Max. 0.5	(1) 0.05~0.12 (2) 0.05~0.12 (3) Max. 0.5	(1) 0.05~0.15 (2) 0.05~0.15 (3) Max. 0.5	(1) 0.08~0.15 (2) 0.08~0.15 (3) Max. 0.8	(1) 0.05~0.15 (2) 0.05~0.15 (3) Max. 0.5	(1) 0.08~0.15 (2) 0.08~0.15 (3) Max. 0.8	(1) 0.08~0.15 (2) 0.08~0.15 (3) Max. 0.8	
Brass	-	-	-	-	-	★ 100~250	(1) 0.05~0.12 (2) 0.05~0.12 (3) Max. 0.5	(1) 0.05~0.12 (2) 0.05~0.12 (3) Max. 0.5	(1) 0.05~0.15 (2) 0.05~0.15 (3) Max. 0.5	(1) 0.08~0.15 (2) 0.08~0.15 (3) Max. 0.8	(1) 0.05~0.15 (2) 0.05~0.15 (3) Max. 0.5	(1) 0.08~0.15 (2) 0.08~0.15 (3) Max. 0.8	(1) 0.08~0.15 (2) 0.08~0.15 (3) Max. 0.8	

* Use MEGACOAT, PVD coated carbide or carbide for turning with edge width 1mm (GV$^{R}_{L}$100SS / 100S / 100A)

★:1st recommendation ☆:2nd recommendation

GVF Inserts - ground chipbreaker

Workpiece material	Recommended insert grades (Vc: m/min)						f (mm/rev) = (1) grooving, (2) turning ap (mm) = (3) turning					Remarks
	Cermet			MEGACOAT	PVD coated carbide	Carbide	GVF$^{R}_{L}$ 200~340...A	GVF$^{R}_{L}$ 250~350...B	GVF$^{R}_{L}$ 400~490...B	GVF$^{R}_{L}$ 350~450...C	GVF$^{R}_{L}$ 500~600...C	
	TN90	TC40N	TC60M	PR1225	PR930	KW10	GVF$^{R}_{L}$ 200-100AR ~300-150AR	GVF$^{R}_{L}$ 300-150BR	GVF$^{R}_{L}$ 400-200BR			
Carbon steel	☆ 150~220	☆ 150~220	☆ 100~150	★ 80~200	☆ 80~180	-	(1) 0.03~0.08 (2) 0.03~0.08 (3) Max. 0.3	(1) 0.04~0.09 (2) 0.04~0.09 (3) Max. 0.3	(1) 0.05~0.1 (2) 0.05~0.1 (3) Max. 0.5	(1) 0.05~0.12 (2) 0.05~0.1 (3) Max. 0.5	(1) 0.05~0.12 (2) 0.05~0.1 (3) Max. 0.8	Coolant
Alloy steel	☆ 130~200	☆ 130~200	☆ 80~130	★ 80~180	☆ 80~160	-	(1) 0.03~0.07 (2) 0.03~0.1 (3) Max. 0.3	(1) 0.04~0.08 (2) 0.04~0.08 (3) Max. 0.3	(1) 0.05~0.09 (2) 0.05~0.09 (3) Max. 0.5	(1) 0.05~0.1 (2) 0.05~0.1 (3) Max. 0.5	(1) 0.05~0.1 (2) 0.05~0.1 (3) Max. 0.8	
Stainless steel	☆ 70~150	-	☆ 60~100	★ 80~150	☆ 60~130	-	(1) 0.03~0.07 (2) 0.03~0.1 (3) Max. 0.3	(1) 0.04~0.08 (2) 0.04~0.08 (3) Max. 0.3	(1) 0.05~0.09 (2) 0.05~0.09 (3) Max. 0.5	(1) 0.05~0.1 (2) 0.05~0.1 (3) Max. 0.5	(1) 0.05~0.1 (2) 0.05~0.1 (3) Max. 0.8	
Cast iron	-	-	-	-	-	★ 60~100	(1) 0.03~0.08 (2) 0.03~0.08 (3) Max. 0.3	(1) 0.04~0.09 (2) 0.04~0.09 (3) Max. 0.3	(1) 0.05~0.1 (2) 0.05~0.1 (3) Max. 0.5	(1) 0.05~0.12 (2) 0.05~0.1 (3) Max. 0.5	(1) 0.05~0.12 (2) 0.05~0.1 (3) Max. 0.8	
Aluminum alloys	-	-	-	-	-	★ 150~400	(1) 0.05~0.12 (2) 0.05~0.12 (3) Max. 0.5	(1) 0.05~0.15 (2) 0.05~0.15 (3) Max. 0.5	(1) 0.05~0.15 (2) 0.05~0.15 (3) Max. 0.8	(1) 0.08~0.15 (2) 0.08~0.15 (3) Max. 0.8	(1) 0.08~0.15 (2) 0.08~0.15 (3) Max. 0.8	
Brass	-	-	-	-	-	★ 150~300	(1) 0.05~0.12 (2) 0.05~0.12 (3) Max. 0.5	(1) 0.05~0.15 (2) 0.05~0.15 (3) Max. 0.5	(1) 0.05~0.15 (2) 0.05~0.15 (3) Max. 0.8	(1) 0.08~0.15 (2) 0.08~0.15 (3) Max. 0.8	(1) 0.08~0.15 (2) 0.08~0.15 (3) Max. 0.8	

Apply a sufficient amount of coolant

The ap should be under 0.5 mm if a good surface finish is required

★:1st recommendation ☆:2nd recommendation

FTK

Workpiece material	Recommended insert grades (Vc: m/min)				Edge width (mm)		Remarks
	Cermet	CVD coated carbide	PVD coated carbide	Carbide	4.0	5.0	
	TN90	CR9025	PR930	KW10	f (mm/rev)		
Carbon steel	☆ 120~200	★ 80~180	☆ 60~130	-	0.05~0.15	0.05~0.15	Coolant
Alloy steel	☆ 100~160	★ 70~150	☆ 60~130	-	0.05~0.15	0.05~0.15	
Stainless steel	☆ 80~150	☆ 60~140	☆ 50~120	-	0.05~0.15	0.05~0.15	
Cast iron	-	-	-	★ 50~100	0.10~0.30	0.10~0.30	
Aluminum alloys	-	-	-	★ 200~450	0.05~0.25	0.05~0.25	
Brass	-	-	-	★ 100~200	0.05~0.25	0.05~0.25	

★:1st recommendation ☆:2nd recommendation

GMN inserts (CBN / PCD)

Workpiece material	Recommended insert grades (Vc: m/min)		f (mm/rev) = (1) grooving, (2) turning ap (mm) = (3) turning				Remarks
	CBN	PCD					
	KBN510, KBN525	KPD001 (KPD010)	GMN2	GMN3	GMN4, GMN5	GMN6	
Aluminum alloys	-	★ 150~2,000	(1) 0.05~0.15 (2) 0.05~0.15 (3) Max. 0.5	(1) 0.05~0.15 (2) 0.05~0.15 (3) Max. 0.8	(1) 0.08~0.18 (2) 0.08~0.18 (3) Max. 0.8	(1) 0.10~0.20 (2) 0.10~0.20 (3) Max. 0.8	Coolant
Brass	-	★ 200~800	(1) 0.05~0.15 (2) 0.05~0.15 (3) Max. 0.5	(1) 0.05~0.15 (2) 0.05~0.15 (3) Max. 0.8	(1) 0.08~0.18 (2) 0.08~0.18 (3) Max. 0.8	(1) 0.10~0.20 (2) 0.10~0.20 (3) Max. 0.8	
Cast iron	★ 150~400	-	(1) 0.04~0.09 (2) 0.04~0.09 (3) Max. 0.3	(1) 0.05~0.1 (2) 0.05~0.1 (3) Max. 0.5	(1) 0.05~0.12 (2) 0.05~0.12 (3) Max. 0.5	(1) 0.05~0.15 (2) 0.05~0.15 (3) Max. 0.8	
Hard materials	★ 80~120	-	(1) 0.02~0.05 (2) 0.01~0.03 (3) Max. 0.1	(1) 0.03~0.07 (2) 0.01~0.05 (3) Max. 0.2	(1) 0.03~0.08 (2) 0.03~0.08 (3) Max. 0.3	(1) 0.05~0.1 (2) 0.05~0.1 (3) Max. 0.4	

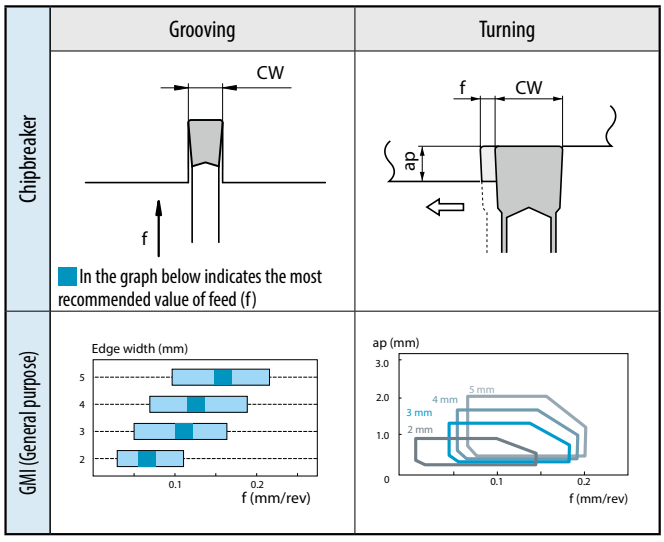
★:1st recommendation

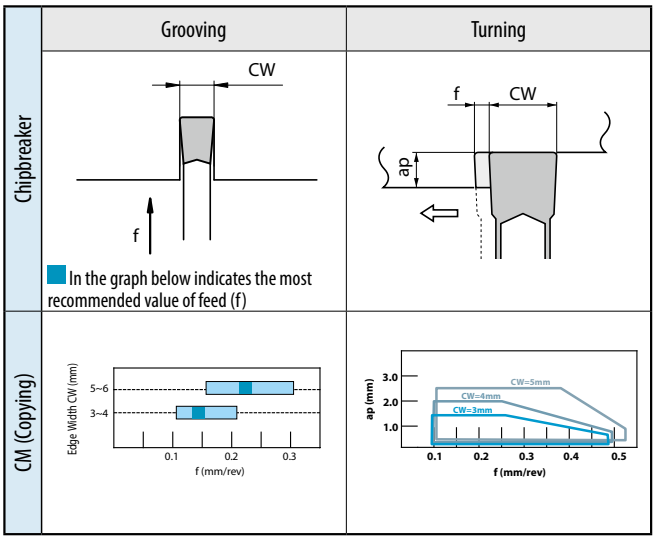
KGDI - recommended cutting conditions (Vc)

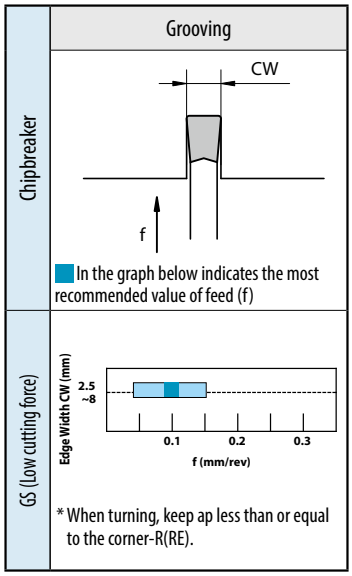
Workpiece material	Chipbreaker	Recommended insert grades (Vc: m/min)						Remarks
		Cermet		MEGACOAT NANO	MEGACOAT		Carbide	
		TN620	TN90	PR1535	PR1225	PR1215	GW15	
Carbon steel	GMI CM GS	☆ 100~220	☆ 100~220	☆ 80~150	★ 80~200	☆ 100~200	-	Coolant
Alloy steel		☆ 80~200	☆ 80~200	☆ 70~150	★ 70~180	☆ 80~180	-	
Stainless steel		☆ 70~180	☆ 70~180	★ 60~150	☆ 60~150	☆ 60~150	-	
Cast iron		-	-	-	-	★ 100~200	-	
Aluminum alloys		-	-	-	-	-	★ 200~500	
Brass		-	-	-	-	-	★ 100~200	

★ : 1st recommendation ☆: 2nd recommendation

KGDI - recommended cutting conditions (f and ap)

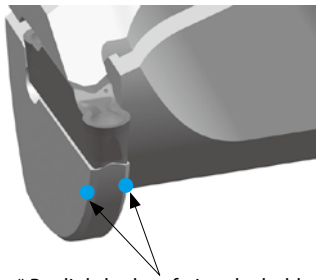






* When turning, keep ap less than or equal to the corner-R(RE).

Additional processing of toolholder tip when CM chipbreaker is installed



* By slightly chamfering the holder tip of about 0.5 mm, the cutting diameter can be minimized.

Guide for External Grooving

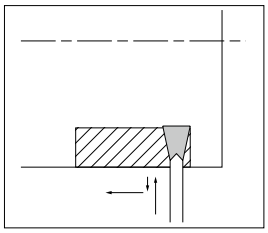
Point (I) (Turning after Grooving)

1) Grooving Depth 0.5mm or over : For roughing (Refer to Fig. 1)

Before turning, pull the tool back about 0.1mm after grooving, instead of turning subsequent to grooving.
(Failure to pull the tool back before traverse machining will result in an unbalanced load applied on only one side of the cutting edge.)

2) Grooving Depth 0.5mm or under : For finishing (Refer to Fig. 2)

Turning subsequent to grooving is possible because shallow groove depths relate a small load on the cutting edge. (Retention time is not necessary.)

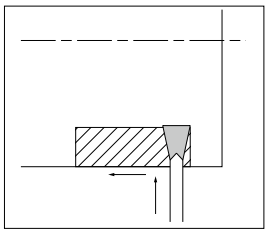


Before turning, pull the tool back about 0.1mm after grooving.
(Grooving Depth 0.5mm or over at roughing)
Fig. 1

Point (II)

1) When widening the groove width (Refer to Fig. 3), apply the "Step Turning."
2) The widened groove and side walls should be finished last.
(For better chip control, ap 0.5mm or over is recommended.)

Note) If the workpiece is not supported at the center, reduce the feed rate when grooving towards center.



Turning subsequent to grooving
(Grooving Depth 0.5mm or under at finishing)
Fig. 2

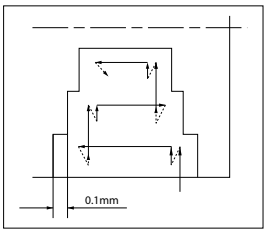


Fig. 3

Guide for Face Grooving

<Toolholder Selection>

(1) Choose the best tool depending on the groove width.
External dia. of the groove listed in the catalog indicates the available range (between DAXN and DAXX) for the initial grooving on the unprocessed workpiece (Ref. to Fig. 1).

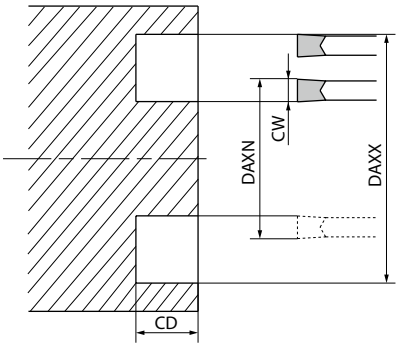


Fig. 1

(2) Confirm Grooving Depth (CD)

(3) It is recommended to install the toolholder in the reverse position. (Fig. 2)
(This will provide smooth chip flow and chip clearance.)

Toolholder	Right-hand	Toolholder	Left-hand
Insert	(Neutral)	Insert	(Neutral)

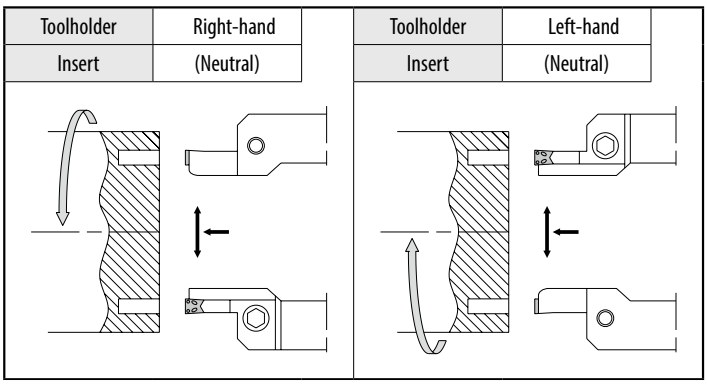


Fig. 2 Toolholder's hand and rotation

<Guide for turning>

Turning direction should be from the outer diameter to the inner diameter as shown in Fig. 3
This improves chip evacuation.

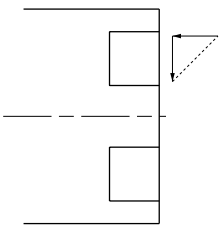


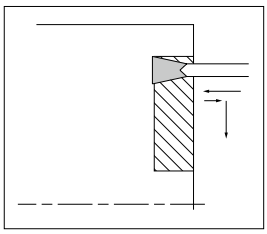
Fig. 3

Guide for Face Grooving (Continued)

Point (I) (Turning after Grooving)

1) Grooving Depth 0.5mm or over : For roughing (Refer to Fig. 4)

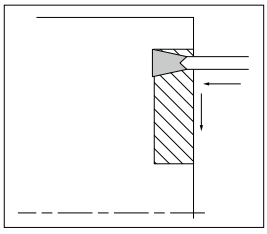
Before turning, pull the tool back about 0.1mm after grooving, instead of turning subsequent to grooving.
(Failure to pull the tool back before traverse machining will result in
an unbalanced load applied on only one side of the cutting edge.)



Before turning, pull the tool back about 0.1mm after grooving.
(Grooving Depth 0.5mm or over at roughing)
Fig. 4

2) Grooving Depth 0.5mm or under : For finishing (Refer to Fig. 5)

Turning subsequent to grooving is possible because shallow groove depths relate a small load on the cutting edge.
(Retention time is not necessary.)



Turning subsequent to grooving
(Grooving Depth 0.5mm or under at finishing)
Fig. 5

Point (II)

1) When widening the groove width. (Ref. to Fig. 6)
Apply the "Step Turning".
2) The widened groove and side walls should be finished last.
(For better chip control, ap 0.5mm or over is recommended.)

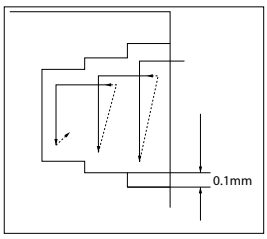
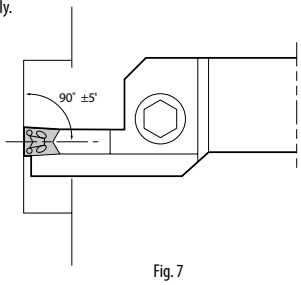


Fig. 6

Trouble shooting

Trouble	Countermeasures
Whitish trace remains at the groove bottom.	(1) Increase the cutting speed for finishing process only. (This can handle most of the cases.) If the method is not successful, try (2) as follows. (2) Check the insert edge's parallelness. (Adjustment: Apply the insert edge to the workpiece face and adjust the toolholder within the angle of ±5'. (Fig. 7)  Fig. 7
Chips are entangled.	(1) Install the toolholder in the reverse position. Adjust the coolant flow to the cutting edge. (2) When widening the groove, do not machine one deep groove. Instead, repeat shallow grooving and turning.
Insert cracks when turning.	Reverse the facing direction.
Groove is not straight.	Check the edge's parallelness. Decrease the feed rate.