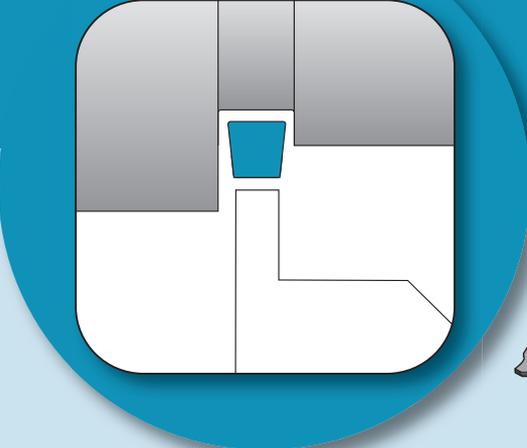


Grooving

G1~G110



G

External Grooving

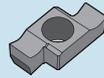
G2~G42



Summary of External Grooving	G2
KGBA / KGBAS	G9
KGB / KGBS → Will be switched to KGBA / KGBAS	G11
KGBF-F / S-KGBF	G14
KTGF-F / KTGF	G16
S-KTGF	Sleeve Holder G17
KTG → Will be switched to KGBA	G18
KGD (Integral Type for Automatic Lathe)	G23
KGD (Integral Type)	G24
KGD-S (0° Separate Type)	G25
KGDS-S (90° Separate Type)	G26
KGM (For automatic lathe)	G36
KGM-T	G37
KGMM / KGMS	G38
KGMU	G39
KGH / KGHS	G40
KGA	G41
KGMW (For Aluminum Wheel)	G42

Internal Grooving

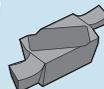
G43~G65



Summary of Internal Grooving	G43
EZG	EZ Bars G45
VNG	System Tip-Bars G47
PSG-S → Will be switched to EZG	Tip-Bars G48
HPG → Will be switched to EZG	2-Edge Tip-Bars G48
SIGE-EH / SIGE-WH / SIGE-WH-90	G51
GIV / GIV-E / GIV-W	G56
KIGBA	G58
KITG → Will be switched to KIGBA	G59
KIGM-V	G62
KIGH	G63
KIGM-8 / KIGMU-8	G64
KGIA	G65

Face Grooving

G66~G102



Summary of Face Grooving	G66
EZFG	G70
VNFG	System Tip-Bars G72
PSFG-S → Will be switched to EZFG	Tip-Bars G73
HPFG → Will be switched to EZFG	2-Edge Tip-Bars G73
TWFG / TWFGT	Twin-Bars G74
KGDF (0° Separate Type)	G80
KGDF-Z (Integral Type)	G84
KGDF (90° Separate Type)	G85
GFVS-AA / GFVT-AA	G90
GFV	G92
GFVS / GFVT	G94
KFMS	G98
KFMS-8	G100
KFTB-S	G101
GIFV (Boring Bar Type)	G102

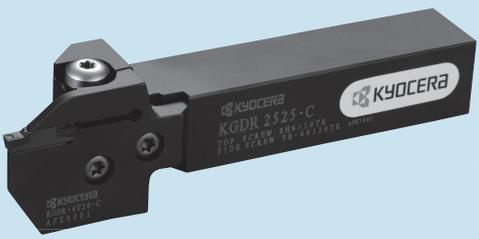
Technical Information

G103~G110



Recommended Cutting Conditions	G103
Guide for Grooving	G108

Alternative Toolholder Reference Table for Grooving Toolholder G110



Summary of External Grooving

■ KGD Grooving (External Grooving & Turning) (G19~G31)

• Integral Type

Type	KGD
Edge Width (mm)	2.0~8.0
Max. Grooving Depth (mm)	6~30
See Page	G24

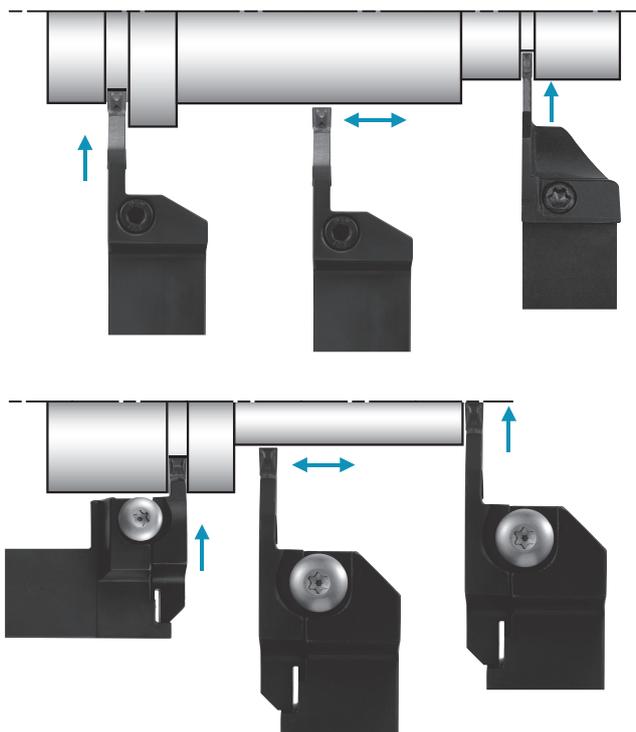
• Integral Type for Automatic Lathe

Type	KGD
Edge Width (mm)	2.0~4.0
Max. Grooving Depth (mm)	10~21
See Page	G23

• Separate Type

Type	* KGDS-S
Edge Width (mm)	3.0
Max. Grooving Depth (mm)	10
See Page	G26

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



• Separate Type

Type	*KGDS-S
Edge Width (mm)	2.0~5.0
Max. Grooving Depth (mm)	10~25
See Page	G25

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

Low Cutting Force
GS



Low Feed
GL



General purpose
GM



High Feed
PH



Copying
CM



G

Grooving

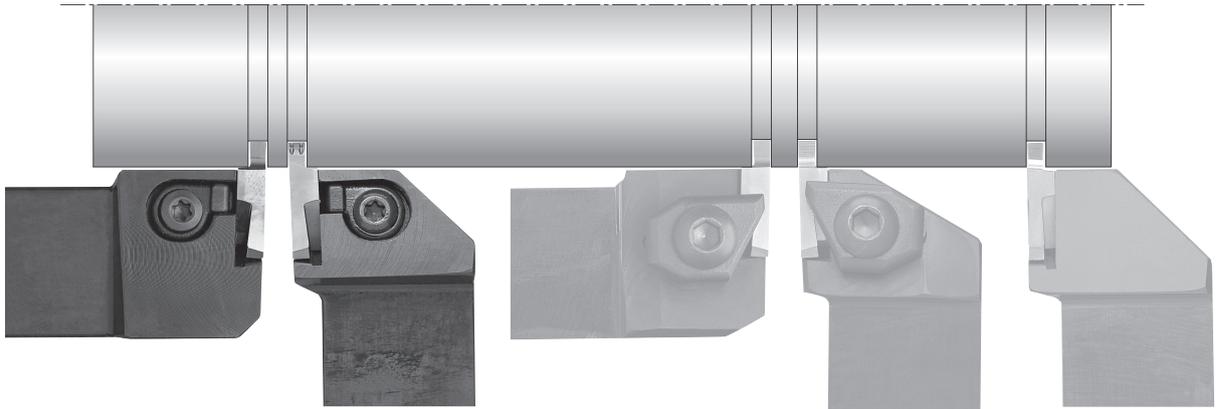
External

Internal

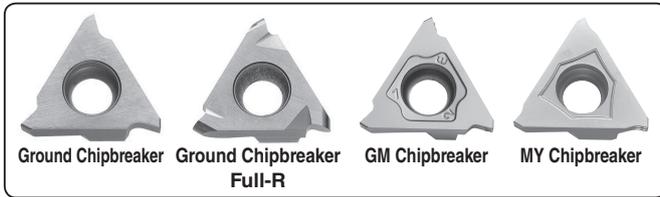
Face

External Grooving (G6~G18, G40, G41)

Shallow Grooving (Grooving Depth: ~5mm)



Type	KGBAS	KGBA	KGBS	KGB	KTG
Edge Width (mm)	0.33~4.8	0.33~4.8	0.5~4.8	0.5~4.8	0.75~4.5
Max. Grooving Depth (mm)	0.8~5.0	0.8~5.0	1.0~5.0	1.0~5.0	2.0~5.0
See Page	G9	G9	G11	G11	G18

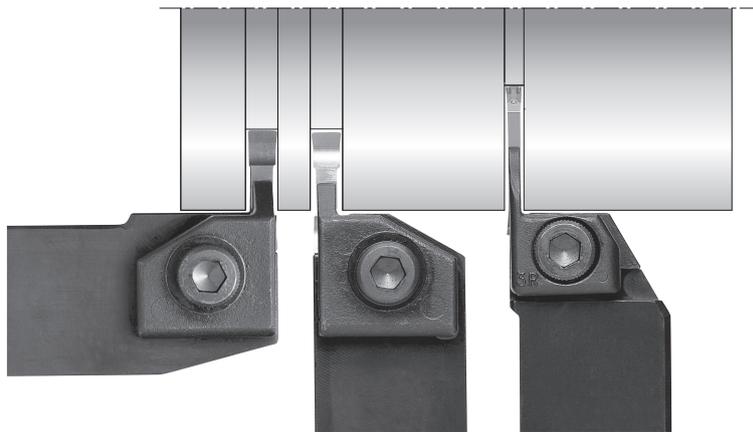


Edge Shape	General (Square)	Full-R (Round)	GM Chipbreaker	MY Chipbreaker

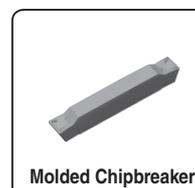
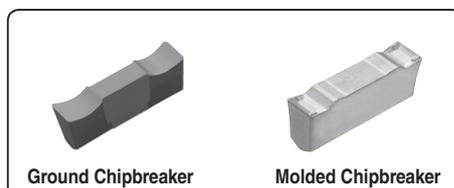
* These shallow groove types of the previous system will be switched to the system on the left.

KGBS → KGBAS
 KGB → KGBA
 KTG → KGBA

Deep Grooving (Grooving Depth: ~25mm)



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	G40	G40	G41

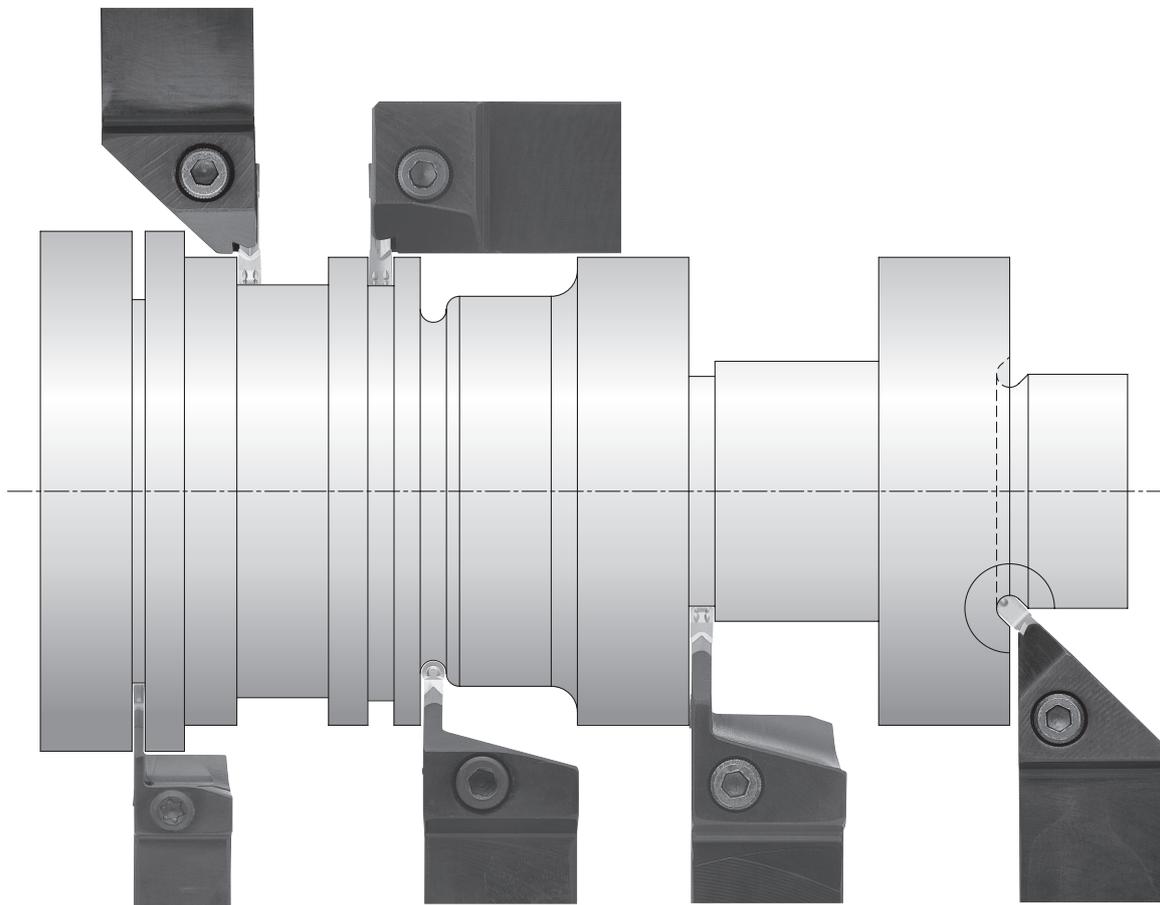


Summary of External Grooving

■ KGM Grooving (External Grooving & Turning) (G32~G39)

Type	KGMM
Edge Width (mm)	3.0~5.0
Max. Grooving Depth (mm)	4.8
See Page	G38

Type	KGMS
Edge Width (mm)	3.0~5.0
Max. Grooving Depth (mm)	4.8
See Page	G38

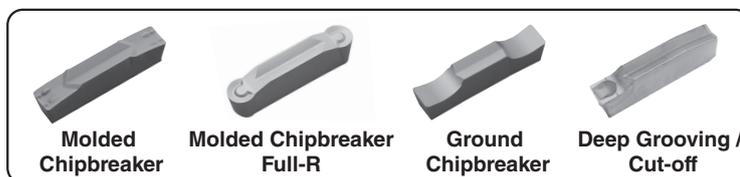


Type	KGM
Edge Width (mm)	1.5~4.0
Max. Grooving Depth (mm)	10~16
See Page	G36

Type	KGM
Edge Width (mm)	3.0~8.0
Max. Grooving Depth (mm)	9~25
See Page	G36

Type	KGM-T
Edge Width (mm)	2.0~6.0
Max. Grooving Depth (mm)	17~30
See Page	G37

Type	KGMU
Edge Width (mm)	3.0~5.0
Max. Grooving Depth (mm)	3.5~4.5
See Page	G39



G

Grooving

External

Internal

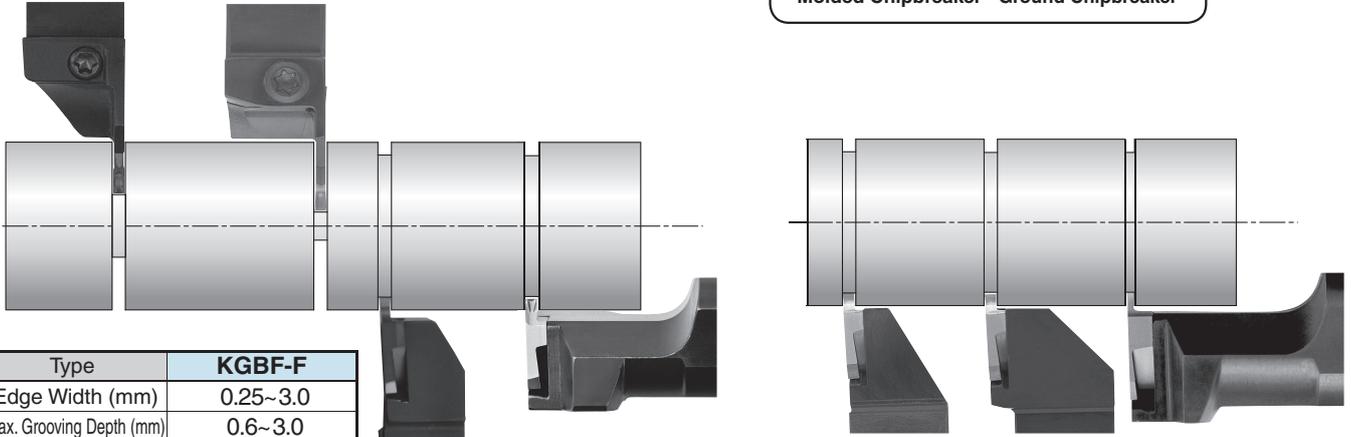
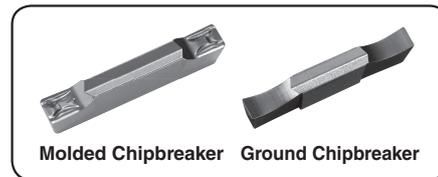
Face

External Grooving of Precision Parts (G14, G16, G17, G23, G36)

For Automatic Lathe

Type	KGD
Edge Width (mm)	2.0~4.0
Max. Grooving Depth (mm)	10~21
See Page	G23

Type	KGM
Edge Width (mm)	1.5~4.0
Max. Grooving Depth (mm)	10~16
See Page	G36

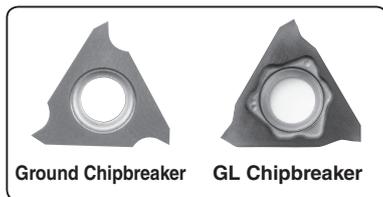


Type	KGBF-F
Edge Width (mm)	0.25~3.0
Max. Grooving Depth (mm)	0.6~3.0
See Page	G14

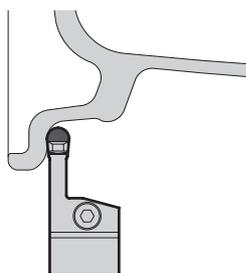
Type	S-KGBF
Edge Width (mm)	0.25~3.0
Max. Grooving Depth (mm)	0.6~3.0
See Page	G14

Type	KTGF-F	KTGF
Edge Width (mm)	0.33~2.5	
Max. Grooving Depth (mm)	0.8~2.5	
See Page	G16	

Type	S-KTGF
Edge Width (mm)	0.33~2.5
Max. Grooving Depth (mm)	0.8~2.5
See Page	G17



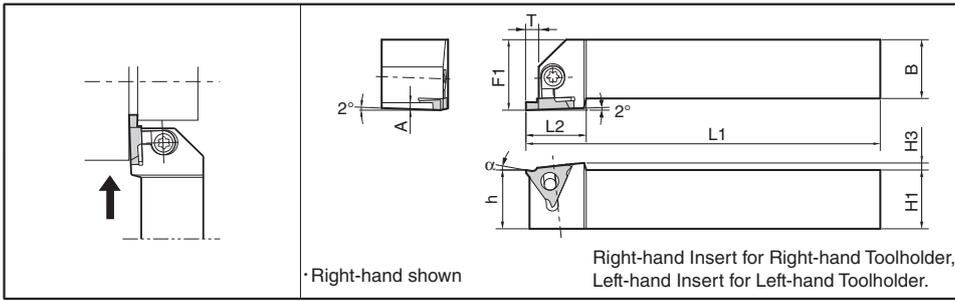
For Aluminum Wheel External Grooving (External / Facing / Copying) (G42)



Type	KGMW
Edge Width (mm)	6.0~8.0
Max. Grooving Depth (mm)	25
See Page	G42



■ KGBA

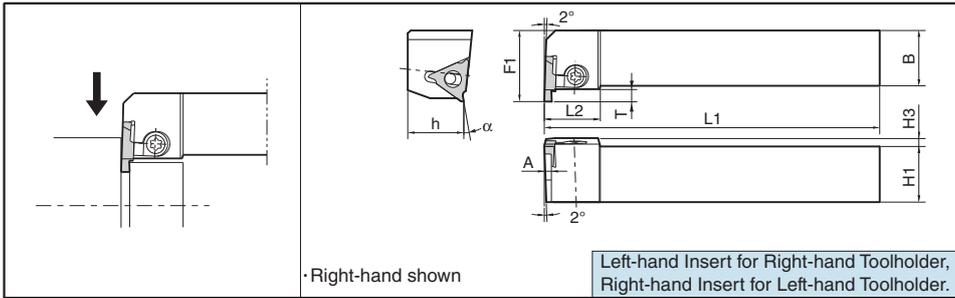


● Alternative Toolholder Reference Table

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

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

■ KGBAS



● Alternative Toolholder Reference Table

KGBAS	← (KGBS)
KGBAS ^{°/L} ...22-15	KGBS ^{°/L} ...22-15
KGBAS ^{°/L} ...22-25	KGBS ^{°/L} ...22-25
KGBAS ^{°/L} ...22-35	KGBS ^{°/L} ...22-35
KGBAS ^{°/L} ...22-25T5	KGBS ^{°/L} ...22-25 (Available grooving depth has a limit)

● Toolholder Dimensions

Description	Std.		Dimension (mm)									Spare Parts		Applicable Inserts ● G6~G8	
	R	L	H1=h	H3	B	L1	L2	F1	A	T	Clamp Set	Wrench			
KGBA ^{°/L} 2020K-16 2525M-16 2020K22-15 2525M22-15 2020K22-25 2525M22-25 2020K22-25T5 2525M22-25T5 2020K22-35 2525M22-35 2020H22-15* 2020H22-25* 2020H22-35*	●	●	20	4.0	20	125	24	25	-	2.5			LGBA-16 ^{°/S}	FT-15	GBA32 ^{°/L} type
	●	●	25	4.0	20	125	25.5	25	1.0	4.0					
	●	●	20	4.0	20	125	25.5	25	2.0	4.5					
	●	●	25	4.0	20	125	25.5	25	2.0	5.5					
	●	●	20	4.0	20	125	25.5	25	3.0						
	●	●	25	4.0	20	125	25.5	25	3.0						
	●								1.0	4.0					
	●		20	4.0	20	100	25.5	25	2.0	4.5					
	●								3.0	5.5					
	KGBAS ^{°/L} 2020K-16 2525M-16 2020K22-15 2525M22-15 2020K22-25 2525M22-25 2020K22-25T5 2525M22-25T5 2020K22-35 2525M22-35	●	●	20	4.0	20	125	25	25	-	2.5				
●		●	25	4.5	20	125	25	27	1.0	4.0					
●		●	20	4.5	20	125	25	27	2.0	4.5					
●		●	25	5.0	20	125	25	27	2.0	5.5					
●		●	20	4.5	20	125	25	27	3.0						
●		●	25	5.0	20	125	25	27	3.0						
●		●	20	4.5	20	125	25	27							
●		●	25	5.0	20	125	25	27							
●		●	20	4.5	20	125	25	27							
●		●	25	5.0	20	125	25	27							

· Dimension T shows the distance from the toolholder to the cutting edge. Available Groove Depth: "B" Dimension of Insert.

* Mark indicates short shank type

· Clamp Set : KGBA^{°/L}...LGBA-○○RS for Right-hand Toolholder and LGBA-○○LS for Left-hand Toolholder.

KGBAS^{°/L}...LGBA-○○LS for Right-hand Toolholder and LGBA-○○RS for Left-hand Toolholder.

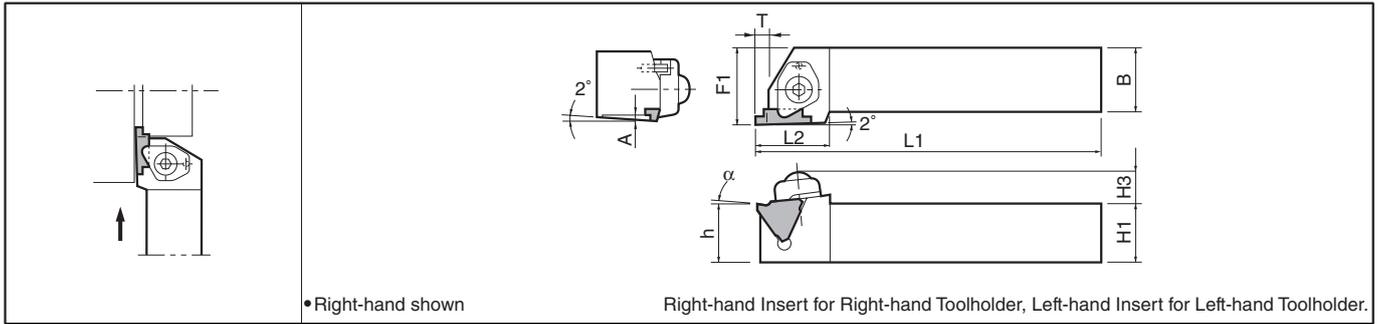
· See Page G7 and G8 for Applicable Insert & Rake Angle (α) after Installation of Insert.

■ External Grooving Toolholders KGBA Short Shank types are available

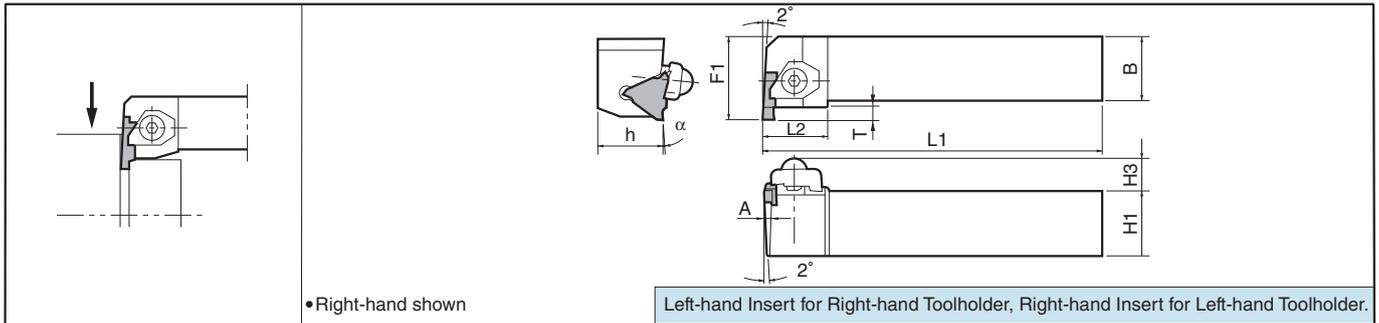
For NC lathe and HSK tooling, KGBAR2020K-○○(Overall length 125mm) short shank type KGBAR2020H22-○○ (Overall length 100mm) is available. No longer required for the users to cut the shank portion.



KGB (Will be switched to KGBA ⚡ G9)



KGBS (Will be switched to KGBAS ⚡ G9)



Toolholder Dimensions

Description	Std.		Dimension (mm)									Spare Parts				Applicable Inserts ⚡ G6-G8 ⚡ G10
	R	L	H1=h	H3	B	L1	L2	F1	A	T	Clamp	Clamp Bolt	Spring	Wrench		
KGB^{R/L} 2020K-16 2525M-16 2020K22-15 2525M22-15 2020K22-25 2525M22-25 2020K22-35 2525M22-35	○	○	20	11	20	125	24	25	-	2.5	CGB ^{R/L}	BH6X25	SP-6	LW-4	GB32 ^{R/L} type	
	○	○	25	25	150	25.5	25	30	1.0	4.0					GBA32 ^{R/L} type	
	○	○	20	11.5	25	150	25.5	25	30	2.0					4.5	GB43 ^{R/L} type
	○	○	25	25	150	25.5	25	30	3.0	5.5					GBA43 ^{R/L} type	
	○	○	20	11.5	25	150	25.5	25	30	3.0					5.5	
	○	○	25	25	150	25.5	25	30	3.0	5.5						
KGBS^{R/L} 2020K-16 2525M-16 2020K22-15 2525M22-15 2020K22-25 2525M22-25 2020K22-35 2525M22-35	○	○	20	11	20	125	25	25	-	2.5	CGB ^{L/R}	BH6X25	SP-6	LW-4	GB32 ^{R/L} type	
	○	○	25	25	150	25	27	32	1.0	4.0					GBA32 ^{R/L} type	
	○	○	20	11.5	25	150	25	27	32	2.0					4.5	GB43 ^{R/L} type
	○	○	25	25	150	25	27	32	2.0	4.5					GBA43 ^{R/L} type	
	○	○	20	11.5	25	150	25	27	32	3.0					5.5	
	○	○	25	25	150	25	27	32	3.0	5.5						

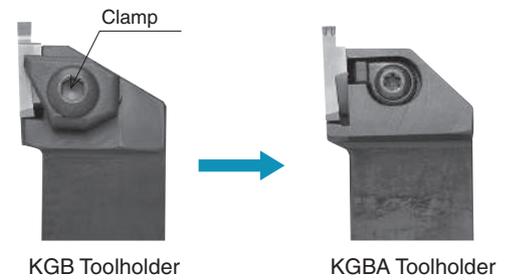
Dimension T shows the distance from the toolholder to the cutting edge. Available Groove Depth: "B" Dimension of Insert.

Clamp: KGB^{R/L} ... CGBR for Right-hand Toolholder and CGBL for Left-hand Toolholder.

KGBS^{R/L} ... CGBL for Right-hand Toolholder and CGBR for Left-hand Toolholder.

Rake Angle (α) after Installment of GB type

GB32 ^{R/L} ○○○		GB43 ^{R/L} ○○○		GB43 ^{R/L} ○○○ R (Full-R)	
α	Insert Grades	α	Insert Grades	α	Insert Grades
5°	TC60M PR630	5°	TC40N TC60M PR630 PR930	5°	TC60M } 050R~150R PR630 }
20°	KW10	10°	KPD010	14°	TC60M } 200R PR630 } KW10...050R~200R
		20°	KW10		



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

* For applicable insert, GB insert will be switched to GBA. There are various types of GBA insert grades available dependent on the user's cutting condition requirements.

GBF

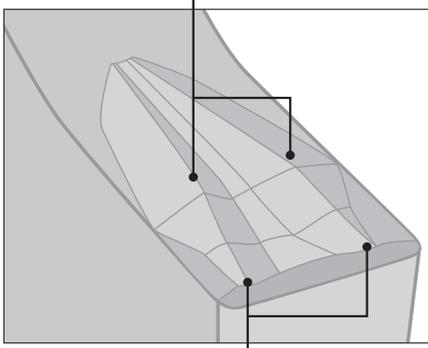
High Precision With Edge Width Tolerance of $\pm 0.02\text{mm}$

High Efficiency MEGACOAT Coating Technology for Long Tool Life

1 Stable Chip Control with GL Chipbreaker

GL Chipbreaker for stable chip control in both grooving and turning.
(Turning is not recommended for GBF32R075-005GL)

Twin Dots Stable Chip Control



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

Comparison of Chip Control (Internal evaluation)

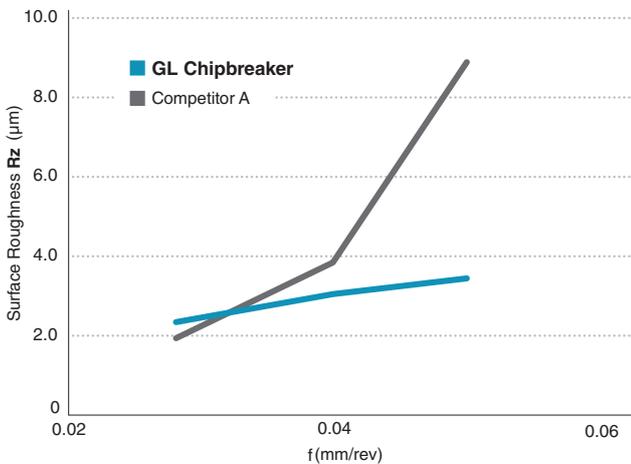
	GL Chipbreaker	Competitor A
Grooving f = 0.05 mm/rev d = 1.5 mm		
Turning f = 0.04 mm/rev ap = 0.2 mm		

Cutting Conditions : Vc = 80 m/min, Edge Width 1 mm
Workpiece Material : SUS304

2 Good Surface Finish

GL Chipbreaker stable chip control at high feed rates,
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

Comparison of Chip Control (Internal evaluation)

	f = 0.03	f = 0.04	f = 0.05
GL Chipbreaker			
Competitor A (Molded Chipbreaker)			

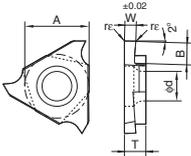
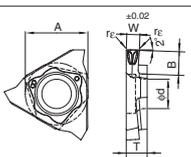
GBF / GBF-GL

P	Carbon steel / Alloy steel	●	☺	
M	Stainless Steel	○	●	
K	Cast Iron			●
N	Non-ferrous Metals			●
S	Titanium Alloys			●
H	Hard materials (-40HRC)			
	Hard materials (40HRC-)			

Classification of usage
 ● : Continuous-Light Interruption / 1st Choice
 ☺ : Continuous-Light Interruption / 2nd Choice
 ● : Continuous / 1st Choice
 ○ : Continuous / 2nd Choice

Description	A	T	φd
GBF32_	9.525	3.18	4.4

(mm)

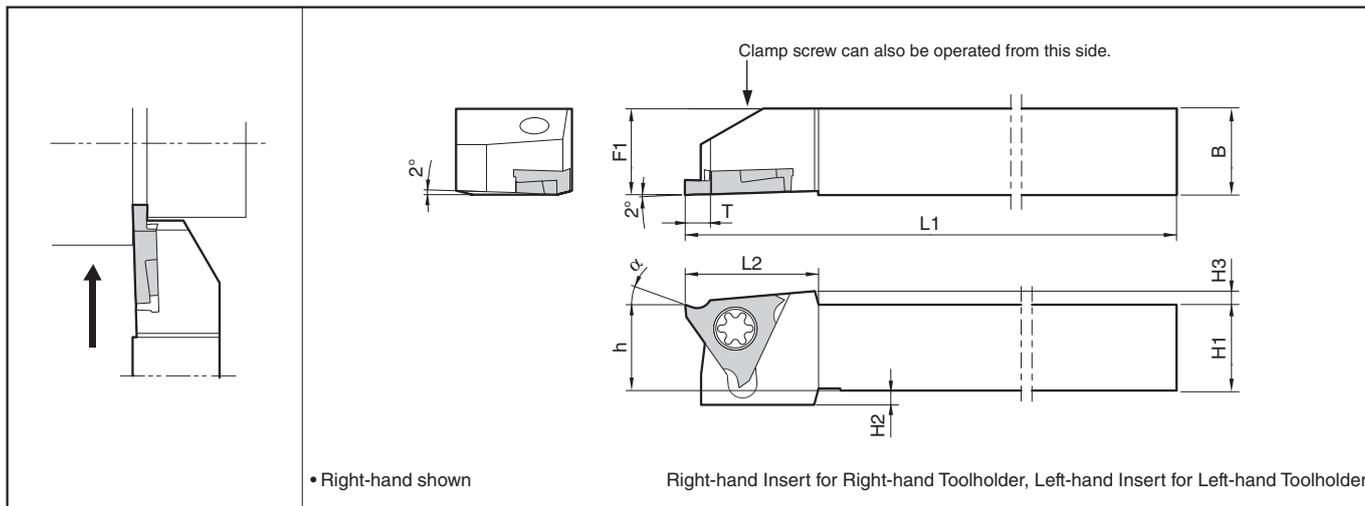
Insert	Description	Dimension (mm)			MEGACOAT		MEGACOAT NANO		Carbide		Applicable Toolholders	See Page for Applicable Toolholders	
		W	B	r _ε	PR1215		PR1535		GW15				
					R	L	R	L	R	L			
 	GBF32^{FL}	025-005 030-005 033-005 043-005 050-005 053-005 065-005 075-005 080-005 095-005 100-005 110-005 120-005 125-010 130-010 140-010 145-010 150-010 165-010 170-010 175-010 200-010 225-010 250-010 300-010	0.25	0.6	0.05	●	●	●	●	●	●	KGBF ^{FL} /...16F S...KGBF ^{FL} -16	G14
			0.30	0.8		●	●	●	●	●	●		
			0.33	1.0		●	●	●	●	●	●		
			0.43			●	●	●	●	●	●		
			0.50	1.2		●	●	●	●	●	●		
			0.53			●	●	●	●	●	●		
			0.65	1.2		●	●	●	●	●	●		
			0.75			●	●	●	●	●	●		
			0.80	2.0		●	●	●	●	●	●		
			0.95			●	●	●	●	●	●		
			1.00	2.0	●	●	●	●	●	●			
			1.10		●	●	●	●	●	●			
			1.20	2.7	●	●	●	●	●	●			
			1.25		●	●	●	●	●	●			
			1.30	2.7	●	●	●	●	●	●			
			1.40		●	●	●	●	●	●			
			1.45	3.0	●	●	●	●	●	●			
			1.50		●	●	●	●	●	●			
			1.65	3.0	●	●	●	●	●	●			
			1.70		●	●	●	●	●	●			
1.75	3.0	●	●	●	●	●	●						
2.00		●	●	●	●	●	●						
225-010	3.0	●	●	●	●	●	●						
250-010		●	●	●	●	●	●						
300-010	3.0	●	●	●	●	●	●						
 	GBF32R	075-005GL 095-005GL 100-005GL 150-010GL 200-010GL 300-010GL	0.75	2.0	0.05	●	●						
			0.95	2.0		●	●						
			1.00	2.7	●	●							
			1.50		2.7	●	●						
			2.00	3.0	●	●							
300-010GL	3.0	●	●										

Max. Cutting Dia. : See Page G15

Recommended Cutting Conditions G15



KGBF-F (without offset)



G

Toolholder Dimensions

Description	Std.		Dimension (mm)							Rake Angle	Spare Parts	
	R	L	H1 = h	H2	H3	B = F1	L1	L2	*T	α	Clamp Screw	Wrench
KGBF^{R/L} 1010JX-16F	●	●	10	4	2.1	10	120	18.5	3	20°	SB-4070TRW	FT-8
	●	●	12	2		12						
	●	●	16	-		16						
	●	●	20	-		20						

*Dimension T shows the distance from the toolholder to the cutting edge. Available Groove Depth : "B" Dimension of Insert.

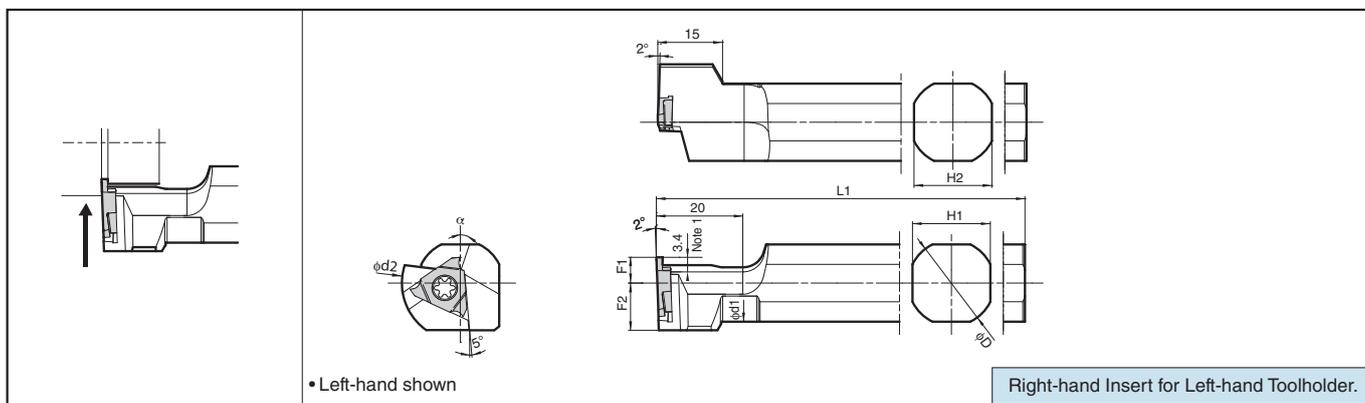
Grooving

External

Internal

Face

S-KGBF (Sleeve Holder)



Note 1) Dimension B shows available grooving depth.

Toolholder Dimensions

Description	Std.		Dimension (mm)						Rake Angle	Spare Parts						
	L	ϕD	L1	F1	F2	$\phi d1$	$\phi d2$	H1=H2	α	Clamp Screw	Wrench					
S16F-KGBFL16	●	16	85	6	9	15	27	15	20°	SB-4070TRW	FT-8					
S19G-KGBFL16	●	19.05	90		10.5	18		17								
S19K-KGBFL16	●		120		11	19		21				20				
S20G-KGBFL16	●	20	90										14	24	32	23
S20K-KGBFL16	●	22	120													
S22K-KGBFL16	●		25		100											
S25.0H-KGBFL16	●	25.4	120													

● : Std. Item

Recommended Cutting Conditions

Recommended Cutting Conditions (GBF)

Workpiece Material	Recommended Insert Grades (Cutting Speed Vc: m/min)			(1) f for Grooving (mm/rev)				Remarks
	MEGACOAT	MEGACOAT NANO	Carbide	(2) f for Turning (mm/rev)				
	PR1215	PR1535	GW15	(3) ap for Turning (mm)				
				GBF32%(.025 - 053	GBF32%(.065 - 095	GBF32%(.100 - 145	GBF32%(.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 Alloys	-	-	★ 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

Recommended Cutting Conditions (GBF-GL)

Workpiece Material	Recommended Insert Grades (Cutting Speed Vc: m/min)		(1) f for Grooving (mm/rev)				Remarks
	MEGACOAT	MEGACOAT NANO	(2) f for Turning (mm/rev)				
	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

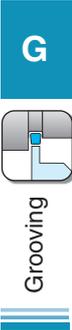
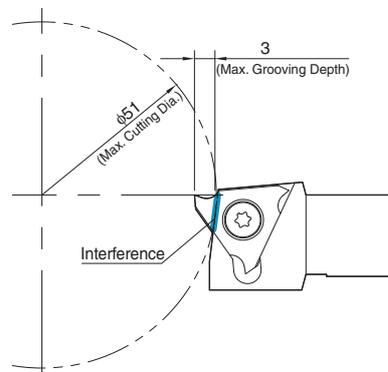
Precautions

Compatibility with GBF and GBA

- GBF will fit KGBA / KGBAS toolholders
Caution: The maximum groove depth for KGBA / KGBAS toolholders is 2.5 mm
- 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 $\phi 51$ mm
 2.7 mm groove depth is available on workpiece diameters up to $\phi 100$ mm,
 2.5 mm groove depth is available on workpiece diameters up to $\phi 200$ mm
 The workpiece will interfere with the holder at maximum cutting diameters or larger.



External Shallow Grooving Toolholders [for TGF Insert]

KTGF-F (without offset)

α	Insert Grades
20°	PR1115, PR1215 PR930, KW10
11°	KPD001
6°	TC40N

• Right-hand shown

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

KTGF (with offset)

α	Insert Grades
20°	PR1115, PR1215 PR930, KW10
11°	KPD001
6°	TC40N

• Right-hand shown

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

Toolholder Dimensions

Description	Std.	Dimension (mm)									Spare Parts							
		R	L	H1=h	H2	H3	B	L1	L2	F1	Clamp Screw	Wrench						
KTGF ^{F/L}	1010JX-16F	●	●	10	2		10			10			SB-4070TRW	FT-8				
	1212JX-16F	●	●	12	-	2.5	12	120	18.5	12								
	1616JX-16F	●	●	16			16			16								
KTGF ^{F/L}	1212F-16F	●	●	12	-	2.5	12	85	18.5	12			SB-4070TRW	FT-8				
KTGF ^{F/L}	1010F-16	●	●	10	4		10	80		12			SB-4070TRS	FT-10				
	1212H-16	●	●	12	2		12	100	18.5	16								
	1616H-16	●	●	16		2.5	16	100		20								
	2020K-16	●	●	20	-		20	125		25								
	2525M-16	●	●	25			25	150	20	32								

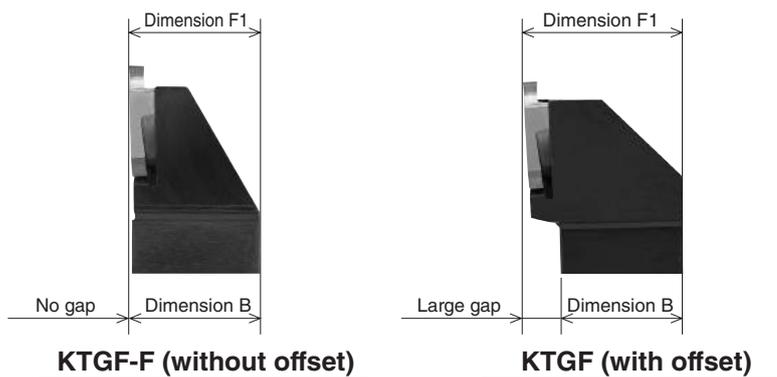
KTGF-F / KTGF Selection Reference

Q: What is the difference between "Without Offset" and "With Offset" of KTGF toolholders for external grooving?

A: When operating the automatic lathe, the toolholder come very close to the chuck.

In such cases, the "With Offset" toolholder sometimes interferes with the chuck due to the large gap between B and F1 dimensions as shown below.

It is necessary to use "Without Offset" in such cases.



S-KTGF (Sleeve Holder)

α	Insert Grades
20°	PR1115, PR1215 PR930, KW10
11°	KPD001
6°	TC40N

• Left-hand shown

Right-hand Insert for Left-hand Toolholder.

Note 1) Dimension B shows available grooving depth.

Toolholder Dimensions

Description	Std.	Dimension (mm)							Spare Parts				
		L	ϕD	L1	F1	F2	$\phi d1$	$\phi d2$	H1=H2	Clamp Screw	Wrench		
S12F-KTGFL16	●	12	80	6	9.0	11.0	27	11	SB-4070TRS	FT-10			
S14H-KTGFL16	●	14	100								13		
S15F-KTGFL16	●	15.875	85								14.6	15	
S16F-KTGFL16	●	16									17		
S19G-KTGFL16	●	19.05	90								10.5	17.6	17
S19K-KTGFL16	●	19.05	120								11.0	18.6	18
S20G-KTGFL16	●	20	90	10	14.0	23.6	32	23					
S20K-KTGFL16	●	20	120										
S25.0H-KTGFL16	●	25	100										
S25K-KTGFL16	●	25.4	120										



Applicable Inserts

Description	A	T	ϕd	P Carbon steel / Alloy steel	M Stainless Steel	K Cast Iron	N Non-ferrous Metals	S Titanium Alloys	H Hard materials (~40HRC) Hard materials (40HRC~)	Classification of usage	
										● : Continuous-Light Interruption / 1st Choice	○ : Continuous-Light Interruption / 2nd Choice
TGF32_	9.525	3.18	4.6								

Insert	Description	Dimension (mm)					Material										Applicable Toolholders	See Page for Applicable Toolholders
		W	B	r_e	Cermet	MEGA COAT	PVD Coated Carbide		Carbide		PCD							
Handed Insert shows Right-hand					TC40N	PR1215	PR930	PR1115	KW10	KPD001								
					R	L	R	L	R	L	R	L	R	L	R	L		
	TGF32 ^{R/L} 033-005	0.33	0.8	0.05			●											
	050-005	0.50	1.2	0.05	●	●	●	●	●	●	●	●	●	●	●	●		
	075-010	0.75	2.0	0.1	●	●	●	●	●	●	●	●	●	●	●	●		
	095-010	0.95			●	●	●	●	●	●	●	●	●	●	●	●	●	
	100-010	1.00			●	●	●	●	●	●	●	●	●	●	●	●	●	
	120-010	1.20			●	●	●	●	●	●	●	●	●	●	●	●	●	
	125-010	1.25	2.5	0.1	●	●	●	●	●	●	●	●	●	●	●	●	●	
	140-010	1.40			●	●	●	●	●	●	●	●	●	●	●	●	●	
	145-010	1.45			●	●	●	●	●	●	●	●	●	●	●	●	●	
	150-010	1.50			●	●	●	●	●	●	●	●	●	●	●	●	●	
175-010	1.75	●			●	●	●	●	●	●	●	●	●	●	●	●		
200-010	2.00	●			●	●	●	●	●	●	●	●	●	●	●	●		
250-010	2.50	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
	TGF32 ^{R/L} 125-010	1.25	2.0	0.1												●		
	150-010	1.50																●
	200-010	2.00																

• Dimension B shows available grooving depth.

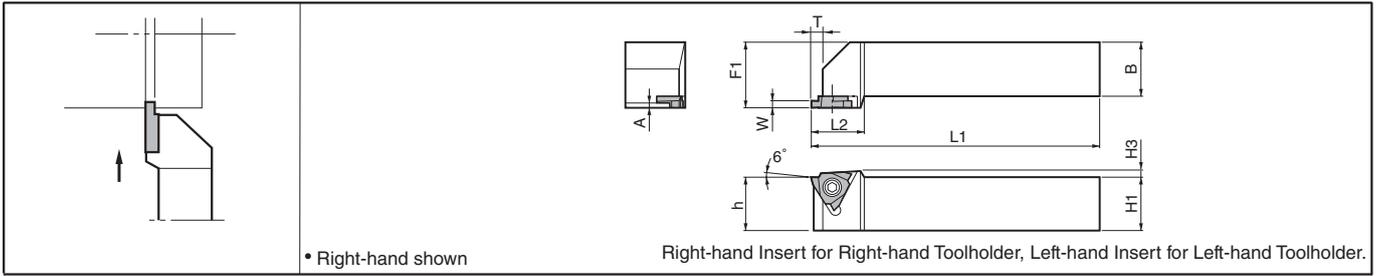
Recommended Cutting Conditions **G104**

● : Std. Item

Inserts are sold in 10 piece boxes.

CBN & PCD Inserts are sold in 1 piece boxes.

KTG (Will be switched to KGBA → G9)



Toolholder Dimensions

Description	Std.	Dimension (mm)										Spare Parts			
		R	L	H1-h	H3	B	L1	L2	F1	A	T	Clamp Screw		Wrench	
KTG^{R/L} 2020K-16 2525M-16 2020K22-15 2525M22-15 2020K22-25 2525M22-25 2020K22-35 2525M22-35	○ ○	20	3.0	20	125	20	25	-	2.5			SB-4TR	-	FT-15	-
	○ ○	20	3.0	20	125	25	25	1.0	4.0				GS-50	-	LW-3
	○ ○	20	3.0	20	125	25	25	2.0	4.5			-	GS-50	-	LW-3
	○ ○	20	3.0	20	125	25	25	3.0	5.5				GS-50	-	LW-3
	○ ○	25	3.0	20	125	25	25	3.0	5.5				GS-50	-	LW-3
	○ ○	25	3.0	20	125	25	25	3.0	5.5				GS-50	-	LW-3

· Dimension T shows the distance from the toolholder to the cutting edge. Available groove depth : "B" dimension of insert.

* GBA insert cannot be installed to this toolholder.

Applicable Inserts (TG insert will be switched to GBA → G6~G8) (mm)

Description	A	T	φd
TG32_	9.525	3.18	4.5
TG43_	12.70	4.76	5.5

P	Carbon steel / Alloy steel	Classification of usage
M	Stainless Steel	
K	Cast Iron	
N	Non-ferrous Metals	
S	Titanium Alloys	
H	Hard materials (~40HRC) Hard materials (40HRC~)	

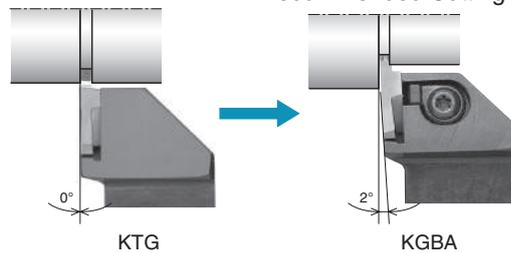
● : Continuous-Light Interruption / 1st Choice
 ◐ : Continuous-Light Interruption / 2nd Choice
 ● : Continuous / 1st Choice
 ○ : Continuous / 2nd Choice

Insert	Description	Dimension (mm)			Cermat	Applicable Toolholders	See Page for Applicable Toolholders		
		W	B	C or rε				TN60	
								R	L
General (Square) (Corner is Chamfered) TG32 type (Corner is Chamfered)	TG32^{R/L} 075 095 125 145 150 175 200	2.0	C0.1	○	○	KTG^{R/L}...16	G18		
				○	○				
				○	○				
				○	○				
				○	○				
				○	○				
	General (Square) (Corner is R shape) TG43 type (Corner is R shape)	TG43^{R/L} 150 175 200 230 250 265 280 300 330 350 400 430 450	3.5	0.2	○	○	KTG^{R/L}...22-15	G18	
					○	○			
					○	○			
			5.0	0.3	○	○	KTG^{R/L}...22-25	G18	
○					○				
○					○				
○		○							
5.0		0.4	○	○	KTG^{R/L}...22-35	G18			
			○	○					
			○	○					
	○		○						

· Dimension B shows available grooving depth.

Recommended Cutting Conditions → G104

- * KTG will be switched to KGBA. Machining against the wall is available.
- * For applicable insert, TG insert will be switched to GBA. Change Insert Grade TN60 for TN90. There are various types of GBA insert grades available dependent on the user's cutting condition requirements.
- * Check the corner-R(rε) of the insert when changing.

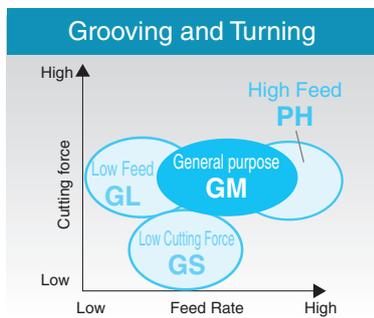


Features

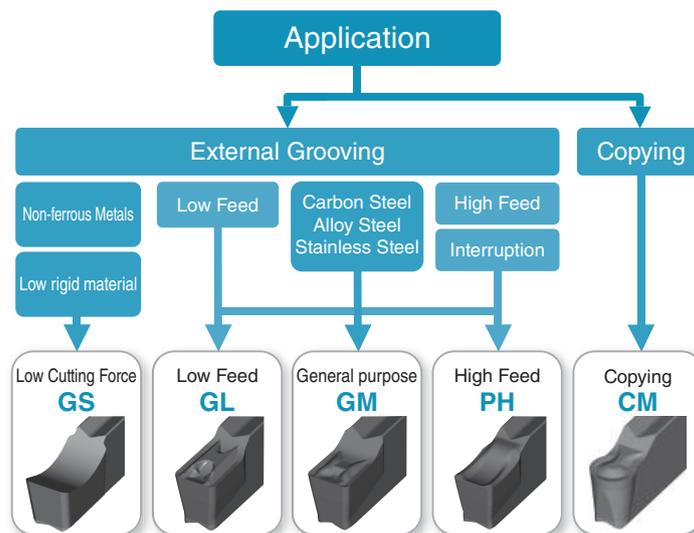
1 Various insert lineup

- **Smooth chip control**
 - ➔ Newly-introduced chipbreakers designed to cover a variety of workpiece materials.
- **High precision edge preparation**
 - ➔ High precision molding technology with tolerance $\pm 0.03\text{mm}$ (Edge width 2, 3, 4mm types)
- **Highly-reputed MEGACOAT technology**
 - ➔ Long tool life and high efficiency machining achieved by superior oxidation resistance and wear resistance.

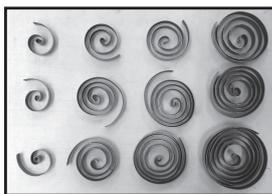
Application Map



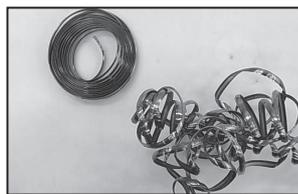
Chipbreaker Selection



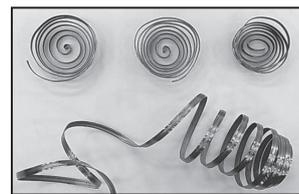
Comparison of Chip Control (SCM415 Vc=150m/min, f=0.15mm/rev)



GM Chipbreaker



Competitor A



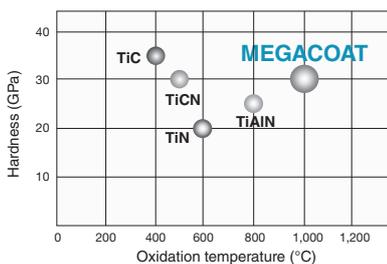
Competitor B

Smooth chip control

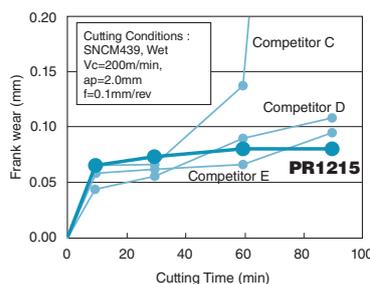


Less chip biting troubles

Features of MEGACOAT



Comparison of Wear Resistance



PR1225 :
1st choice for cut-off, grooving and turning.

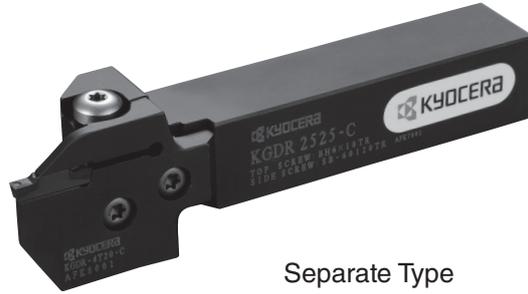
PR1215 :
With superior wear resistance, recommended for grooving and cut-off under the stable conditions as well as machining of cast iron.

2 Toolholder

● Integral Type and Separate Type (Toolholder + Blade) are available



Integral Type

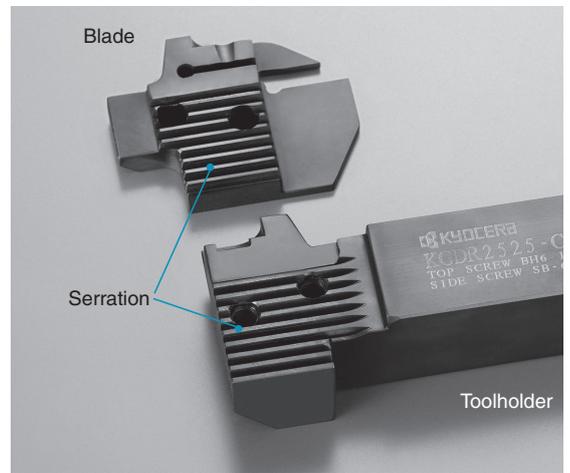


Separate Type

● 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.



G

Grooving

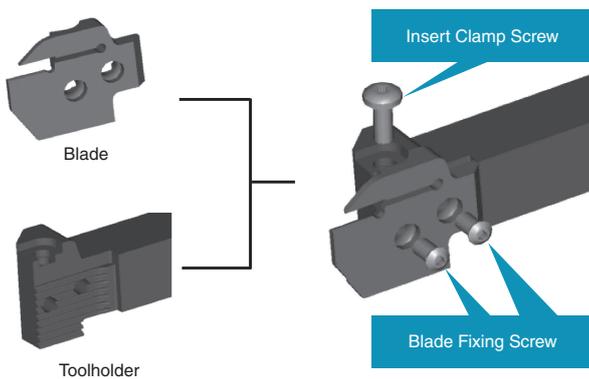
External

Internal

Face

Structure of toolholder unit (Toolholder + Blade)

● KGD-S (0° Separate Type)

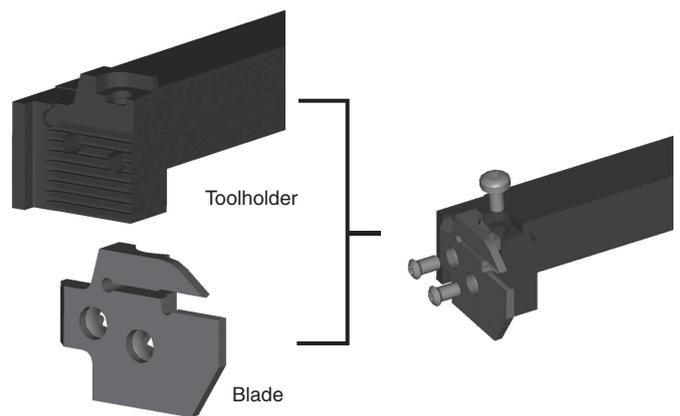


* Note for the toolholder and blade combination of 0° Separate Type

Toolholder (KGD[°]/_L ○○○○-C)
+
Blade (KGD[°]/_L-○T○○-C)

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

● KGDS-S (90° Separate Type)



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

Toolholder (KGDS[°]/_L ○○○○-C)
+
Blade (KGD[°]/_R-○T○○-C)

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

Inserts for Grooving and Cut-off

GDM / GDMS / GDG

Classification of usage	P	Carbon steel / Alloy steel	●	○	●	○	●	○
M	Stainless Steel				●	○	●	○
K	Cast Iron						●	○
N	Non-ferrous Metals							●
S	Titanium Alloys				●	○		○
H	Hard materials (~40HRC)						○	
	Hard materials (40HRC~)							

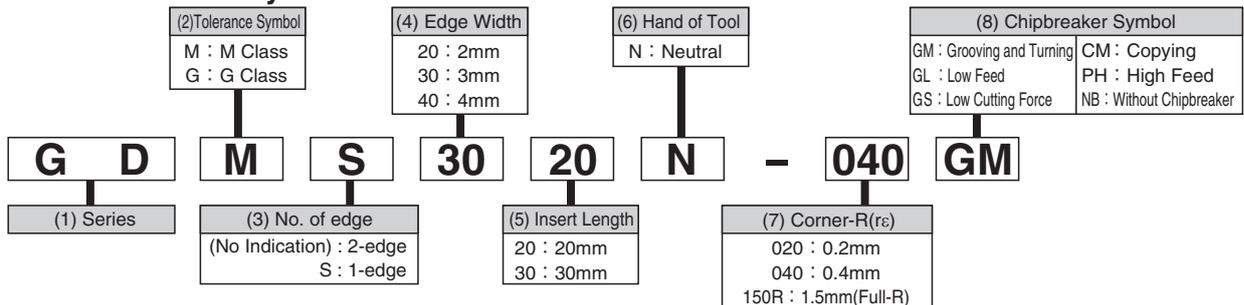
● : Continuous-Light Interruption / 1st Choice
 ○ : Continuous-Light Interruption / 2nd Choice
 ● : Continuous / 1st Choice
 ○ : Continuous / 2nd Choice

Insert	Description	Dimension (mm)					Cermet		MEGACOAT NANO	MEGACOAT	Carbide	See Page for Applicable Toolholders				
		W	Tolerance	r _e	M	L	H	TN620	TN90	PR1535	PR1225		PR1215	GW15		
Grooving and Turning General purpose	GDM 2420N-020GM	2.4	±0.03	0.2	1.95	20	4.3	●	●	●	●	●		G23		
	3020N-020GM	3.0		0.4	2.3			●	●	●	●	●		G24		
	3020N-040GM			0.2	3.3			●	●	●	●	●		G25		
	4020N-020GM	4.0		0.4				5.2	●	●	●	●	●		G26	
	4020N-040GM			0.8	●				●	●	●	●		G24		
	5020N-040GM	5.0		0.4	5.2			●	●	●	●	●		G25		
	5020N-080GM			0.8				●	●	●	●	●		G26		
	6020N-040GM	6.0		0.4	5.2			●	●	●	●	●		G24		
	6020N-080GM			0.8				●	●	●	●	●		G25		
	8030N-080GM	8.0		±0.05	6.0			30	5.5	●	●	●	●		G26	
Grooving General purpose 1-edge	GDMS 2220N-020GM	2.2	±0.03	0.2	1.75	20	4.3	●	●	●	●	●		G23		
	3020N-040GM	3.0		0.4	2.3			●	●	●	●	●		G24		
	4020N-040GM	4.0		0.4	3.3			●	●	●	●	●		G25		
	5020N-080GM	5.0		0.4	4.2			●	●	●	●	●		G26		
	6020N-080GM	6.0		±0.04	0.8			5.2	●	●	●	●	●		G24	
					0.8			5.2	●	●	●	●	●		G25	
Grooving Low Feed	GDM 2420N-020GL	2.4	±0.03	0.2	1.95	20	4.3	●	●	●	●	●		G23		
	3020N-020GL	3.0		0.4	2.3			●	●	●	●	●		G24		
	3020N-040GL	4.0		0.2	3.3			●	●	●	●	●		G25		
	4020N-020GL			0.4	4.2			●	●	●	●	●		G26		
	5020N-040GL	5.0		0.4	4.2			●	●	●	●	●		G24		
	6020N-040GL			6.0	±0.04			5.2	●	●	●	●	●		G25	
Grooving Low Cutting Force	GDG 2520N-020GS	2.5	±0.02	0.2	2.0	20	4.3	●	●	●	●	●	●	G23		
	3020N-020GS	3.0		0.4	2.3			●	●	●	●	●		G24		
	3520N-020GS	3.5		0.4	2.8			●	●	●	●	●		G25		
	4020N-040GS	4.0		0.4	3.3			●	●	●	●	●		G26		
	5020N-040GS	5.0		0.4	4.2			●	●	●	●	●		G24		
	6020N-040GS	6.0		0.4	5.2			●	●	●	●	●		G25		
	8030N-040GS	8.0		±0.02	6.0			30	5.5	●	●	●	●	●		G26
					6.0			30	5.5	●	●	●	●	●		G24
Full-R / Copying	GDM 3020N-150R-CM	3.0	±0.03	1.5	2.3	20	4.3	●	●	●	●	●		G23		
	4020N-200R-CM	4.0		2.0	3.3			●	●	●	●	●		G24		
	5020N-250R-CM	5.0		2.5	4.2			●	●	●	●	●		G25		
	6020N-300R-CM	6.0		±0.04	3.0			5.2	●	●	●	●	●		G26	
Grooving / Cut-off High Feed	GDM 2020N-020PH	2.0	±0.03	0.2	1.5	20	4.3		●	●	●			G23		
	3020N-030PH	3.0		0.3	2.3				●	●	●			G24		
	4020N-030PH	4.0		0.3	3.3				●	●	●			G25		
	GDMS 2020N-020PH	2.0		±0.03	0.2			1.5		●	●	●			G26	
					0.3			2.3		●	●	●				
					0.3			3.3		●	●	●				
High Feed 1-edge	4.0	±0.03	0.2	1.5		●	●	●								
			0.3	2.3		●	●	●								
			0.3	3.3		●	●	●								

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

Recommended Cutting Conditions ● G29, G30

Inserts Identification System



● : Std. Item

Inserts are sold in 10 piece boxes.

Inserts for Grooving

GDGS (CBN / PCD)

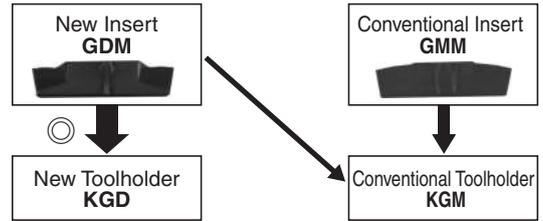
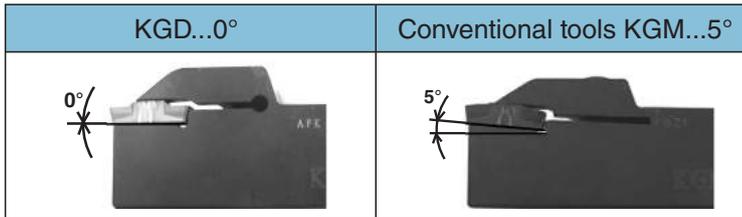
Classification of usage	P	Carbon steel / Alloy steel			
	M	Stainless Steel			
<ul style="list-style-type: none"> ● : Continuous-Light Interruption / 1st Choice ○ : Continuous-Light Interruption / 2nd Choice ● : Continuous / 1st Choice ○ : Continuous / 2nd Choice 	K	Cast Iron			
	N	Non-ferrous Metals			●
	S	Titanium Alloys			●
	H	Hard materials (~40HRC)			
		Hard materials (40HRC~)	●		
		Sintered Steel			●

Insert	Description	Dimension (mm)						Angle θ	MEGA CBN	CBN	PCD	See Page for Applicable Toolholders		
		W	re	M	L	H	S							
													Tolerance	KBN05M
 1-edge	GDGS 2020N-020NB 3020N-020NB 3020N-040NB	2.0	±0.03	0.2	1.8	20	4.3	2.9	-	●	●	●	G23 G24	
				0.2	2.3					●	●	●		
	4020N-020NB 4020N-040NB	3.0	±0.03	0.2	3.3	20	4.3	2.9	-	-	●	●	●	G25 G26
											0.4	3.3	●	
	5020N-020NB 5020N-040NB	4.0	±0.03	0.2	4.2	20	4.3	2.9	-	-	●	●	●	G24 G25
											0.4	4.2	●	
	6020N-020NB 6020N-040NB	5.0	±0.03	0.2	5.2	20	4.3	2.9	-	-	●	●	●	G24 G25
											0.4	5.2	●	
	6020N-020NB 6020N-040NB	6.0	±0.03	0.2	5.2	20	4.3	2.9	-	-	●	●	●	G24 G25
											0.4	5.2	●	

Recommended Cutting Conditions **G29, G30**

Note for the 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.

G

Grooving

External

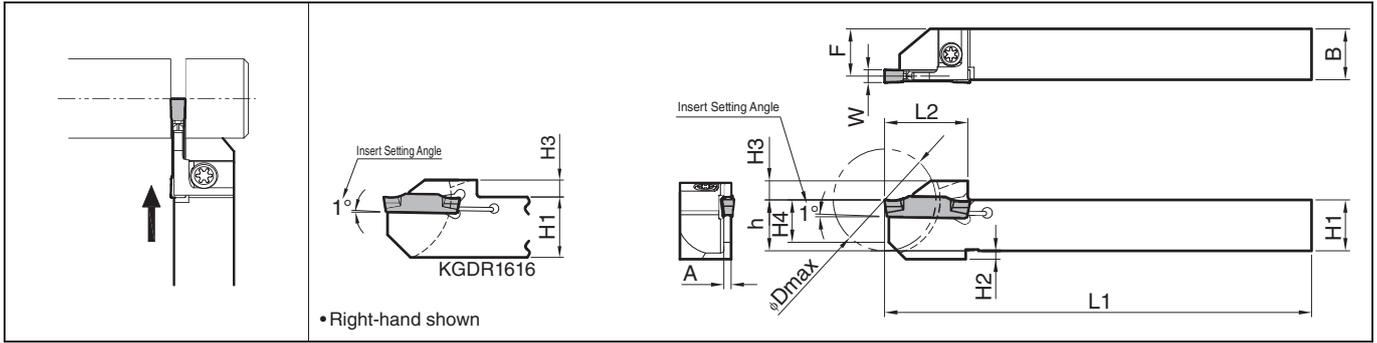
Internal

Face

Toolholders for Grooving and Cut-off

■ KGD (Integral Type for Automatic Lathe)

Edge Width: 2.0~4.0mm



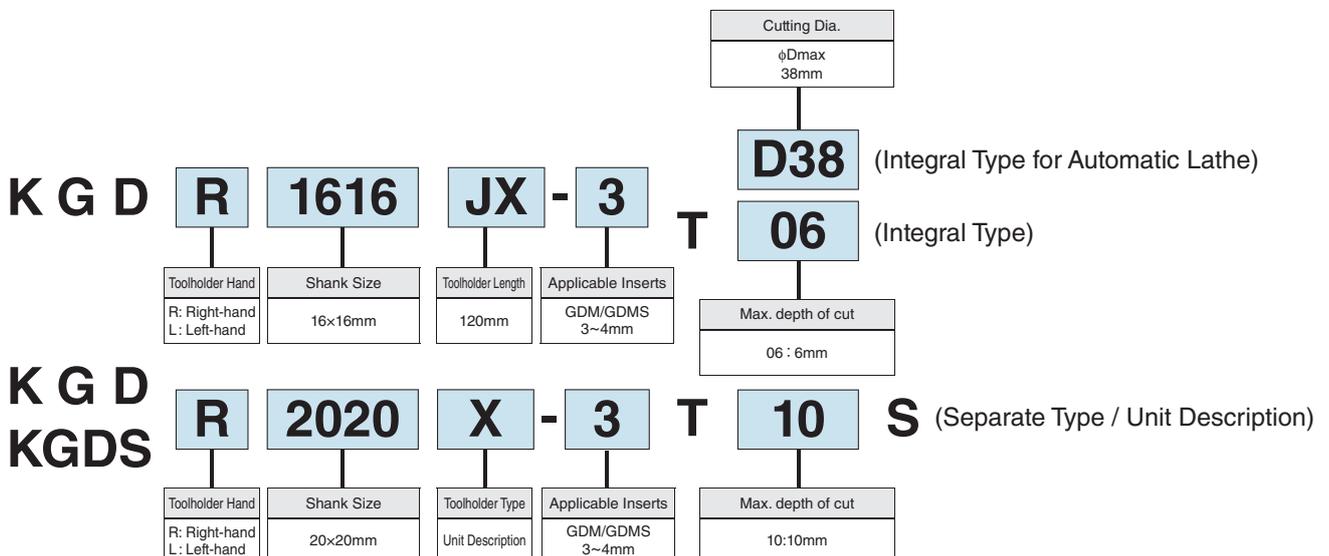
● Toolholder Dimensions

Description	Std.		Cutting Dia. ϕ Dmax	Dimension (mm)											Angle θ	Edge Width W (mm)		Spare Parts			
	R	L		H1=h	H2	H3	H4	B	L1	L2	F	A	MIN.	MAX.		Clamp Screw	Wrench				
KGD [®] /L 1010JX-2 1212F-2 1212JX-2 1616JX-2 2012K-2D34 2020K-2D34	●	●	20	10	2	5.5	8	10	120	18	9.2	1.6	1°	2.0	3.0	SB-40120TR	LTW-15S				
	●	●	24	12														10	12	85	19.5
	●	●	32	16	-	9.5	20	12	125	32.5	11.2	0°	2.0	3.0	HH5X16	LW-4					
	●	●	34	20													20	125	32.5	19.2	
	●	●	34	20													20	125	32.5	19.2	
KGD [®] /L 1010JX-2.4 1212F-2.4 1212JX-2.4 1616JX-2.4 2012K-2.4D34 2020K-2.4D34	●	●	20	10	2	5.5	8	10	120	18	9	2.0	1°	2.4	3.0	SB-40120TR	LTW-15S				
	●	●	24	12														10	12	85	19.5
	●	●	32	16	-	9.5	20	12	125	32.5	11	0°	2.4	3.0	HH5X16	LW-4					
	●	●	34	20													20	125	32.5	19	
	●	●	34	20													20	125	32.5	19	
KGD [®] /L 1212JX-3 1616JX-3 1616JX-3D38 1913K-3D38 2012JX-3D42 2012JX-3D51 2020JX-3D42 2020JX-3D51	●	●	24	12	2	5.5	10	12	120	18	10.8	2.4	1°	3.0	4.0	SB-40120TR	LTW-15S				
	●	●	32	16														10	16	120	24.5
	●	●	38	19	-	8	13	13	125	29	11.8	2.4	1°	3.0	4.0	SE-50125TR	LTW-20				
	●	●	42	20														12	120	31	10.8
	●	●	51	20														14	120	36	10.8
	●	●	42	20	-	8	14	20	120	31	18.8	2.4	1°	3.0	4.0	SE-50125TR	LTW-20				
	●	●	51	20														14	120	36	18.8

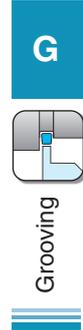
- Note) 1. 4mm width Insert can be installed in KGD[®]/L 1212JX-3, but is not recommended due to the toolholder's rigidity.
 2. Recommended tightening torque of clamp screw : 2.0N·m(SB-40120TR), 2.5N·m(SE-50125TR), 6.5N·m(HH5X16)
 3. When machining the material greater than ϕ 36mm with KGD[®]/L...-3D38, KGD[®]/L...-3D42 or KGD[®]/L...-3D51 toolholders, please use 1-edge inserts. Maximum workpiece diameter for 2-edge inserts is ϕ 36mm.

Applicable Inserts ● G21, G22

◆ Toolholder Identification System

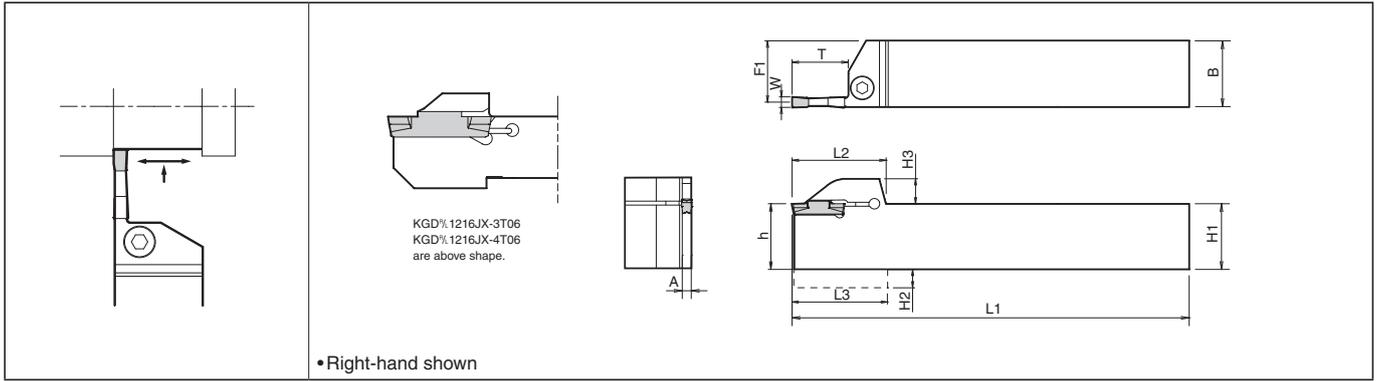


● : Std. Item



Toolholders for Grooving and Cut-off

KGD (Integral Type)



Toolholder Dimensions

Width (mm)	Max. depth of cut (mm)	Description	Std.		Dimension (mm)										Edge Width W (mm)		Spare Parts								
			R	L	H1-h	H2	H3	B	L1	L2	L3	F1	A	T	MIN.	MAX.	Clamp Bolt	Wrench							
2	6	KGD% 1616H-2T06	●	●	16	4.0	9.5	16	100	27.7	28.0	15.2	1.7	6	2.0	3.0	HH5X16	LW-4							
		2020K-2T06	●	●	20	-		20	125	28.0	-	19.2					HH5X25								
		2525M-2T06	●	●	25	-		25	150	28.0	-	24.2					HH5X25								
	10	KGD% 1616H-2T10	●	●	16	4.0		16	100	30.2	30.5	15.2					10		2.0	3.0	HH5X16				
		2020K-2T10	●	●	20	-		20	125	30.5	-	19.2									HH5X25				
		2525M-2T10	●	●	25	-		25	150	30.5	-	24.2									HH5X25				
	17	KGD% 1616H-2T17	●	●	16	4.0		16	100	31.2	31.5	15.2					17		2.0	3.0	HH5X16				
		2012K-2T17	●	●	20	-		12	125	32.5	-	11.2									HH5X25				
		2020K-2T17	●	●	20	-		20	125	32.5	-	19.2									HH5X25				
	2.4	17	KGD% 2012K-2.4T17	●	●	20		-	9.5	12	125	32.5					-		11.0	2.0	17	2.4	3.0	HH5X16	LW-4
			2020K-2.4T17	●	●	20		-	20	125	32.5	-					19.0		HH5X25						
3	6	KGD% 1216JX-3T06	●	●	12	2.0	5.5	16	120	19.5	19	14.8	2.4	6	3.0	4.0	SE-50125TR	LW-20							
		1616H-3T06	●	●	16	4.0	16	100	27.7	28.0	14.8	HH5X16													
		2020K-3T06	●	●	20	-	20	125	28.0	-	18.8	HH5X25													
	10	KGD% 1616H-3T10	●	●	16	4.0	16	100	30.2	30.5	14.8	10					3.0		4.0	HH5X16					
		2020K-3T10	●	●	20	-	20	125	30.5	-	18.8									HH5X25					
		2525M-3T10	●	●	25	-	25	150	30.5	-	23.8									HH5X25					
	20	KGD% 1616H-3T20	●	●	16	4.0	16	100	34.2	34.5	14.8	20					3.0		4.0	HH5X16					
		2012K-3T20	●	●	20	-	12	125	34.5	-	10.8									HH5X25					
		2020K-3T20	●	●	20	-	20	125	34.5	-	18.8									HH5X25					
	2525M-3T20	●	●	25	-	25	150	35.5	-	23.8	HH5X25														
4	6	KGD% 1216JX-4T06	●	●	12	2.0	5.5	16	120	19.5	19	14.3	3.4	6	4.0	5.0	SE-50125TR	LW-20							
		KGD% 2020K-4T10	●	●	20	-	20	125	30.5	-	18.3	HH5X16													
	2525M-4T10	●	●	25	-	25	150	30.5	-	23.3	HH5X25														
	10	KGD% 2020K-4T20	●	●	20	-	9.5	20	125	34.5	-	18.3					10		4.0	5.0	HH5X16				
		2525M-4T20	●	●	25	-	25	150	35.5	-	23.3	HH5X25													
25	KGD% 2525M-4T25	●	●	25	-	9.5	25	150	40.5	-	23.3	25	4.0	5.0	HH5X25										
5	10	KGD% 2020K-5T10	●	●	20	-	9.5	20	125	30.5	-	17.8	4.4	10	5.0	6.0	HH5X16								
		2525M-5T10	●	●	25	-	25	150	30.5	-	22.8	HH5X25													
	17	KGD% 2020K-5T17	●	●	20	-	9.5	20	125	37.5	-	17.8					17	5.0	6.0	HH5X25					
		2525M-5T17	●	●	25	-	25	150	37.5	-	22.8	HH5X25													
25	KGD% 2525M-5T25	●	●	25	-	9.5	25	150	40.5	-	22.8	25	5.0	6.0	HH5X25										
6	15	KGD% 2525M-6T15	●	●	25	-	9.5	25	150	32.5	-	22.4	5.3	15	6.0	6.0	HH5X25								
	30	KGD% 2525M-6T30	●	●	25	-	9.5	25	150	45.5	-	22.4					30	6.0	6.0	HH5X25					
8	25	KGD% 2525M-8T25	●	●	25	7.0	9.5	25	150	43.3	44.2	22.0	6.0	25	8.0	8.0	HH6X25								
		3232P-8T25	●	●	32	-	9.5	32	170	43.3	-	29.0					25	8.0	8.0	HH6X25					

Note) 1. Dimension T : Maximum depth to which processing can be made.

(If the dimension T is 20 mm or more, the maximum groove-depth of groove made by the 2-edge insert will be 18 mm.)

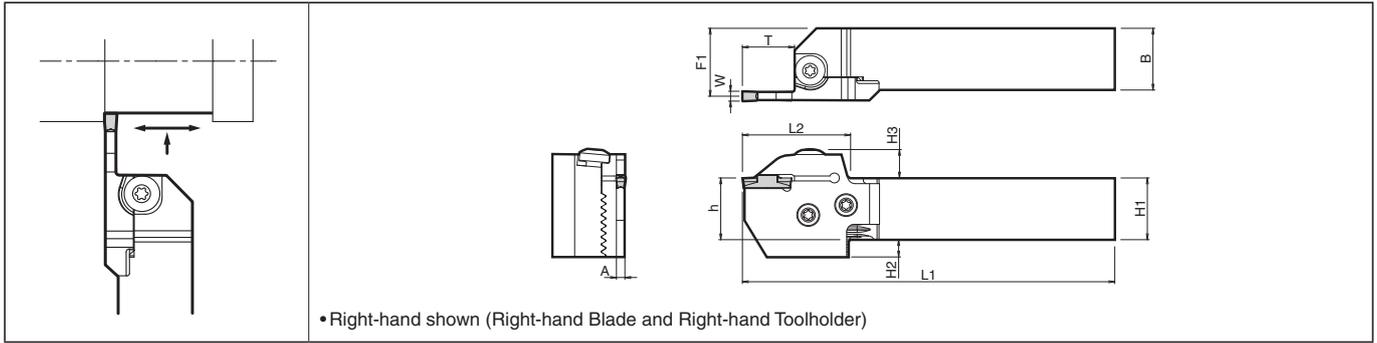
2. Recommended tightening torque of clamp bolt : 6.5N·m (HH5X○○), 8.0N·m (HH6X25), 2.5N·m (SE-50125TR)

3. Above toolholders are applicable to Cut-off, too.

Applicable Inserts **G21, G22**

● : Std. Item

KGD-S (0° Separate Type)



Toolholder Dimensions (Blade + Toolholder)

Shank Angle	Width (mm)	Max. depth of cut (mm)	Shank Size (mm)	Unit Description (Standard Stock Description)	Std.		Blade Description G27	Toolholder Description G27	Dimension (mm)											Edge Width W(mm)	
					R	L			H1-h	H2	H3	B	L1	L2	L3	F1	A	T	MIN.	MAX.	
0°	2	17	□20	KGD% 2020X-2T17S	●	●	KGD% -2T17-C	KGD% 2020-C	20	12	11.6	20	122	40	23.4	1.7	17	2.0	3.0		
			□25	2525X-2T17S	●	●		KGD% 2525-C	25	7		25	147		28.4						
			□32	No unit description →		●		●	KGD% 3232-C	32		-	32		167					35.4	
	3	10	□20	KGD% 2020X-3T10S	●	●	KGD% -3T10-C	KGD% 2020-C	20	12	20	115	33	23.0	2.4	10	3.0	4.0			
			□25	2525X-3T10S	●	●		KGD% 2525-C	25	7	25	140		28.0							
			□32	3232X-3T10S	●	●		KGD% 3232-C	32	-	32	160		35.0							
		20	□20	KGD% 2020X-3T20S	●	●	KGD% -3T20-C	KGD% 2020-C	20	12	20	125	43	23.0							
			□25	2525X-3T20S	●	●		KGD% 2525-C	25	7	25	150		28.0							
			□32	3232X-3T20S	●	●		KGD% 3232-C	32	-	32	170		35.0							
	4	10	□20	KGD% 2020X-4T10S	●	●	KGD% -4T10-C	KGD% 2020-C	20	12	20	115	33	22.5	3.4	20	4.0	5.0			
			□25	2525X-4T10S	●	●		KGD% 2525-C	25	7	25	140		27.5							
			□32	3232X-4T10S	●	●		KGD% 3232-C	32	-	32	160		34.5							
		20	□20	KGD% 2020X-4T20S	●	●	KGD% -4T20-C	KGD% 2020-C	20	12	20	125	43	22.5							
			□25	2525X-4T20S	●	●		KGD% 2525-C	25	7	25	150		27.5							
			□32	3232X-4T20S	●	●		KGD% 3232-C	32	-	32	170		34.5							
		25	□20	KGD% 2020X-4T25S	●	●	KGD% -4T25-C	KGD% 2020-C	20	12	20	130	48	22.5							
			□25	2525X-4T25S	●	●		KGD% 2525-C	25	7	25	155		27.5							
			□32	3232X-4T25S	●	●		KGD% 3232-C	32	-	32	175		34.5							
	5	10	□20	KGD% 2020X-5T10S	●	●	KGD% -5T10-C	KGD% 2020-C	20	12	20	115	33	22.0	4.4	10	5.0	6.0			
			□25	2525X-5T10S	●	●		KGD% 2525-C	25	7	25	140		27.0							
			□32	3232X-5T10S	●	●		KGD% 3232-C	32	-	32	160		34.0							
		25	□20	KGD% 2020X-5T25S	●	●	KGD% -5T25-C	KGD% 2020-C	20	12	20	130	48	22.0							
			□25	2525X-5T25S	●	●		KGD% 2525-C	25	7	25	155		27.0							
			□32	3232X-5T25S	●	●		KGD% 3232-C	32	-	32	175		34.0							

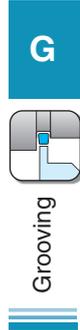
- Note) 1. When using the toolholder in normal mounting position, the lower jaw of toolholder may interfere with the tool presetter. Applicable Inserts **G21, G22**
 2. The toolholder and blade descriptions are printed on the toolholder body. (Unit description is not printed.)
KGD-S: Right-hand Blade for Right-hand Toolholder, Left-hand Blade for Left-hand Toolholder.
The toolholder is applicable for all blade with suitable hand.
 3. In case the unit description is not available (No unit description), please purchase toolholder and blade separately.
 4. Dimension T : Maximum depth to which processing can be made. (If the dimension T is 20 mm or more, the maximum groove-depth of groove made by the 2-edge insert will be 18 mm.)

Spare Parts (Common with separate types)

* The parts are included in the toolholder and unit.

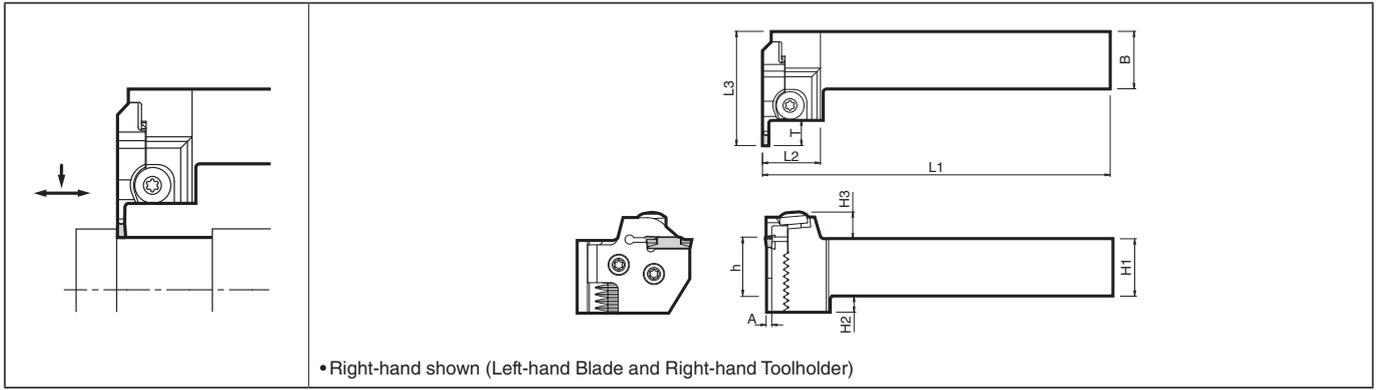
Unit Description	Spare Parts		
	Clamp Bolt (for Insert Clamp)	Clamp Screw (for Blade)	Wrench
KGD%L.....S			
	BH6X10TR	SB-60120TR	LTW-25

● : Std. Item



Grooving Toolholder

KGDS-S (90° Separate Type)



Toolholder Dimensions (Blade + Toolholder)

Shank Angle	Width (mm)	Max. depth of cut (mm)	Shank Size (mm)	Blade Description G27	Toolholder Description G27	Unit Description (Standard Stock Description)	Std.	Dimension (mm)											Edge Width W(mm)								
								R	L	H1=h	H2	H3	B	L1	L2	L3	F1	A	T	MIN.	MAX.						
90°	2	17	<input type="checkbox"/> 20	KGD ^{1/2} _R -2T17-C	KGDS ^{1/2} _L -2020-C	-	-	-	20	12	11.6	20	125	27.7	56.7	-	1.7	17	2.0	3.0							
			<input type="checkbox"/> 25		KGDS ^{1/2} _L -2525-C	-	-	-	25	7		25	150														
	3	10	<input type="checkbox"/> 20	KGD ^{1/2} _R -3T10-C	KGDS ^{1/2} _L -2020-C	KGDS ^{1/2} _L 2020X-3T10S	●	●	20	12		20	125								59.7	49.7	-	2.4	10	3.0	4.0
			<input type="checkbox"/> 25		KGDS ^{1/2} _L -2525-C	2525X-3T10S	●	●	25	7		25	150														
		20	<input type="checkbox"/> 20	KGD ^{1/2} _R -3T20-C	KGDS ^{1/2} _L -2020-C	-	-	-	20	12		20	125														
			<input type="checkbox"/> 25		KGDS ^{1/2} _L -2525-C	-	-	-	25	7		25	150														
	4	10	<input type="checkbox"/> 20	KGD ^{1/2} _R -4T10-C	KGDS ^{1/2} _L -2020-C	-	-	-	20	12		20	125								59.7	49.7	-	3.4	20	4.0	5.0
			<input type="checkbox"/> 25		KGDS ^{1/2} _L -2525-C	-	-	-	25	7		25	150														
		20	<input type="checkbox"/> 20	KGD ^{1/2} _R -4T20-C	KGDS ^{1/2} _L -2020-C	-	-	-	20	12		20	125														
			<input type="checkbox"/> 25		KGDS ^{1/2} _L -2525-C	-	-	-	25	7		25	150														
		25	<input type="checkbox"/> 20	KGD ^{1/2} _R -4T25-C	KGDS ^{1/2} _L -2020-C	-	-	-	20	12		20	125														
			<input type="checkbox"/> 25		KGDS ^{1/2} _L -2525-C	-	-	-	25	7		25	150														
5	10	<input type="checkbox"/> 20	KGD ^{1/2} _R -5T10-C	KGDS ^{1/2} _L -2020-C	-	-	-	20	12	20	125	64.7	49.7	-	4.4	10	5.0	6.0									
		<input type="checkbox"/> 25		KGDS ^{1/2} _L -2525-C	-	-	-	25	7	25	150																
	25	<input type="checkbox"/> 20	KGD ^{1/2} _R -5T25-C	KGDS ^{1/2} _L -2020-C	-	-	-	20	12	20	125																
		<input type="checkbox"/> 25		KGDS ^{1/2} _L -2525-C	-	-	-	25	7	25	150																

Note) 1. When using the toolholder in normal mounting position, the lower jaw of toolholder may interfere with the tool presetter. Applicable Inserts ● G21, G22

2. The toolholder and blade descriptions are printed on the toolholder body. (Unit description is not printed.)

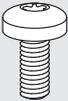
KGDS-S: Left-hand Blade for Right-hand Toolholder, Right-hand Blade for Left-hand Toolholder.

The toolholder is applicable for all blade with suitable hand.

3. Dimension T : Maximum depth to which processing can be made. (If the dimension T is 20 mm or more, the maximum groove-depth of groove made by the 2-edge insert will be 18 mm.)

Spare Parts (Common with separate types)

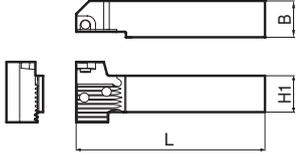
* The parts are included in the toolholder and unit.

Unit Description	Spare Parts		
	Clamp Bolt (for Insert Clamp)	Clamp Screw (for Blade)	Wrench
KGDS ^{1/2} _L ...S	 BH6X10TR	 SB-60120TR	 LTW-25

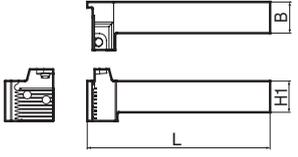
● : Std. Item

● Toolholder

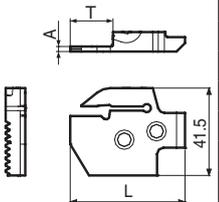
KGDS (0° Separate Type)

Shape of 0° type Right-hand shown	Toolholder Description	Std.		Dimension		
		R	L	L	B	H1
	KGDS% 2020-C	●	●	104	20	20
	2525-C	●	●	129	25	25
	3232-C	●	●	149	32	32

KGDS-S (90° Separate Type)

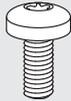
Shape of 90° type Right-hand shown	Toolholder Description	Std.		Dimension		
		R	L	L	B	H1
	KGDS% 2020-C	●	●	122	20	20
	2525-C	●	●	147	25	25

● Blade

Shape of Blade Right-hand shown	Blade Description	Std.		Dimension		
		R	L	L	T	A
	KGDS% -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	4.4
	-5T10-C	●	●	44.2	10.2	
	-5T25-C	●	●	59.2	25.2	

● Spare Parts (Common with separate types)

* The parts are included in the toolholder.

Unit Description	Spare Parts		
	Clamp Bolt (for Insert Clamp)	Clamp Screw (for Blade)	Wrench
			
KGDS%.....S KGDS-S%.....S	BH6X10TR	SB-60120TR	LTW-25

Setting the inserts and the blade

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).

Clamp Screw (For Automatic Lathe)	Recommended tightening torque : 2.0N·m(SB-40120TR) 2.5N·m(SE-50125TR)
Clamp Bolt	Recommended tightening torque : 6.5N·m(Width 2-6mm) 8.0N·m(Width 8mm)

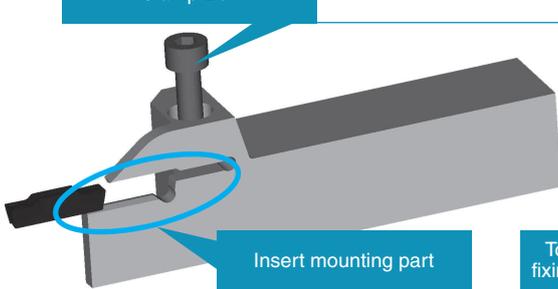
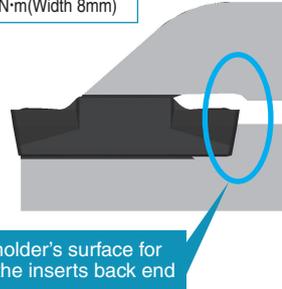


Fig.1



Toolholder's surface for fixing the inserts back end

Fig.2

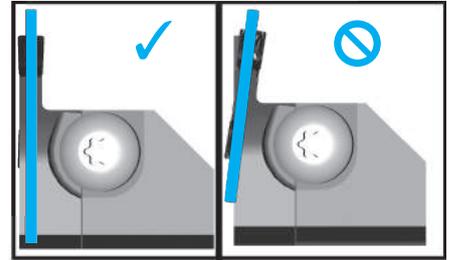


Fig.3

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.

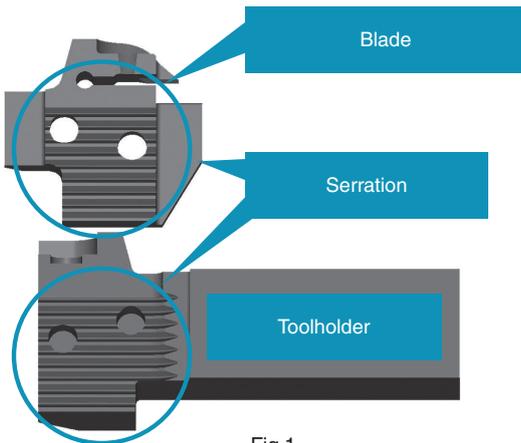


Fig.1

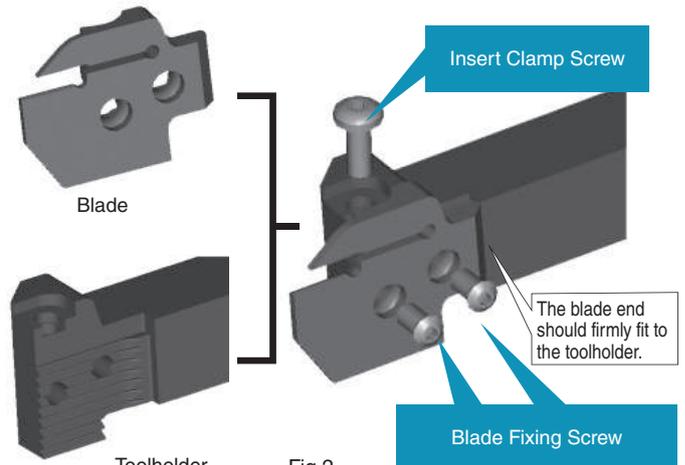
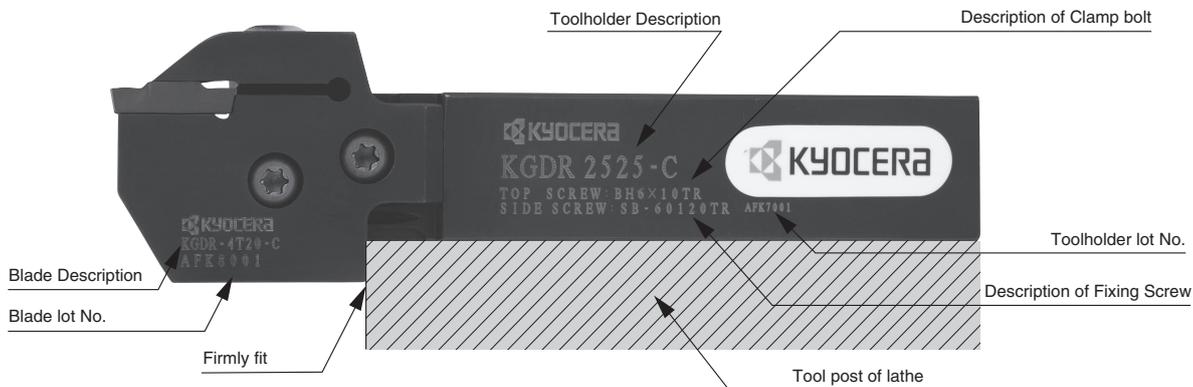


Fig.2

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

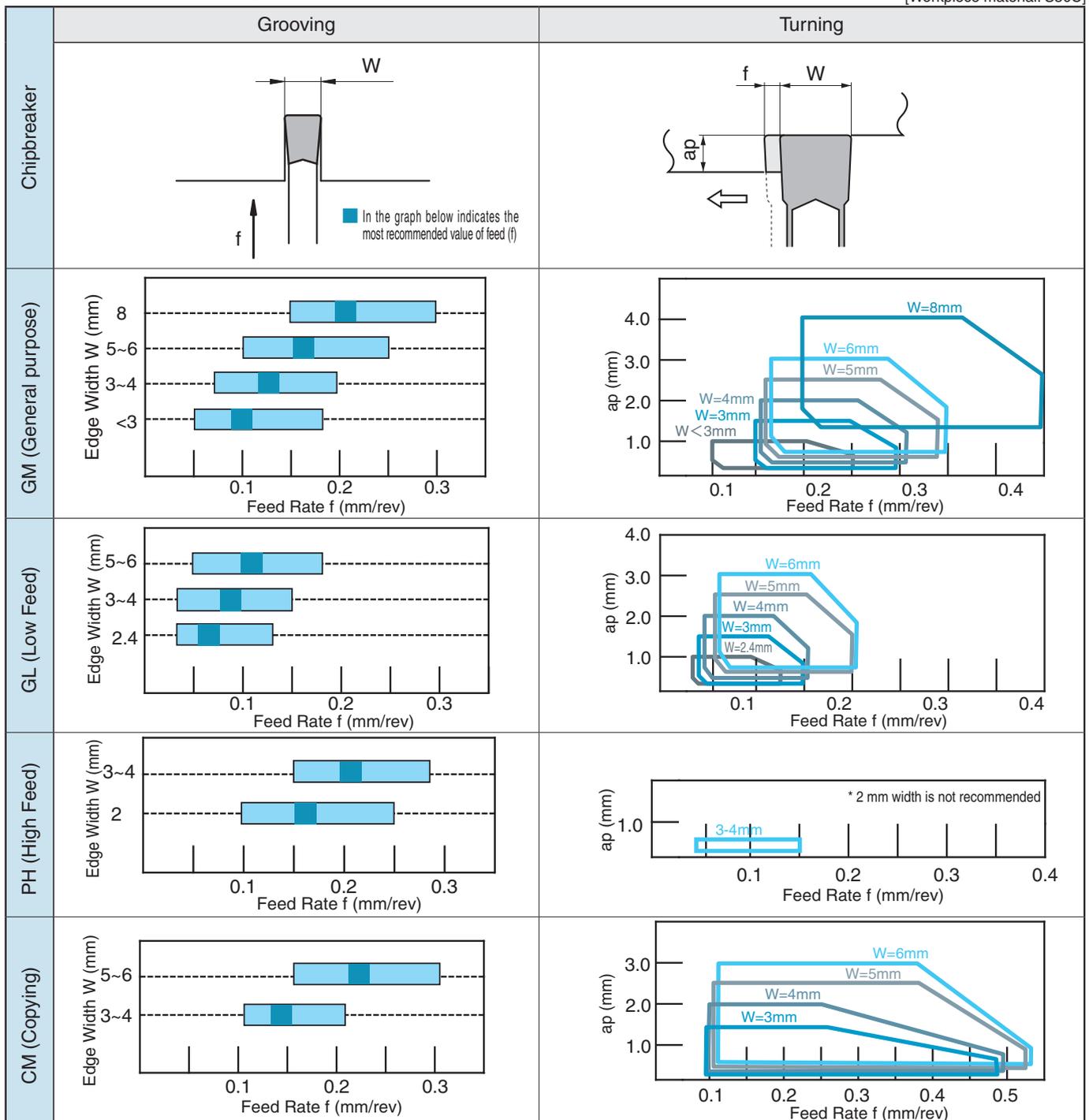
Recommended Cutting Conditions (Vc)

Workpiece Material	Chipbreaker	Recommended Insert Grades (Cutting Speed 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	-	-	-	-	
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 Alloys	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]



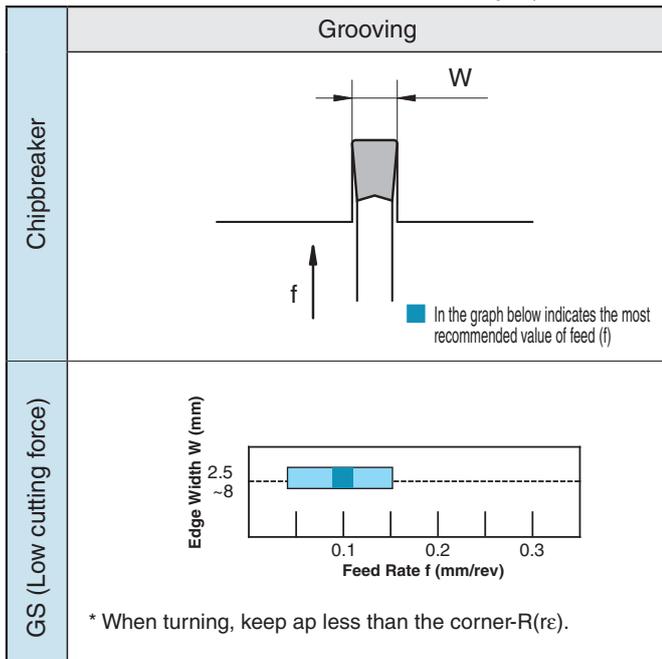
Note) 1. The above values are based on the condition that the dimension T of toolholder is 17 mm or less.

2. If the toolholder is not for the 8mm width insert and its dimension T is over 17mm, set the values for turning to less than 90% of those above.



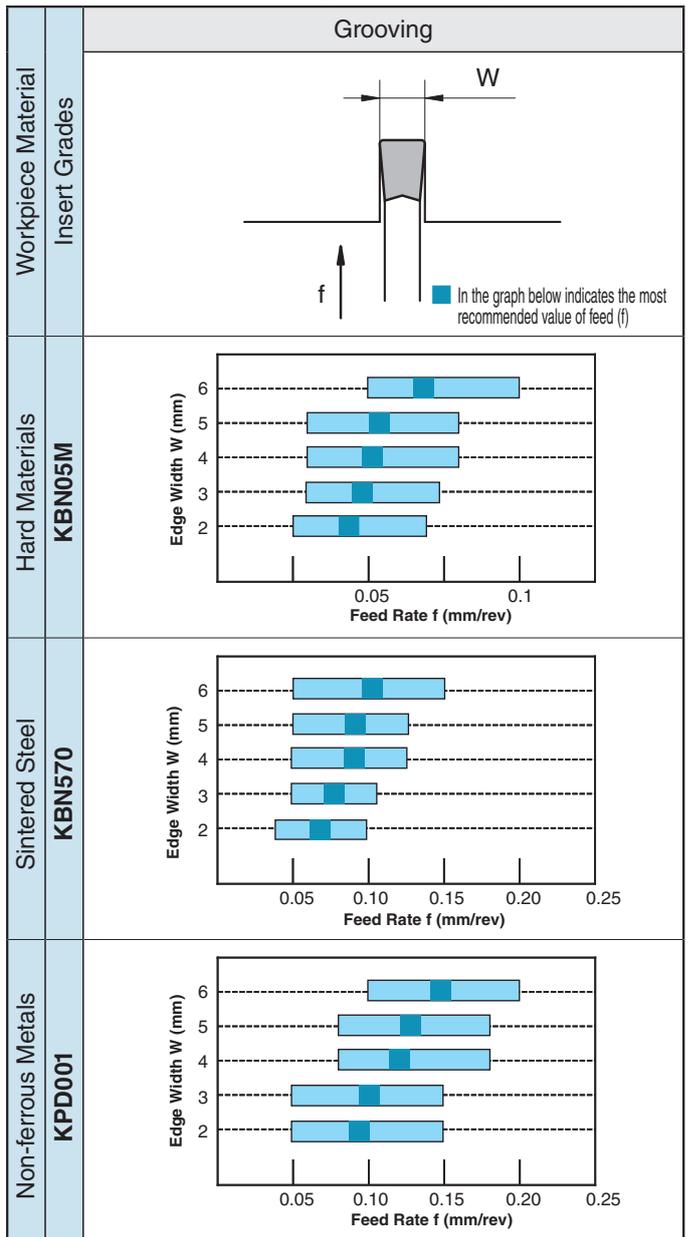
Recommended Cutting Conditions

Recommended Cutting Conditions (Feed Rate / ap) [Workpiece material: S50C]



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

Recommended Cutting Conditions (Feed Rate)



G

Grooving

External

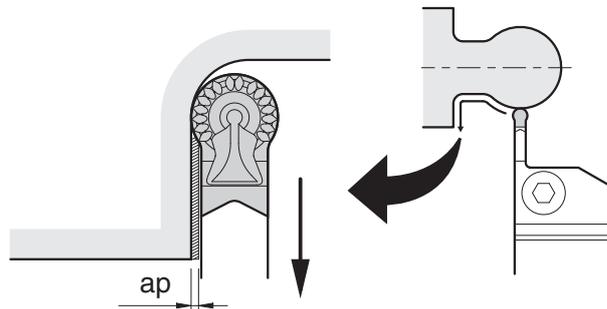
Internal

Face

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

Max. ap in back copying

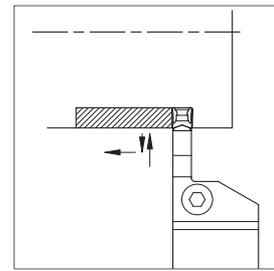
Description	Max. ap (ap : mm)				
	Toolholder Description				
	KGD....2T...	KGD....3T...	KGD....4T...	KGD....5T...	KGD....6T...
GDM 3020N-150R-CM	0.24	0.20	-	-	-
4020N-200R-CM	-	0.24	0.20	-	-
5020N-250R-CM	-	-	0.30	0.20	-
6020N-300R-CM	-	-	-	0.30	0.25



Guide for External Grooving

Point (I) (Turning after Grooving)

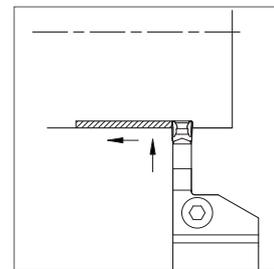
- 1) Grooving Depth Over 0.5mm: For roughing (Refer to Fig. 1)
Before turning, pull the tool back about 0.1mm after grooving, instead of turning subsequent to grooving.
(Failure to pull the tool back before traverse machining will result in an unbalanced load applied on only one side of the cutting edge.)



Before turning, pull the tool back about 0.1mm after grooving.
(Grooving Depth Over 0.5mm: At roughing)

Fig.1

- 2) Grooving Depth under 0.5mm: 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.)



Turning subsequent to grooving
(Grooving Depth under 0.5mm: At finishing)

Fig.2

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 over 0.5mm is recommended.)
- Note) If the workpiece is not supported at the center, reduce the feed rate when grooving towards center.

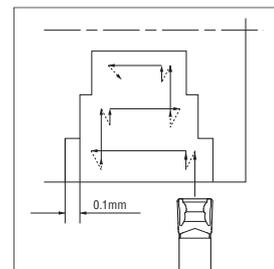


Fig.3

G



Grooving



Case Studies

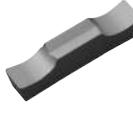
20Cr1H (Grooving)	
<ul style="list-style-type: none"> ·Gear ·Vc=113~164 m/min ·f=0.06 mm/rev ·Wet ·GDM4020N-040GM (PR1225) ·KGD2525X-3T10S 	
GM Chipbreaker (PR1225)	1,500 pcs/C
Competitor K (PVD Coated Carbide)	250 pcs/C
<p>· GM chipbreaker (PR1225) showed 6 times longer tool life than that of Competitor K.</p> <p>· Good chip control without burned chips.</p>	
(Evaluation by the user)	

20CrMo (Grooving / Turning)	
<ul style="list-style-type: none"> ·Gear ·Vc=170m/min ·f=0.15 mm/rev(Roughing) 0.10 mm/rev(Finishing) ·ap=0.2mm(Finishing) ·Wet ·GDM4020N-040GM (PR1215) ·KGDR2525X-4T20S 	
GM Chipbreaker (PR1215)	250 pcs/C
Competitor L (Roughing: PVD Coated Carbide) (Finishing: Cermet)	200 pcs/C
<p>· GM chipbreaker reduced occurrence rate of tangle of chips (occurrence rate 80% → 10%). The problem was persistent with Competitor L. Machining productivity is improved.</p>	
(Evaluation by the user)	

Multi-Function / Grooving (Cut-off)

GMM / GMG (Will be switched to GDM / GDG ⚡ G21~G22)

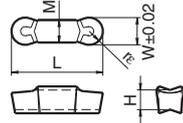
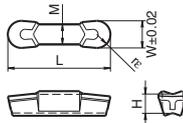
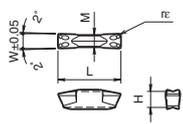
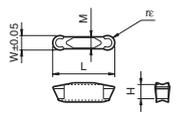
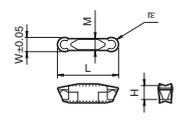
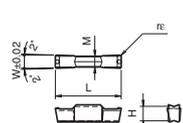
Classification of usage	P	Carbon steel / Alloy steel			☺	☹		
	M	Stainless Steel			☹	☺		
● : Continuous-Light Interruption / 1st Choice ☺ : Continuous-Light Interruption / 2nd Choice ● : Continuous / 1st Choice ○ : Continuous / 2nd Choice	K	Cast Iron					☹	☺
	N	Non-ferrous Metals						☹
S	Titanium Alloys							☹
H	Hard materials (~40HRC)				○	●		
	Hard materials (40HRC~)							

Insert	Description	Dimension (mm)						Cermet TN90	CVD Coated Carbide CR9025	PVD Coated Carbide			Carbide KW10	See Page for Applicable Toolholders
		W	re	M	L	H	PR915			PR930	PR905			
 Chip Control Oriented / M Class	GMM 2420-020MW	2.4	0.2	1.9	20	4.3	●	●	●	●	●	●	G36 G37	
	3020-020MW	3.0	0.2	2.3			●	●	●	●	●	●		●
	3020-040MW		0.4				●	●	●	●	●	●		
	4020-020MW	4.0	0.2	3.3			●	●	●	●	●	●		●
	4020-040MW		0.4				●	●	●	●	●	●		
	4020-080MW		0.8				●	●	●	●	●	●		
	5020-040MW	5.0	0.4	4.2			●	●	●	●	●	●		●
	5020-080MW		0.8				●	●	●	●	●	●		
	6020-040MW	6.0	0.4	5.2			●	●	●	●	●	●		●
6020-080MW	0.8		●		●	●	●	●	●					
8030-080MW	8.0	0.8	6.0	30	5.5	●	●	●	●	●	●	G36,G64		
 Sharp-Cutting Oriented / M Class	GMM 3020-020MS	3.0	0.2	2.3	20	4.3	●	●	●	●	●	G36 G37		
	3020-040MS		0.4				●	●	●	●	●			
	4020-040MS	4.0	0.4	3.3			●	●	●	●	●			
	5020-040MS	5.0	0.4	4.2			●	●	●	●	●		●	
	6020-040MS		0.8				●	●	●	●	●			
 Sharp-Cutting Oriented / Precision Class	GMG 3020-000MS	3.0	0.0	2.3	20	4.3	●	●	●	●	●	G36 G37		
	3020-020MS		0.2				●	●	●	●	●			
	3020-040MS	0.4	●	●			●	●	●	●				
	4020-020MS	4.0	0.2	3.3			●	●	●	●	●		●	
	4020-040MS		0.4				●	●	●	●	●		●	
	4020-080MS		0.8				●	●	●	●	●		●	
	5020-040MS	5.0	0.4	4.2			●	●	●	●	●		●	
	5020-080MS		0.8				●	●	●	●	●		●	
6020-040MS	6.0	0.4	5.2	●	●	●	●	●	●					
6020-080MS		0.8		●	●	●	●	●	●					
 Sharp-Cutting Oriented / Precision Class Ground Chipbreaker	GMG 2520-030MG	2.5	0.3	2.0	20	4.3	●	●	●	●	●	G36 G37		
	3020-030MG						2.3	●	●	●	●		●	
	3520-030MG						2.8	●	●	●	●		●	
	4020-040MG	4.0	0.4	3.3			●	●	●	●	●		●	
	5020-040MG						4.2	●	●	●	●		●	
	6020-040MG	6.0	0.5	5.2			●	●	●	●	●		●	
	8030-050MG						5.5	●	●	●	●		●	●
 Chip Control Oriented / M Class Full-R / Copying	GMM 3020-150R	3.0	1.5	2.3	20	4.3	●	●	●	●	●	G36 G37		
	4020-200R						2.0	3.3	●	●	●		●	●
	5020-250R						2.5	4.2	●	●	●		●	●
	6020-300R						3.0	5.2	●	●	●		●	●
 Sharp-Cutting Oriented / Precision Class Full-R / Copying	GMG 3020-150R	3.0	1.5	2.3	20	4.3	●	●	●	●	●	G36 G37		
	4020-200R						2.0	3.3	●	●	●		●	●
	5020-250R						2.5	4.2	●	●	●		●	●
	6020-300R						3.0	5.2	●	●	●		●	●
 Undercutting Chip Control Oriented	GMG 3020-150RU	3.0	1.5	2.3	20	4.3	●	●	●	●	●	G36 G37 G39		
	4020-200RU						2.0	3.3	●	●	●		●	●
	5020-250RU						2.5	4.2	●	●	●		●	●

Recommended Cutting Conditions ⚡ G107

● : Std. Item

GMM / GMGA / FGG

Insert		Description	Dimension (mm)					Cermet		CVD Coated Carbide		PVD Coated Carbide		Carbide	See Page for Applicable Toolholders
			W	r _ε	M	L	H	TN90	CR9025	PR915	PR930	KW10			
 Sharp-Cutting Oriented / Precision Class Full-R / Copying		 GMGA 6020-300R	6.0	3.0	4.3	20	4.3								G36 G37
 Sharp-Cutting Oriented / Precision Class Full-R / Copying		 GMGA 8030-400R	8.0	4.0	6.0	30	5.5								G36 G64
 Chip Control Oriented / M Class		 GMM 3014-04	3.0	0.4	2.3	14	4.3	●	●	●	●	●	●	●	
 Chip Control Oriented / M Class Full-R / Copying		 GMM 3014-15R	3.0	1.5	2.3	14	4.3	●				●	●		G38
 Chip Control Oriented Undercutting		 GMM 3014-15RU	3.0	1.5	2.3	14	4.3					●			
 Chip Control Oriented / Precision Class Face Grooving		 FGG ^{R/L} 3020-02 4020-04 5020-04	3.0 4.0 5.0	0.2 0.4 0.4	2.3 3.3 4.2	20	4.3	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	● ● ● ● ● ●	● ● ● ● ● ●	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	● ● ● ● ● ●	G38

Recommended Cutting Conditions  G107

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(r _ε) and minimize the core which remains in the center of the face.
GMM-TK		Large corner-R(r _ε) and stable performance at cut-off.
GMM-NB		Flat rake face and non-chipbreaker. It works well for brass.

Edge Preparation

Edge Prep.	Chamfer + Honed Corner-R(r _ε) = 0.05	Chamfer + Honed Sharp Corner
	MT Chipbreaker	
Edge Prep.	CR9025 / PR915 Chamfer + Honed Corner-R(r _ε) = 0.2-0.3	PR930 / KW10 Sharp Edge Corner-R(r _ε) = 0.2-0.3
		
TK Chipbreaker	CR9025 / PR915 Honed Corner-R(r _ε) = 0.05	PR930 / KW10 Sharp Edge Sharp Corner
Edge Prep.		
	CR9025	PR930 / KW10
Without Chipbreaker (-NB)	CR9025	PR930 / KW10

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

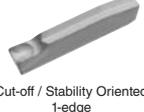
● : Std. Item
□ : Deleted from the next catalogue

Inserts are sold in 10 piece boxes.

Grooving / Cut-off (Multi-Function)

GMM / GMN

Classification of usage	P	Carbon steel / Alloy steel				
	M	Stainless Steel			☺	☹
●	Continuous-Light Interruption / 1st Choice	K	Cast Iron			☹
☺	Continuous-Light Interruption / 2nd Choice	N	Non-ferrous Metals			☹
●	Continuous / 1st Choice	S	Titanium Alloys			☹
○	Continuous / 2nd Choice	H	Hard materials (~40HRC)		○	●
			Hard materials (40HRC~)			

Insert	Description	Dimension (mm)					Angle	Cermel	CVD Coated Carbide	PVD Coated Carbide	Carbide	See Page for Applicable Toolholders								
		W	r _ε	M	L	H							θ	TN90	CR9025	PR915	PR930	KW10		
 <p>Deep Grooving / Cut-off Sharp-Cutting Oriented</p>	GMM 1520-MT	1.5	0.0 0.05	1.2	20	4.3	-				●	G36 G37								
	2020-MT	2.0	0.0 0.05	1.5						●	●		●	●						
	2520-MT	2.5	0.0 0.05	1.9						●	●		●	●						
	3020-MT	3.0	0.0 0.05	2.3						●	●		●	●						
 <p>Deep Grooving / Cut-off Sharp-Cutting Oriented Without Chipbreaker</p>	GMM 1520-NB	1.5	0.0 0.05	1.2	20	4.3	-				●									
	2020-NB	2.0	0.0 0.05	1.5						●				●						
	2520-NB	2.5	0.0 0.05	1.9						●				●						
	3020-NB	3.0	0.0 0.05	2.3						●				●						
 <p>Deep Grooving / Cut-off Stability Oriented</p>	GMM 2020-TK	2.0	0.20	1.5	20	4.3	-			●	●		●							
	2520-TK	2.5		1.9						●	●		●	●						
	3020-TK	3.0	0.25	2.3						●	●		●	●						
 <p>Cut-off / Stability Oriented 1-edge</p>	GMN 2-TK	2.0	0.20	1.5	20	4.3	-			●	●		●							
	3-TK	3.0	0.25	2.3						●	●	●	●							
	4-TK	4.0	0.30	3.3									●							
 <p>Deep Grooving / Cut-off 1-edge</p>	GMN 2.2	2.2	0.17	1.8	20	4.3	-	●	●		●	●								
	3	3.0	0.20	2.3						●	●		●	●						
	4	4.0	0.25	3.3						●	●		●	●						
	5	5.0	0.80	4.2									●	●						
	6	6.0	0.80	5.2									●	●						
 <p>Cut-off Sharp-Cutting Oriented With lead angle</p>	GMM 1520^βL-MT-15D	1.5	0 0.05	1.2	20	4.3	15°	R	L	R	L	R	L	R	L	●	●	●	●	
	2020^βL-MT-15D	2.0	0 0.05	1.5						●	●	●		●	●	●	●	●	●	●
	2520^βL-MT-15D	2.5	0 0.05	1.9						●	●	●		●	●	●	●	●	●	●
	3020^βL-MT-15D	3.0	0 0.05	2.3						●	●	●		●	●	●	●	●	●	●
 <p>Cut-off Stability Oriented With lead angle</p>	GMM 2020R-TK-8D	2.0	0.20	1.5	20	4.3	8°				●	●	●	●						
	2520R-TK-8D	2.5	0.20	1.9						●	●	●	●	●	●					
	3020R-TK-8D	3.0	0.25	2.3						●	●	●	●	●	●					
 <p>Cut-off / Stability Oriented 1-edge / Lead Angle</p>	GMR 2-TK-8D	2.0	0.20	1.5	20	4.3	8°					●	●	●	●					
	3-TK-8D	3.0	0.25	2.3									●	●	●	●				
	4-TK-8D	4.0	0.30	3.3																
 <p>Cut-off / Sharp-Cutting Oriented 1-edge / Lead Angle</p>	GM^βL 2.2-8D	2.2	0.17	1.8	20	4.3	8°	●	●		●	●	●	●						
	2.2-15D		0.00							●	●		●	●						
	3-4D	3.0	0.20	2.3					4°	●	●	●	●	●	●					
	4-4D	4.0	0.25	3.3						●	●									

Recommended Cutting Conditions **G107**

● : Std. Item

G34

Inserts are sold in 10 piece boxes.

GMN

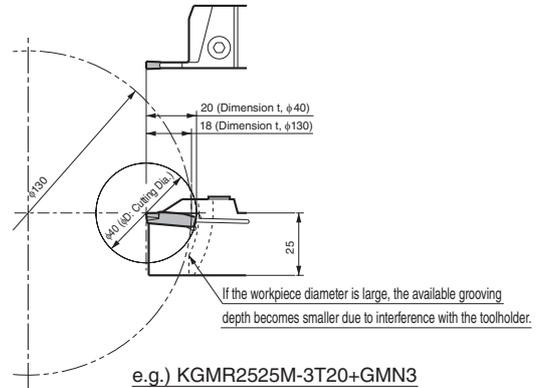
Classification of usage ● : Continuous-Light Interruption / 1st Choice ○ : Continuous-Light Interruption / 2nd Choice ● : Continuous / 1st Choice ○ : Continuous / 2nd Choice	P	Carbon steel / Alloy steel				
	M	Stainless Steel				
	K	Cast Iron				
	N	Non-ferrous Metals			●	
	S	Titanium Alloys			●	
	H	Hard materials (~40HRC)				
		Hard materials (40HRC~)	○	●		

Insert	Description	Dimension (mm)					Angle	CBN		PCD		See Page for Applicable Toolholders
		W	r _ε	M	L	H		θ	KBN510	KBN525	KPD001	
	GMN 2	2.0	0.2 0.4	1.8	20	4.3	-	●	●	●	●	G36 G37
	3	3.0	0.2 0.4	2.3				●	●	●	●	
	4	4.0	0.2 0.4	3.3				●	●	●	●	
	5	5.0	0.2 0.4	4.2				●	●	●	●	
	6	6.0	0.2 0.4	5.2				●	●	●	●	

Recommended Cutting Conditions **G106**

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

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



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

Toolholder Description	φD (Cutting Dia.)																
	10	14	16	32	∞	10	14	16	32	∞	10	14	16	32	∞		
KGM^{φ/L} 0810K-1.5-125	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
1010-1.5...	-	-	-	-	-	-	-	20	25	32	40	60	∞	∞	∞		
1212-1.5...	-	-	-	-	25	26	28	32	36	40	60	100	∞	∞	∞		
0810K-2-125	-	-	-	-	-	-	-	-	-	-	-	-	10	14	16	32	
1010-2...	-	-	-	-	-	-	-	20	25	32	40	60	∞	∞	∞	∞	
1212-2...	-	-	-	-	25	26	28	50	∞	∞	∞	∞	∞	∞	∞	∞	
1616-2...	32	40	50	60	80	100	∞	∞	∞	∞	∞	∞	∞	∞	∞	∞	
1010-2.5...	-	-	-	-	-	-	-	20	25	32	40	60	∞	∞	∞	∞	
1212-2.5...	-	-	-	-	25	26	28	32	36	40	60	100	∞	∞	∞	∞	
1616-2.5...	32	40	50	60	80	100	∞	∞	∞	∞	∞	∞	∞	∞	∞	∞	
1616-3...	32	40	50	60	80	100	∞	∞	∞	∞	∞	∞	∞	∞	∞	∞	
Available Grooving Depth t (mm)	16	15	14	13	12.5	12	11	10	9	8	7	6	5	4	3	2	1

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

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

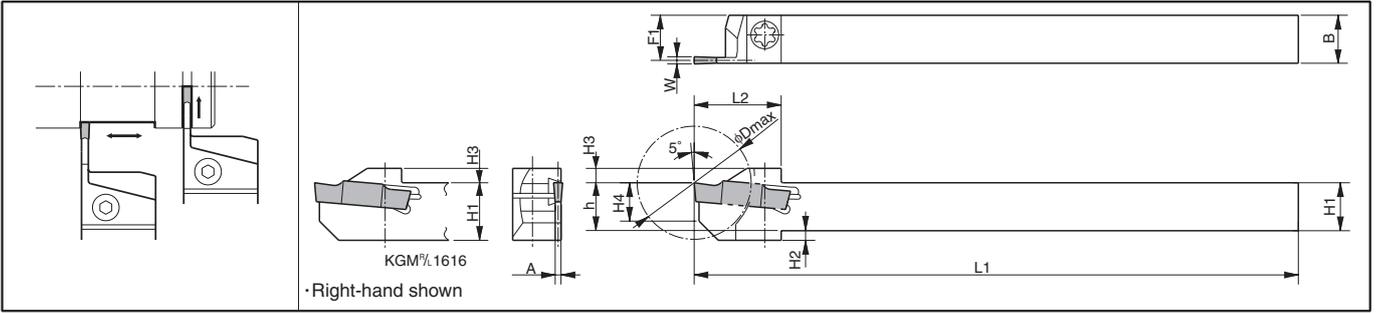
● : Std. Item

CBN & PCD Inserts are sold in 1 piece boxes.

External Grooving Toolholders

KGM (For Automatic Lathe) (Will be switched to KGD \odot G23)

Edge Width: 1.5~4.0mm

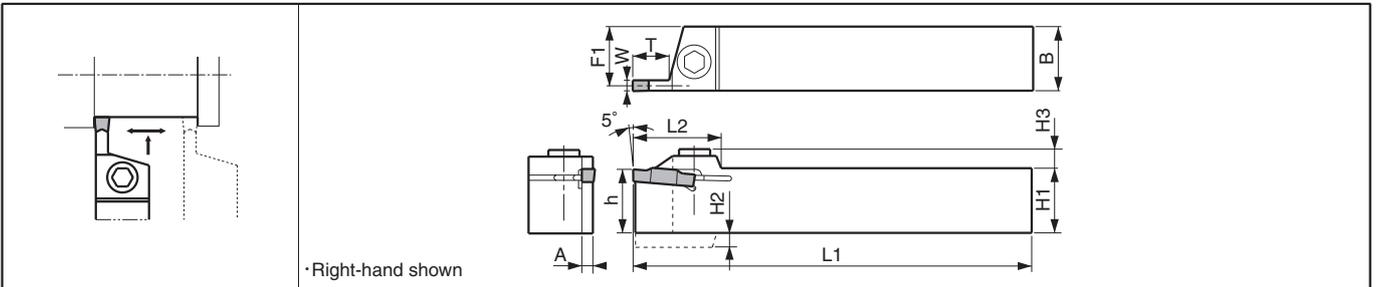


Toolholder Dimensions

Description	Std.		Cutting Dia. ϕDmax	Dimension (mm)										Edge Width W (mm)		Spare Parts	
	R	L		H1-h	H2	H3	H4	B	L1	L2	F1	A	MIN.	MAX.			
KGM ^{R/L} 1010JX-1.5	●	●	20	10	2	3	8	10	120	18	9.4	1.2	1.5	2.0	SE-40120TR	LTW-15S	
	●	●	25	12		4	10	12		19	11.4						
KGM ^{R/L} 1010JX-2	●	●	20	10	2	3	8	10	120	18	9.15	1.7	2.0	3.0	SE-40120TR	LTW-15S	
	●	●	25	12		4	10	12		19	11.15						
	●	●	32	16		-	4	9		16	24.5						15.15
KGM ^{R/L} 1616JX-2	●	●	32	16	-	4	9	16	120	24.5	15.15	2.4	3.0	4.0	SE-50125TR	LTW-20	
	●	●	20	10	2	3	8	10	120	18	9	2.0	2.4	3.0	SE-40120TR	LTW-15S	
	●	●	25	12	4	10	12	120	19	11	24.5	15	SE-50125TR	LTW-20			
KGM ^{R/L} 1616JX-2.5	●	●	32	16	-	4	9	16	120	24.5	15	2.4	3.0	4.0	SE-50125TR	LTW-20	
KGM ^{R/L} 1616JX-3	●	●	32	16	-	4	9	16	120	24.5	14.8	2.4	3.0	4.0	SE-50125TR	LTW-20	
KGM ^{R/L} 1212F-1.5-85	●		25	12	2	4	10	12	85	19	11.4	1.2	1.5	2.0	SE-40120TR	LTW-15S	
KGM ^{R/L} 1212F-2-85	●	●	25	12	2	4	10	12	85	19	11.15	1.7	2.0	3.0	SE-40120TR	LTW-15S	
KGM ^{R/L} 1212F-2.5-85	●	●	25	12	2	4	10	12	85	19	11	2.0	2.4	3.0	SE-40120TR	LTW-15S	

KGM (Will be switched to KGD \odot G24~G25)

Edge Width: 3.0~8.0mm



Toolholder Dimensions

Description	Std.		Dimension (mm)										Edge Width W (mm)		Spare Parts				
	R	L	H1-h	H2	H3	B	L1	L2	F1	A	T	MIN.	MAX.						
KGM ^{R/L} 1212H-3	●	●	12	4	6	12	100	27	10.8	2.4	9	3.0	3.0	SB-5TR	-	LTW-20	-		
	●	●	16		7	16			14.8										
	●	●	20		-	7			20									125	18.8
	●	●	25		-	7			25									150	23.8
KGM ^{R/L} 2020K-3	●	●	20	-	7	20	125	27	18.3	3.4	10	4.0	5.0	-	-	-	LW-4		
	●	●	25	-	7	25	150	27	23.3	3.4	10	4.0	5.0	-	-	-	LW-4		
KGM ^{R/L} 2525M-3	●	●	20	-	7	20	125	27	18.3	3.4	10	4.0	5.0	-	-	-	LW-4		
	●	●	25	-	7	25	150	27	23.3	3.4	10	4.0	5.0	-	-	-	LW-4		
	●	●	32	-	7	32	170	27	29.8	3.4	10	5.0	6.0	-	-	-	LW-4		
KGM ^{R/L} 2020K-4	●	●	20	-	7	20	125	27	17.8	4.4	10	5.0	6.0	-	-	-	LW-4		
	●	●	25	-	7	25	150	27	22.8	4.4	10	5.0	6.0	-	-	-	LW-4		
KGM ^{R/L} 2525M-4	●	●	20	-	7	20	125	27	17.8	4.4	10	5.0	6.0	-	-	-	LW-4		
	●	●	25	-	7	25	150	27	22.8	4.4	10	5.0	6.0	-	-	-	LW-4		
KGM ^{R/L} 3232P-5	●	●	32	-	7	32	170	27	29.8	4.4	10	5.0	6.0	-	-	-	LW-4		
	●	●	32	-	7	32	170	27	29.8	4.4	10	5.0	6.0	-	-	-	LW-4		
KGM ^{R/L} 2020K-5	●	●	20	-	7	20	125	27	17.8	4.4	10	5.0	6.0	-	-	-	LW-4		
	●	●	25	-	7	25	150	27	22.8	4.4	10	5.0	6.0	-	-	-	LW-4		
KGM ^{R/L} 2525M-5	●	●	20	-	7	20	125	27	17.8	4.4	10	5.0	6.0	-	-	-	LW-4		
	●	●	25	-	7	25	150	27	22.8	4.4	10	5.0	6.0	-	-	-	LW-4		
KGM ^{R/L} 3232P-5	●	●	32	-	7	32	170	27	29.8	4.4	10	5.0	6.0	-	-	-	LW-4		
	●	●	32	-	7	32	170	27	29.8	4.4	10	5.0	6.0	-	-	-	LW-4		
KGM ^{R/L} 2525M-8	●	●	25	7.5	10.5	25	150	40	22.0	6.0	25	8.0	8.0	-	-	-	LW-5		
	●	●	32	-	10.5	32	170	40	29.0	6.0	25	8.0	8.0	-	-	-	LW-5		

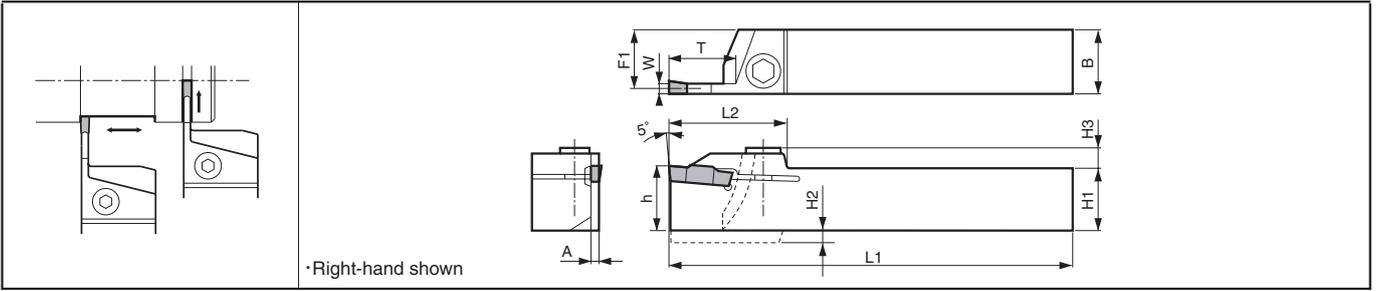
· Dimension T shows available grooving depth.

· 4mm width Insert can be installed in KGM^{R/L}1212H-3, but is not recommended due to the toolholder's rigidity.

● : Std. Item

KGM-T (Deep Grooving Type) (Will be switched to KGD → G24)

Edge Width: 2.0~6.0mm



Toolholder Dimensions

Description	Std.	Dimension (mm)											Edge Width W (mm)		Spare Parts			
		R	L	H1-h	H2	H3	B	L1	L2	F1	A	T	MIN.	MAX.	Screw		Wrench	
KGM ^{R/L} 2012K-2T17 2020K-2T17	●●	20	-	7	12	125	33	11.15	1.7	17	2.0	3.0	SB-5TR	-	LTW-20	-		
	●●	25	-	7	20	150	33	19.15	1.7	17	2.0	3.0	-	HH5X16	-	LW-4		
KGM ^{R/L} 1616H-3T20 2012K-3T20	●●	16	4	7	16	100	36	14.8	2.4	20	3.0	4.0	-	HH5X16	-	LW-4		
	●●	20	-	7	12	125	36	10.8	2.4	20	3.0	4.0	SB-5TR	-	LTW-20	-		
KGM ^{R/L} 2020K-3T20 2525M-3T20	●●	20	-	7	20	150	36	18.3	3.4	20	4.0	5.0	-	HH5X16	-	LW-4		
	●●	25	-	7.5	25	150	36	23.3	3.4	20	4.0	5.0	-	HH5X25	-	LW-4		
KGM ^{R/L} 2020K-4T20 2525M-4T20	●●	20	-	8.5	25	150	42	22.8	4.4	25	5.0	6.0	-	HH5X25	-	LW-4		
	●●	25	-	8.5	25	150	42	29.8	4.4	25	5.0	6.0	-	HH5X25	-	LW-4		
KGM ^{R/L} 2525M-5T25 3232P-5T25	●●	25	-	9.5	25	150	45	22.4	5.3	30	6.0	6.0	-	HH5X25	-	LW-4		
	●●	32	-	9.5	32	170	45	29.8	5.3	30	6.0	6.0	-	HH5X25	-	LW-4		
KGM ^{R/L} 2525M-6T30	●●	25	-	9.5	25	150	45	22.4	5.3	30	6.0	6.0	-	HH5X25	-	LW-4		

· Dimension T shows the distance from the toolholder to the cutting edge. Ref. to the Table (G35) for the relationship between the available grooving depth and the cutting dia.
· When using GMG / GMM type (2-edge) insert, set the groove depth under 15mm.

Applicable Inserts

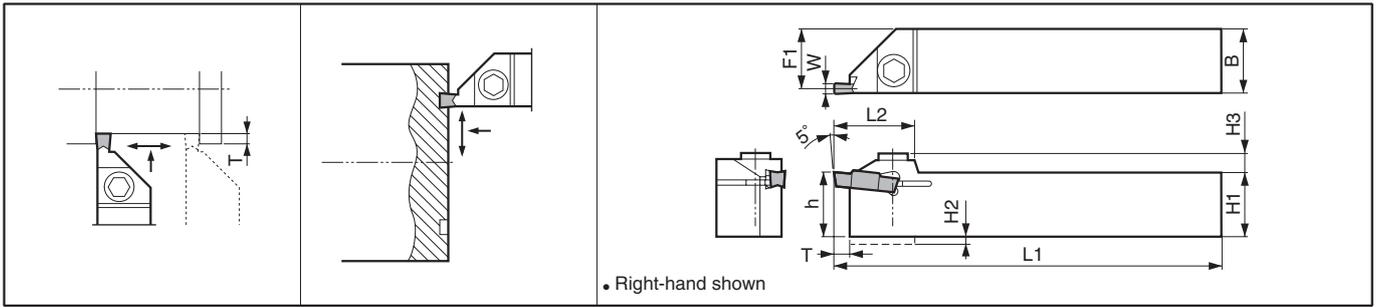
Applications	Grooving / Turning	Grooving / Turning	Grooving	Full-R / Copying	Full-R / Copying	Deep Grooving / Cut-off	Deep Grooving / Cut-off	Deep Grooving / Cut-off	Deep Grooving / Cut-off	Deep Grooving / Cut-off	Deep Grooving
See Page	G32	G32	G32	G32	G33	G34	G34	G34	G34	G34	G35
Insert	MW	MS	MG			MT	NB	TK	TK		CBN PCD
Toolholder Description											
KGM ^{R/L} ...1.5	-	-	-	-	-	GMM1520..MT GMM2020..MT GMM1520%..MT GMM2020%..MT	GMM1520..NB GMM2020..NB	GMM2020..TK GMM2020%..TK	GMN2..TK GM%2..TK	-	-
KGM ^{R/L} ...2(T)	GMM2420..MW GMM3020..MW	GMG3020..MS GMM3020..MS	GMG2520..MG GMM3020..MG	GMM3020..R GMM3020..R	-	GMM2020..MT GMM2520..MT GMM3020..MT GMM2020%..MT GMM2520%..MT GMM3020%..MT	GMM2020..NB GMM2520..NB GMM3020..NB	GMM2020..TK GMM2520..TK GMM3020..TK GMM2020%..TK GMM2520%..TK GMM3020%..TK	GMN2..TK GMN3..TK GM%2..TK GM%3..TK	GMN2.2 GMN3 GM%2.2 GM%3	GMN2 GMN3
KGM ^{R/L} ...2.5	GMM2420..MW GMM3020..MW	GMG3020..MS GMM3020..MS	GMG2520..MG GMM3020..MG	GMM3020..R GMM3020..R	-	GMM2520..MT GMM3020..MT GMM2520%..MT GMM3020%..MT	GMM2520..NB GMM3020..NB	GMM2520..TK GMM3020..TK GMM2520%..TK GMM3020%..TK	GMN3..TK GM%3..TK	GMN3 GM%3	GMN3
KGM ^{R/L} ...3(T)	GMM3020..MW GMM4020..MW	GMG3020..MS GMM3020..MS GMM4020..MS	GMG3020..MG GMM3520..MG GMM4020..MG	GMM3020..R GMM3020..R GMM4020..R GMM4020..R	-	GMM3020..MT GMM3020%..MT	GMM3020..NB	GMM3020..TK GMM3020%..TK	GMN3..TK GMN4..TK GM%3..TK GM%4..TK	GMN3 GMN4 GM%3 GM%4	GMN3 GMN4
KGM ^{R/L} ...4(T)	GMM4020..MW GMM5020..MW	GMG4020..MS GMM4020..MS GMM5020..MS	GMG4020..MG GMM5020..MG	GMM4020..R GMM4020..R GMM5020..R GMM5020..R	-	-	-	-	GMN4..TK GM%4..TK	GMN4 GMN5 GM%4	GMN4 GMN5
KGM ^{R/L} ...5(T)	GMM5020..MW GMM6020..MW	GMG5020..MS GMM5020..MS GMM6020..MS	GMG5020..MG GMM6020..MG	GMM5020..R GMM5020..R GMM6020..R GMM6020..R	GMGA6020..R	-	-	-	-	GMN5 GMN6 GM%5 GM%6	GMN5 GMN6
KGM ^{R/L} ...6T	GMM6020..MW	GMG6020..MS GMM6020..MS	GMG6020..MG	GMM6020..R GMM6020..R	GMGA6020..R	-	-	-	-	GMN6	GMN6
KGM ^{R/L} ...8	GMM8030..MW	-	GMM8030..MG	-	GMGA8030..R	-	-	-	-	-	-

· If using a full-R insert, you need to modify the corner of insert adapter part (dimension A) of toolholder.

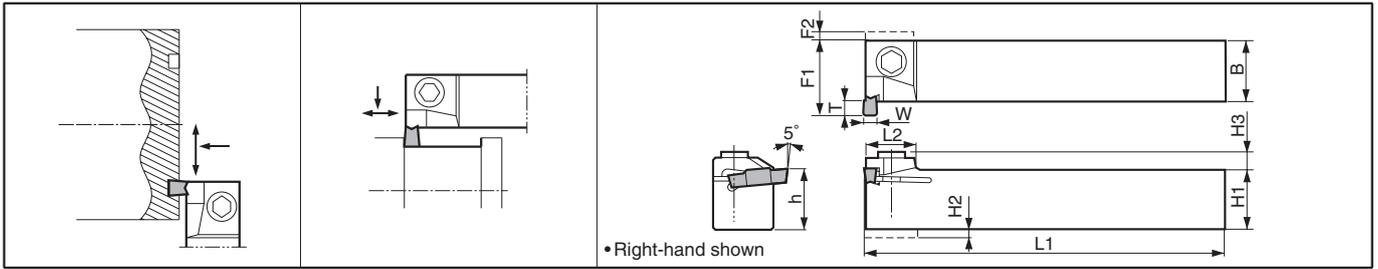
Recommended Cutting Conditions → G107
Recommended Cutting Conditions of CBN / PCD → G106

External Grooving (External / Face Grooving) Toolholders

KGMM



KGMS



Toolholder Dimensions

Description	Std.		Dimension (mm)										Edge Width W (mm)		Spare Parts			
	R	L	H1=h	H2	H3	B	L1	L2	F1	F2	T	MIN.	MAX.	Screw		Wrench		
KGMM ^{R/L}	1212H-3	●●	12	4	5	12	100	25	10.8	-	4.8	3.0	5.0	SB-5TR	-	LTW-20	-	
	1616H-3	●●	16	6		16			14.8					-	-	-	-	-
	2020K-3	●●	20		6	20	125	18.8	-	-	-	-	-	-	-	-	-	-
	2525M-3	●●	25	25		150	23.8	-	-	-	-	-	-	-	-	-	-	-
KGMS ^{R/L}	1212H-3	●●	12	4	5	12	100	17	17	1.5	4.8	3.0	3.0	SB-5TR	-	LTW-20	-	
	1616H-3	●●	16	6		16			21.5					-	-	-	-	-
	2020K-3	●●	20		6	20	125	25	-	-	-	-	-	-	-	-	-	-
	2525M-3	●●	25	25		150	30	-	-	-	-	-	-	-	-	-	-	-

Dimension T shows available grooving depth. (Ref. to the table G39 for Face Grooving)

Applicable Inserts [External Grooving]

Applications	Grooving / Turning	Grooving / Turning	Grooving	Full-R / Copying	Grooving	Grooving	Grooving	Grooving	Grooving	Grooving
See Page	G32, G33	G32	G32	G32, G33	G34	G34	G34	G34	G34	G35
Insert	(MW)	MS	MG		MT	NB	TK	TK		CBN PCD
Toolholder Description										
KGMS ^{R/L} 1212H-3	GMM3014..	-	-	GMM3014..R	-	-	-	-	-	-
KGMM ^{R/L...3} KGMS ^{R/L...3}	GMM3020..MW GMM4020..MW GMM5020..MW	GMG3020..MS GMM3020..MS GMM4020..MS GMM5020..MS	GMG3020..MG GMM3020..MG GMM4020..MG GMM5020..MG	GMG3020..R GMM3020..R GMM4020..R GMM5020..R	GMM3020..MT	GMM3020..NB	GMM3020..TK	GMN3..TK GMN4..TK	GMN3 GMN4 GMN5	GMN3 GMN4 GMN5

Applicable Inserts [Face Grooving]

Applications	Grooving / Turning	Undercutting	Grooving / Turning	Grooving / Turning	Grooving	Full-R / Copying	Grooving	Grooving	Grooving	Grooving
See Page	G33	G32, G33	G32	G32	G32	G32	G34	G34	G34	G34
Insert			MW	MS	MG		MT	NB	TK	
Toolholder Description										
KGMS ^{R/L} 1212H-3	-	GMM3014..RU	-	-	-	-	-	-	-	-
KGMM ^{R/L...3} KGMS ^{R/L...3}	FGG ^{R/L} 3020.. FGG ^{R/L} 4020.. FGG ^{R/L} 5020..	GMG3020..RU GMM3020..RU GMM4020..RU GMM5020..RU	GMM3020..MW GMM4020..MW GMM5020..MW	GMG3020..MS GMM3020..MS GMM4020..MS GMM5020..MS	GMG3020..MG GMM3020..MG GMM4020..MG GMM5020..MG	GMG3020..R GMM3020..R GMM4020..R GMM5020..R	GMM3020..MT	GMM3020..NB	GMM3020..TK	GMN3 GMN4 GMN5 GMN3..TK GMN4..TK

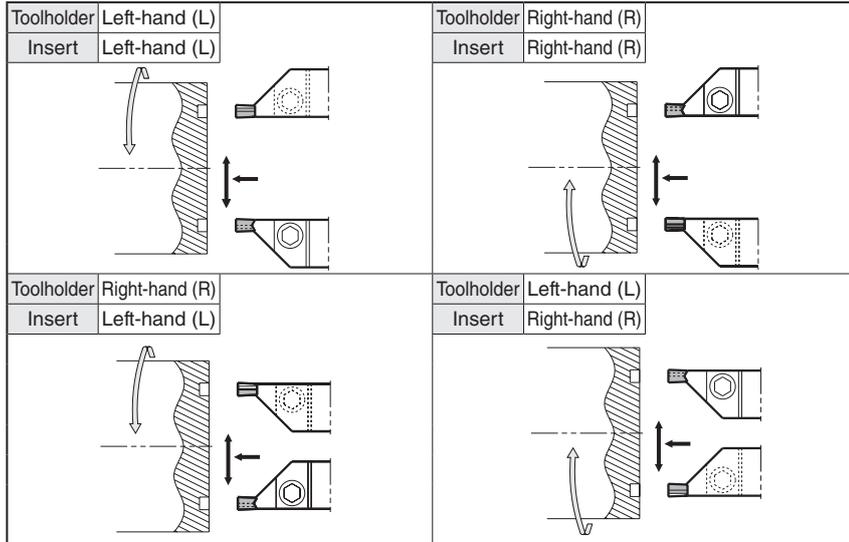
Recommended Cutting Conditions ● G107

Recommended Cutting Conditions of CBN / PCD ● G106

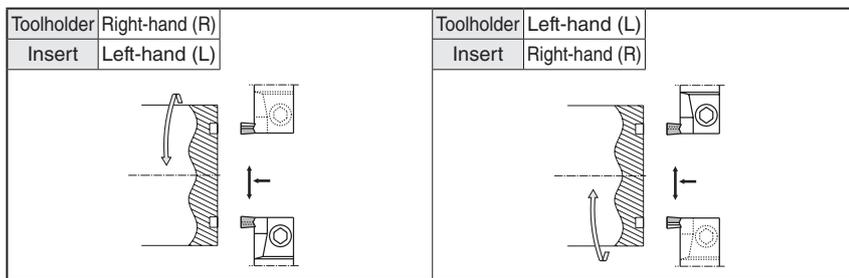
● : Std. Item

◆ Selection of Insert & Toolholder (Face Grooving)

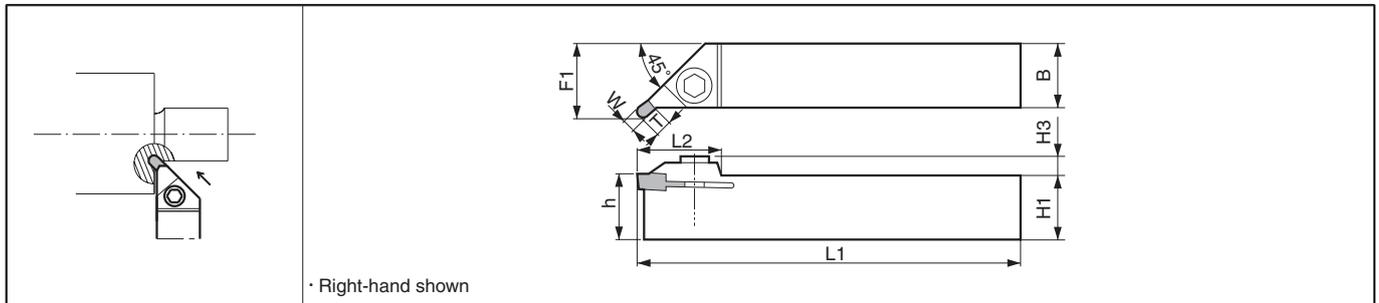
● Case of KGMM



● Case of KGMS



■ KGMU (External Undercutting Toolholder)



● Toolholder Dimensions

Description	Std.	Dimension (mm)								Edge Width W (mm)		Spare Parts		
		R	L	H1=h	H3	B	L1	L2	F1	T	MIN.	MAX.	Clamp Bolt	Wrench
		●	●	20	6	20	125	28.5	23.6	4.8		3.0	5.0	HH5X16
●	●	25		25	150	28.6	28.6		(6.0)		HH5X25			

· Dimension T shows the distance from the toolholder to the cutting edge. Ref. to the table below for the available grooving depth. · Dimension F1 shows at GMM5020-RU. () indicates external grooving inserts when installed.

● Applicable Inserts

Applications	Undercutting		
See Page	G32		
Insert			
Toolholder Description			
KGMU ^{R/L} 2020K 2525M	GMG3020..RU GMG4020..RU GMG5020..RU		

· External grooving inserts (grooving width 3mm-6mm) will be attached.
(In case of using GMG○○20-○○○○□□, GMM○○20-○○○○□□, GMN○ insert)

◆ Undercut Depth t

Description	Undercut Depth	Distance from the face of the workpiece
	t (mm)	ap (mm)
GMG3020-150RU	3.5	1.8
GMG4020-200RU	4.0	1.9
GMG5020-250RU	4.5	2.1

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

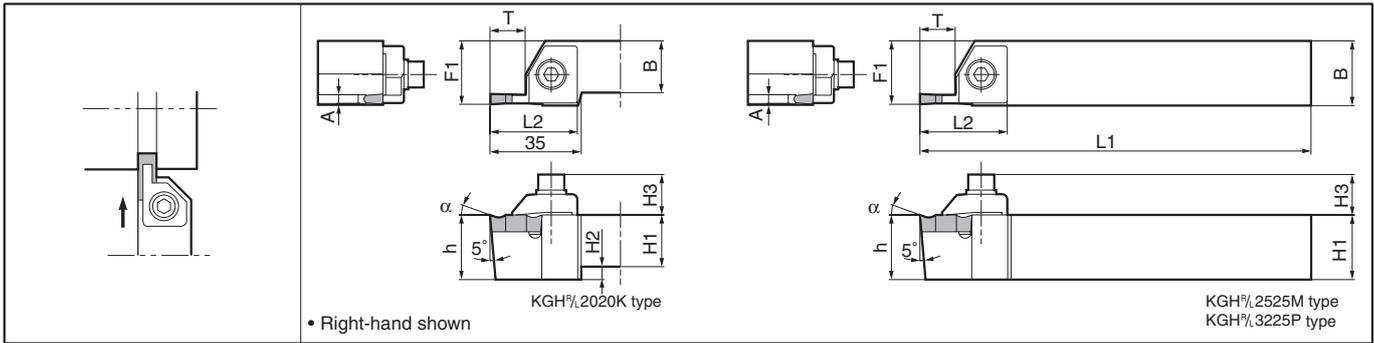
● : Std. Item

◆ Face Groove Dia. & Grooving Depth (Face Grooving)

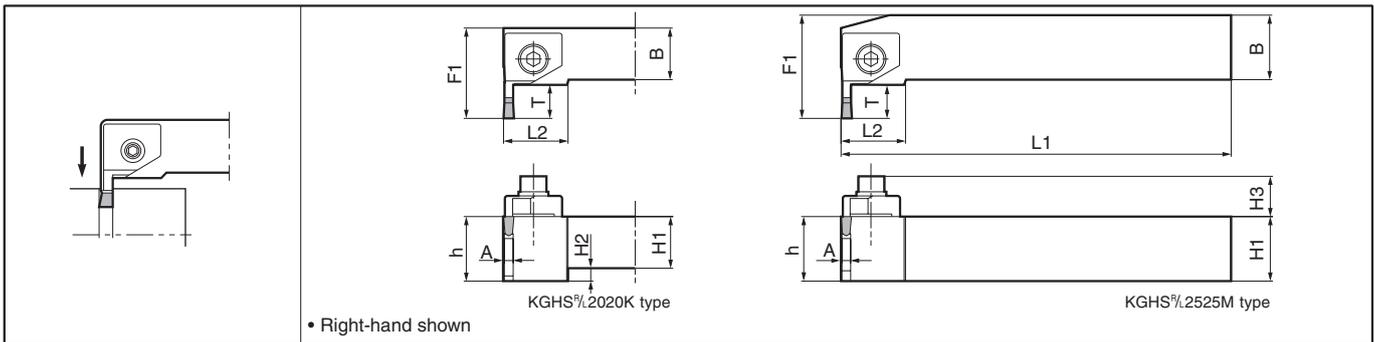
● KGMM / KGMS (Common) (mm)

Description	φD _{min}	t
GMG/GMM3020-○○○○□□	φ 100	4.8
GMG/GMM4020-○○○○□□		
GMG/GMM5020-○○○○□□		
FGG ^{R/L} 3020-02	φ 22	4.3
FGG ^{R/L} 4020-04	φ 28	4.8
FGG ^{R/L} 5020-04	φ 30	
GMG3020-150RU	φ 22	4.3
GMG4020-200RU	φ 28	4.8
GMG5020-250RU	φ 30	

KGH



KGHS



Toolholder Dimensions

Description	Std.	Dimension (mm)											Spare Parts						
		R		L		H1-h	H2	H3	B	L1	L2	F1	A	T	Clamp	Clamp Bolt	Washer	Spring	Wrench
		●	●	●	●														
KGH^{°/L}	2020K-4	●	●	20	5		20	125											
	2525M-4	●	●	25	-	15.6	25	150		33.5		24.5-24.8	3.4	13	CGH-1 ^{°/L}	HH6X25	W-6	SP-6	LW-5
	2020K-5	●	●	20	5		20	125				25.0-25.8			CGH-1 ^{°/L}				
	2525M-5	●	●	25	-	15.6	25	150		33.5		25.0-25.8	4.2	13	CGH-1 ^{°/L}				
	3225P-5	●	●	32	-		25	170				25.0-25.8			CGH-1 ^{°/L}				
	2020K-7	●	●	20	5	15.6	20	125		33.5		24.5-25.0	5.8	13	CGH-2 ^{°/L}				
	2525M-7	●	●	25	-		25	150				24.5-25.0			CGH-2 ^{°/L}				
	2525M-10	●	●	25	-		25	150			41	25.5-26.5	9.0	17	CGH-3 ^{°/L}				
3225P-10	●		32	-	16.1	25	170				25.5-26.5			CGH-3 ^{°/L}					
KGHS^{°/L}	2020K-4	●	●	20	5	15.6	20	125		25	35	3.4	13	CGH-1 ^{1/2°/R}	HH6X25	W-6	SP-6	LW-5	
	2525M-4	●	●	25	-		25	150			40			CGH-1 ^{1/2°/R}					
	2020K-5	●	●	20	5	15.6	20	125		25	35	4.2	13	CGH-1 ^{1/2°/R}					
	2525M-5	●	●	25	-		25	150			40			CGH-1 ^{1/2°/R}					

· Dimension T shows available grooving depth.

· Dimension F1 of KGH^{°/L} Toolholder depends on the insert's edge width.

· Clamp KGH^{°/L}... CGH-○R for Right-hand Toolholder and CGH-○L for Left-hand Toolholder.

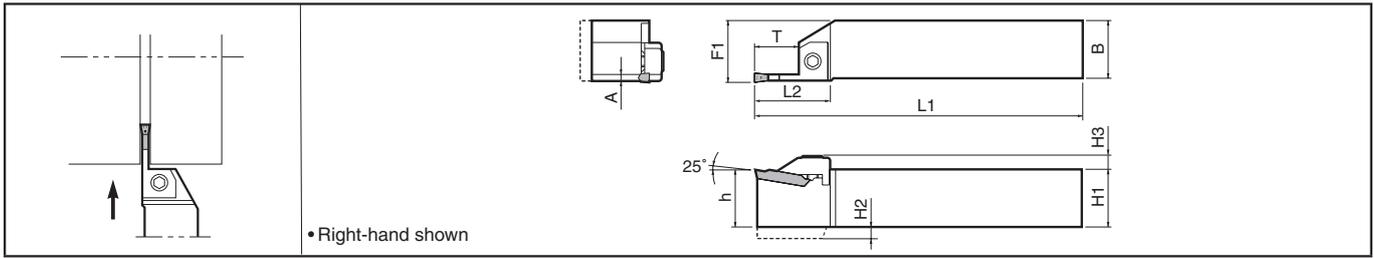
KGHS^{°/L}...CGH-○L for Right-hand Toolholder and CGH-○R for Left-hand Toolholder.

Rake Angle (α) after Installment of GH / GHU

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		

● : Std. Item

KGA



Toolholder Dimensions

Description	Std.	Dimension (mm)										Spare Parts				
		R	L	H1-h	H2	H3	B	L1	L2	F1	A	T	Clamp	Clamp Bolt	Spring	Wrench
KGA $\frac{R}{L}$	2020K-3	●	●	20	5	6	20	125	37	21.5	2.3	20	CGA-3 $\frac{R}{L}$	HH6X20	SP-6	LW-5
	2525M-3	●	●	25	-	6	25	150	37	26.5	2.3	20	CGA-3 $\frac{R}{L}$			
	2020K-4	●	●	20	5	6	20	125	37	21.5	3.3	20	CGA-4 $\frac{R}{L}$			
	2525M-4	●	●	25	-	6	25	150	37	26.5	3.3	20	CGA-4 $\frac{R}{L}$			
	2020K-5	●	●	20	5	6	20	125	42	21.5	4.3	25	CGA-5 $\frac{R}{L}$			
2525M-5	●	●	25	-	6	25	150	42	26.5	4.3	25	CGA-5 $\frac{R}{L}$				

Dimension T shows available grooving depth.

Clamp: CGA-OR for Right-hand Toolholder and CGA-OL for Left-hand Toolholder.

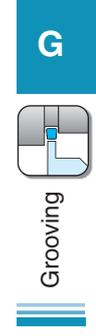
Applicable Inserts

Insert	Description	Dimension (mm)		Material										Applicable Toolholders	See Page for Applicable Toolholders					
		W	r ϵ	P	M	K	N	S	H	Cermet	PVD Coated Carbide	Carbide	Ceramic							
 Ground Chipbreaker  Ceramic Ceramic insert is above shape.	GH 4020-02	4.0	0.2																	
		4020-05	4.0	0.5																
	4520-02	4.5	0.2																	
		4520-05	4.5	0.5																
	5020-02	5.0	0.2																	
		5020-05	5.0	0.5																
	5520-02	5.5	0.2																	
		5520-05	5.5	0.5																
	6020-02	6.0	0.2																	
		6020-05	6.0	0.5																
	6520-02	6.5	0.2																	
		6520-05	6.5	0.5																
7020-02	7.0	0.2																		
	7020-05	7.0	0.5																	
7520-02	7.5	0.2																		
	7520-05	7.5	0.5																	
8020-02	8.0	0.2																		
	8020-05	8.0	0.5																	
10025-05	10.0	0.5																		
	12025-05	12.0	0.5																	
 Molded Chipbreaker	GHU 40-20	4.0	0.25																	
		50-20	5.0	0.30																
		60-20	6.0	0.30																
 GA	30	3.0	0.20																	
		40	4.0	0.25																
		50	5.0	0.30																

Recommended Cutting Conditions \odot G104~G105

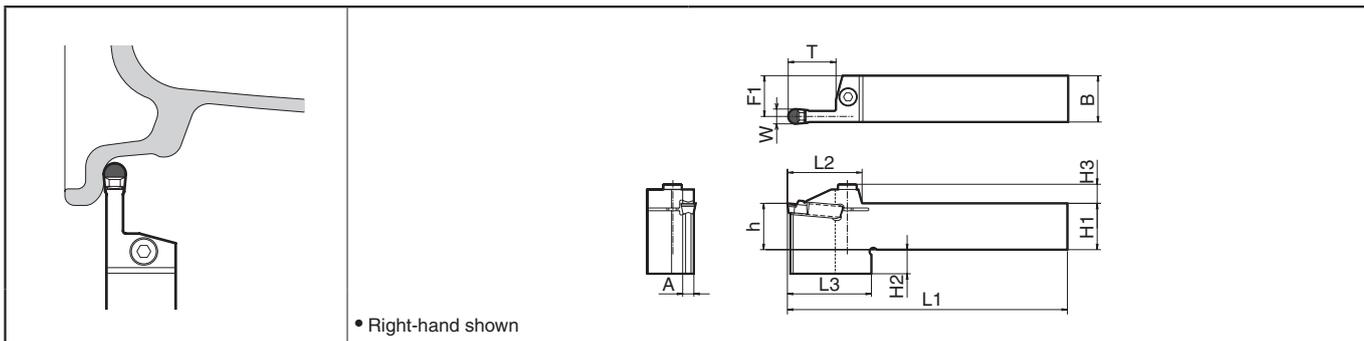
● : Std. Item
 □ : Deleted from the next catalogue

Inserts are sold in 10 piece boxes.



For Aluminum Wheel External Grooving

KGMW (External / Facing / Copying)



Toolholder Dimensions

Description	Std.		Dimension (mm)										Spare Parts		Applicable Inserts
	R	L	H1=h	H2	H3	B	L1	L2	L3	F1	A	T	Clamp Bolt	Wrench	
KGMW ^{R/L} 2525M-6	●	●	25	13	10.3	25	150	40	55	22.8	4.4	25	HH6X25	LW-5	GMGW6030-30R
	●	●													GMGW8030-40R

Applicable Inserts

Insert	Description	Dimension (mm)						No. of Edge	PCD
		W	r _e	L	H	M	S		
	GMGW 6030-30R	6	3	30	5.5	5	4.5	1	●
	8030-40R	8	4			6	6	1	●
	GMGW 8030-40R-HR	8	4	30	5.5	6	5	1	●

- GMGW inserts are exclusively used for KGMW type 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

Workpiece Material	Recommended Insert Grades (Cutting Speed Vc: m/min)	(1) f for Grooving (mm/rev) (2) f for Turning (mm/rev) (3) ap for Turning (mm)
	PCD	
Aluminum Alloys	KPD001 ★ 150~2,700	(1) 0.05~0.3 (2) 0.2~0.8 (3) MAX. 3

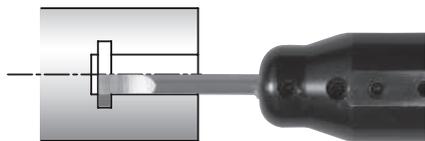
★ : 1st Recommendation

● : Std. Item

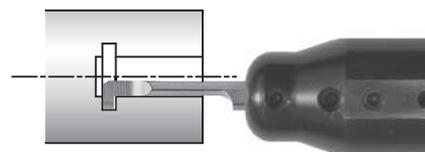
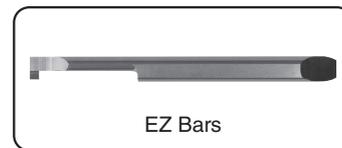
Summary of Internal Grooving

Small Dia. Internal Grooving $\phi 3 \sim (G45 \sim G48)$

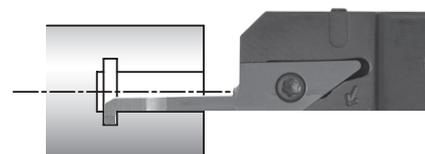
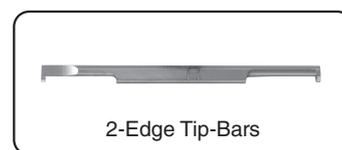
EZ Bars, 2-Edge Tip-Bars & System Tip-Bars



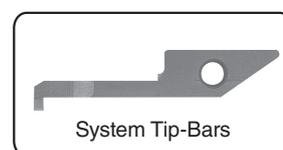
Type	EZG
Min. Bore Dia.	$\phi 3 \sim \phi 8$
Edge Width (mm)	0.5~2.0
Max. Grooving Depth (mm)	1.0~2.0
See Page	G45



Type	HPG
Min. Bore Dia.	$\phi 4 \sim \phi 7$
Edge Width (mm)	1.0~2.0
Max. Grooving Depth (mm)	1.0~2.0
See Page	G48

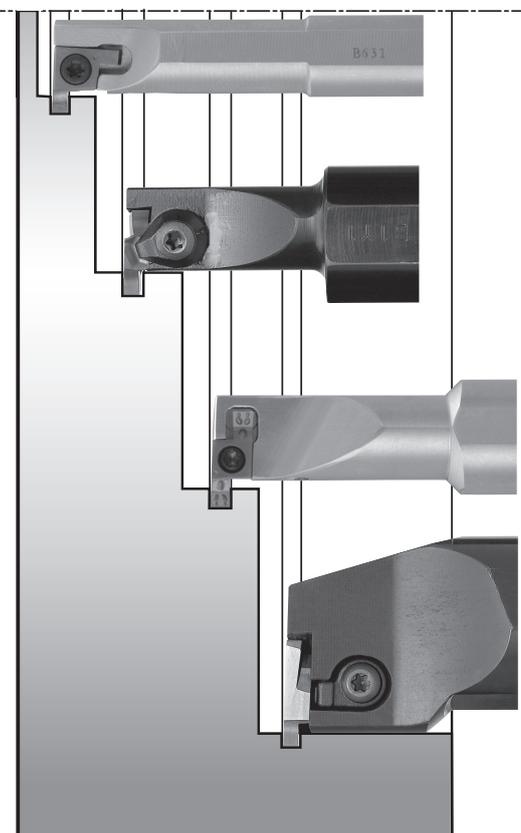


Type	VNG
Min. Bore Dia.	$\phi 4 \sim \phi 7$
Edge Width (mm)	1.0~2.0
Max. Grooving Depth (mm)	0.8~2.0
See Page	G47

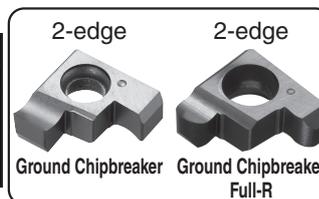


Internal Grooving $\phi 8 \sim (G49 \sim G59)$

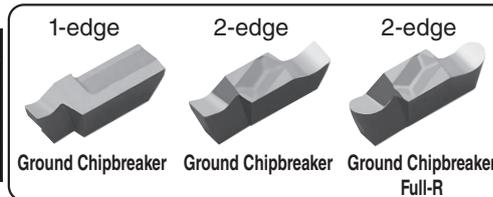
Shallow Grooving



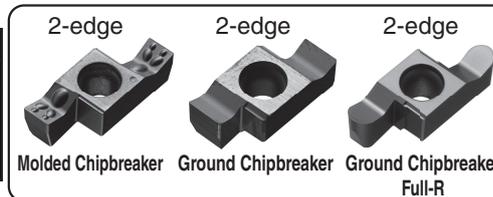
Type	SIGE
Min. Bore Dia.	$\phi 8 \sim \phi 12$
Edge Width (mm)	1.0~3.0
Max. Grooving Depth (mm)	1.5~2.2
See Page	G51



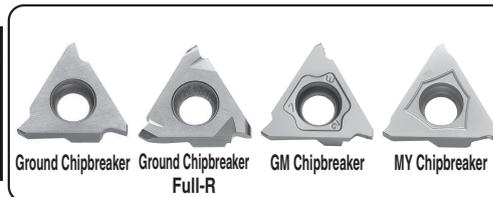
Type	GIV
Min. Bore Dia.	$\phi 12 \sim \phi 40$
Edge Width (mm)	1.0~5.0
Max. Grooving Depth (mm)	1.7~6.3
See Page	G56



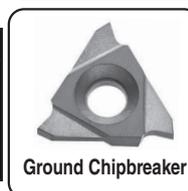
Type	SIGE
Min. Bore Dia.	$\phi 14 \sim \phi 40$
Edge Width (mm)	1.0~5.0
Max. Grooving Depth (mm)	2.5~6.5
See Page	G51



Type	KIGBA
Min. Bore Dia.	$\phi 35 \sim \phi 40$
Edge Width (mm)	0.33~4.8
Max. Grooving Depth (mm)	0.8~2.8
See Page	G58



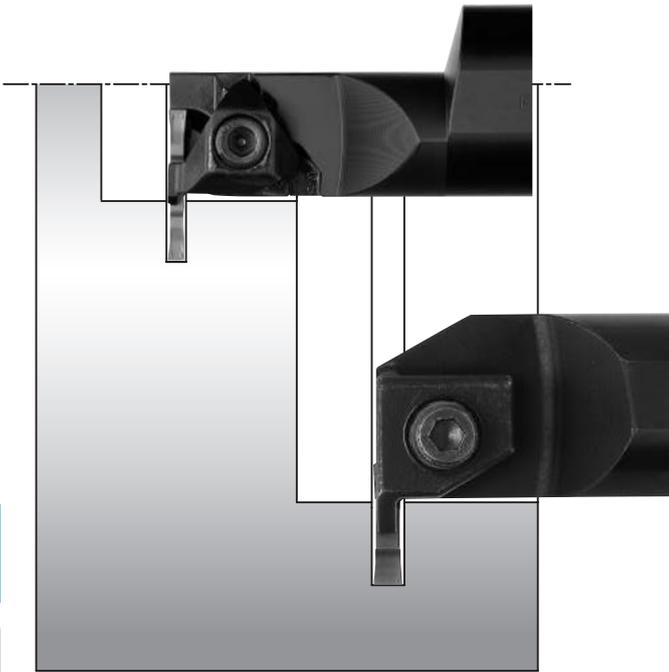
Type	KITG
Min. Bore Dia.	$\phi 35 \sim \phi 45$
Edge Width (mm)	0.75~4.5
Max. Grooving Depth (mm)	2.0~2.5
See Page	G59



* KITG will be switched to KIGBA.

Summary of Internal Grooving

● Deep Grooving (G63, G65)



Type	KGIA
Min. Bore Dia.	φ32~φ66
Edge Width (mm)	3.0~5.0
Max. Grooving Depth (mm)	10~15
See Page	G65



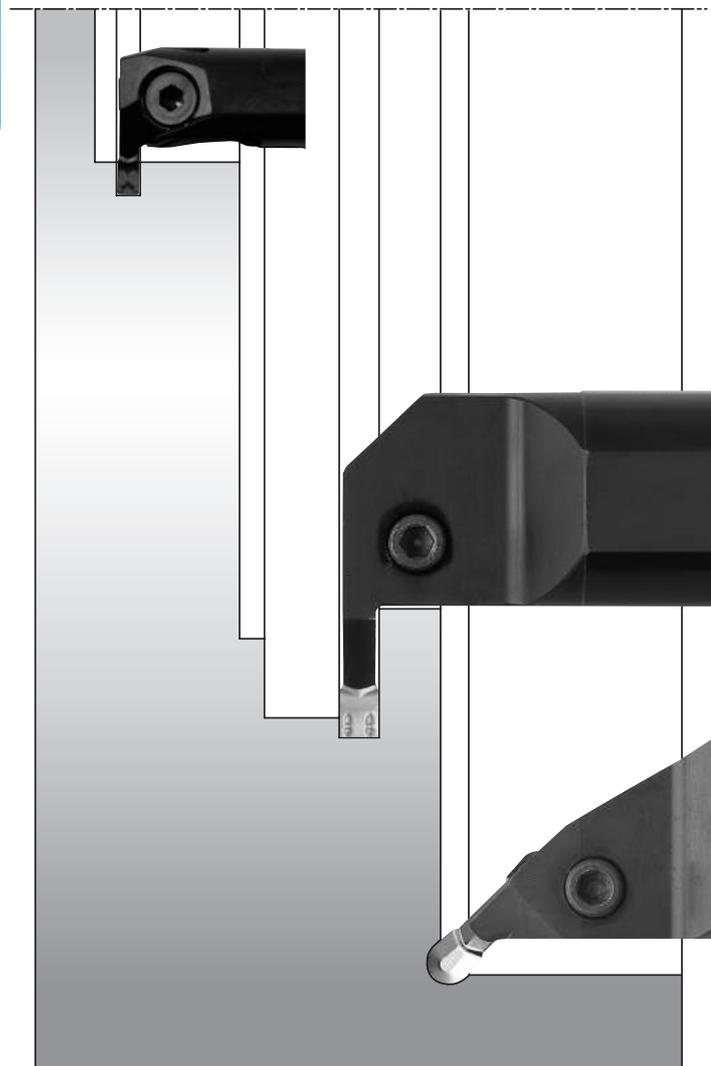
Type	KIGH
Min. Bore Dia.	φ45~φ65
Edge Width (mm)	4.0~8.0
Max. Grooving Depth (mm)	12
See Page	G63



G

Grooving

■ Internal Grooving & Turning φ20~(G60, G62, G64)

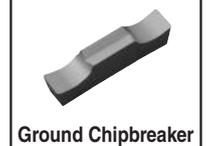


Type	KGDI
Min. Bore Dia.	φ18~φ40
Edge Width (mm)	2.0~5.0
Max. Grooving Depth (mm)	4.5~11.0
See Page	G60



Type	KIGM-V
Min. Bore Dia.	φ20~φ40
Edge Width (mm)	3.0~5.0
Max. Grooving Depth (mm)	5.5~11.0
See Page	G62

Type	KIGM-8
Min. Bore Dia.	φ65
Edge Width (mm)	8.0
Max. Grooving Depth (mm)	20
See Page	G64

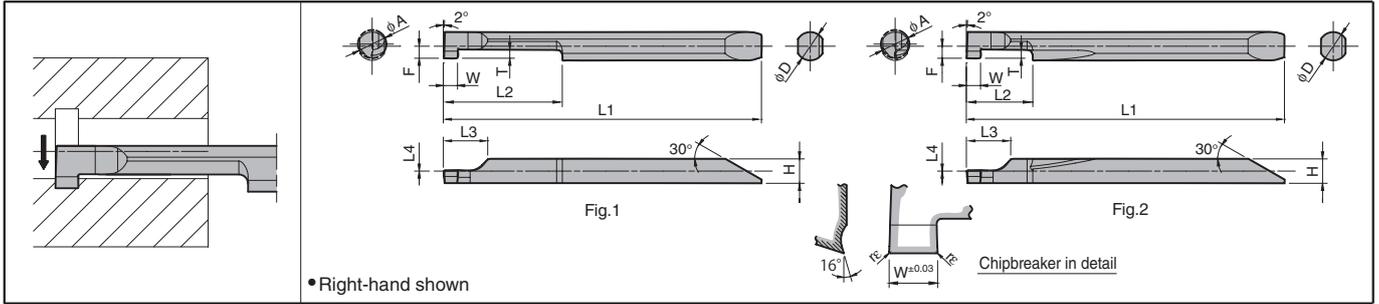


Type	KIGMU-8
Min. Bore Dia.	φ65
Edge Width (mm)	8.0
Max. Grooving Depth (mm)	2.2
See Page	G64



Small Dia. Internal Grooving EZ Bars

EZG (Small Dia. Internal Grooving) NEW

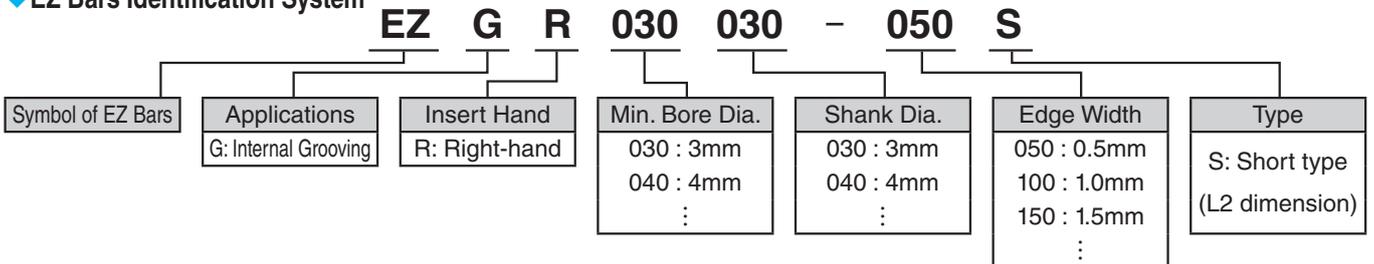


Dimensions

Description	Min. Bore Dia.		Dimension (mm)									Drawing	MEGACOAT PR1225	Applicable Sleeves EZH F25-F29						
	ϕA	W ^{+0.03}	r _e	ϕD	H	L1	L2	L3	L4	F	T									
EZGR 040040-050	4	0.5	± 0.013 0.05	4	3.45	44.7	12	6.2	0	1.7	1	Fig.2	●	EZH040..						
040040-100		1.0											●							
040040-150		1.5											●							
040040-200		2.0											●							
050050-100	5	1.0		± 0.013 0.05	5	4.3	52.8	20		6.7	0	2.15	1.5	Fig.1	●	EZH050..				
050050-150		1.5													●					
050050-200		2.0													●					
060060-100	6	1.0			± 0.013 0.05	6	5.15	60.7		25		7.6	0	2.65	2	Fig.1	●	EZH060..		
060060-150		1.5															●			
060060-200		2.0															●			
070070-100		1.0															7		6.2	63.7
070070-150	1.5	●																		
070070-200	2.0	●																		
080070-100	8	1.0	± 0.013 0.05			7	6.2	63.7	25	7.6		0		3.45	2	Fig.2	●	EZH070..		
080070-150		1.5															●			
080070-200	2.0	●																		
EZGR 030030-050S	3	0.5		± 0.013 0.05		3	2.5	38.7	5	4.8	0			1.25	0.8	Fig.2	●	EZH030..		
030030-100S		1.0															●			
040040-050S	4	0.5				± 0.013 0.05	4	3.45	44.7	8				6.2	0	1.7	1	Fig.2	●	EZH040..
040040-100S		1.0			●															
040040-150S		1.5			●															
040040-200S		2.0			●															
050050-100S	5	1.0			± 0.013 0.05		5	4.3	52.8	10			6.7	0		2.15	1.5	Fig.2	●	EZH050..
050050-150S		1.5																	●	
050050-200S		2.0																	●	
060060-100S	6	1.0	± 0.013 0.05				6	5.15	60.7	10		7.6	0			2.65	2	Fig.2	●	EZH060..
060060-150S		1.5																	●	
060060-200S		2.0																	●	
070070-100S		1.0		7							6.2								63.7	
070070-150S	1.5	●																		
070070-200S	2.0	●																		
080070-100S	8	1.0		± 0.013 0.05		7	6.2	63.7	10	7.6	0	3.45			2	Fig.2	●	EZH070..		
080070-150S		1.5															●			
080070-200S	2.0	●																		

• Dimension T shows available grooving depth.

EZ Bars Identification System



Recommended Cutting Conditions

Workpiece Material	Insert Grades (Cutting Speed Vc: m/min)	EZGR030030-...S	EZGR040040-... EZGR050050-... EZGR040040-...S EZGR050050-...S	EZGR060060-... EZGR070070-... EZGR080070-... EZGR060060-...S EZGR070070-...S EZGR080070-...S	Remarks
	MEGACOAT				
	PR1225				
Carbon steel / Alloy steel	★ 30-100	~0.02	~0.03	~0.05	Coolant
Stainless Steel	★ 30-80	~0.01	~0.02	~0.03	

★ : 1st Recommendation

● : Std. Item

EZ Bars are sold in 1 piece boxes.

Applicable Sleeves for Internal Grooving Inserts

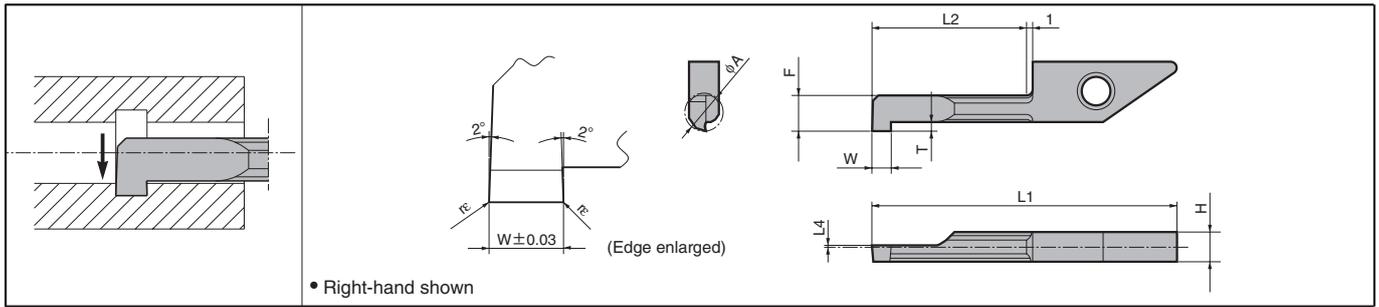
● Applicable Sleeves

Sleeve				Applicable Insert for Small Dia. Internal Grooving			Applicable Machine Manufacturer
EZH-CT (Adjustable overhang length with coolant hole) F25	EZH-HP (Adjustable overhang length) F26	EZH-ST F28	Sleeve Shank Dia. φD1(mm)	EZG	HPG	Shank Dia. φD(mm)	
-	-	EZH 03012ST-80 04012ST-80 05012ST-80 06012ST-80 07012ST-80	12	EZGR ...030-... EZGR ...040-... EZGR ...050-... EZGR ...060-... EZGR ...070-...	- HPG ^{R/L} 0404-... HPG ^{R/L} 0505-... HPG ^{R/L} 0606-... HPG ^{R/L} 0707-...	3 4 5 6 7	(General purpose)
-	EZH 03016HP-100 04016HP-100 05016HP-100 06016HP-100 07016HP-100	EZH 03016ST-100 04016ST-100 05016ST-100 06016ST-100 07016ST-100	16	EZGR ...030-... EZGR ...040-... EZGR ...050-... EZGR ...060-... EZGR ...070-...	- HPG ^{R/L} 0404-... HPG ^{R/L} 0505-... HPG ^{R/L} 0606-... HPG ^{R/L} 0707-...	3 4 5 6 7	(General purpose)
EZH 03019CT-120 04019CT-120 05019CT-120 06019CT-120 07019CT-120	EZH 03019HP-120 04019HP-120 05019HP-120 06019HP-120 07019HP-120	EZH 03019ST-120 04019ST-120 05019ST-120 06019ST-120 07019ST-120	19.05	EZGR ...030-... EZGR ...040-... EZGR ...050-... EZGR ...060-... EZGR ...070-...	- HPG ^{R/L} 0404-... HPG ^{R/L} 0505-... HPG ^{R/L} 0606-... HPG ^{R/L} 0707-...	3 4 5 6 7	Citizen Machinery
EZH 03020CT-120 04020CT-120 05020CT-120 06020CT-120 07020CT-120	EZH 03020HP-120 04020HP-120 05020HP-120 06020HP-120 07020HP-120	EZH 03020ST-120 04020ST-120 05020ST-120 06020ST-120 07020ST-120	20	EZGR ...030-... EZGR ...040-... EZGR ...050-... EZGR ...060-... EZGR ...070-...	- HPG ^{R/L} 0404-... HPG ^{R/L} 0505-... HPG ^{R/L} 0606-... HPG ^{R/L} 0707-...	3 4 5 6 7	Eguro Tsugami Citizen Machinery (General purpose)
EZH 03022CT-135 04022CT-135 05022CT-135 06022CT-135 07022CT-135	EZH 03022HP-135 04022HP-135 05022HP-135 06022HP-135 07022HP-135	EZH 03022ST-135 04022ST-135 05022ST-135 06022ST-135 07022ST-135	22	EZGR ...030-... EZGR ...040-... EZGR ...050-... EZGR ...060-... EZGR ...070-...	- HPG ^{R/L} 0404-... HPG ^{R/L} 0505-... HPG ^{R/L} 0606-... HPG ^{R/L} 0707-...	3 4 5 6 7	Star Micronics Nomura DS Tsugami
EZH 03025.0CT-135 04025.0CT-135 05025.0CT-135 06025.0CT-135 07025.0CT-135	EZH 03025.0HP-135 04025.0HP-135 05025.0HP-135 06025.0HP-135 07025.0HP-135	EZH 03025.0ST-135 04025.0ST-135 05025.0ST-135 06025.0ST-135 07025.0ST-135	25	EZGR ...030-... EZGR ...040-... EZGR ...050-... EZGR ...060-... EZGR ...070-...	- HPG ^{R/L} 0404-... HPG ^{R/L} 0505-... HPG ^{R/L} 0606-... HPG ^{R/L} 0707-...	3 4 5 6 7	Eguro Tsugami Citizen Machinery (General purpose)
EZH 03025.4CT-120 04025.4CT-120 05025.4CT-120 06025.4CT-120 07025.4CT-120	EZH 03025.4HP-120 04025.4HP-120 05025.4HP-120 06025.4HP-120 07025.4HP-120	EZH 03025.4ST-120 04025.4ST-120 05025.4ST-120 06025.4ST-120 07025.4ST-120	25.4	EZGR ...030-... EZGR ...040-... EZGR ...050-... EZGR ...060-... EZGR ...070-...	- HPG ^{R/L} 0404-... HPG ^{R/L} 0505-... HPG ^{R/L} 0606-... HPG ^{R/L} 0707-...	3 4 5 6 7	Citizen Machinery

- Choose sleeves (φd1) to meet with φD 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



Classification of usage		P	M	K	N	S	H
	Carbon steel / Alloy steel	●	○				
	Stainless Steel	●	○				
	Cast Iron			●			
	Non-ferrous Metals				●		
	Titanium Alloys					●	
	Hard materials (~40HRC)	○	○				
	Hard materials (40HRC~)						

● : Continuous / 1st Choice
○ : Continuous / 2nd Choice

Dimensions

Description	Min. Bore Dia.	Dimension (mm)											MEGA COAT	PVD	Carbide	PCD	See Page for Applicable Toolholders							
		φA	W	rε	φD	H	L1	L2	L3	L4	F	T						PR1225	PR930	KW10	KPD001	KPD010		
VNGR	0410-11	4	1.0	0.05	-	3.9	30.8	11	-	0.1	3.5	0.8	●	●	●									
	0420-11		2.0																					
	0510-11	5	1.0	0.05			39.8	20		0.3	4.4	1.0	●	●	●									
	0520-11		2.0																					
	0610-20	6	1.0	0.05			39.8	20		0.3	5.2	1.8	●	●	●									
	0620-20		2.0																					
0710-20	7	1.0	0.05	39.8	20	0.3	6.2	2.0	●	●	●													
0720-20		2.0																						
VNGR	0410-11NB	4	1.0	0.05	-	3.9	30.8	11	-	0.1	3.5	0.8					MTO	MTO						
	0420-11NB		2.0																					
	0510-11NB	5	1.0	0.05			39.8	20		0.3	4.4	1.0								MTO	MTO			
	0520-11NB		2.0																					
	0610-20NB	6	1.0	0.05			39.8	20		0.3	5.2	1.8									MTO	MTO		
	0620-20NB		2.0																					
	0710-20NB	7	1.0	0.05			39.8	20		0.3	6.2	2.0									MTO	MTO		
	0720-20NB		2.0																					

· Dimension T shows available grooving depth.
· Dimension L4 indicates the cutting edge is above the Tool's Center Position.

Recommended Cutting Conditions

Workpiece Material	Recommended Insert Grades (Cutting Speed Vc: m/min)			VNG04 VNG05	VNG06 VNG07	Remarks
	MEGA	PVD	Carbide			
	PR1225	PR930	KW10			
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

● : Std. Item
MTO : Made to order

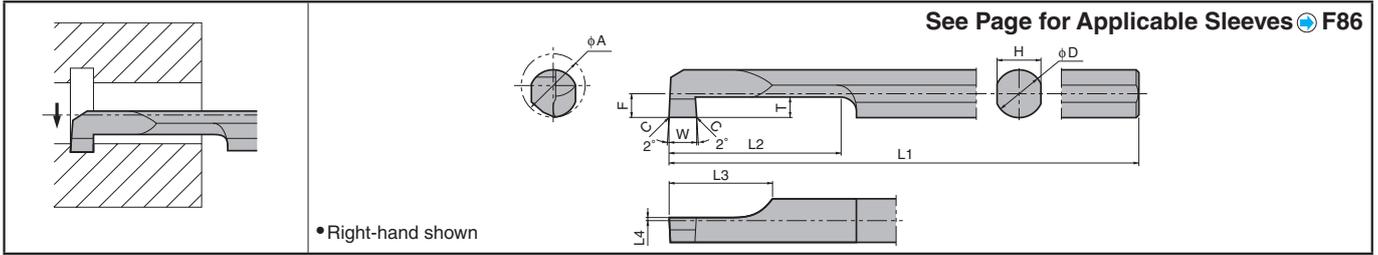
System Tip-Bars (VNG) are sold in 5 piece boxes.

CBN & PCD Inserts are sold in 1 piece boxes.



PSG-S (Tip-Bars)

This insert will be switched to EZG.



Dimensions

Description	Min. Bore Dia.	Dimension (mm)											PVD Coated Carbide		Carbide	
		φA	W ^{+0.03}	C	φD	H	L1	L2	L3	L4	F	T	PR930		KW10	
													R	L	R	L
PSG ^{R/L} 0510-60S 0520-60S	5	1.0	0.05	3.8	3.6	60	15	8	0.1	1.86	1.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		2.0	0.1									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
0610-70S 0620-70S	6	1.0	0.05	4.8	4.4	70	20	10	0.3	2.36	2.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		2.0	0.1									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
0710-70S 0720-70S	7	1.0	0.05	5.8	5.2	70	20	10	0.3	2.86	2.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		2.0	0.1									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
0810-80S 0820-80S	8	1.0	0.05	6.8	6.2	80	25	10	0.3	3.38	2.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		2.0	0.1									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

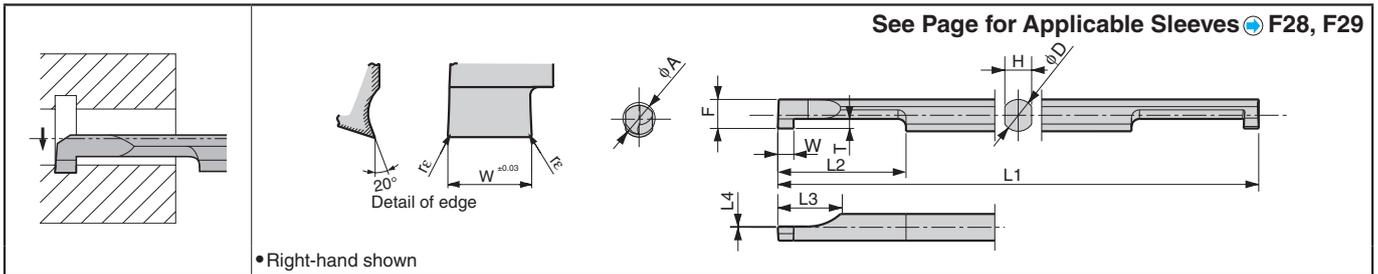
· Dimension T shows available grooving depth.

· Dimension L4 indicates the cutting edge is above the Tool's Center Position.

Recommended Cutting Conditions **G105**

HPG (Small Dia. Internal Grooving)

This insert will be switched to EZG.



Dimensions

Description	Min. Bore Dia.	Dimension (mm)											PVD Coated Carbide		Carbide	
		φA	W ^{+0.03}	re	φD	H	L1	L2	L3	L4	F	T	PR930		KW10	
													R	L	R	L
HPG ^{R/L} 0404-10 0404-20	4	1	0.05	4	3.35	60	15	8	0	3.65	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		2										<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
0505-10 0505-20	5	1	0.05	5	4.3	70	20	10	0	4.55	1.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		2										<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
0606-10 0606-20	6	1	0.05	6	5.2	80	25	10	0	5.5	2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		2										<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
0707-10 0707-20	7	1	0.05	7	6.2	80	25	10	0	6.45	2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		2										<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

· Dimension T shows available grooving depth.

Description Table for Tip-Bars and Applicable Sleeves

Recommended Cutting Conditions

Tip-Bars Description	Applicable Sleeves F28, F29	Workpiece Material	Recommended Insert Grades (Cutting Speed Vc: m/min)		HPG ^{R/L} 04 HPG ^{R/L} 05	HPG ^{R/L} 06 HPG ^{R/L} 07	Remarks
			PVD Coated Carbide	Carbide			
			PR930	KW10			
HPG ^{R/L} 0404-...	EZH 04-.... 05-.... 06-.... 07-....	Carbon steel / Alloy steel	★ 30-100	-	~0.03	~0.05	Coolant
0505-...		Stainless Steel	★ 30-80	-	~0.02	~0.03	
0606-...		Non-ferrous Metals	-	★ ~300	~0.05	~0.08	
0707-...							

★: 1st Recommendation

○ : Check Availability
□ : Deleted from the next catalogue

Internal Grooving SIGE

Applicable Inserts

Description	A	L	H	φd
GE [®] /...-A	6.69	6.5	2.58	2.5
GER...-AR				
GE [®] /...-B	8.46	8.2	3.18	2.7
GER...-BR				
GER...-CM	5.8	11.48	4.05	2.8
GER...-DM	6.8	16.44	5.05	3.4
GER...-EM	9.54	21.66	5.55	4.4

	P Carbon steel / Alloy steel	M Stainless Steel	K Cast Iron	N Non-ferrous Metals	S Titanium Alloys	H Hard materials (~40HRC)	H Hard materials (40HRC~)
●	●	●				○	
○						○	

Classification of usage
 ●: Continuous-Light Interruption / 1st Choice
 ○: Continuous-Light Interruption / 2nd Choice
 ●: Continuous / 1st Choice
 ○: Continuous / 2nd Choice

Insert Handed Insert shows Right-hand	Description	Dimension (mm)				Cermet TN6020	MEGA COAT PR1225	PVD Coated Carbide PR1025	Carbide				Applicable Toolholders	See Page for Applicable Toolholders			
		W	B	C	r _e				GW15		KW10						
									R	L	R	L					
 2-edge	GE [®] / 100-005A	1.00	1.5	1.8	0.05	●	●	●	●	●	●	●	●	SIGE [®] /...A-EH SIGE [®] /...A-WH	G51 G52		
	120-005A	1.20				●	●	●	●	●	●	●	●				
	125-005A	1.25				●	●	●	●	●	●	●	●				
		150-010A	1.50			0.1	●	●	●	●	●	●	●	●			
		200-010A	2.00				●	●	●	●	●	●	●	●			
	 2-edge Full-R	GE [®] / 100-005B	1.00	2.2	2.6	0.05	●	●	●	●	●	●	●	●	SIGE [®] /...B-EH SIGE [®] /...B-WH SIGER...B-WH-90	G51 G52 G53	
		120-005B	1.20				●	●	●	●	●	●	●	●			●
		125-005B	1.25				●	●	●	●	●	●	●	●			●
			145-010B	1.45			0.1	●	●	●	●	●	●	●	●		
			150-010B	1.50				●	●	●	●	●	●	●	●		
		200-010B	2.00				●	●	●	●	●	●	●	●			
		250-020B	2.50			0.2	●	●	●	●	●	●	●	●			
		300-020B	3.00				●	●	●	●	●	●	●	●			
 2-edge Molded Chipbreaker		GER 100-050AR	1.00	1.5	1.8	0.5		●	●			●		SIGER...A-EH SIGER...A-WH	G51 G52		
		200-100AR	2.00					●	●			●					
		GER 100-050BR	1.00	2.2	2.6	0.5		●	●			●		SIGER...B-EH SIGER...B-WH SIGER...B-WH-90	G51 G52 G53		
	200-100BR	2.00					●	●			●						
		GER 150-010CM	1.50	2.5	2.7	0.1		●	●					SIGER...C-EH SIGER...C-WH SIGER...C-WH-90	G51 G52 G53		
	200-010CM	2.00					●	●									
	250-020CM	2.50					●	●									
	300-020CM	3.00					●	●									
		350-020CM	3.50					●	●								
		GER 150-010DM	1.50	3.0	4.8	0.1		●	●					SIGER...D-EH	G51		
200-010DM	2.00		●				●										
230-020DM	2.30		●				●										
250-020DM	2.50		●				●										
	300-020DM	3.00	4.5	6.8	0.2		●	●									
350-020DM	3.50					●	●										
	GER 150-010EM	1.50	3.0	6.8	0.1		●	●					SIGER...E-EH	G51			
200-010EM	2.00					●	●										
250-020EM	2.50					●	●										
300-020EM	3.00					●	●										
	350-020EM	3.50	4.5	6.8	0.2		●	●									
400-020EM	4.00					●	●										
450-020EM	4.50					●	●										
	500-020EM	5.00	6.5				●	●									

• Dimension B shows available grooving depth.

Recommended Cutting Conditions **G54**

Comparison of Chip Control (Molded Chipbreaker)

f (mm/rev) Description	SCM415 (Bore Dia. f16)			Evaluation
	0.05	0.07	0.1	
SIGER1612C-EH GER300-020CM(PR1025)				Good Chip Control
Competitor A Width: 3mm			Insert Fracture	Unstable Chip Control and biting
Competitor B Width: 3mm				Unstable Chip Control and biting

[Vc=100m/min, ap=2.0mm, Wet]

(Internal evaluation)

Comparison of Chip Control (Min. Bore Dia.:φ8)

f (mm/rev) Description	SCM415	Evaluation
	0.02	
SIGER0808A-EH GER200-010A (PR1025)		
Competitor C Width: 2mm		Chipping

[Vc=50m/min, ap=1.25mm, Wet]

(Internal evaluation)

Inserts are sold in 10 piece boxes.

Internal Grooving SIGE

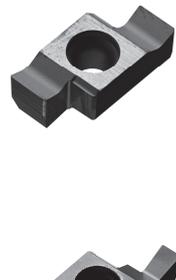
Applicable Inserts

(mm)

Description	A	L	H	φd
GE [®] /...-C	5.8	11.48	4.05	2.8
GER...-CR	5.8	11.48	4.05	2.8
GE [®] /...-D	6.8	16.44	5.05	3.4
GER...-DR	6.8	16.44	5.05	3.4
GE [®] /...-E	9.54	21.66	5.55	4.4

	P	M	K	N	S	H
Carbon steel / Alloy steel	☐	☐	☐	☐	☐	☐
Stainless Steel	☐	☐	☐	☐	☐	☐
Cast Iron	☐	☐	☐	☐	☐	☐
Non-ferrous Metals	☐	☐	☐	☐	☐	☐
Titanium Alloys	☐	☐	☐	☐	☐	☐
Hard materials (~40HRC)	☐	☐	☐	☐	☐	☐
Hard materials (40HRC~)	☐	☐	☐	☐	☐	☐

Classification of usage
 ●: Continuous-Light Interruption / 1st Choice
 ○: Continuous-Light Interruption / 2nd Choice
 ●: Continuous / 1st Choice
 ○: Continuous / 2nd Choice

Insert	Description	Dimension (mm)				Cermet		MEGA COAT		PVD Coated Carbide		Carbide				Applicable Toolholders					
		W	B	C	r _e	TN6020		PR1225		PR1025		GW15		KW10							
						R	L	R	L	R	L	R	L	R	L						
 2-edge	GE [®] / 100-005C	1.00	2.5	2.7	0.05	●	●	●	●	●	●	●	●	●	●	●	●	SIGE [®] /...C-EH SIGE [®] /...C-WH SIGER...C-WH-90	G51 G52 G53		
	120-005C	1.20				●	●	●	●	●	●	●	●	●	●	●	●			●	●
	125-005C	1.25				●	●	●	●	●	●	●	●	●	●	●	●			●	●
	140-005C	1.40				●	●	●	●	●	●	●	●	●	●	●	●			●	●
	145-010C	1.45				●	●	●	●	●	●	●	●	●	●	●	●			●	●
	150-010C	1.50				●	●	●	●	●	●	●	●	●	●	●	●			●	●
	170-010C	1.70				●	●	●	●	●	●	●	●	●	●	●	●			●	●
	185-010C	1.85				●	●	●	●	●	●	●	●	●	●	●	●			●	●
	195-010C	1.95				●	●	●	●	●	●	●	●	●	●	●	●			●	●
	200-010C	2.00				●	●	●	●	●	●	●	●	●	●	●	●			●	●
	250-020C	2.50				●	●	●	●	●	●	●	●	●	●	●	●			●	●
	300-020C	3.00				●	●	●	●	●	●	●	●	●	●	●	●			●	●
	350-020C	3.50				●	●	●	●	●	●	●	●	●	●	●	●			●	●
 2-edge	GE [®] / 100-005D	1.00	2.5	3.0	0.05	●	●	●	●	●	●	●	●	●	●	●	SIGE [®] /...D-EH	G51			
	140-005D	1.40				●	●	●	●	●	●	●	●	●	●	●			●	●	
	145-010D	1.45				●	●	●	●	●	●	●	●	●	●	●			●	●	
	150-010D	1.50				●	●	●	●	●	●	●	●	●	●	●			●	●	
	170-010D	1.70				●	●	●	●	●	●	●	●	●	●	●			●	●	
	185-010D	1.85				●	●	●	●	●	●	●	●	●	●	●			●	●	
	195-010D	1.95				●	●	●	●	●	●	●	●	●	●	●			●	●	
	200-010D	2.00				●	●	●	●	●	●	●	●	●	●	●			●	●	
	225-010D	2.25				●	●	●	●	●	●	●	●	●	●	●			●	●	
	230-020D	2.30				●	●	●	●	●	●	●	●	●	●	●			●	●	
	250-020D	2.50				●	●	●	●	●	●	●	●	●	●	●			●	●	
	275-020D	2.75				●	●	●	●	●	●	●	●	●	●	●			●	●	
	280-020D	2.80				●	●	●	●	●	●	●	●	●	●	●			●	●	
300-020D	3.00	●	●	●	●	●	●	●	●	●	●	●	●	●							
330-020D	3.30	●	●	●	●	●	●	●	●	●	●	●	●	●							
350-020D	3.50	●	●	●	●	●	●	●	●	●	●	●	●	●							
400-020D	4.00	●	●	●	●	●	●	●	●	●	●	●	●	●							
 2-edge	GE [®] / 100-005E	1.00	2.5	3.0	0.05	●	●	●	●	●	●	●	●	●	●	●	SIGE [®] /...E-EH	G51			
	150-010E	1.50				●	●	●	●	●	●	●	●	●	●	●			●	●	
	170-010E	1.70				●	●	●	●	●	●	●	●	●	●	●			●	●	
	185-010E	1.85				●	●	●	●	●	●	●	●	●	●	●			●	●	
	195-010E	1.95				●	●	●	●	●	●	●	●	●	●	●			●	●	
	200-010E	2.00				●	●	●	●	●	●	●	●	●	●	●			●	●	
	225-010E	2.25				●	●	●	●	●	●	●	●	●	●	●			●	●	
	230-020E	2.30				●	●	●	●	●	●	●	●	●	●	●			●	●	
	250-020E	2.50				●	●	●	●	●	●	●	●	●	●	●			●	●	
	275-020E	2.75				●	●	●	●	●	●	●	●	●	●	●			●	●	
	280-020E	2.80				●	●	●	●	●	●	●	●	●	●	●			●	●	
	300-020E	3.00				●	●	●	●	●	●	●	●	●	●	●			●	●	
	330-020E	3.30				●	●	●	●	●	●	●	●	●	●	●			●	●	
350-020E	3.50	●	●	●	●	●	●	●	●	●	●	●	●	●							
400-020E	4.00	●	●	●	●	●	●	●	●	●	●	●	●	●							
430-020E	4.30	●	●	●	●	●	●	●	●	●	●	●	●	●							
450-020E	4.50	●	●	●	●	●	●	●	●	●	●	●	●	●							
460-020E	4.60	●	●	●	●	●	●	●	●	●	●	●	●	●							
500-020E	5.00	●	●	●	●	●	●	●	●	●	●	●	●	●							
 2-edge Full-R	GER 200-100CR	2.00	2.5	2.7	1.0	●	●	●	●	●	●	●	●	●	●	●	SIGER...C-EH SIGER...C-WH SIGER...C-WH-90	G51 G52 G53			
	250-125CR	2.50				●	●	●	●	●	●	●	●	●	●	●			●		
	300-150CR	3.00				●	●	●	●	●	●	●	●	●	●	●			●		
	200-100DR	2.00				3.2	4.8	1.0	●	●	●	●	●	●	●	●			●	●	
	300-150DR	3.00				4.5	4.8	1.5	●	●	●	●	●	●	●	●			●	●	

* Dimension B shows available grooving depth.

Recommended Cutting Conditions ● G54

● : Std. Item

G50

Inserts are sold in 10 piece boxes.

See Page for Applicable Toolholders

G

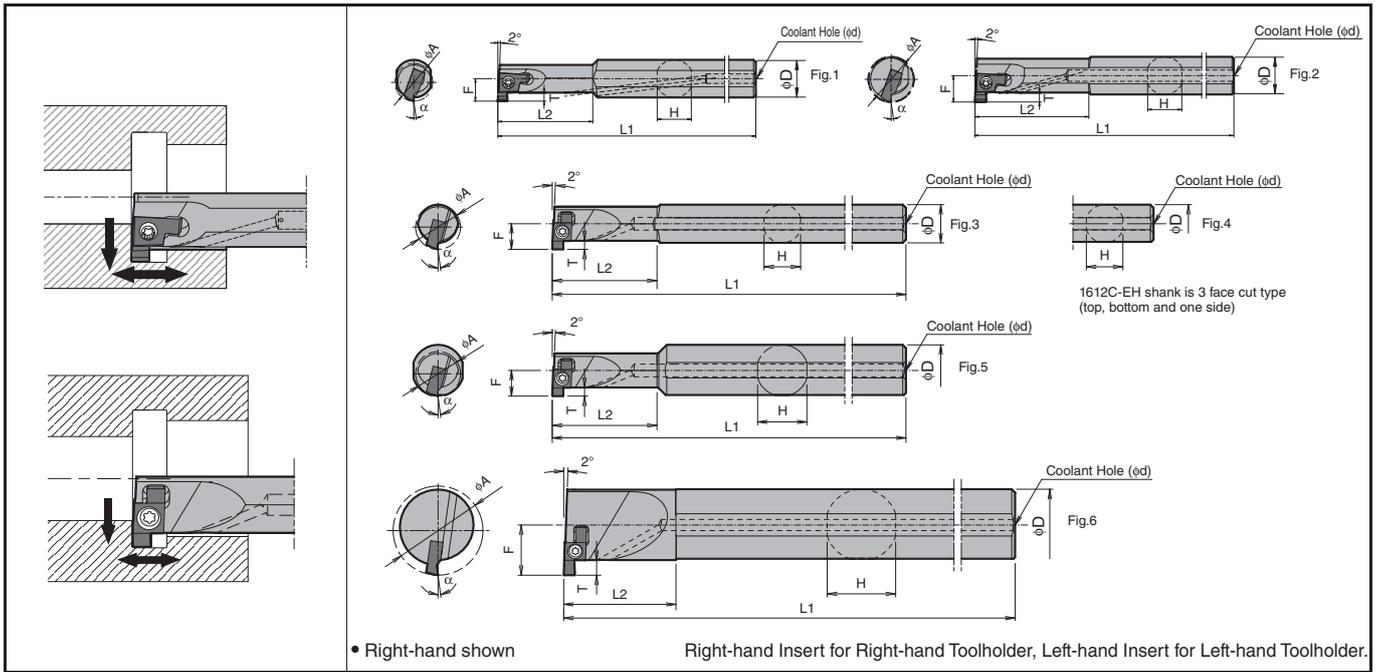
Grooving

External

Internal

Face

■ SIGE-EH Excellent Bar (with Coolant Hole)



● Toolholder Dimensions

Description	Std.		Min. Bore Dia.	Dimension (mm)							Drawing	Spare Parts			Applicable Inserts ● G49, G50
	R	L		φA	φD	H	L1	L2	F	T		φd	Clamp Screw	Wrench	
SIGE% 0808A-EH	●	●	8	8	7.2	100	20	4.8	1.5	3	Fig.1	SB-2045TRN	FT-6	-	GE%100-005A~GE%200-010A GER100-050AR~GER200-100AR
1010B-EH	●	●	10	10	9	125	25	6.2	2.2	3	Fig.1	SB-2255TR	-	DT-7	GE%100-005B~GE%300-020B GER100-050BR~GER200-100BR
1210B-EH	●	●	12				30	7			Fig.2				
1412C-EH	●	●	14	12	11.4	150	33	8	2.5	4	Fig.3	SB-2570TR	FT-8	-	GE%100-005C~GE%350-020C GER150-010CM~GER350-020CM GER200-100CR~GER300-150CR
1612C-EH	●	●	16				20	8.5			Fig.4				
1616C-EH	●	●	16	16	15	160	36	9	5	5	SB-3080TR	FT-10	-	GE%100-005D~GE%400-020D GER150-010DM~GER400-020DM GER200-100DR~GER300-150DR	
2020D-EH	●	●	20	20	19	180	40	12.1							5
2525E-EH	●	●	25	25	24	200	45	15.6	6.5	5	SB-4085TR	FT-15	-	GE%100-005E~GE%500-020E GER150-010EM~GER500-020EM	
3232E-EH	●	●	32	32	30.4	220	55	19							
4032E-EH	●	●	40	40	30.4	250	45	23							

· Dimension T shows available grooving depth. Available Groove Depth: "B" Dimension of Insert.

■ Features

- Large chip pocket screw clamp toolholder design enables excellent chip evacuation



- Cutting edge is free from contact face



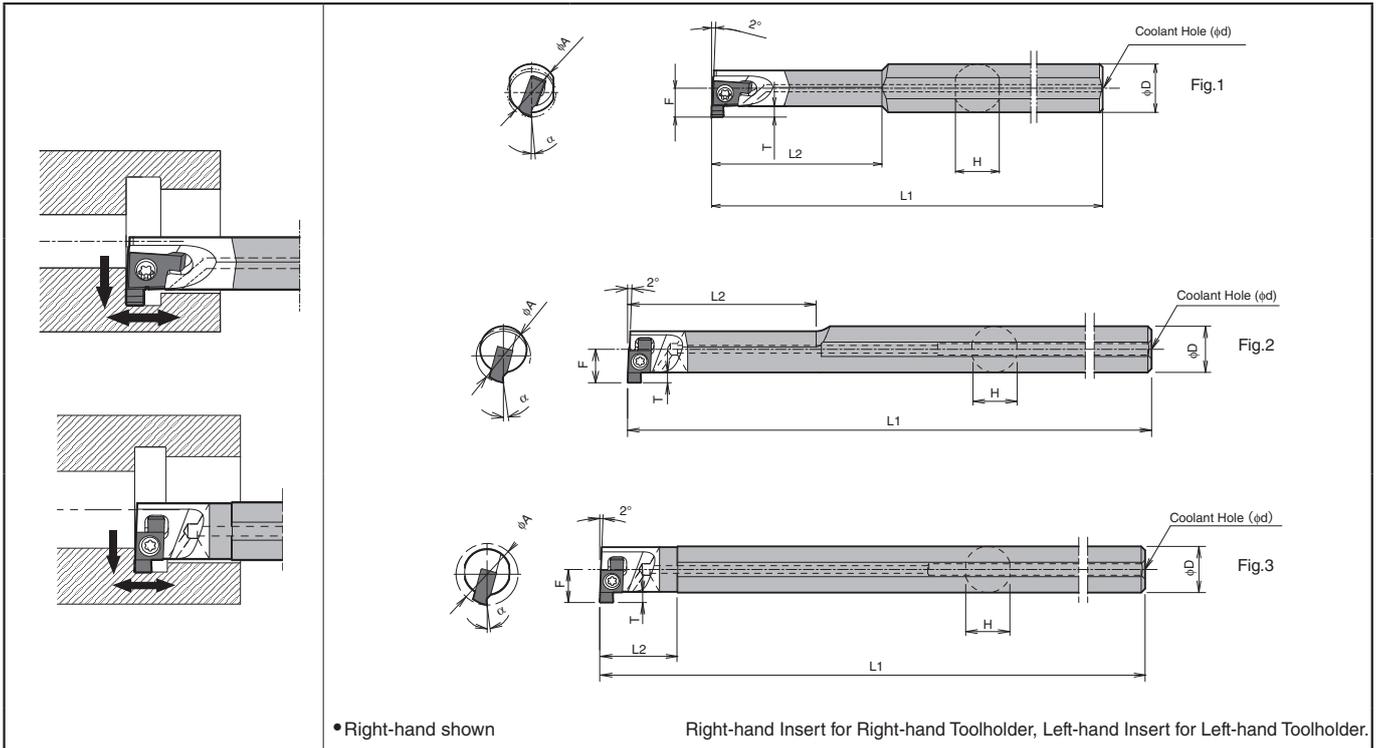
- An 8mm minimum bore diameter with a 2-edge design

- Cost effective chip control from a molded chipbreaker



Internal Grooving SIGE

SIGE-WH Carbide Shank Bar (with Coolant Hole)



Toolholder Dimensions

Description	Std.		Min. Bore Dia.	Dimension (mm)							Drawing	Spare Parts			Applicable Inserts ● G49, G50
	R	L		φA	φD	H	L1	L2	F	T		φd	Clamp Screw	Wrench	
SIGE[®]/L 0808A-WH	●	●	8	8	7.2	125	28	4.8	1.5	3	Fig.1	SB-2045TRN	FT-6	-	GE [®] /L 100-005A~GE [®] /L 200-010A GER100-050AR~GER200-100AR
1010B-WH	●	●	10	10	9	125	35	6.2	2.2	3		SB-2255TR	-	DT-7	GE [®] /L 100-005B~GE [®] /L 300-020B GER100-050BR~GER200-100BR
1210B-WH	●	●	12		140	45	7								
1412C-WH	●	●	14	12	11.4	150	50	8.7	2.5	4	Fig.2	SB-2570TR	FT-8	-	GE [®] /L 100-005C~GE [®] /L 350-020C GER150-010CM~GER350-020CM GER200-100CR~GER300-150CR
1612C-WH	●	●	16		180	20	8.5								

• Dimension T shows available grooving depth. Available Groove Depth: "B" Dimension of Insert.

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[®]/L 0808A-EH	GE [®] /L 100-005A~GE [®] /L 200-010A GER100-050AR~GER200-100AR	5°	-	-
1010B-EH	GE [®] /L 100-005B~GE [®] /L 300-020B GER100-050BR~GER200-100BR	5°	-	-
1210B-EH				
1412C-EH	GE [®] /L 100-005C~GE [®] /L 350-020C GER200-100CR~GER300-150CR	8°	GER150-010CM~GER350-020CM	10°
1612C-EH				
1616C-EH				
2020D-EH	GE [®] /L 100-005D~GE [®] /L 400-020D GER200-100DR~GER300-150DR	9°	GER150-010DM~GER400-020DM	10°
2525E-EH				
3232E-EH	GE [®] /L 100-005E~GE [®] /L 500-020E	10°	GER150-010EM~GER500-020EM	10°
4032E-EH				
SIGE[®]/L 0808A-WH	GE [®] /L 100-005A~GE [®] /L 200-010A GER100-050AR~GER200-100AR	5°	-	-
1010B-WH				
1210B-WH	GE [®] /L 100-005B~GE [®] /L 300-020B GER100-050BR~GER200-100BR	5°	-	-
1008B-WH-90				
1210B-WH-90				
1412C-WH	GE [®] /L 100-005C~GE [®] /L 350-020C 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.

● : Std. Item

G

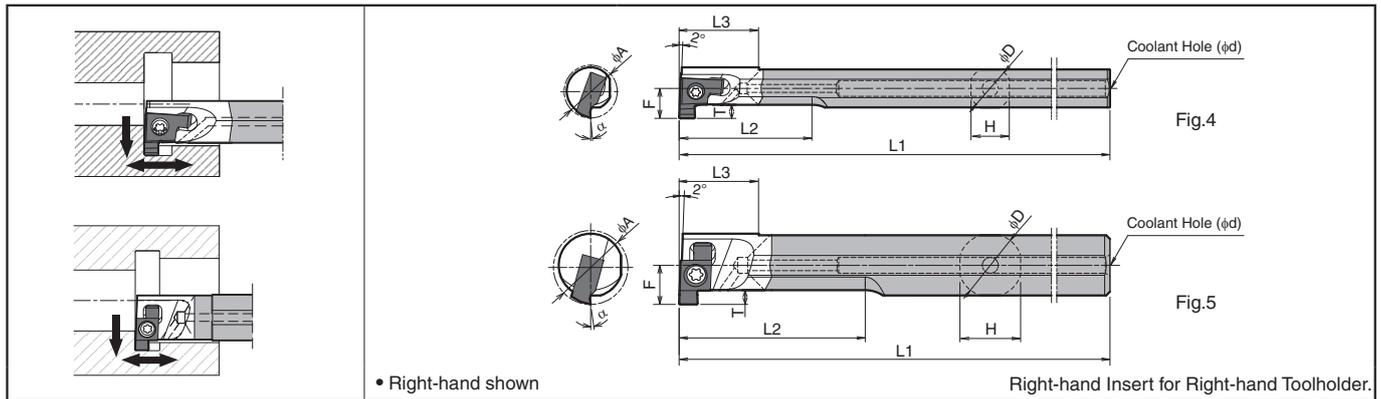
Grooving

External

Internal

Face

SIGE-WH-90 (For Automatic Lathe) Carbide Shank Bar (with Coolant Hole)



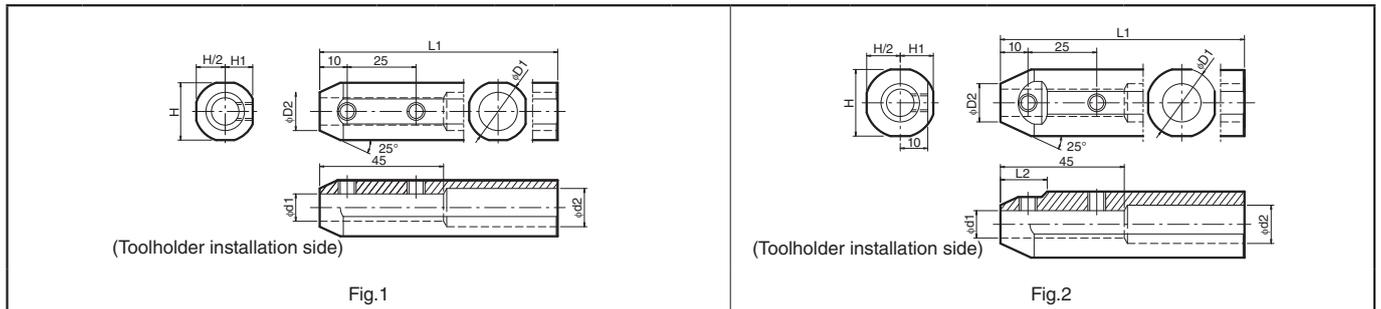
Toolholder Dimensions

Description	Std.	Min. Bore Dia.	Dimension (mm)										Spare Parts		Applicable Inserts ● G49, G50
			phi A	phi D	H	L1	L2	L3	F	T	phi d	Drawing	Clamp Screw	Wrench	
SIGER 1008B-WH-90	●	10	8	7.2	90	25	15	5.6	2.2	3	Fig.4	SB-2255TR	FT-7	GER100-005B-GER300-020B GER100-050BR-GER200-100BR	
1210B-WH-90	●	12	10	9.4		30		6.6							
1412C-WH-90	●	14	12	11.4	90	35	15	7.4	2.5	3	Fig.5	SB-2570TR	FT-8	GER100-005C-GER350-020C GER150-010CM-GER350-020CM GER200-100CR-GER300-150CR	

*Dimension L3 shows minimum overhang length.

· See Page ● G52 for Applicable Insert & Rake Angle (α) after Installment of Insert.

Applicable Sleeves



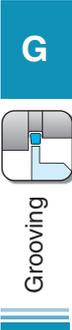
Description	Std.	Dimension (mm)								Drawing	Spare Parts		Applicable Machine Manufacturer
		phi d1	phi D1	phi D2	phi d2	H	H1	L1	L2		Screw	Wrench	
SHA 0820-120	●	8	20	14	12	19	9.25	120	-	Fig.1	HS6X4P	LW-3	Eguro Tsumami Citizen Machinery
SHA 1020-120	●	10											
SHA 0825.0-135	●	8	25	14	14	24	11.5	135	17	Fig.2	HS6X4P	LW-3	Citizen Machinery
SHA 1025.0-135	●	10											
SHA 1225.0-135	●	12											
SHA 0819-120	●	8	19.05	14	12	18	8.75	120	-	Fig.1	HS6X4P	LW-3	Citizen Machinery
SHA 1019-120	●	10											
SHA 0820-120	●	8	20	14	12	19	9.25	120	-	Fig.1	HS6X4P	LW-3	Citizen Machinery
SHA 1020-120	●	10											
SHA 0825.4-120	●	8											
SHA 1025.4-120	●	10	25.4	14	14	24.4	12	120	17	Fig.2	HS6X4P	LW-3	Citizen Machinery
SHA 1225.4-120	●	12											
SHA 0822-125	●	8	22	14	14	21	10	125	-	Fig.1	HS6X4P	LW-3	Star Micronics Nomura DS
SHA 1022-125	●	10											
SHA 1222-125	●	12											
SHA 0823-120	●	8	23	14	14	22	10.5	120	16	Fig.2	HS6X4P	LW-3	Nomura DS
SHA 1023-120	●	10											
SHA 1223-120	●	12											

* Length of phi d1...45mm (All of SHA sleeves)

· Choose sleeves (phi d1) to meet with phi D dimension of toolholder.

· Machine manufacturers in random order.

● : Std. Item



Internal Grooving SIGE

◆ Recommended Cutting Conditions (Ground Chipbreaker: GE^{R/L}...A(R), GE^{R/L}...B(R))

Workpiece Material	Recommended Insert Grades (Cutting Speed 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 (2)0.01~0.03 (3)Max. 0.05	(1)0.02~0.04 (2)0.02~0.04 (3)Max. 0.05	(1)0.02~0.04 (2)0.02~0.04 (3)Max. 0.1	Coolant
Alloy Steel	☆ 50~80	★ 50~80	☆ 50~80	-	(1)0.01~0.03 (2)0.01~0.03 (3)Max. 0.05	(1)0.02~0.04 (2)0.02~0.04 (3)Max. 0.05	(1)0.02~0.04 (2)0.02~0.04 (3)Max. 0.1	
Stainless Steel	-	★ 50~80	☆ 50~80	-	(1)0.01~0.03 (2)0.01~0.03 (3)Max. 0.05	(1)0.01~0.03 (2)0.01~0.03 (3)Max. 0.05	(1)0.01~0.03 (2)0.01~0.03 (3)Max. 0.1	
Cast Iron	-	-	-	★ 50~80	(1)0.01~0.03 (2)0.01~0.03 (3)Max. 0.05	(1)0.02~0.04 (2)0.02~0.04 (3)Max. 0.05	(1)0.02~0.04 (2)0.02~0.04 (3)Max. 0.1	
Aluminum Alloys	-	-	-	★ 50~100	(1)0.01~0.03 (2)0.01~0.03 (3)Max. 0.1	(1)0.02~0.04 (2)0.02~0.04 (3)Max. 0.1	(1)0.02~0.04 (2)0.02~0.04 (3)Max. 0.2	
Brass	-	-	-	★ 50~100	(1)0.01~0.03 (2)0.01~0.03 (3)Max. 0.1	(1)0.02~0.04 (2)0.02~0.04 (3)Max. 0.1	(1)0.02~0.04 (2)0.02~0.04 (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

◆ Recommended Cutting Conditions (Ground Chipbreaker: GE^{R/L}...C(R), GE^{R/L}...D(R), GE^{R/L}...E)

Workpiece Material	Recommended Insert Grades (Cutting Speed Vc: m/min)				(1) f for Grooving (mm/rev)						Remarks	
	Cermet	MEGA COAT	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} 300-400-020D 300-150DR			
Carbon Steel	☆ 120~180	★ 60~140	☆ 60~140	-	(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)0.04~0.09 (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	(1)0.05~0.12 (2)0.05~0.1 (3)Max. 0.5	Coolant
Alloy Steel	☆ 100~160	★ 60~120	☆ 60~120	-	(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)0.04~0.08 (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	(1)0.05~0.1 (2)0.05~0.1 (3)Max. 0.5	
Stainless Steel	☆ 70~130	★ 60~110	☆ 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)0.04~0.08 (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	(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)0.04~0.09 (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	(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)0.05~0.15 (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	(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)0.05~0.15 (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	(1)0.08~0.15 (2)0.08~0.15 (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

◆ Recommended Cutting Conditions (Molded Chipbreakers: GER...CM, GER...DM, GER...EM)

Workpiece Material	Recommended Insert Grades (Cutting Speed Vc: m/min)				(1) f for Grooving (mm/rev)						Remarks	
	Cermet	MEGA COAT	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 300-400-020DM	GER 350-400-020EM		GER 450-500-020EM
Carbon Steel	-	★ 60~160	☆ 60~160	-	(1)0.03~0.1 (2)0.03~0.1 (3)Max. 1.0	(1)0.03~0.12 (2)0.03~0.1 (3)Max. 1.5	(1)0.04~0.12 (2)0.04~0.1 (3)Max. 1.5	(1)0.05~0.12 (2)0.05~0.1 (3)Max. 1.5	(1)0.05~0.12 (2)0.05~0.1 (3)Max. 1.5	(1)0.05~0.12 (2)0.05~0.1 (3)Max. 1.5	(1)0.05~0.12 (2)0.05~0.1 (3)Max. 1.5	Coolant
Alloy Steel	-	★ 60~140	☆ 60~140	-	(1)0.03~0.1 (2)0.03~0.1 (3)Max. 1.0	(1)0.03~0.1 (2)0.03~0.1 (3)Max. 1.5	(1)0.04~0.12 (2)0.04~0.1 (3)Max. 1.5	(1)0.05~0.12 (2)0.05~0.1 (3)Max. 1.5	(1)0.05~0.12 (2)0.05~0.1 (3)Max. 1.5	(1)0.05~0.12 (2)0.05~0.1 (3)Max. 1.5	(1)0.05~0.12 (2)0.05~0.1 (3)Max. 1.5	
Stainless Steel	-	★ 60~110	☆ 60~110	-	(1)0.03~0.08 (2)0.03~0.1 (3)Max. 1.0	(1)0.03~0.08 (2)0.03~0.1 (3)Max. 1.5	(1)0.04~0.08 (2)0.04~0.1 (3)Max. 1.5	(1)0.05~0.1 (2)0.05~0.1 (3)Max. 1.5	(1)0.05~0.1 (2)0.05~0.1 (3)Max. 1.5	(1)0.05~0.1 (2)0.05~0.1 (3)Max. 1.5	(1)0.05~0.1 (2)0.05~0.1 (3)Max. 1.5	

★: 1st Recommendation ☆: 2nd Recommendation

G

Grooving

External

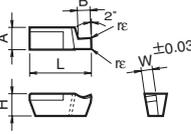
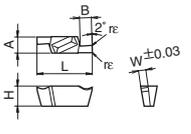
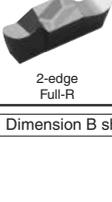
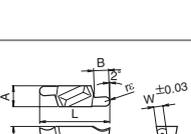
Internal

Face

Insert for Small Dia. Internal Grooving

Applicable Inserts (GIV / GIV-E / GIV-W)

(mm)

Description	A	L	H	Classification of usage	Dimension (mm)		Cermert		MEGA COAT	PVD Coated Carbide	Carbide	PCD	Applicable Toolholders												
					W	B	re	TN90	TC40N	TC60M	PR1225	PR930		KW10	KPD010										
Handed Insert shows Right-hand				Description	W	B	re	R	L	R	L	R	L	R	L	R	L								
		GV^β/L	100-020SS					1.00	2.3	0.2	●				●	●	●	●	●						
			125-020SS	1.25																					
			145-020SS	1.45																					
			200-020SS	2.00																					
			250-020SS	2.50																					
			300-020SS	3.00																					
		GV^β/L	100-020S	1.00	2.3	0.2	●				●	●	●	●	●										
			125-020S	1.25																					
			145-020S	1.45																					
			185-020S	1.85																					
			200-020S	2.00																					
			250-020S	2.50																					
			340-020S	3.40																					
							GV^β/L	100-020A	1.00	2.3	0.2	●				●	●	●	●	●					
								125-020A	1.25																
								145-020A	1.45																
185-020A	1.85																								
200-020A	2.00																								
250-020A	2.50																								
300-020A	3.00																								
340-020A	3.40																								
		GV^β/L			145-020B	1.45		2.8	0.2			●				●	●	●	●	●					
					185-020B	1.85																			
			200-020B	2.00																					
			230-020B	2.30																					
			250-020B	2.50																					
			280-020B	2.80																					
			300-020B	3.00																					
			340-020B	3.40																					
			400-020B	4.00																					
					GV^β/L	280-020C	2.80			4.5	0.2	●	□			●	●	●	●	●					
300-020C	3.00																								
340-020C	3.40																								
400-020C	4.00																								
430-020C	4.30																								
460-020C	4.60																								
500-020C	5.00																								
		GV^β/L				145-020A	1.45	2.3	0.2													●			
						200-020A	2.00																		●
						300-020A	3.00																		
			GV^β/L	200-020B	2.00	3.2	0.2															●			
				250-020B	2.50																		●		
				300-020B	3.00																			MTO	
GV^β/L	300-020C	3.00	4.5	0.2														MTO							
	400-020C	4.00			5.5														MTO						
		GV^β/L	200-100AR	2.00	2.3	1.00					●	●	●	●	●										
			250-125AR	2.50		1.25																			
			300-150AR	3.00		1.50																			
			GV^β/L	200-100BR		2.00	3.2	1.00	●					●	●	●	●	●							
				300-150BR		3.00			4.2	1.50	●					●	●	●	●	●					

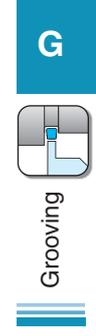
Dimension B shows available grooving depth.

Recommended Cutting Conditions  G106
See Page for Applicable Toolholders  G57

● : Std. Item
□ : Deleted from the next catalogue
MTO : Made to order

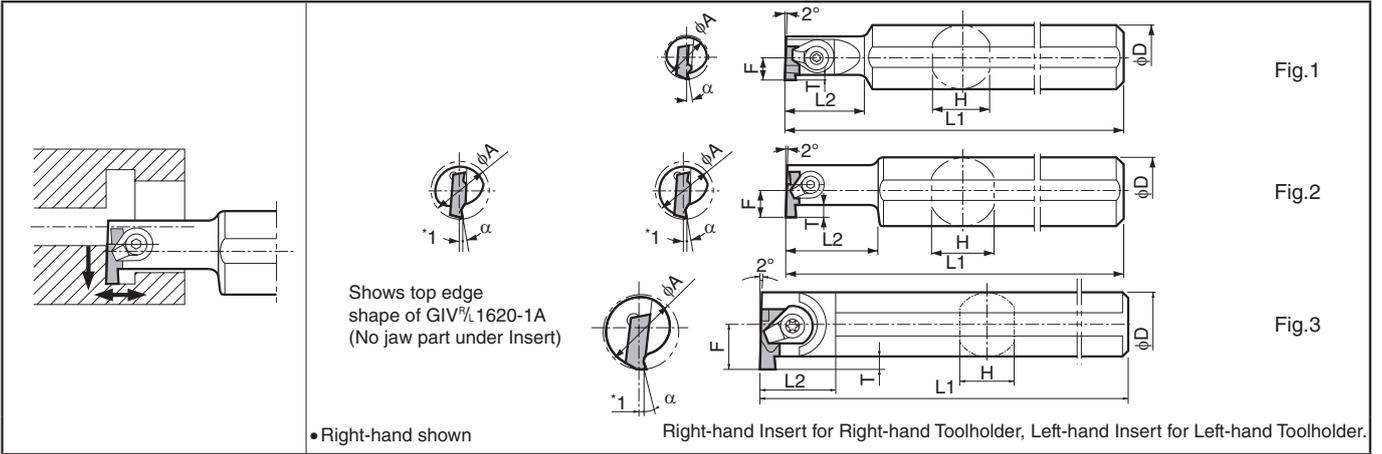
Inserts are sold in 10 piece boxes.

CBN & PCD Inserts are sold in 1 piece boxes.

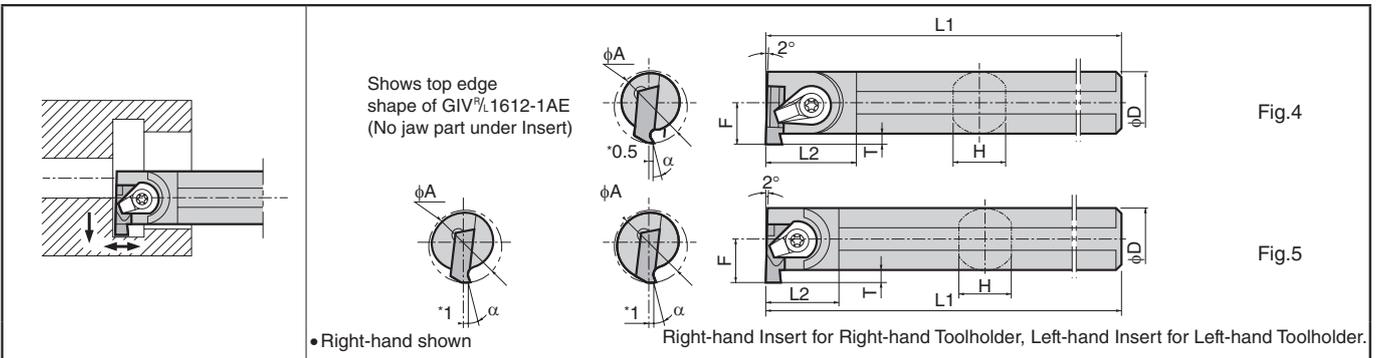


Small Dia. Internal Grooving Toolholders [GV Insert]

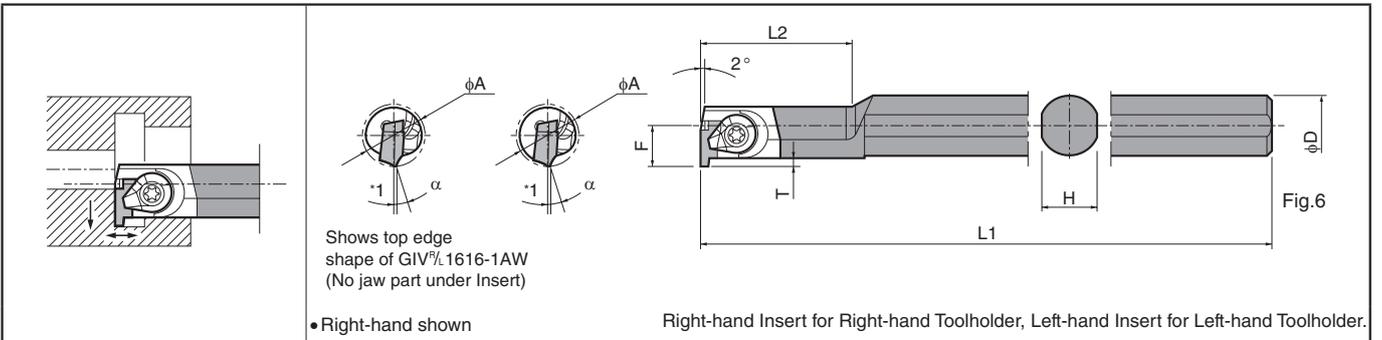
GIV



GIV-E Excellent Bar



GIV-W Carbide Shank Bar



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

Toolholder Description	Insert Description G55		Rake Angle (α)	
	General Grooving (Square)	Full-R Grooving (Round)	TC40N	TN90,TC60M PR930,PR1225 KW10
GIV%L...1SS	GV%L100~300-020SS	-	10°	15°
GIV%L...1S	GV%L100~340-020S	-	10°	15°
GIV%L...1SE	GV%L100~340-020S	-	3°	8°
GIV%L...1A(□)	GV%L100~340-020A	GV%L200-100AR-300-150AR	3°	8°
GIV%L...1B(□)	GV%L145~250-020B	GV%L200-100BR	4°	9°
GIV%L...2B(□)	GV%L280~400-020B	GV%L300-150BR		
GIV%L...1C(□)	GV%L280~340-020C	-	5°	10°
GIV%L...2C(□)	GV%L400~500-020C	-		

* GIV, GIV-E and GIV-W are designed to set the cutting edge height 1mm above the center height. (0.5mm for GIV%L1612-1AE)

● Toolholder Dimensions

Description	Std.		Min. Bore Dia.	Dimension (mm)							Drawing	Spare Parts				See Page for Applicable Inserts
	R	L		φA	φD	H	L1	L2	F	T		Clamp Set		Wrench	Wrench	
																
GIV ^{R/L}	1216-1SS	●●	12	16	15	150	20	6.0	2.2	Fig.1	CPS-4V	-	FT-10	-		
	1420-1S	●●	14	20	19	150	24	7.0	2.2	Fig.1	CPS-5F	-	FT-15	-		
	1620-1A	●●	16	20	19	160	28	8.0	2.2	Fig.2	CPS-5V	-	FT-15	-		
	2025-1B	●●	20	25	23	180	35	10.0	Note 1) 2.8 Note 2) 3.2	Fig.2	CPS-5V	-	FT-15	-		
	2025-2B	●●														
	2532-1C	●●	25	32	30	200	43	12.5	Note 3) 4.5	Fig.2	-	CPS-6V	-	LW-3		
	3232-1C	●●	32			220	52	16.0		Fig.3						
	4032-1C	●●	40			250	43	21.0		Fig.3						
	2532-2C	●●	25	32	30	200	43	12.5	Note 4) 5.5	Fig.2	-	CPS-6V	-	LW-3		
	3232-2C	●●	32			220	52	16.0		Fig.2						
4032-2C	●●	40	250			43	22.2	Fig.3								
GIV ^{R/L}	1412-1SE	●●	14	12	11.4	150	18	7.7	1.7	Fig.4	CPS-5F	-	FT-15	-		
	1612-1AE	●●	16	12	11.4	150	19	8.2	2.2	Fig.5	CPS-5V	-	FT-15	-		
	2016-1BE	●●	20	16	15.2	180	20	11.2	Note 5) 2.8 Note 5) 3.2	Fig.5	CPS-5V	-	FT-15	-		
	2016-2BE	●●					19	11.7								
	2520-1CE	●●	25	20	19	200	25	14.5	Note 6) 4.5 Note 7) 4.5	Fig.5	-	CPS-6V	-	LW-3		
	3225-1CE	●●	32	25	24	220	24	17.5								
	4032-1CE	●●	40	32	31	240	29	21.0	Note 7) 4.5							
	2720-2CE	●●	27	20	19	200	25	16.2	Note 4) 5.5	Fig.5	-	CPS-6V	-	LW-3		
3225-2CE	●●	32	25	24	220	24	18.7									
4032-2CE	●●	40	32	31	240	29	22.2									
GIV ^{R/L}	1616-1AW	●●	16	16	15	175	48	10.6	2.2	Fig.6	CPS-5V	-	FT-15	-		
	2020-1BW	●●	20	20	19	220	60	14.6	Note 1) 2.8 Note 2) 3.2	Fig.6	CPS-5V	-	FT-15	-		
	2020-2BW	●●														
	2525-1CW	●●	25	25	24	260	70	19.1	Note 3) 4.5 Note 4) 5.5	Fig.6	-	CPS-6V	-	LW-3		
2525-2CW	●●															

· Dimension T shows available grooving depth.

Note 1) GIV^{R/L}200-250-020B Insert can be used up to a Groove Depth 3.2mm.

Note 2) GIV^{R/L}300-400-020B Insert can be used up to a Groove Depth 4.2mm.

Note 3) GIV^{R/L}340-020C Insert can be used up to a Groove Depth 5.5mm.

Note 4) GIV^{R/L}430-500-020C Insert can be used up to a Groove Depth 6.3mm.

Note 5) GIV^{R/L}300-400-020B Insert can be used up to a Groove Depth 3.8mm. (When using GIV^{R/L}2016-2BE)

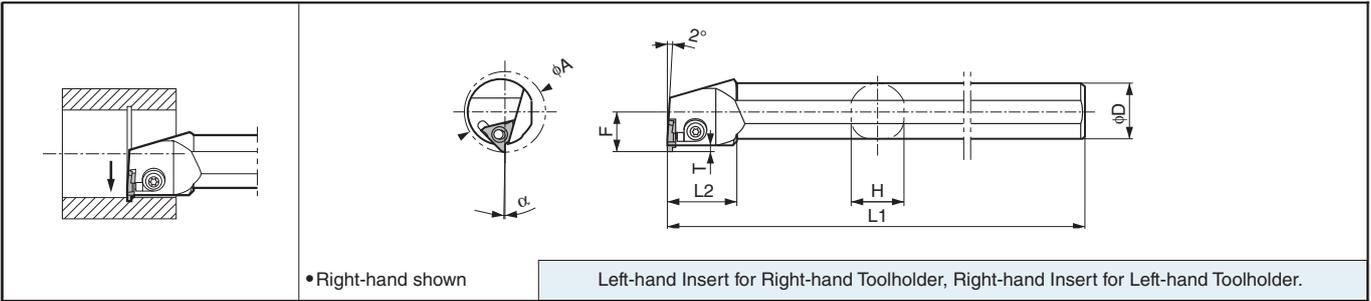
Note 6) GIV^{R/L}340-020C Insert can be used up to a Groove Depth 4.7mm. (When using GIV^{R/L}2520-1CE)

Note 7) GIV^{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 notes 1 to 7, modify the dimension T of toolholder.

Internal Shallow Grooving Toolholders

KIGBA



Toolholder Dimensions

Description	Std.		Min. Bore Dia.	Dimension (mm)							Spare Parts		Applicable Inserts G6-G8
	R	L		phi A	phi D	H	L1	L2	F	T	Clamp Set	Wrench	
	KIGBA^{R/L} 3525-16	●		●	35	25	23	220	30	17.5	2.8	LGBA-16 ^{R/S}	
4032-22	●	●	40	32	30	250	30	23.0	3.0	LGBA-22 ^{R/S}	FT-15	GBA43 ^{R/L} type	

*Dimension T shows the distance from the toolholder to the cutting edge.
 Available Grooving Depth depends on the insert.
 KIGBA^{R/L} 3525-16: Dimension B of the applicable insert (GBA32 type)
 4032-22: Dimension B of the applicable insert (GBA43 type)
 1. 2.0mm (Dimension B < 3.0mm)
 2. 3.0mm (Dimension B ≥ 3.0mm)

• Clamp Set : LGBA-○○LS for Right-hand Toolholder, and LGBA-○○RS for Left-hand Toolholder.

Rake Angle (α) after Installment of GBA type

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 PR1115, PR1215, PR905 KPD001, KPD010	-9°	KBN510, KBN525	+1°	TN620, TN90, PV7040, PR930 PR1115, PR1215, PR905	050R~150R
		+1°	TN620, TC40N, TN90, PV7040 PR930, PR1115, PR1215, PR905 KPD001, KPD010	+5°	TN620, TN90, PV7040, PR930 PR1115, PR1215, PR905	200R
+11°	KW10	+11°	KW10		KW10	050R~200R

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

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.

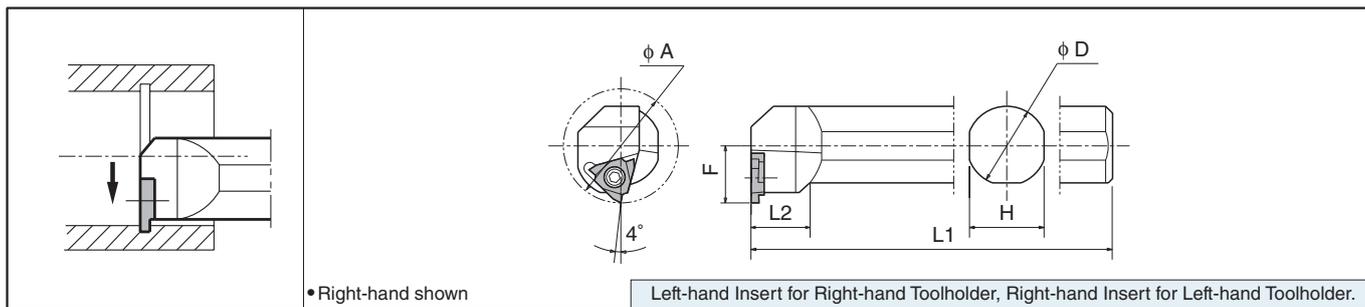
Rake Angle (α) after Installment of GBA-MY type

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.

Internal Large Dia. Shallow Grooving Toolholders [TG Insert]

KITG (Will be switched to KIGBA)



Toolholder Dimensions

Description	Std.	Min. Bore Dia.	Dimension (mm)							Spare Parts				
			R	L	φA	φD	H	L1	L2	F	Clamp Screw		Wrench	
														
KITG^{R/L} 3525T-16	●	●	35	25	23	220	18	17.5			SB-4TR	-	FT-15	-
4532T-22	●	●	45	32	30	250	20	22.5			-	GS-50	-	LW-3

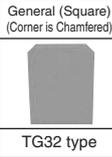
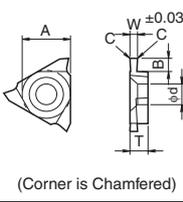
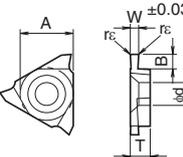
• Available Grooving Depth: KITG^{R/L}.3525T-16=2.0mm, KITG^{R/L}.4532T-22=2.5mm

* KITG will be switched to KIGBA as an Internal Shallow Grooving Toolholder; however, it will continue to be sold as Internal Threading Toolholder ()
 - GBA Insert cannot be installed to this toolholder.

Applicable Inserts (TG insert will be switched to GBA)

Description	A	T	φd
TG32₋	9.525	3.18	4.5
TG43₋	12.70	4.76	5.5

	P	M	K	N	S	H	Classification of usage
	Carbon steel / Alloy steel	Stainless Steel	Cast Iron	Non-ferrous Metals	Titanium Alloys	Hard materials (~40HRC) Hard materials (40HRC-)	 : Continuous-Light Interruption / 1st Choice  : Continuous-Light Interruption / 2nd Choice  : Continuous / 1st Choice  : Continuous / 2nd Choice

Insert Handed Insert shows Right-hand	Description	Dimension (mm)			Cermet		Applicable Toolholders	See Page for Applicable Toolholders
		W	B	C or rε	TN60			
					R	L		
 General (Square) (Corner is Chamfered) TG32 type	 (Corner is Chamfered)	TG32^{R/L} 075 0.75 095 0.95 125 1.25 145 1.45 150 1.50 175 1.75 200 2.00	2.0	C0.1	<input type="radio"/>	<input type="radio"/>	KITG^{R/L} ...16	G59
					<input type="radio"/>	<input type="radio"/>		
					<input type="radio"/>	<input type="radio"/>		
					<input type="radio"/>	<input type="radio"/>		
					<input type="radio"/>	<input type="radio"/>		
					<input type="radio"/>	<input type="radio"/>		
 General (Square) (Corner is R shape) TG43 type		TG43^{R/L} 150 1.50 175 1.75 200 2.00 230 2.30	3.5	0.2	<input type="radio"/>	<input type="radio"/>	KITG^{R/L} ...22	G59
					<input type="radio"/>	<input type="radio"/>		
					<input type="radio"/>	<input type="radio"/>		
		250 2.50 265 2.65 280 2.80 300 3.00 330 3.30	4.0	0.3	<input type="radio"/>	<input type="radio"/>		
					<input type="radio"/>	<input type="radio"/>		
					<input type="radio"/>	<input type="radio"/>		
		350 3.50 400 4.00 430 4.30 450 4.50	5.0	0.4	<input type="radio"/>	<input type="radio"/>		
					<input type="radio"/>	<input type="radio"/>		
					<input type="radio"/>	<input type="radio"/>		

• Dimension B shows available grooving depth.

* KITG will be switched to KIGBA.

* For applicable insert, TG insert will be switched to GBA.

Change Insert Grade TN60 for TN90.

There are various types of GBA insert grades available dependent on the user's cutting condition requirements.

* Check the corner-R(rε) of the insert when changing.

Recommended Cutting Conditions 

● : Std. Item
 ○ : Check Availability

Inserts are sold in 10 piece boxes.



KGDI

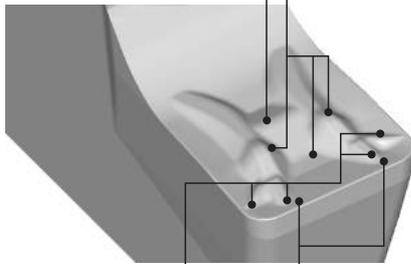
Stable Machining with Excellent Chip Control and Smooth Chip Evacuation

1

Excellent Chip Control with GMI Chipbreaker for Internal Grooving

Evenly breaks chips in various cutting conditions with newly designed chipbreaker geometry. Good chip control even in finishing applications with small depths of cut.

Rear ramp supports chip deformation. Center geometry squeezes chips and prevents chip clogging during high feed machining.



Corner design stabilizes chip shape during finishing and improves chip breaking performance.

Front design stabilizes chip shape during low feed machining.

Comparison of Chip Control (Internal evaluation)



GMI Chipbreaker

Competitor A

Conventional product F

Smooth chip control with stable chip shape compared with Competitor A and Conventional F. Prevents frequent machine stops caused by tangled chips.

Cutting Conditions : $V_c=100\text{m/min}$, $f=0.07\text{mm/rev}$ Toolholder : KGDIR3225B-3
Insert : GDM3015N-040GMI Workpiece Material : SCr420

G

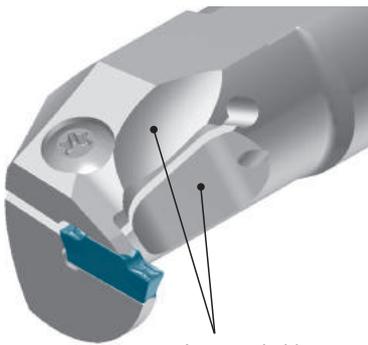


Grooving

2

Smooth Chip Evacuation by Creating Chip Pocket

Smooth chip evacuation when grooving and finishing.

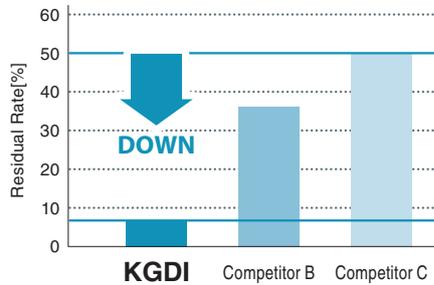


Improved chip evacuation by innovative chip pockets.

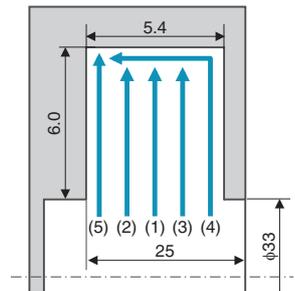
Cutting Conditions : $V_c=100\text{m/min}$
(1) : $a_p=3\text{mm}$, (2)(3) : $a_p=1\text{mm}$, (4)(5) : $a_p=0.2\text{mm}$
 $f=0.08\text{mm/rev}$

Toolholder : KGDIR3225B-3
Insert : GDM3015N-040GMI
Workpiece Material : SCM415

Residual Chips (Internal evaluation)



Chips remaining in machined bore were greatly reduced compared with Competitor B and C.



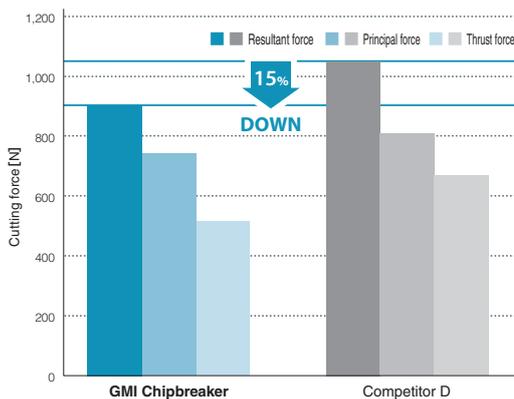
Prevents Chip Clogging

3

Low Cutting Forces and Stable Machining

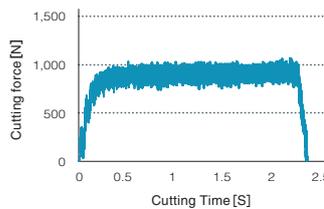
GMI chipbreaker prevents chip clogging and reduces cutting forces.

Comparison of Cutting force (Internal evaluation)



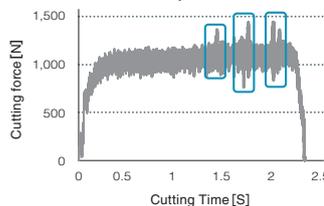
Cutting Conditions : $V_c=150\text{m/min}$, $f=0.1\text{mm/rev}$ Toolholder : KGDIR3225B-3
Insert : GDM3015N-040GMI Workpiece Material : SCM415

GMI Chipbreaker



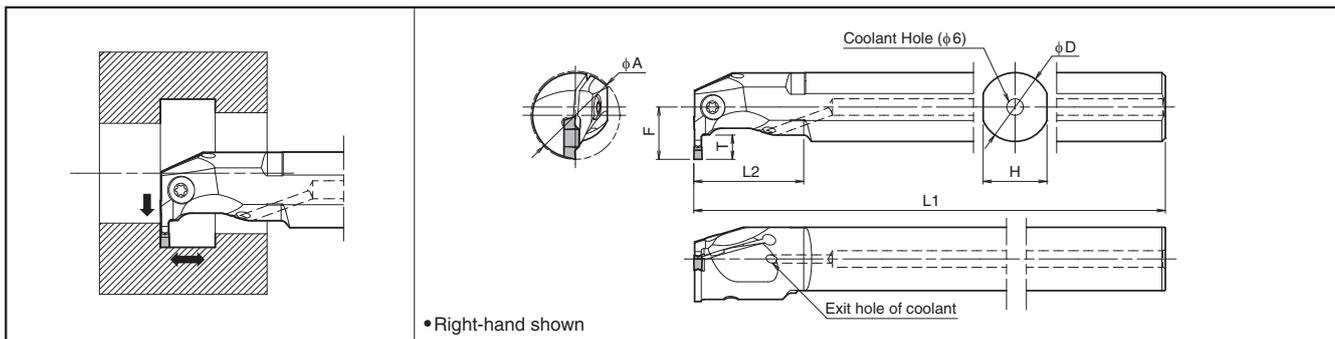
Stable machining with few changes in cutting force.

Competitor D



Instantaneous increase of cutting force due to clogged chips.

KGDI



Toolholder Dimensions

Description	Std.		Min. Bore Dia.		Dimension (mm)							Edge Width W (mm)		Spare Parts			
	R	L	φA		φD	H	L1	L2	F	T	MIN.	MAX.	Clamp Screw		Wrench		
			with GMI	with CM													
KGDI ^{R/L} 1816B-2 2520B-2 3225B-2	●	●	18	-	16	15	150	25	9.5	4.5	2.0	2.0		-	LW-3	-	
	●	●	25	-	20	18	180	30	14.5	6				-	LW-3	-	
	●	●	32	-	25	23	200	40	19	7			-	SB-5TR	-	LTW-20	-
KGDI ^{R/L} 2016B-3 2520B-3 3225B-3	●	●	20	21	16	15	150	25	11.5	5.5	3.0	3.0		-	LW-3	-	
	●	●	25	26	20	18	180	30	14.5	6				-	LW-3	-	
	●	●	32	33	25	23	200	40	19	8			-	SB-5TR	-	LTW-20	-
KGDI ^{R/L} 3225B-4 4032B-4	●	●	32	40(34*)	25	23	200	40	19	8.5	4.0	5.0	-	SB-5TR	-	LTW-20	
	●	●	40	48(42*)	32	29	220	50	23.5	11			-	SB-5TR	-	LTW-20	
KGDI ^{R/L} 3225B-5 4032B-5	●	●	32	37(34*)	25	23	200	40	19	8.5	5.0	5.0	-	SB-5TR	-	LTW-20	
	●	●	40	45(42*)	32	29	220	50	23.5	11			-	SB-5TR	-	LTW-20	

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

Applicable Inserts

Classification of usage		P	Carbon steel / Alloy steel			Applicable Toolholders			
●	Continuous-Light Interruption / 1st Choice	M	Stainless Steel						
☺	Continuous-Light Interruption / 2nd Choice	K	Cast Iron						
●	Continuous / 1st Choice								
○	Continuous / 2nd Choice								

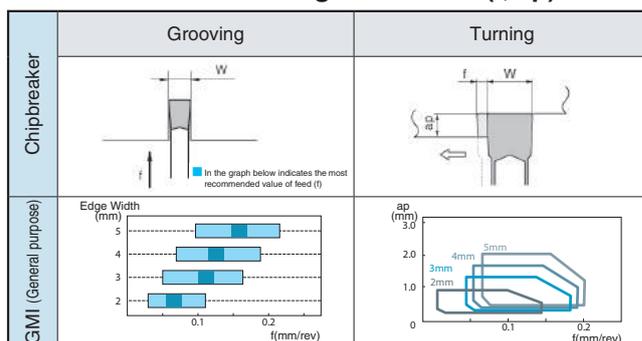
Insert	Description	Dimension (mm)					Cermet	MEGACOAT NANO	MEGACOAT	MEGACOAT
		W	re	M	L	H				
	GDM 2013N-020GMI	2.0	0.2	1.5	13.5	4.3	●	●	●	●
	3015N-040GMI	3.0 ±0.03	2.4	15.5	4.6	●	●	●	●	
	4020N-040GMI	4.0	0.4	3.4	●	●	●	●		
	5020N-040GMI	5.0 ±0.04	0.8	4.4	20	4.3	●	●	●	●
	5020N-080GMI						●	●	●	●
	GDM 3015N-150R-CM	3.0	1.5	2.3	16.3	4.6	●	●	●	●
	4020N-200R-CM	4.0	2.0	3.3	20	4.3	●	●	●	●
	5020N-250R-CM	5.0 ±0.04	2.5	4.2	21	●	●	●	●	

Recommended Cutting Conditions (Vc)

Workpiece Material	Chipbreaker	Recommended Insert Grades (Cutting Speed Vc: m/min)				Remarks
		Cermet	MEGACOAT NANO	MEGACOAT		
				TN620	PR1535	
Carbon Steel	GMI CM	☆	☆	★	☆	Coolant
Alloy Steel		☆	☆	★	☆	
Stainless Steel		☆	★	☆	☆	
Cast Iron				★		

★ : 1st Recommendation ☆ : 2nd Recommendation

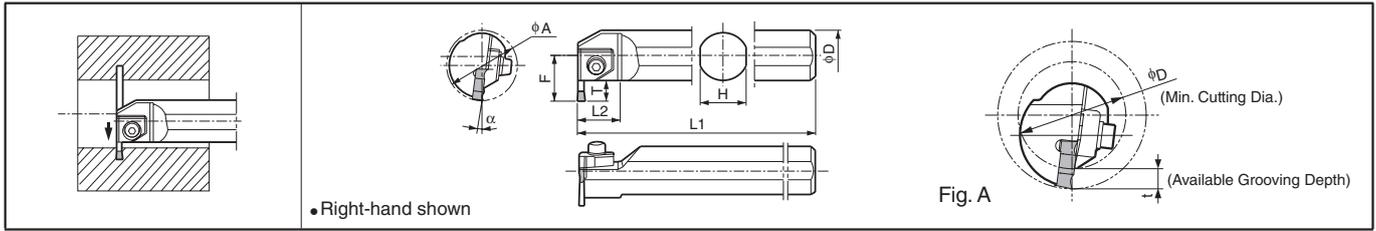
Recommended Cutting Conditions (f, ap)



● : Std. Item

Inserts are sold in 10 piece boxes.

KIGH



• Right-hand shown

Fig. A

Toolholder Dimensions

Description	Std.	Dimension (mm)								Spare Parts								
		ϕA	ϕD	H	L1	L2	F	T	Clamp	Clamp Bolt	Washer	Spring	Wrench					
KIGHR																		
4532B-4	●	45	32	30	200		28.2											
5540B-4	●	55	40	38	250	27	32.3	12										
6550B-4	●	65	50	48	300		37.3											
4532B-5	●	45	32	30	200		28.2											
5540B-5	●	55	40	38	250	27	32.3	12										
6550B-5	●	65	50	48	300		37.3											
5540B-7	●	55	40	38	250	27	32.3	12										
6550B-7	●	65	50	48	300		37.3											

• Dimension T shows the distance from the toolholder to the cutting edge. For the available grooving depth (t), ref. to "List of Min. Available Cutting Diameter and Groove Depth".
• Dimension L2 depends on the insert's edge width.

Rake Angle (α) after Installment of GH / GHU

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	ϕD (Min. Cutting Dia.)					
KIGHR 4532B-○	$\phi 110$	$\phi 70$	$\phi 65$	$\phi 60$	$\phi 55$	$\phi 45$
5540B-○	$\phi 70$	$\phi 60$	$\phi 55$			
6550B-○	$\phi 65$					
Available Grooving Depth t (mm)	12	11.5	11	10	9	Under 8

Applicable Inserts

Description	(mm)	
	L	H
GH4020-○○ ~GH8020-○○	20	7.5
GHU○○-○○	20	

P	M	K	N	S	H	Classification of usage												
Carbon steel / Alloy steel	Stainless Steel	Cast Iron	Non-ferrous Metals	Titanium Alloys	Hard materials (~40HRC) Hard materials (40HRC~)													

● : Continuous-Light Interruption / 1st Choice
 ○ : Continuous-Light Interruption / 2nd Choice
 ● : Continuous / 1st Choice
 ○ : Continuous / 2nd Choice

Insert	Description	Dimension (mm)		Cermet							PVD Coated Carbide				Applicable Toolholders
		W	re	TN60	TN90	TC40N	TC60M	CR9025	PR930	KW10	A65	A66N	PT600M		
 Ground Chipbreaker	GH 4020-02	4.0	0.2		●	●	●	●	●	●	●	●	●	KIGHR4532B-4 5540B-4 6550B-4	
	4020-05		0.5		□	●	●	●	●	●	●	●			
	4520-02	4.5	0.2		●	●	●	●	●	●	●	●			
	4520-05		0.5		□	●	●	●	●	●	●	●	●		
	5020-02	5.0	0.2		●	●	●	●	●	●	●	●	●	KIGHR4532B-5 5540B-5 6550B-5	
	5020-05		0.5		□	●	●	●	●	●	●	●	●		
	5520-02	5.5	0.2		●	●	●	●	●	●	●	●	●		
	5520-05		0.5		□	●	●	●	●	●	●	●	●		
	6020-02	6.0	0.2		●	●	●	●	●	●	●	●	●	KIGHR5540B-7 6550B-7	
	6020-05		0.5		□	●	●	●	●	●	●	●	●		
6520-02	6.5	0.2		●	●	●	●	●	●	●	●	●			
6520-05		0.5		□	●	●	●	●	●	●	●	●			
7020-02	7.0	0.2		●	●	●	●	●	●	●	●	●	KIGHR5540B-7 6550B-7		
7020-05		0.5		□	●	●	●	●	●	●	●	●			
7520-02	7.5	0.2		●	●	●	●	●	●	●	●	●			
7520-05		0.5		□	●	●	●	●	●	●	●	●			
8020-02	8.0	0.2		●	●	●	●	●	●	●	●	●	KIGHR...○○○○B-4		
8020-05		0.5		□	●	●	●	●	●	●	●	●			
 Molded Chipbreaker	GHU 40-20	4.0	0.25	●				●							
	50-20	5.0	0.30	●				●							
	60-20	6.0	0.30	●				●							

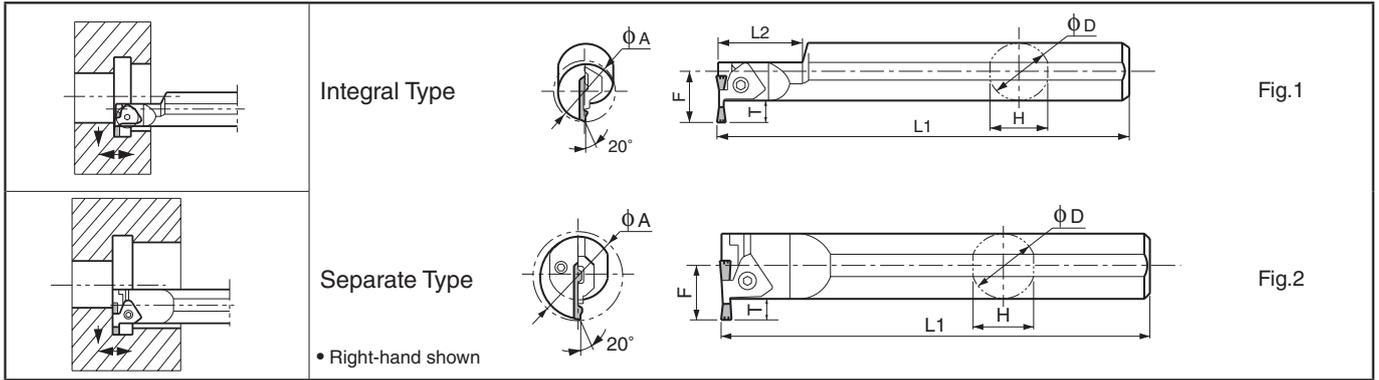
Recommended Cutting Conditions ● G104

● : Std. Item
□ : Deleted from the next catalogue

Inserts are sold in 10 piece boxes.

Internal Large Dia. Deep Grooving Toolholders [GIA Insert]

KGIA



Toolholder Dimensions

Description	Std.	Min. Bore Dia.	Dimension (mm)							Drawing	Spare Parts			
			ϕA	ϕD	H	L1	L2	F	T		Clamp	Clamp Bolt	Spring	Wrench
KGIA	3232B-3	●	32	32	30.4	200	45	26.5		Fig.1	CGIA-3R	HH5X15	SP-5	LW-4
	4332B-3	●	43	32	30	200	-	26.3	10	Fig.2				
	5140B-3	●	51	40	38	250	-	30.3		Fig.1				
	3232B-4	●	32	32	30.4	200	45	26.5		Fig.1				
	4332B-4	●	43	32	30	200	-	26.3	10	Fig.2				
	5140B-4	●	51	40	38	250	-	30.3		Fig.2				
	5640B-5	●	56	40	38	250	-	35.3	15	Fig.2	CGIA-5R			
	6650B-5	●	66	50	48	250	-	40.3		Fig.2				

Dimension T shows available grooving depth.

Composition

Type	Spare Parts	Toolholder	Blade	Clamp Screw	Wrench
Integral Type	KGIA 3232B-3	-	-	-	-
Separate Type	4332B-3	KGIA32H	BGIA43-3	SB-40140TR	FT-15
	5140B-3	KGIA40H	BGIA51-3		
Integral Type	3232B-4	-	-	-	-
Separate Type	4332B-4	KGIA32H	BGIA43-4	SB-40140TR	FT-15
	5140B-4	KGIA40H	BGIA51-4		
Separate Type	5640B-5	KGIA40H	BGIA56-5	SB-40140TR	FT-15
	6650B-5	KGIA50H	BGIA66-5		

Applicable Inserts

Insert	Description	Dimension (mm)				Cermets TN60 CVD Coated CR9025	Applicable Toolholders
		W	re	L	H		
 Molded Chipbreaker	GIA 30	3.0	0.20	25	5.0	● ●	KGIA ... 3
	40	4.0	0.25			● ●	
	50	5.0	0.30	30	● ●	KGIA ... 5	

Recommended Cutting Conditions **G105**

● : Std. Item

Inserts are sold in 10 piece boxes.

Summary of Face Grooving

Face Grooving Dia. ϕD

Face grooving diameter (ϕD) is the suitable value for the initial grooving on the unprocessed workpiece (Ref. to Fig.1).

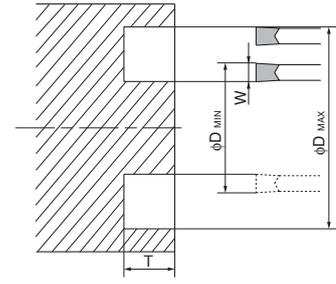
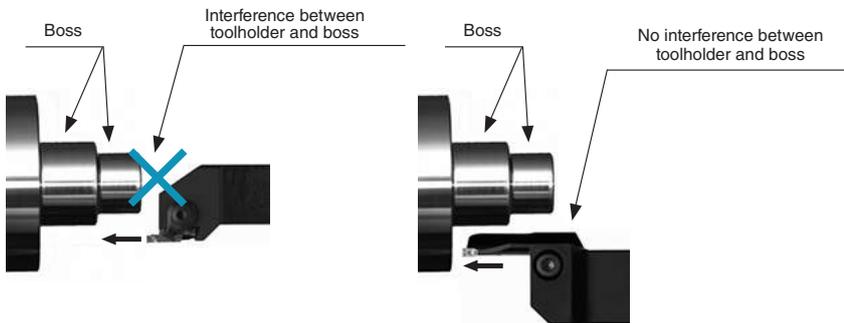


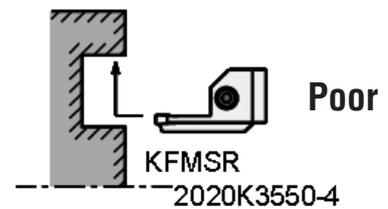
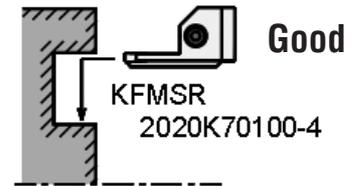
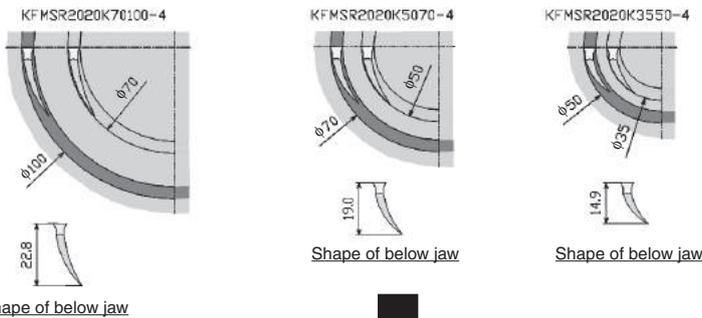
Fig.1

Caution for Face Grooving

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



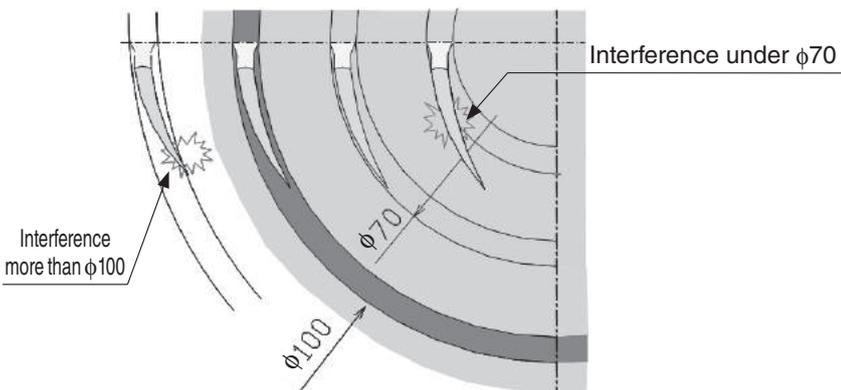
2) Selection of Face Grooving Toolholder



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

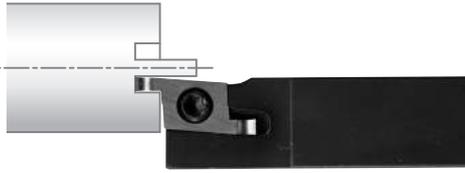
3) Interference of Face Grooving Toolholder

e.g.) KFMSR2525M70100-4

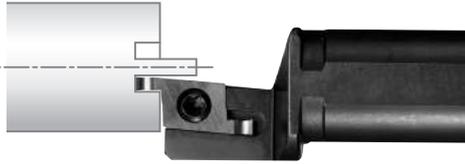


Example of usage for the face grooving toolholder.
When face grooving, KFMSR2525M70100-4 should be between $\phi 70 \sim \phi 100$ for grooving the outer diameter at first. If the workpiece is machined at a diameter $\phi 100$ or $\phi 70$, the jaw of toolholder interferes with the workpiece.

Small Dia. Face Grooving $\phi 6\sim$



Type	STW
External dia. of the groove (Min.)	$\phi 6$
Edge Width (mm)	0.5~2.0
Max. Grooving Depth (mm)	1.0~3.0
See Page	G74



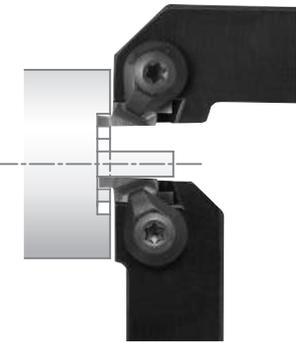
Type	S..-STW
External dia. of the groove (Min.)	$\phi 6$
Edge Width (mm)	0.5~2.0
Max. Grooving Depth (mm)	1.0~3.0
See Page	G74



Type	STWS
External dia. of the groove (Min.)	$\phi 6$
Edge Width (mm)	0.5~2.0
Max. Grooving Depth (mm)	1.0~3.0
See Page	G75



Small Dia. Face Grooving $\phi 8\sim$

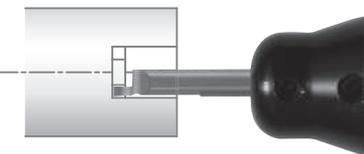


Type	GFVS-AA
External dia. of the groove (Min.)	$\phi 8$
Edge Width (mm)	1.0~3.0
Max. Grooving Depth (mm)	2.2
See Page	G90

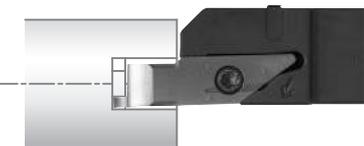
Type	GFVT-AA
External dia. of the groove (Min.)	$\phi 8$
Edge Width (mm)	1.0~3.0
Max. Grooving Depth (mm)	2.2
See Page	G90



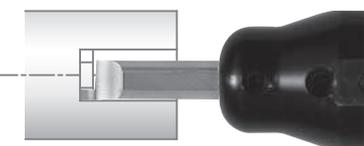
Small Dia. Face Grooving $\phi 5\sim, \phi 8\sim$



Type	EZFG
External dia. of the groove (Min.)	$\phi 5, \phi 6, \phi 8$
Edge Width (mm)	1.0~3.0
Max. Grooving Depth (mm)	1.5~3.0
See Page	G70



Type	VNFG
External dia. of the groove (Min.)	$\phi 8$
Edge Width (mm)	1.0~3.0
Max. Grooving Depth (mm)	2.0~3.0
See Page	G72



Type	HPFG
External dia. of the groove (Min.)	$\phi 8$
Edge Width (mm)	1.0~3.0
Max. Grooving Depth (mm)	2.0~3.0
See Page	G73



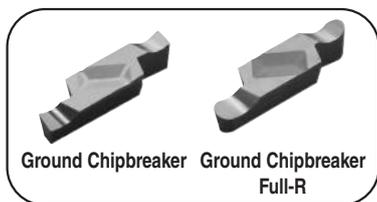
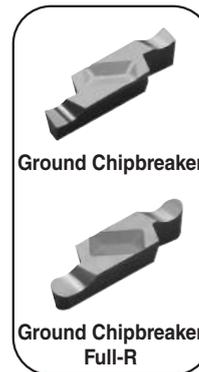
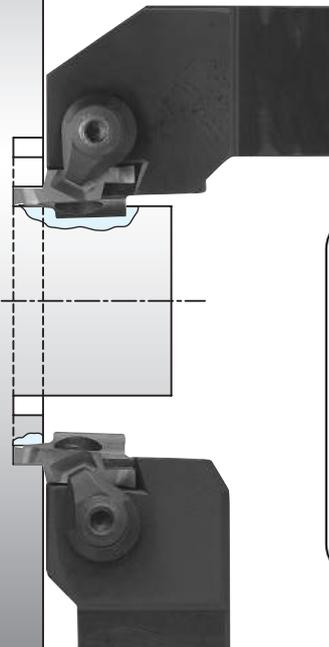
Summary of Face Grooving

Face Grooving $\phi 20\sim$



Type	KFTB
External dia. of the groove (Min.)	$\phi 65\sim\phi 250$
Edge Width (mm)	4.0~5.0
Max. Grooving Depth (mm)	25~38
See Page	G101

Type	GFVS
External dia. of the groove (Min.)	$\phi 35\sim\phi 150$
Edge Width (mm)	2.5~6.0
Max. Grooving Depth (mm)	4.6~8.1
See Page	G94

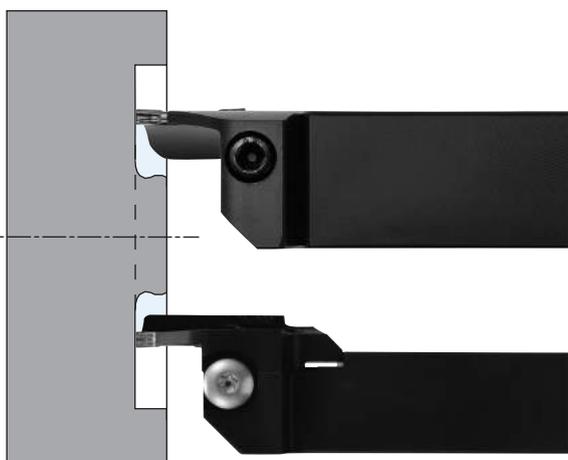


Type	GFV
External dia. of the groove (Min.)	$\phi 20\sim\phi 150$
Edge Width (mm)	2.0~6.0
Max. Grooving Depth (mm)	2.2~8.1
See Page	G92

Type	GFVT
External dia. of the groove (Min.)	$\phi 35\sim\phi 150$
Edge Width (mm)	2.5~6.0
Max. Grooving Depth (mm)	4.6~8.1
See Page	G94

- G
- Grooving
- External
- Internal
- Face

KGDF Face Grooving $\phi 25\sim$ (G76~G89)



Type	KGDF-Z
External dia. of the groove (Min.)	$\phi 50$
Edge Width (mm)	3.0~5.0
Max. Grooving Depth (mm)	15
See Page	G84

Type	*KGDF
External dia. of the groove (Min.)	$\phi 25$
Edge Width (mm)	2.0~6.0
Max. Grooving Depth (mm)	6~32
See Page	G80

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

Grooving and Turning
GM

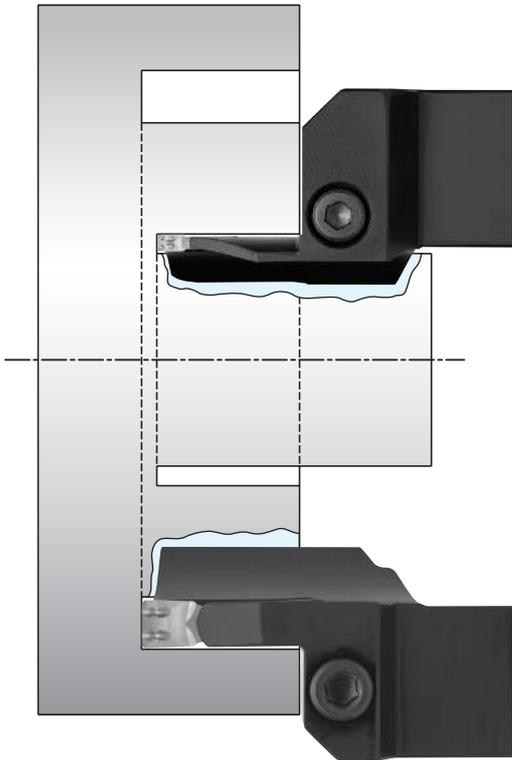
Deep grooving and Turning
DM

High Feed
GH

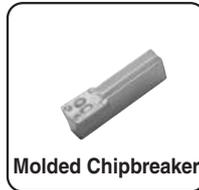
Full-R
CM



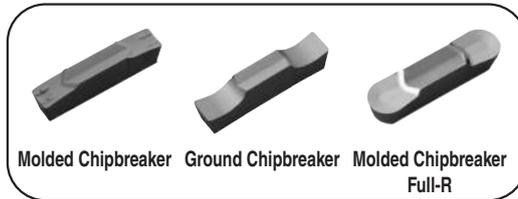
■ Face Grooving & Turning $\phi 25\sim$



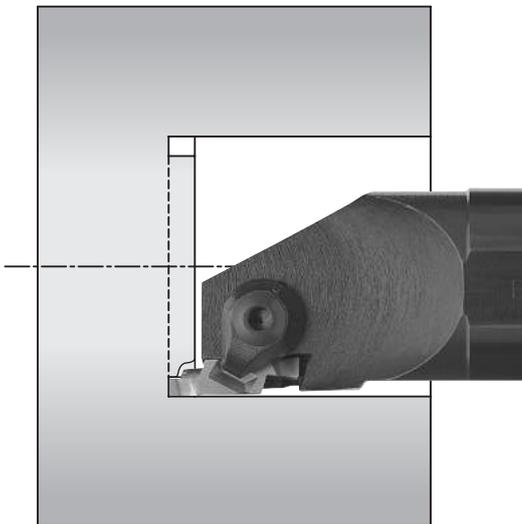
Type	KFMS
External dia. of the groove (Min.)	$\phi 25\sim\phi 235$
Edge Width (mm)	3.0~6.0
Max. Grooving Depth (mm)	13~32
See Page	G98



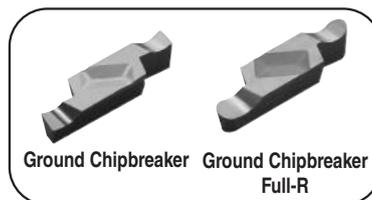
Type	KFMS-8
External dia. of the groove (Min.)	$\phi 54\sim\phi 155$
Edge Width (mm)	8.0
Max. Grooving Depth (mm)	25
See Page	G100



■ Face Grooving $\phi 35\sim$

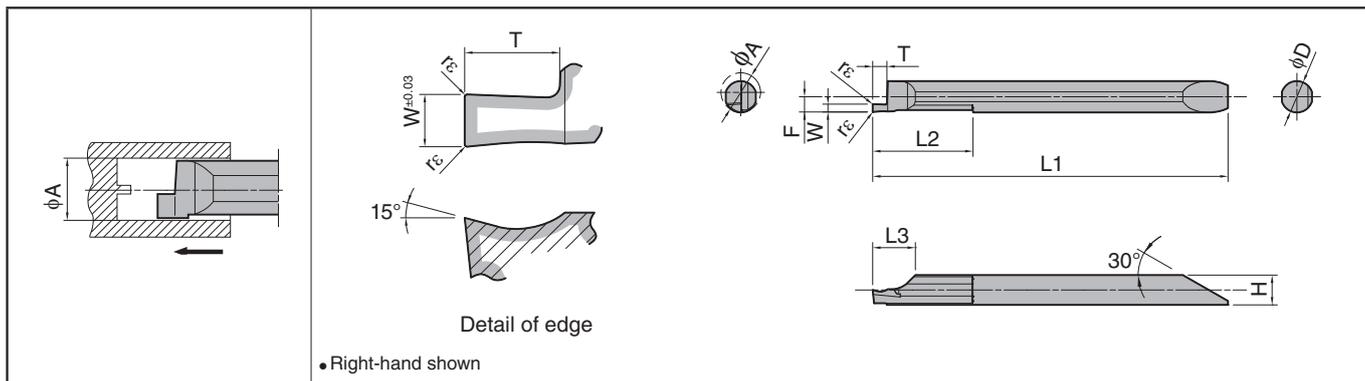


Type	GIFV
External dia. of the groove (Min.)	$\phi 35\sim\phi 50$
Edge Width (mm)	2.0~6.0
Max. Grooving Depth (mm)	2.2~8.1
See Page	G102



Small Dia. Face Grooving EZ Bars

EZFG



Dimensions

Description	External dia. of the groove (Min.)		Dimension (mm)								MEGACOAT	Applicable Sleeves
	φA	W ^{±0.03}	rε	φD	H	L1	L2	L3	F	T	PR1225	
EZFG R 050040-100 050040-150	5	1.0	± 0.013 0.05	4	3.8	45.0	12	5.4	1.9	1.5	●	EZH040..
		1.5								2.0		
EZFG R 060050-100 060050-150 060050-200	6	1.0	± 0.013 0.05	5	4.8	53.2	15	6.9	2.4	1.5	●	EZH050..
		1.5								2.5		
		2.0								3.0		
EZFG R 080070-100 080070-150 080070-200 080070-300	8	1.0	± 0.013 0.05	7	6.8	64.2	25	7.9	3.4	2.0	●	EZH070..
		1.5								2.5		
		2.0								3.0		
		3.0								3.0		

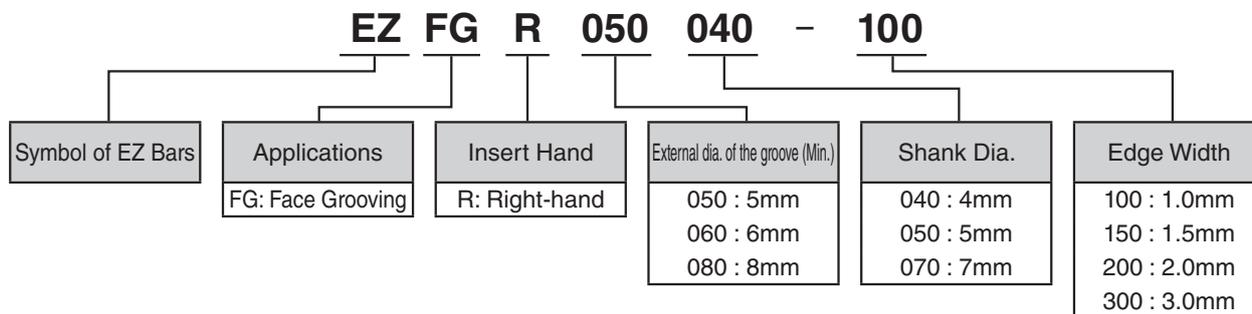
· Dimension T shows available grooving depth.

Recommended Cutting Conditions

Workpiece Material	Recommended Insert Grades (Cutting Speed Vc: m/min)	EZFG R050040-100 EZFG R060050-100 EZFG R080070-100	EZFG R050040-150 EZFG R060050-150 EZFG R080070-150	EZFG R060050-200 EZFG R080070-200	EZFG R080070-300	Remarks
	MEGACOAT	f (mm/rev)				
	PR1225	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	

★ : 1st Recommendation

EZ Bars Identification System



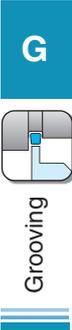
EZ Bars are sold in 1 piece boxes.

● : Std. Item

● Applicable Sleeves

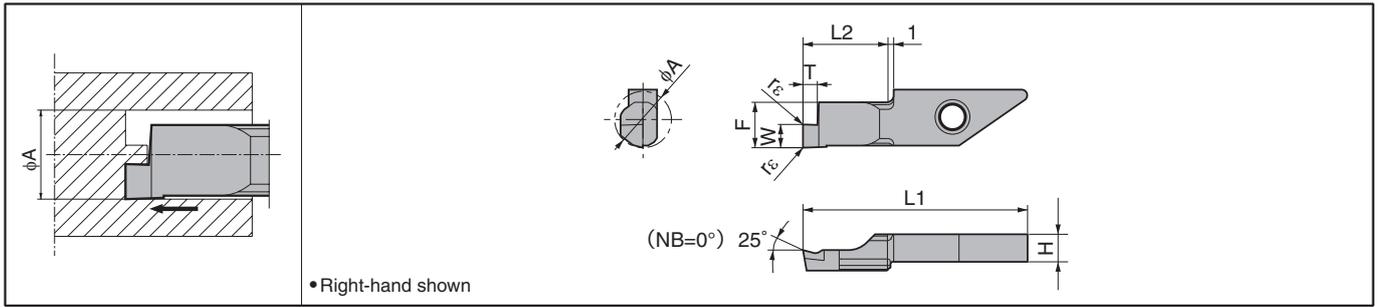
Sleeve				Applicable Insert for Internal Face Grooving			Applicable Machine Manufacturer
EZH-CT (Adjustable overhang length with coolant hole) F25	EZH-HP (Adjustable overhang length) F26	EZH-ST F28	Sleeve Shank Dia. φD1(mm)	EZFG	HPFG	Shank Dia. φD(mm)	
-	-	EZH 04012ST-80 05012ST-80 07012ST-80	12	EZFGR ...040-... EZFGR ...050-... EZFGR ...070-...	- - HPFG ^{5/L} 0807-...	4 5 7	(General purpose)
-	EZH 04016HP-100 05016HP-100 07016HP-100	EZH 04016ST-100 05016ST-100 07016ST-100	16	EZFGR ...040-... EZFGR ...050-... EZFGR ...070-...	- - HPFG ^{5/L} 0807-...	4 5 7	(General purpose)
EZH 04019CT-120 05019CT-120 07019CT-120	EZH 04019HP-120 05019HP-120 07019HP-120	EZH 04019ST-120 05019ST-120 07019ST-120	19.05	EZFGR ...040-... EZFGR ...050-... EZFGR ...070-...	- - HPFG ^{5/L} 0807-...	4 5 7	Citizen Machinery
EZH 04020CT-120 05020CT-120 07020CT-120	EZH 04020HP-120 05020HP-120 07020HP-120	EZH 04020ST-120 05020ST-120 07020ST-120	20	EZFGR ...040-... EZFGR ...050-... EZFGR ...070-...	- - HPFG ^{5/L} 0807-...	4 5 7	Eguro Tsugami Citizen Machinery (General purpose)
EZH 04022CT-135 05022CT-135 07022CT-135	EZH 04022HP-135 05022HP-135 07022HP-135	EZH 04022ST-135 05022ST-135 07022ST-135	22	EZFGR ...040-... EZFGR ...050-... EZFGR ...070-...	- - HPFG ^{5/L} 0807-...	4 5 7	Star Micronics Nomura DS Tsugami
EZH 04025.0CT-135 05025.0CT-135 07025.0CT-135	EZH 04025.0HP-135 05025.0HP-135 07025.0HP-135	EZH 04025.0ST-135 05025.0ST-135 07025.0ST-135	25	EZFGR ...040-... EZFGR ...050-... EZFGR ...070-...	- - HPFG ^{5/L} 0807-...	4 5 7	Eguro Tsugami Citizen Machinery (General purpose)
EZH 04025.4CT-120 05025.4CT-120 07025.4CT-120	EZH 04025.4HP-120 05025.4HP-120 07025.4HP-120	EZH 04025.4ST-120 05025.4ST-120 07025.4ST-120	25.4	EZFGR ...040-... EZFGR ...050-... EZFGR ...070-...	- - HPFG ^{5/L} 0807-...	4 5 7	Citizen Machinery

- Choose sleeves (φd1) to meet with φD 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.



System Tip-Bars for Small Dia. Internal Face Grooving

VNFG (System Tip-Bars)



• Right-hand shown

Dimensions

Classification of usage	P	Carbon steel / Alloy steel	●	○			
M	Stainless Steel		●	○			
K	Cast Iron				●		
N	Non-ferrous Metals				○	●	
S	Titanium Alloys				○	●	
H	Hard materials (~40HRC)	○		○			
	Hard materials (40HRC~)						

See Page for Applicable Toolholders

Description	Face Grooving Dia. ϕA		Dimension (mm)							MEGA COAT	PVD	Carbide	PCD	
	MIN.	MAX.	$W_{\pm 0.03}$	$r\epsilon$	H	L1	L2	F	T	PR1225	PR930	KW10	KPD001	KPD010
VNFGR 0810-10 0820-10 0830-10	8 (0)	∞ (∞)	1.0	0.05	3.9	29.6	10	7.3	2.0	●	●	●		
			2.0						●	●	●			
			3.0						●	●	●			
VNFGR 0820-10NB 0830-10NB			2.0	0.05	3.9	29.6	10	7.3	2.0				MTO	MTO
			3.0									MTO	MTO	

F32
F33

• Dimension T shows available grooving depth.

• Face grooving diameter ϕA MIN. (0) means that you can make the initial groove within MIN. ~ MAX. and then widen it to the center.

Recommended Cutting Conditions

Workpiece Material	Recommended Insert Grades (Cutting Speed Vc: m/min)			VNFG0810	VNFG0820	VNFG0830	Remarks
	MEGA COAT	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	★ 30~80	☆ 30~80		~0.01	~0.02	~0.03	
Non-ferrous Metals			★ ~300	~0.04	~0.06	~0.08	

★ : 1st Recommendation ☆ : 2nd Recommendation

System Tip-Bars are sold in 5 piece boxes.

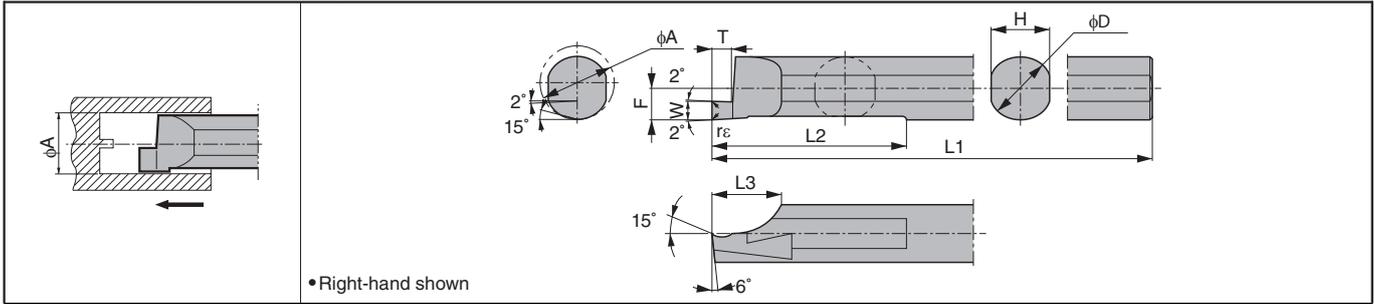
CBN & PCD Inserts are sold in 1 piece boxes.

● : Std. Item
MTO : Made to order

Tip-Bars for Internal Face Grooving PSFG-S / HPGF

PSFG-S (Tip-Bars)

This insert will be switched to EZFG.



Dimensions

Description	Face Grooving Dia. ϕA		Dimension (mm)									PVD Coated Carbide		Carbide		See Page for Applicable Sleeves
	MIN.	MAX.	$W^{\pm 0.03}$	$r\epsilon$	ϕD	H	L1	L2	L3	F	T	PR930		KW10		
												R	L	R	L	
PSFG^{R/L} 0810-20S 0820-20S 0830-20S	8 (0)	∞ (∞)	1.0 2.0 3.0	0.05	6.8	6.2	80	25.5	7	3.4	2.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	F86

• Dimension T shows available grooving depth.

• Face grooving diameter ϕA MIN. (0) means that you can make the initial groove within MIN. - MAX. and then widen it to the center.

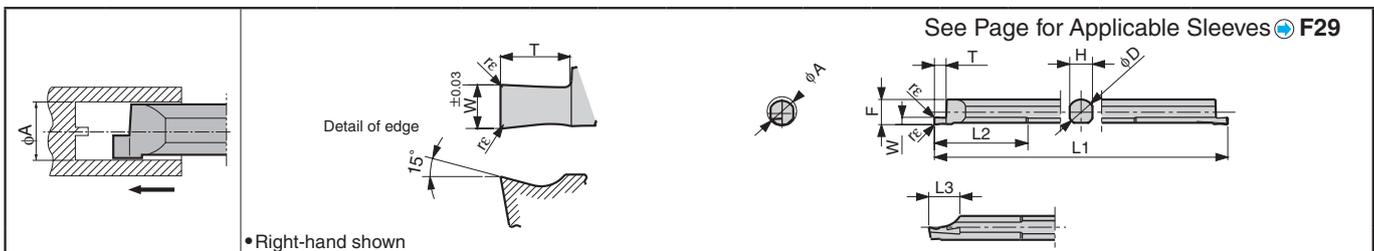
Recommended Cutting Conditions

Workpiece Material	Recommended Insert Grades (Cutting Speed Vc: m/min)		PSFG ^{R/L} 0810	PSFG ^{R/L} 0820	PSFG ^{R/L} 0830	Remarks
	PVD Coated Carbide	Carbide				
	PR930	KW10				
Carbon steel / Alloy steel	★ 30-100		~0.02	~0.04	~0.05	Coolant
Stainless Steel	★ 30-80		~0.01	~0.02	~0.03	
Non-ferrous Metals		★ ~300	~0.04	~0.06	~0.08	

★ : 1st Recommendation

HPFG (Face Grooving / Small Dia.)

This insert will be switched to EZFG.



Dimensions

Description	Face Grooving Dia. ϕA		Dimension (mm)									Insert Grades			
	MIN.	MAX.	$W^{\pm 0.03}$	$r\epsilon$	ϕD	H	L1	L2	L3	F	T	PVD Coated Carbide		Carbide	
												PR930		KW10	
HPFG^{R/L} 0807-10 0807-20 0807-30	8 (0)	∞ (∞)	1 2 3	0.05	7	6.2	80	25	8.5	6.9	2 3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

• Dimension T shows available grooving depth.

• Face grooving diameter ϕA MIN. (0) means that you can make the initial groove within MIN. - MAX. and then widen it to the center.

Recommended Cutting Conditions

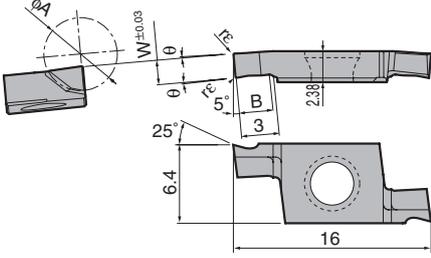
Workpiece Material	Recommended Insert Grades (Cutting Speed Vc: m/min)		HPFG ^{R/L} 0807-10	HPFG ^{R/L} 0807-20	HPFG ^{R/L} 0807-30	Remarks
	PVD Coated Carbide	Carbide				
	PR930	KW10				
Carbon steel / Alloy steel	★ 30-100	-	~0.02	~0.04	~0.05	Coolant
Stainless Steel	★ 30-80	-	~0.01	~0.02	~0.03	
Non-ferrous Metals	-	★ ~300	~0.04	~0.06	~0.08	

★ : 1st Recommendation

○ : Check Availability
□ : Deleted from the next catalogue

Tip-Bars are sold in 1 piece boxes.

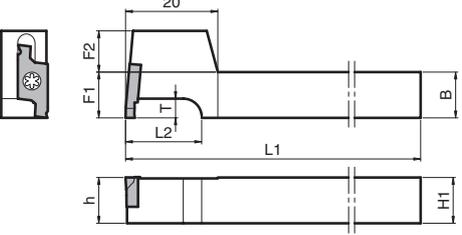
TWFGT (Vertical type)

		Description	Face Grooving Dia. φA		Dimension (mm)			Angle	Insert Grades		
			MIN.	MAX.	W	rε	B	θ	PVD Coated Carbide	Carbide	
		TWFGTR	050	6 (0)	∞ (∞)	0.5	0.05	1.0	1.5°	●	●
			080			0.8		1.5		●	●
			100			1.0		2.2	●	●	
			125			1.25			●	●	
			150			1.5			●	●	
			180			1.8			●	●	
			200	2.0	3.0	●	●				

· Dimension B shows available grooving depth.

· Face grooving diameter φA MIN. (0) means that you can make the initial groove within MIN. - MAX. and then widen it to the center.

STWS (Square Shank for vertical type, L-shape)

	
· Right-hand shown	

Toolholder Dimensions

Description	Std.	Dimension (mm)										Drawing	Spare Parts		Applicable Inserts ➔ G75
		H1=h	B	L1	L2	L3	F1	F2	T	F3	Clamp Screw		Wrench		
STWS 1010JX-15T	●	10	10	120	16		10	9					SB-3080TR	LTW-10S	TWFGTR ○○○
1212JX-15T	●	12	12				12	7							
1616JX-15T	●	16	16		20	-	16	3	3	-	-				
STWS 1010F-15T	●	10	10	85	16		10	9							
1212F-15T	●	12	12				12	7							

· Dimension T shows the distance from the toolholder to the cutting edge. Available groove depth: "B" dimension of insert.

Recommended Cutting Conditions (TWFG / TWFGT)

Workpiece Material	Recommended Insert Grades (Cutting Speed Vc: m/min)		TWFGLO50 TWFGLO80 TWFGLO100	TWFGLO125 TWFGLO150 TWFGLO180 TWFGLO200	TWFGLO180 TWFGLO200	Remarks
	PVD Coated Carbide	Carbide	TWFGTR050 TWFGTR080 TWFGTR100	TWFGTR125 TWFGTR150	TWFGTR180 TWFGTR200	
	PR1025	KW10	f (mm/rev)			
Carbon steel / Alloy steel	★ 30~100		~0.02	~0.03	~0.04	Coolant
Stainless Steel	★ 30~80		~0.01	~0.02	~0.02	
Non-ferrous Metals		★ ~300	~0.03	~0.04	~0.06	

★ : 1st Recommendation

● : Std. Item

Twin-Bars are sold in 5 piece boxes.

G75

G



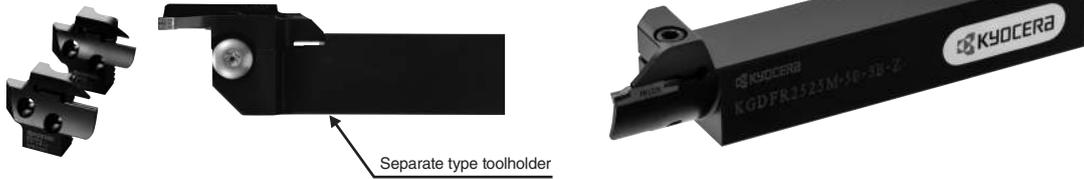
Grooving

KGDF Face Grooving

Features

- Separate type toolholder (toolholder + blade) and Integral type toolholder are available.

Adaptable to a wide range of face grooving applications by changing blades

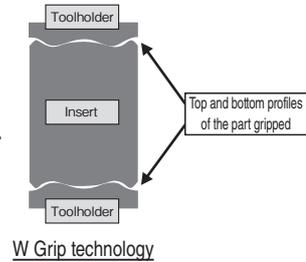


● New insert clamping system "W Grip"

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.



● Smooth chip control

For general purpose GM Chipbreaker, For high feed grooving GH Chipbreaker, For deep grooving DM Chipbreaker

Advantages of Chipbreaker

For general purpose GM Chipbreaker

- Smooth surface from cutting edge to the far side
Enhances breaking of chips and maintains their evacuation direction constant.
- Gradually raised surface.
Keeps curling of chips in constant shape.
- Flat cutting edge line
Improves chip control.
- Steep surface near the cutting edge
Good chip control during shoulder grooving.

For high feed grooving GH Chipbreaker

- Dots juttled out center side
Changes chip shape smoothly.
Stable chip control during shoulder grooving.
- Concave part in middle
Control chips upward.
- Slope portion
Constantly curled chips.
- Negative cutting edge line
Improvement of strong edge.
- Curved lead edge
Keeps chips in constant shape.

For deep grooving DM Chipbreaker

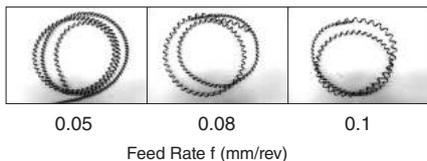
- Concave part in middle
Enhances breaking of chips.
- Inflated inner surface
Enhances breaking of chips and maintains their evacuation direction constant.
- Smooth surface up to the far side standing wall
Reduces cutting force, enhances breaking of chips and maintains their evacuation in constant direction.

Chip Control of GM Chipbreaker

<Cutting Conditions>

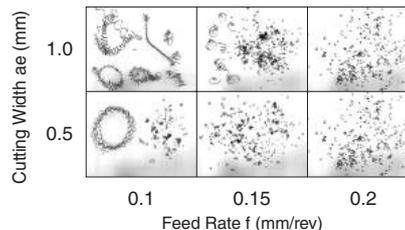
Vc=150m/min f=0.05~0.2mm/rev GDFM5020N-040GM SCM415 Wet

● Face Grooving ($\phi 62$)



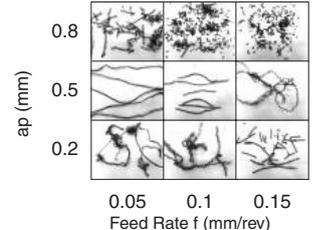
Feed Rate f (mm/rev)

● Side Grooving



Feed Rate f (mm/rev)

● Turning



Feed Rate f (mm/rev)

High precision edge preparation

- ➔ High precision molding technology with tolerance $\pm 0.03\text{mm}$ (Edge width 2, 3, 4mm types)

Highly-reputed MEGACOAT technology

- ➔ Long tool life and high efficiency machining achieved by superior oxidation resistance and wear resistance.

GDFM / GDFMS

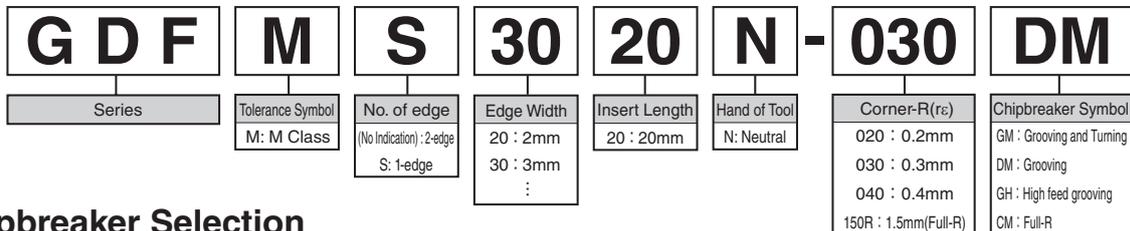
Classification of usage	P	Carbon steel / Alloy steel	●	●	⊕
	M	Stainless Steel			●
● : Continuous-Light Interruption / 1st Choice	K	Cast Iron			●
⊕ : Continuous-Light Interruption / 2nd Choice	N	Non-ferrous Metals			
● : Continuous / 1st Choice	S	Titanium Alloys			
○ : Continuous / 2nd Choice	H	Hard materials (~40HRC) Hard materials (40HRC-)			

Insert	Description	Dimension (mm)					Cermet		MEGACOAT		Applicable Toolholders
		W	re	M	L	H	TN620	TN90	PR1225	PR1215	
Grooving and Turning	GDFM 2020N-020GM	2.0		0.2	1.5	21	3.9		●	●	●
	3020N-030GM	3.0	±0.03	0.3	2.1		4.3		●	●	●
	4020N-040GM	4.0			3.1				●	●	●
	5020N-040GM	5.0		0.4		20			●	●	●
	5020N-080GM	5.0		0.8	4.1	20	4.5		●	●	●
	6020N-040GM	6.0	±0.04	0.4					●	●	●
	6020N-080GM	6.0		0.8	5.0				●	●	●
Grooving and Turning (High feed)	GDFM 4020N-040GH	4.0	±0.03	0.4	3.1					●	●
	5020N-040GH	5.0			4.1	20	4.5			●	●
	5020N-080GH	5.0	±0.04	0.8						●	●
	6020N-040GH	6.0		0.4	5.0					●	●
	6020N-080GH	6.0		0.8						●	●
Deep grooving and Turning	GDFM 3020N-030DM	3.0	±0.03	0.3	2.1		4.3		●	●	●
	4020N-040DM	4.0			3.1	20			●	●	●
	5020N-040DM	5.0	±0.04	0.4	4.1		4.5		●	●	●
	6020N-040DM	6.0			5.0				●	●	●
Deep grooving and Turning (1-edge)	GDFMS 3020N-030DM	3.0	±0.03	0.3	2.1		4.3		●	●	●
	4020N-040DM	4.0			3.1	20			●	●	●
	5020N-040DM	5.0	±0.04	0.4	4.1		4.5		●	●	●
	6020N-040DM	6.0			5.0				●	●	●
Full-R	GDFM 3020N-150R-CM	3.0	±0.03	1.5	2.1	20	4.3	●		●	●
	4020N-200R-CM	4.0		2.0	3.1	*21		●		●	●
	5020N-250R-CM	5.0	±0.04	2.5	4.1		4.5	●		●	●
	6020N-300R-CM	6.0		3.0	5.0	*22		●		●	●

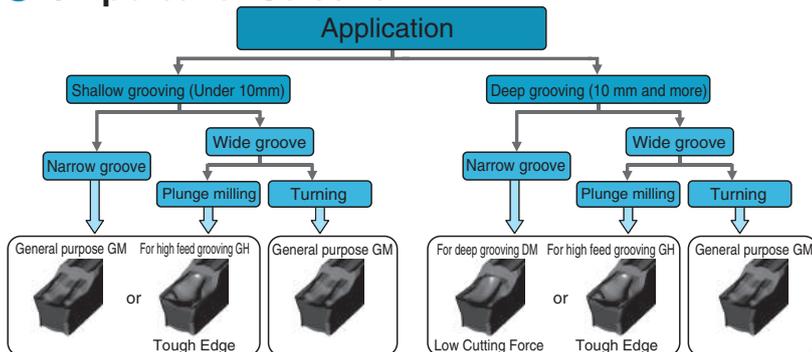
*GDFM40/50/60-CM differs from other descriptions in length (L) to avoid interference of a toolholder with workpiece.

Recommended Cutting Conditions **G88**

Inserts Identification System



Chipbreaker Selection



* If chip control is not stable when using the general GM chipbreaker for grooving, change the chipbreaker to the DM chipbreaker for deep grooving or GH chipbreaker for high feed grooving.

● : Std. Item

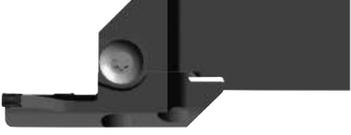
Inserts are sold in 10 piece boxes.



Face Grooving Toolholders (Separate Type)

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

Face Grooving Toolholder Assembly Identification System

Hand of unit	Toolholder shank size	Toolholder Length	Width	Symbol of assembly toolholder
R : Right-hand L : Left-hand	2020 : □20 2525 : □25	X : Special	2 : 2mm 3 : 3mm ⋮	S : indicates the unit description

KGDF	R	2020	X	25	-	3	A	S
-------------	----------	-------------	----------	-----------	----------	----------	----------	----------

Series	External dia. of the groove (Min.)	Grooving Depth
KGDF Face Grooving	Indicates the minimum external diameter suitable for the initial face grooving. 25 : 25mm ⋮ 235 : 235mm	* For the maximum external diameter which can be applied to the initial face grooving (you can also use 1-edge insert), ref. to the MAX. value of "Face Grooving Dia. φD" in the dimension tables of toolholders and blades. A : 6~13mm B : 13~15mm C : 20~25mm D : 32mm
		2-edge insert (1-edge insert can also be used.) 1-edge insert

G

Grooving

External

Internal

Face

◆ Face Grooving Dia. ϕD

Face grooving diameter (ϕD) is the suitable value 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.

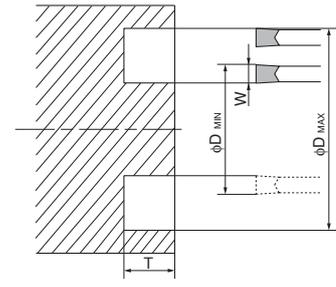
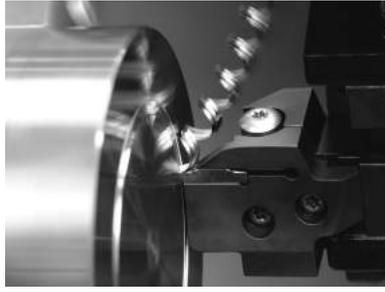
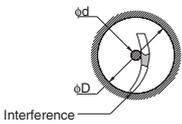


Fig.1

◆ 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.

Description	ϕD			
	25	26	27	28 and over
KGDF^{R/L} 2020X25-3AS 2525X25-3AS	4	2	0	(No remaining Boss)
KGDF^{R/L} 2020X25-4AS 2525X25-4AS	6	3	0	
KGDF^{R/L} 2020X25-5AS 2525X25-5AS	7	4	1	
KGDF^{R/L} 2020X25-6AS 2525X25-6AS	9	4	1	



Remaining Boss Dia. ϕd

e.g.)

KGDFR2020X25-3AS with $\phi 25$ as first cut towards the center, it will cause a rubbing with the toolholder cartridge if ϕd is 4.0mm.

● Toolholder Dimensions

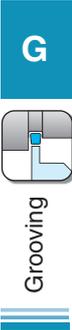
Shank Angle	Edge Width W (mm)	Shank Size (mm)	Max. depth of cut (mm)	Face Grooving Dia. φD (mm)		Unit Description (Standard Stock Description)	Std.		Blade Description ● G87	Toolholder Description ● G27	Dimension (mm)																								
				MIN.	MAX.		R	L			H1=h	H2	H3	B	L1	L2	F1	T																	
0°	3	□ 20	13	25	30	KGDF ^{F/L}	2020X25-3AS	●	●	KGDF ^{F/L}	-25-3A-C	20	12	11.6	20	118	36	24.5	15																
				30	40			●	●											-30-3A-C															
				40	50			●	●											-40-3A-C															
			15	50	65			●	●											-50-3B-C															
				65	85			●	●											-65-3B-C															
				85	110			●	●											-85-3B-C															
			22	110	145			●	●											-110-3B-C															
				50	65			●	●											-50-3C-C															
				65	85			●	●											-65-3C-C															
			25	85	110			●	●											-85-3C-C															
				110	145			●	●											-110-3C-C															
				25	30			●	●											-25-3A-C															
		□ 25	13	30	40	KGDF ^{F/L}	2525X30-3AS	●	●	KGDF ^{F/L}	-30-3A-C	25	7	11.6	25	143	36	29.5	15																
				40	50			●	●											-40-3A-C															
				50	65			●	●											-50-3B-C															
			15	65	85			●	●											-65-3B-C															
				85	110			●	●											-85-3B-C															
				110	145			●	●											-110-3B-C															
			22	50	65			●	●											-50-3C-C															
				65	85			●	●											-65-3C-C															
				85	110			●	●											-85-3C-C															
			25	110	145			●	●											-110-3C-C															
				25	30			●	●											-25-4A-C															
				30	40			●	●											-30-4A-C															
□ 32	13	40	50	No unit description →		●	●	KGDF ^{F/L}	-40-3A-C	32	-	11.6	32	163	36	36.5	15																		
		50	65															●	●	-50-3B-C															
		65	85															●	●	-65-3B-C															
	15	85	110															●	●	-85-3B-C															
		110	145															●	●	-110-3B-C															
		50	65															●	●	-50-3C-C															
	22	65	85															●	●	-65-3C-C															
		85	110															●	●	-85-3C-C															
		110	145															●	●	-110-3C-C															
	0°	4	□ 20															13	25	35	KGDF ^{F/L}	2020X25-4AS	●	●	KGDF ^{F/L}	-25-4A-C	20	12	11.6	20	118	36	24.5	15	
																			35	50			●	●											-35-4B-C
																			50	70			●	●											-50-4B-C
15				70	100	●	●	-70-4B-C																											
				100	150	●	●	-100-4B-C																											
				150	220	●	●	-150-4B-C																											
25				220	∞	●	●	-220-4B-C																											
				35	50	●	●	-35-4C-C																											
				50	70	●	●	-50-4C-C																											
25				70	100	●	●	-70-4C-C																											
				100	150	●	●	-100-4C-C																											
				150	220	●	●	-150-4C-C																											
25			220	∞	●	●	-220-4C-C																												
			25	35	●	●	-25-4A-C																												
			35	50	●	●	-35-4B-C																												
□ 25			13	50	70	KGDF ^{F/L}	2525X50-4BS	●	●	KGDF ^{F/L}	-50-4B-C	25	7	11.6	25	143	36	29.5	15																
				70	100			●	●											-70-4B-C															
				100	150			●	●											-100-4B-C															
			15	150	220			●	●											-150-4B-C															
				220	∞			●	●											-220-4B-C															
				35	50			●	●											-35-4C-C															
			25	50	70			●	●											-50-4C-C															
				70	100			●	●											-70-4C-C															
				100	150			●	●											-100-4C-C															
	25	150	220	●	●			-150-4C-C																											
		220	∞	●	●			-220-4C-C																											
		25	35	●	●			-25-4A-C																											
□ 32	13	35	50	No unit description →		●	●	KGDF ^{F/L}	-35-4B-C	32	-	11.6	32	163	36	36.5	15																		
		50	70															●	●	-50-4B-C															
		70	100															●	●	-70-4B-C															
	15	100	150															●	●	-100-4B-C															
		150	220															●	●	-150-4B-C															
		220	∞															●	●	-220-4B-C															
	25	35	50															●	●	-35-4C-C															
		50	70															●	●	-50-4C-C															
		70	100															●	●	-70-4C-C															
	25	100	150															●	●	-100-4C-C															
		150	220															●	●	-150-4C-C															
		220	∞															●	●	-220-4C-C															
□ 32	13	25	35	No unit description →		●	●	KGDF ^{F/L}	-25-4A-C	32	-	11.6	32	163	36	36.5	15																		
		35	50															●	●	-35-4B-C															
		50	70															●	●	-50-4B-C															
	15	70	100															●	●	-70-4B-C															
		100	150															●	●	-100-4B-C															
		150	220															●	●	-150-4B-C															
	25	220	∞															●	●	-220-4B-C															
		35	50															●	●	-35-4C-C															
		50	70															●	●	-50-4C-C															
	25	70	100															●	●	-70-4C-C															
		100	150															●	●	-100-4C-C															
		150	220															●	●	-150-4C-C															
25	220	∞	●	●	-220-4C-C																														

Note) 1. In case the unit description is not available (No unit description), please purchase toolholder and blade separately.

Applicable Inserts ● G77

2. Dimension T : Maximum depth to which processing can be made. (If the dimension T is 20 mm or more, the maximum groove-depth of groove made by the 2-edge insert will be 18 mm.)

● : Std. Item



G

Grooving

Face Grooving Toolholders (Separate Type)

Toolholder Dimensions

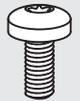
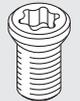
Shank Angle	Edge Width W (mm)	Shank Size (mm)	Max. depth of cut (mm)	Face Grooving Dia. φD (mm)		Unit Description (Standard Stock Description)	Std.		Blade Description G87	Toolholder Description G27	Dimension (mm)																																																														
				MIN.	MAX.		R	L			H1=h	H2	H3	B	L1	L2	F1	T																																																							
0°	5	□ 20	15	25	35	KGDF ^{F/L} 2020X25-5BS	●	●	KGDF ^{F/L} -25-5B-C	KGD ^{1/2} 2020-C	20	12	11.6	20					120	38	15																																																				
				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 ^{F/L} 2020X25-5CS	●	●	KGDF ^{F/L} -25-5C-C						KGD ^{1/2} 2020-C	20	12	11.6	20	125	43							20																																													
				35	50		●	●																					-35-5C-C																																												
				50	75		●	●																					-50-5C-C																																												
				75	115		●	●																					-75-5C-C																																												
				115	180		●	●																					-115-5C-C																																												
				180	235		●	●																					-180-5C-C																																												
			235	∞	●	●	-235-5C-C																																																																		
			25	75	115	KGDF ^{F/L} 2020X75-5CS	●	●	KGDF ^{F/L} -75-5C-C						KGD ^{1/2} 2020-C					20	12	11.6	20			130	48					25																																									
				115	180		●	●																									-115-5C-C																																								
				180	235		●	●																									-180-5C-C																																								
				235	∞		●	●																									-235-5C-C																																								
				32	75		115	No unit description →																									●	●	KGDF ^{F/L} -75-5D-C	KGD ^{1/2} 2020-C	20	12	11.6	20	137	55							32																								
					115		180																										●	●																-115-5D-C																							
			180		235	●	●		-180-5D-C																																																																
			235		∞	●	●		-235-5D-C																																																																
			□ 25	15	25	35	KGDF ^{F/L} 2525X25-5BS	●	●						KGDF ^{F/L} -25-5B-C									KGD ^{1/2} 2525-C	25	7	11.6	25					145	38	15																																						
					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 ^{F/L} 2525X25-5CS	●	●	KGDF ^{F/L} -25-5C-C						KGD ^{1/2} 2525-C														25	7	11.6	25	150	43											20																												
				35	50		●	●																																						-35-5C-C																											
				50	75		●	●																																						-50-5C-C																											
				75	115		●	●																																						-75-5C-C																											
				115	180		●	●																																						-115-5C-C																											
			180	235	●		●	-180-5C-C																																																																	
		235	∞	●	●	-235-5C-C																																																																			
		25	75	115	No unit description →	●	●	KGDF ^{F/L} -75-5D-C	KGD ^{1/2} 2525-C																								25	7	11.6	25					155	48							25																								
			115	180		●	●																																											-115-5D-C																							
			180	235		●	●																																											-180-5D-C																							
			235	∞		●	●																																											-235-5D-C																							
			32	75		115	KGDF ^{F/L} 2525X75-5DS																																											●	●	KGDF ^{F/L} -75-5D-C	KGD ^{1/2} 2525-C	25	7	11.6	25	162	55							32							
				115		180																																												●	●																-115-5D-C						
		180		235	●	●		-180-5D-C																																																																	
		235		∞	●	●		-235-5D-C																																																																	
		□ 32	15	25	35	No unit description →	●	●																																	KGDF ^{F/L} -25-5B-C	KGD ^{1/2} 3232-C	32	-	11.6	32					165	38						15															
				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 ^{F/L} -25-5C-C		●	●		KGDF ^{F/L} -25-5C-C	KGD ^{1/2} 3232-C	32	-	11.6																																													32	170	43							20					
	35			50			●	●																																																													-35-5C-C				
	50			75			●	●																																																													-50-5C-C				
	75			115			●	●																																																													-75-5C-C				
	115			180			●	●								-115-5C-C																																																									
	180		235	●		●	-180-5C-C																																																																		
235	∞		●	●	-235-5C-C																																																																				
25	75		115	No unit description →	●	●	KGDF ^{F/L} -75-5D-C	KGD ^{1/2} 3232-C		32						-	11.6	32																													175	48										25															
	115		180		●	●																																																						-115-5D-C													
	180		235		●	●																																																						-180-5D-C													
	235		∞		●	●																																																						-235-5D-C													
	32		75		115	No unit description →														●	●	KGDF ^{F/L} -75-5D-C	KGD ^{1/2} 3232-C																																					32	-	11.6	32	182	55							32	
			115		180															●	●																																																				-115-5D-C
			180		235															●	●																																																				-180-5D-C
			235		∞															●	●																																																				-235-5D-C

Note) 1. In case the unit description is not available (No unit description), please purchase toolholder and blade separately.
 2. Dimension T : Maximum depth to which processing can be made. (If the dimension T is 20 mm or more, the maximum groove-depth of groove made by the 2-edge insert will be 18 mm.)

Applicable Inserts **G77**

Spare Parts (Common with separate types)

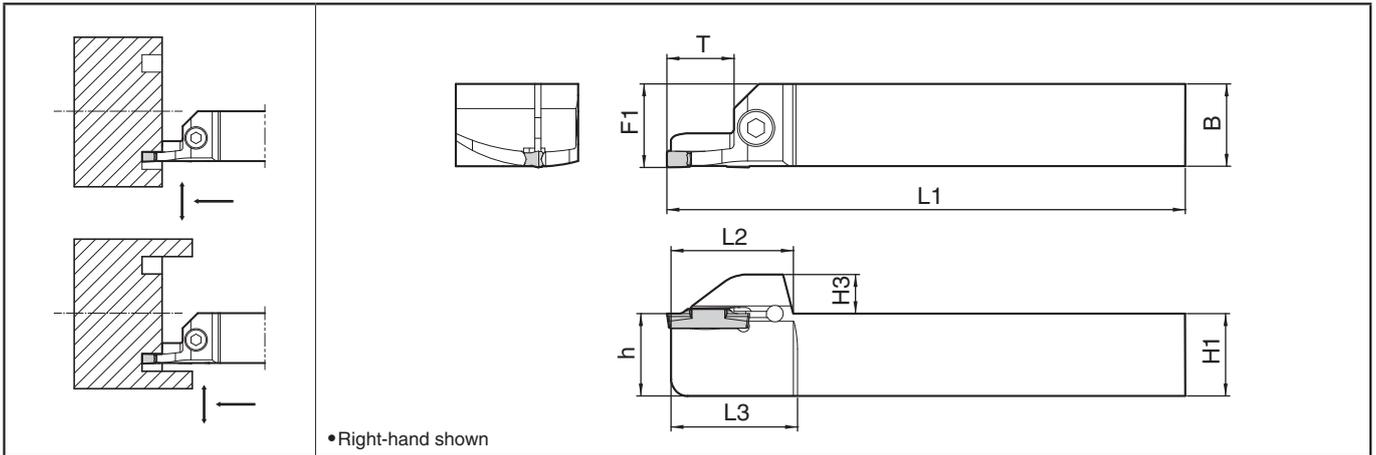
* The parts are included in the toolholder and unit.

Unit Description	Spare Parts		
	Clamp Bolt (for Insert Clamp)	Clamp Screw (for Blade)	Wrench
KGDF ^{F/L}S	 BH6X10TR	 SB-60120TR	 LTW-25

● : Std. Item

Face Grooving Toolholders (Integral Type)

KGDF-Z



Toolholder Dimensions

Edge Width W (mm)	Shank Size (mm)	Max. depth of cut (mm)	Face Grooving Dia. ϕD (mm)		Description	Std.		Dimension (mm)									
			MIN.	MAX.		R	L	H1=h	H3	B	L1	L2	L3	F1	T		
3	□ 20	15	50	65	KGDF ^{R/L}	2020K50-3B-Z	●	●	20	9.5	20	125	30.5	31	20.3	15	
			65	85		2020K65-3B-Z	●	●									
			85	110		2020K85-3B-Z	●	●									
			110	145		2020K110-3B-Z	●	●									
			50	65		KGDF ^{R/L}	2525M50-3B-Z	●									●
	65		85	2525M65-3B-Z	●	●											
	85		110	2525M85-3B-Z	●	●											
	110		145	2525M110-3B-Z	●	●											
	50		70	KGDF ^{R/L}	2020K50-4B-Z	●	●	20	9.5		20	125	30.5	31	20.3		
	70		100	2020K70-4B-Z	●	●											
100	150	2020K100-4B-Z	●	●													
50	70	KGDF ^{R/L}	2525M50-4B-Z	●	●	25	25			150						25.3	
70	100	2525M70-4B-Z	●	●													
100	150	2525M100-4B-Z	●	●													
50	75	KGDF ^{R/L}	2020K50-5B-Z	●	●			20			9.5	20	125	30.5	31		20.3
75	115	2020K75-5B-Z	●	●													
115	180	2020K115-5B-Z	●	●													
50	75	KGDF ^{R/L}	2525M50-5B-Z	●	●	25	25			150						25.3	
75	115	2525M75-5B-Z	●	●													
115	180	2525M115-5B-Z	●	●													

Applicable Inserts G77

Spare Parts

Description	Spare Parts	
	Clamp Bolt	Wrench
KGDF ^{R/L} ...-Z	 HH5X16	 LW-4

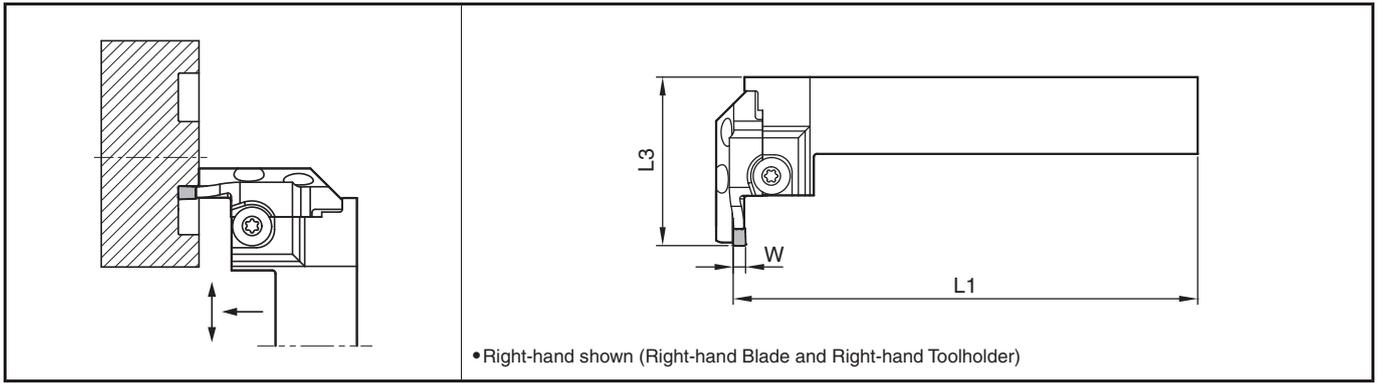
Toolholder Identification System (Integral Type)

KGDF	R	2525	M	50	3	B	Z
Series	Hand of Tool	Shank Size	Toolholder Length	External dia. of the groove (Min.)	Edge Width	Grooving Depth	Toolholder Type
KGDF Face Grooving	R: Right-hand L: Left-hand	2020 : □20mm 2525 : □25mm	K : 125mm M : 150mm	50 : 50mm ∴ 115 : 115mm	3 : 3mm 4 : 4mm 5 : 5mm	B : 15mm	Z : Integral Type

● : Std. Item

Face Grooving Toolholders (90° Separate Type)

KGDF

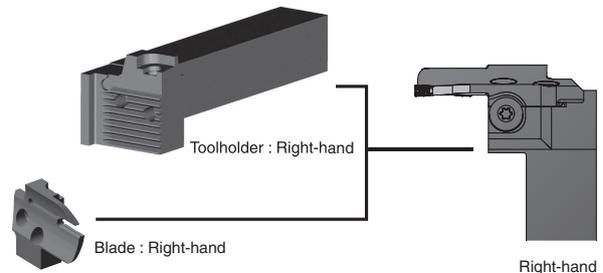


Combination of Toolholder & Blade

Shank Angle	Edge Width W (mm)	Shank Size (mm)	Face Grooving Dia. ϕ D (mm)	Blade Description G87	Toolholder Description G27	Dimension (mm)			
						MIN.	MAX.	L1	L3
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	-25-2B-C	52.7				
			30 35	-30-2B-C					
			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	-25-2B-C	52.7				
			30 35	-30-2B-C					
			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								

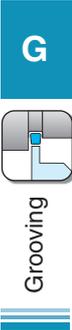
Shank Angle	Edge Width W (mm)	Shank Size (mm)	Face Grooving Dia. ϕ D (mm)	Blade Description G87	Toolholder Description G27	Dimension (mm)			
						MIN.	MAX.	L1	L3
90°	4	□ 20	13	25 35	KGDF $\frac{1}{2}$ -25-4A-C	KGDS $\frac{1}{2}$ 2020-C	125	52.7	
				35 50	-35-4B-C				
				50 70	-50-4B-C				
				70 100	-70-4B-C				
				100 150	-100-4B-C				
				150 220	-150-4B-C				
			220 ∞	-220-4B-C					
			15 35 50	-35-4C-C	54.7				
			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	KGDF $\frac{1}{2}$ -25-4A-C	KGDS $\frac{1}{2}$ 2525-C	150	52.7	
				35 50	-35-4B-C				
				50 70	-50-4B-C				
				70 100	-70-4B-C				
				100 150	-100-4B-C				
				150 220	-150-4B-C				
			220 ∞	-220-4B-C					
			15 35 50	-35-4C-C	54.7				
			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 G77



- 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 G77



Face Grooving Toolholders (90° Separate Type)

Combination of Blade & Toolholder

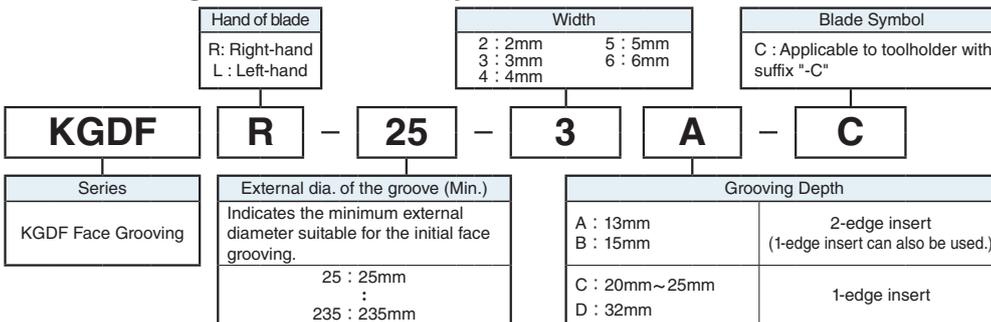
Shank Angle	Edge Width W (mm)	Shank Size (mm)	Max. depth of cut (mm)	Face Grooving Dia. φD (mm)		Blade Description G87	Toolholder Description G27	Dimension (mm)		
				MIN.	MAX.			L1	L3	
90°	5	□ 20	15	25	35	KGDF ^φ / _L -25-5B-C	KGDS ^φ / _L 2020-C	125	54.7	
				35	50	-35-5B-C				
				50	75	-50-5B-C				
				75	115	-75-5B-C				
				115	180	-115-5B-C				
				180	235	-180-5B-C				
			235	∞	-235-5B-C					
			20	25	35	-25-5C-C		59.7		
				35	50	-35-5C-C				
				50	75	-50-5C-C				
				75	115	-75-5C-C				
				115	180	-115-5C-C				
		180		235	-180-5C-C					
		25	180	235	-180-5C-C	64.7				
			235	∞	-235-5C-C					
			75	115	-75-5D-C		71.7			
			115	180	-115-5D-C					
			180	235	-180-5D-C					
			235	∞	-235-5D-C					
		□ 25	15	25	35	KGDF ^φ / _L -25-5B-C		KGDS ^φ / _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	-25-5C-C	59.7					
	35		50	-35-5C-C						
	50		75	-50-5C-C						
	75		115	-75-5C-C						
	115		180	-115-5C-C						
	180	235	-180-5C-C							
25	180	235	-180-5C-C	64.7						
	235	∞	-235-5C-C							
	75	115	-75-5D-C		71.7					
	115	180	-115-5D-C							
	180	235	-180-5D-C							
	235	∞	-235-5D-C							

Applicable Inserts G77

Shank Angle	Edge Width W (mm)	Shank Size (mm)	Max. depth of cut (mm)	Face Grooving Dia. φD (mm)		Blade Description G87	Toolholder Description G27	Dimension (mm)		
				MIN.	MAX.			L1	L3	
90°	6	□ 20	15	25	35	KGDF ^φ / _L -25-6B-C	KGDS ^φ / _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	-25-6C-C		59.7		
				35	50	-35-6C-C				
				50	75	-50-6C-C				
				75	115	-75-6C-C				
				115	180	-115-6C-C				
		180		235	-180-6C-C					
		25	180	235	-180-6C-C	64.7				
			235	∞	-235-6C-C					
			75	115	-75-6D-C		71.7			
			115	180	-115-6D-C					
			180	235	-180-6D-C					
			235	∞	-235-6D-C					
		□ 25	15	25	35	KGDF ^φ / _L -25-6B-C		KGDS ^φ / _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	-25-6C-C	59.7					
	35		50	-35-6C-C						
	50		75	-50-6C-C						
	75		115	-75-6C-C						
	115		180	-115-6C-C						
	180	235	-180-6C-C							
25	180	235	-180-6C-C	64.7						
	235	∞	-235-6C-C							
	75	115	-75-6D-C		71.7					
	115	180	-115-6D-C							
	180	235	-180-6D-C							
	235	∞	-235-6D-C							

Applicable Inserts G77

Face Grooving Blade Identification System



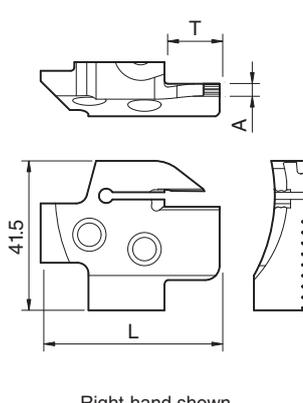
Description

Lot No.

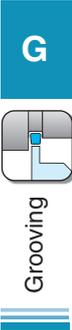
Example of printing of blade description

Face Grooving Blade

Blade Dimensions

Shape	Blade Description	Std.		Dimension (mm)			Face Grooving Dia. ϕD (mm)		Edge Width (mm)	Applicable Inserts G77	Toolholder Description G27
		R	L	L	T	A	MIN.	MAX.	W		
 <p>Right-hand shown</p>	KGDFR	-25-2A-C	●	-	44.35	6	1.5	25	30	2	GDFM 2020N-020GM
		-30-2A-C	●	-				30	35		
		-35-2A-C	●	-				35	45		
		-45-2A-C	●	-				45	60		
		-60-2A-C	●	-				60	80		
		-80-2A-C	●	-				80	100		
		-100-2A-C	●	-	100	130					
		-25-2B-C	●	-	47.35	13	25	30			
		-30-2B-C	●	-			30	35			
		-35-2B-C	●	-			35	45			
		-45-2B-C	●	-			45	60			
		-60-2B-C	●	-			60	80			
	-80-2B-C	●	-	80			100				
	-100-2B-C	●	-	100	130						
	KGDF ^{R/L}	-25-3A-C	●	●	47.35	13	2	25	30	3	GDFM 3020N-030GM GDFM 3020N-030DM GDFMS 3020N-030DM GDFM3020N-150R-CM
		-30-3A-C	●	●				30	40		
		-40-3A-C	●	●				40	50		
		-50-3B-C	●	●	49.35	15		50	65		
		-65-3B-C	●	●				65	85		
		-85-3B-C	●	●				85	110		
		-110-3B-C	●	●	56.35	22		110	145		
		-50-3C-C	●	●				50	65		
		-65-3C-C	●	●				65	85		
	-85-3C-C	●	●	59.35	25	85	110				
	-110-3C-C	●	●			110	145				
	KGDF ^{R/L}	-25-4A-C	●			●	49.35	15	3	25	35
		-35-4B-C	●	●	35	50					
		-50-4B-C	●	●	50	70					
		-70-4B-C	●	●	70	100					
		-100-4B-C	●	●	100	150					
		-150-4B-C	●	●	150	220					
		-220-4B-C	●	●	220	∞					
		-35-4C-C	●	●	59.35	25	35	50			
		-50-4C-C	●	●			50	70			
		-70-4C-C	●	●			70	100			
		-100-4C-C	●	●			100	150			
		-150-4C-C	●	●			150	220			
	-220-4C-C	●	●	220			∞				
	KGDF ^{R/L}	-25-5B-C	●	●	49.35	15	4	25	35	5	GDFM 5020N-040GM GDFM 5020N-080GM GDFM 5020N-040GH GDFM 5020N-080GH GDFM 5020N-040DM GDFMS 5020N-040DM GDFM5020N-250R-CM
		-35-5B-C	●	●				35	50		
		-50-5B-C	●	●				50	75		
		-75-5B-C	●	●				75	115		
		-115-5B-C	●	●				115	180		
		-180-5B-C	●	●	180	235					
		-235-5B-C	●	●	235	∞					
-25-5C-C		●	●	54.35	20	25		35			
-35-5C-C		●	●			35		50			
-50-5C-C		●	●			50		75			
-75-5C-C		●	●			75		115			
-115-5C-C		●	●			115		180			
-180-5C-C		●	●	59.35	25	180		235			
-235-5C-C		●	●			235		∞			
-75-5D-C		●	●			75		115			
-115-5D-C	●	●	115			180					
-180-5D-C	●	●	180			235					
-235-5D-C	●	●	235	∞							
KGDF ^{R/L}	-25-6B-C	●	●	49.35	15	5	25	35	6	GDFM 6020N-040GM GDFM 6020N-080GM GDFM 6020N-040GH GDFM 6020N-080GH GDFM 6020N-040DM GDFMS 6020N-040DM GDFM6020N-300R-CM	
	-35-6B-C	●	●				35	50			
	-50-6B-C	●	●				50	75			
	-75-6B-C	●	●				75	115			
	-115-6B-C	●	●				115	180			
	-180-6B-C	●	●	180	235						
	-235-6B-C	●	●	235	∞						
	-25-6C-C	●	●	54.35	20		25	35			
	-35-6C-C	●	●				35	50			
	-50-6C-C	●	●				50	75			
	-75-6C-C	●	●				75	115			
	-115-6C-C	●	●				115	180			
	-180-6C-C	●	●	59.35	25		180	235			
	-235-6C-C	●	●				235	∞			
	-75-6D-C	●	●				75	115			
-115-6D-C	●	●	115			180					
-180-6D-C	●	●	180			235					
-235-6D-C	●	●	235	∞							

● : Std. Item



Grooving

Recommended Cutting Conditions

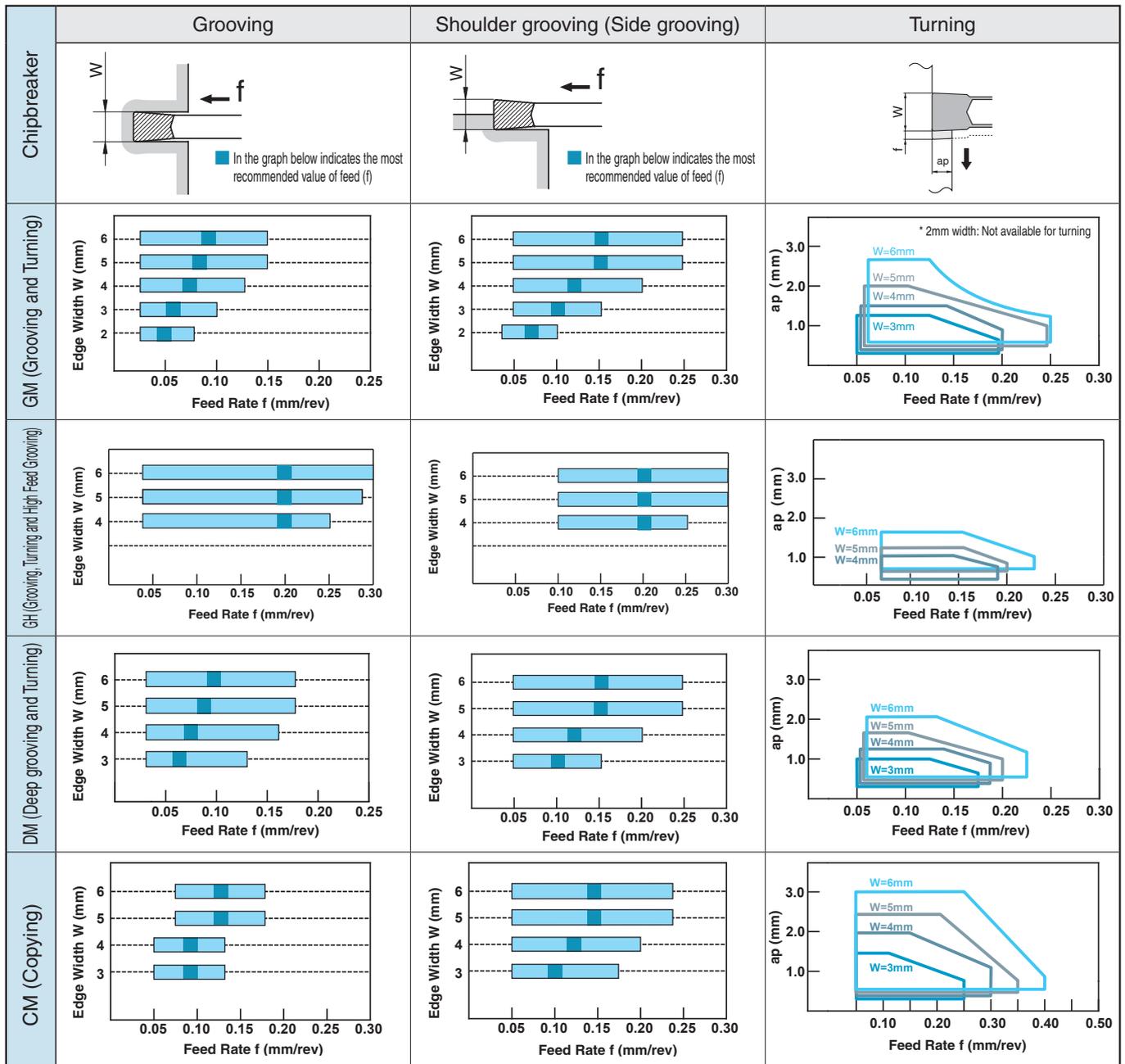
Recommended Cutting Conditions (Vc)

Workpiece Material	Recommended Insert Grades (Cutting Speed 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

Recommended Cutting Conditions (Feed Rate / ap)

[Workpiece material: S50C]



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

- 1) The above values are based on the condition that the dimension T of toolholder is 15 mm or less.
- 2) If the toolholder's dimension T is over 15 mm, set the values for turning to less than 90% of those above.

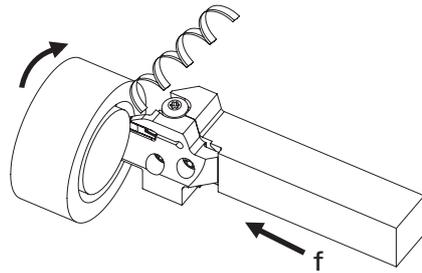
Guide for Face Grooving

1) Toolholder Selection

Check the range of applicable "face grooving diameter" 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.

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.
- (3) Perform turning. (Ref. to Fig.1)

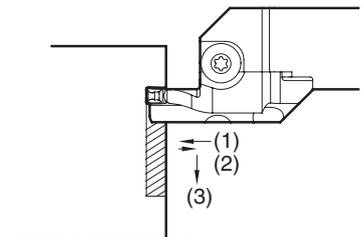
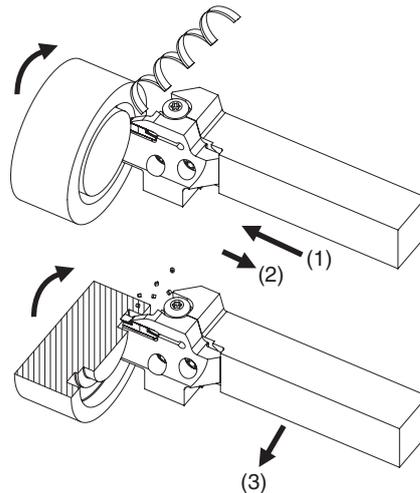


Fig.1

- When widening the face groove width (Ref. to Fig.2) Apply the "Step Turning". Then perform finishing.

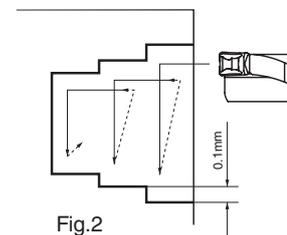


Fig.2

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)

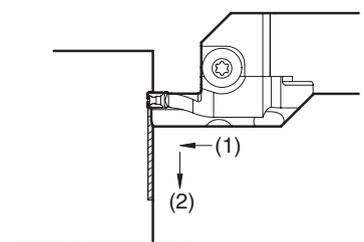
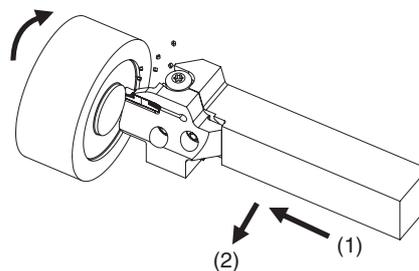
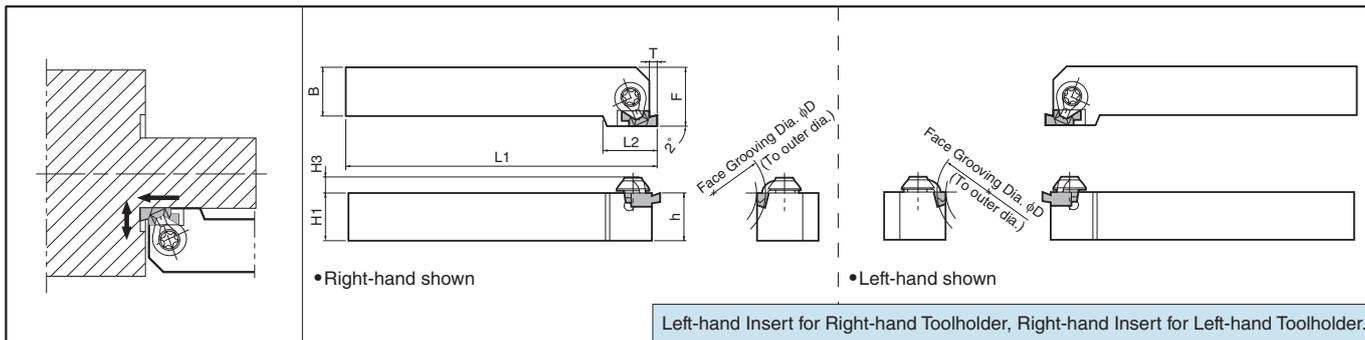


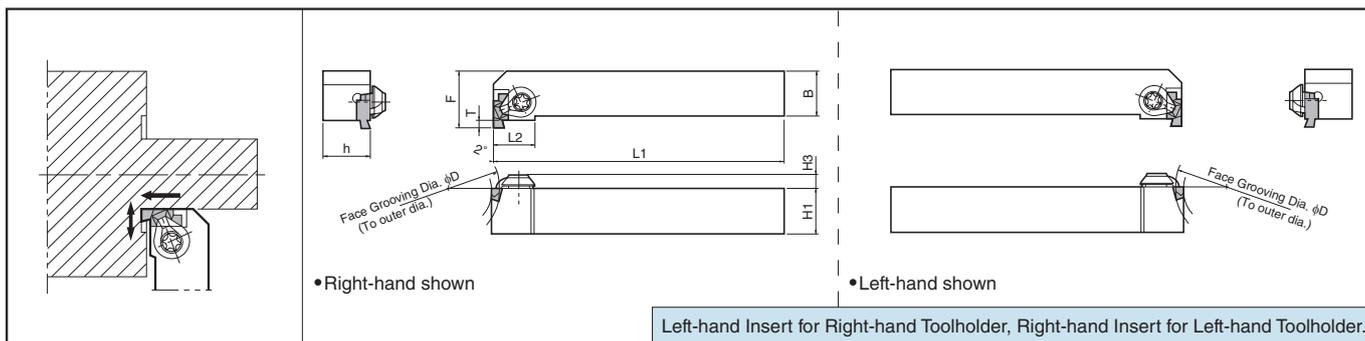
Fig.3

Small Dia. Face Grooving Toolholders [GVF-AA Insert]

GFVS-AA



GFVT-AA



Toolholder Dimensions

Description	Std.	Dimension (mm)										Face Grooving Dia. ϕD		Spare Parts		Applicable Inserts G91
		R	L	H1	h	H3	B	L1	L2	F	T	MIN.	MAX.	Clamp Set 	Wrench 	
GFVS ^{R/L}	2020K-08AA	●	●	20	20	5.5	20	125	18	25	2.2	8	∞	CPS-5V	FT-15	GVF ^R 100-005AA GVF ^R 300-005AA
	2525M-08AA	●	●	25	25	5.5	25	150	32	2.2	8	∞				
GFVT ^{R/L}	2020K-08AA	●	●	20	20	5.5	20	125	14	25	2.2	8	∞	CPS-5V	FT-15	GVF ^R 100-005AA GVF ^R 300-005AA
	2525M-08AA	●	●	25	25	5.5	25	150	32	2.2	8	∞				

Note 1. Dimension T shows available grooving depth.

2. The value () of Face Grooving Dia. (ϕD MAX.) is the maximum outer diameter value after the initial groove between MIN.-MAX. (It is possible to widen the groove to infinity ∞).

The value () of Face Grooving Dia. (ϕD 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 MIN.-MAX.

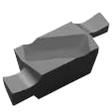
● : Std. Item

Grooving Inserts

Applicable Inserts

Description	A	L	H
GVF ^{R/L} 100-...AA	4.3	12	4.5
200-...AA			
300-...AA			

	P	M	K	N	S	H	Classification of usage
P	Carbon steel / Alloy steel	●	○				● : Continuous-Light Interruption / 1st Choice ○ : Continuous-Light Interruption / 2nd Choice ● : Continuous / 1st Choice ○ : Continuous / 2nd Choice
M	Stainless Steel	●	○				
K	Cast Iron				●		
N	Non-ferrous Metals				●		
S	Titanium Alloys				●		
H	Hard materials (~40HRC) Hard materials (40HRC-)	●	○				

Insert	Description	Dimension (mm)			MEGACOAT		PVD Coated Carbide		Carbide		Applicable Toolholders	See Page for Applicable Toolholders
		W	B	r _ε	PR1225		PR930		KW10			
					R	L	R	L	R	L		
	GVF ^{R/L} 100-005AA	1.00	2.2	0.05	●	●	●	●	●	●	GFVS ^{L/R} ...08AA GFVT ^{L/R} ...08AA	G90
	200-005AA	2.00			●	●	●	●	●	●		
	300-005AA	3.00			●	●	●	●	●	●		

· Dimension B shows available grooving depth.

· GVF^{R/L}...005AA inserts are not compatible with GVF^{R/L}...○○○AA (See Page G97) inserts because their Side Relief Angle is 10°.

Face Grooving Diameter of GFVS-AA (also GFVT-AA)

Description	Face Grooving Dia. φD		Applicable Inserts
	MIN.	MAX.	
GFVS ^{R/L} 2020K-08AA 2525M-08AA	8	∞	GVF ^{L/R} 100-005AA
GFVT ^{R/L} 2020K-08AA 2525M-08AA	(0)	(∞)	GVF ^{L/R} 300-005AA

• It is available to infinity ∞ in case of machining the first groove bigger than MIN.

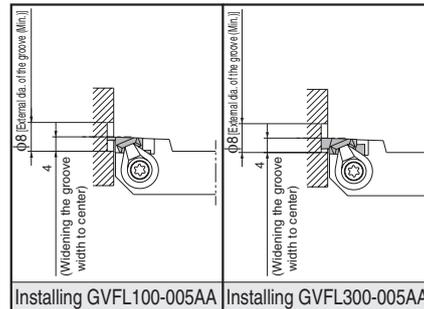
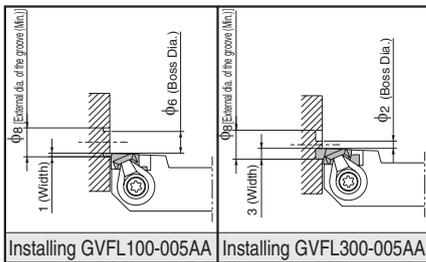
• When machining towards the outer diameter then there is no MAX. limit to the further groove machining.

• When machining the initial groove on the face at MIN. (φ8)

• When widening the groove width to inner diameter.

If the initial groove is made smaller than this, the toolholder interferes with the workpiece.

For machining up to the center of the workpiece regardless of insert width.



Recommended Cutting Conditions (GFVS-AA /GFVT-AA)

Workpiece Material	Recommended Insert Grades (Cutting Speed Vc: m/min)			Grooving	Turning*		Remarks
	MEGA COAT	PVD Coated Carbide	Carbide		f (mm/rev)	ap (mm)	
	PR1225	PR930	KW10				
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(r_ε) when turning of edge width 1.0 mm (GVF^{R/L}100-005AA).

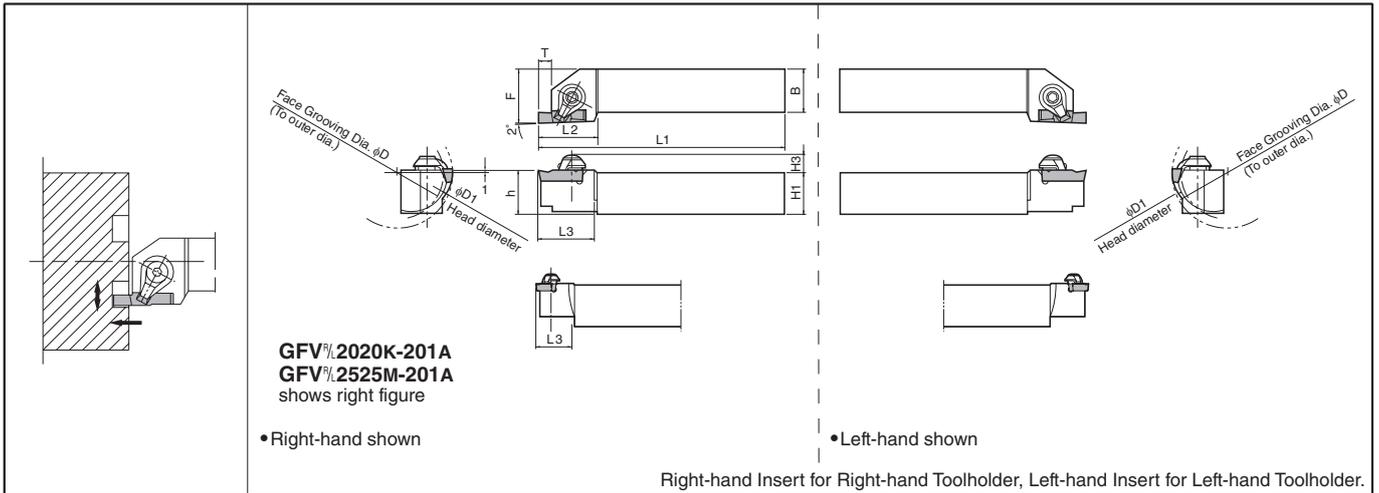
★ : 1st Recommendation ☆ : 2nd Recommendation

● : Std. Item

Inserts are sold in 10 piece boxes.

Face Grooving Toolholders [GVF Insert]

GFV

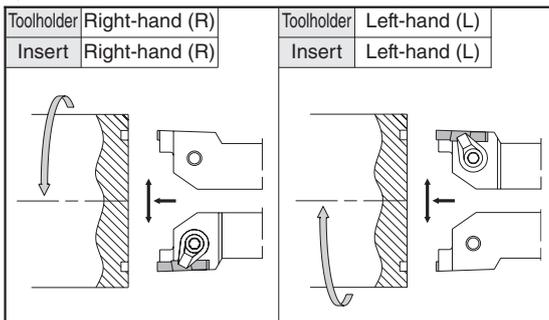


Toolholder Dimensions

Description	Std.	Dimension (mm)											Face Grooving Dia. ϕD		Spare Parts		Applicable Inserts ➔ G97		
		R	L	H1	h	H3	B	L1	L2	L3	F	T	$\phi D1$	MIN.	MAX.	Clamp Set		Wrench	
GFV ^{R/L} 2020K-201A 2525M-201A	●●		20	21	6.5	20	125	20	19	25	2.2	40	20	∞	CPS-5V	-	FT-15	GFV ^{R/L} 200~340-020A GFV ^{R/L} 200-...~300-...AR	
GFV ^{R/L} 2020K-351B 2525M-351B	●●		20	21		20	125	28	26	25	4.6		35	35	50				GFV ^{R/L} 250~350-020B GFV ^{R/L} 300-150BR
2020K-352B 2525M-352B	●●		20	21		20	125	28	26	25	5.1		(25)	(∞)				GFV ^{R/L} 400~490-020B GFV ^{R/L} 400-200BR	
2020K-501B 2525M-501B	●●		20	21		20	125	28	26	25	4.6		50	50	70				GFV ^{R/L} 250~350-020B GFV ^{R/L} 300-150BR
2020K-502B 2525M-502B	●●		20	21	8.0	20	125	28	26	25	5.1		(25)	(∞)	-	CPS-6V	LW-3	GFV ^{R/L} 400~490-020B GFV ^{R/L} 400-200BR	
2020K-701B 2525M-701B	●●		20	21		20	125	28	26	25	4.6		70	70	100				GFV ^{R/L} 250~350-020B GFV ^{R/L} 300-150BR
2020K-702B 2525M-702B	●●		20	21		20	125	28	26	25	5.1		(25)	(∞)					GFV ^{R/L} 400~490-020B GFV ^{R/L} 400-200BR
GFV ^{R/L} 2525M-501C 2525M-502C	●●										6.6	50	50	70					GFV ^{R/L} 350~450-040C GFV ^{R/L} 500~600-040C
2525M-701C 2525M-702C	●●								33		6.6	70	70	100					GFV ^{R/L} 350~450-040C GFV ^{R/L} 500~600-040C
2525M-1001C 2525M-1002C	●●		25	26	9.5	25	150	35		32	6.6	100	100	150					GFV ^{R/L} 350~450-040C GFV ^{R/L} 500~600-040C
2525M-1501C 2525M-1502C	●●									35	6.6	150	150	250					GFV ^{R/L} 350~450-040C GFV ^{R/L} 500~600-040C

- Note 1. [Dimension T shows available grooving depth].
 2. $\phi D1$ shows toolholder head diameter to L3.
 3. The value () of Face Grooving Dia. (ϕD MAX.) is the maximum outer diameter value after the initial groove between MIN.-MAX. (It is possible to widen the groove to infinity ∞).
 The value () of Face Grooving Dia. (ϕD 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 MIN.-MAX.
 4. Standard toolholders are designed with the edge position 1.0mm above the center. When using non-standard toolholders, set the edge position 1.0mm above the center.

Selection of Toolholder & Insert



◆ Face Grooving Diameter of GFV

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

Description	Face Grooving Dia. ϕD		Applicable Inserts
	MIN.	MAX.	
GFV ^{R/L} 2020K-201A 2525M-201A	20	∞	GVF ^{R/L} 200~340-020A GVF ^{R/L} 200...~300...AR
	(12)	(∞)	

• It is available to infinity ∞ in case of machining the first groove bigger than MIN.

• When machining towards the outer diameter then there is no MAX. limit to the further groove machining.

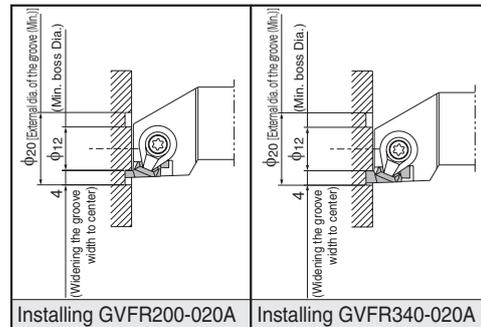
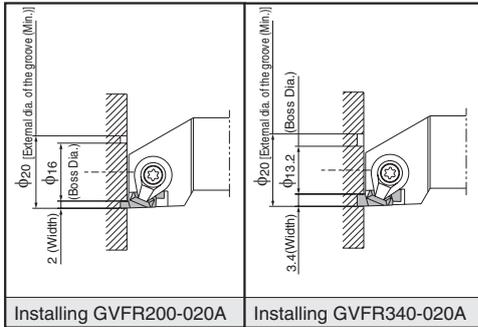
• When machining the initial groove on the face at MIN. $\phi 20$

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

• When widening the groove width to inner diameter.

Face groove diameter ϕD MIN. (12) is the limit; the toolholder interferes with the workpiece in case of smaller than $\phi 12$.

The toolholder interferes with the workpiece when closer to the center.



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

Description	Face Grooving Dia. ϕD		Applicable Inserts
	MIN.	MAX.	
GFV ^{R/L} 2020K-351B 2525M-351B 2020K-352B 2525M-352B	35	50	GVF ^{R/L} 250~350-020B GVF ^{R/L} 300-150BR GVF ^{R/L} 400~490-020B GVF ^{R/L} 400-200BR
	(25)	(∞)	

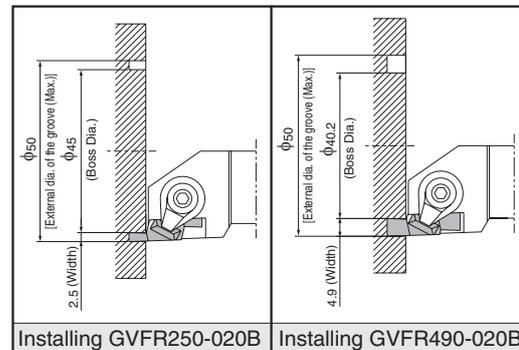
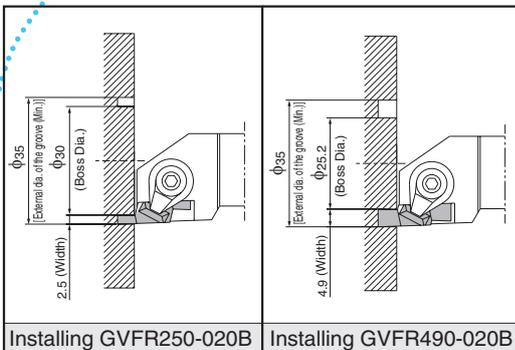
• It is possible to widen the groove to infinity ∞ when machining the initial groove within MIN.-MAX. and then widening to outer diameter.

• When machining the initial groove on the face at MIN. $\phi 35$

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

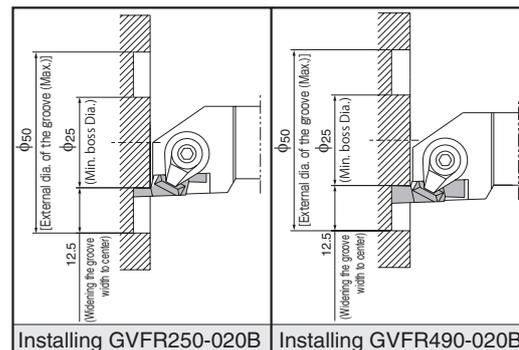
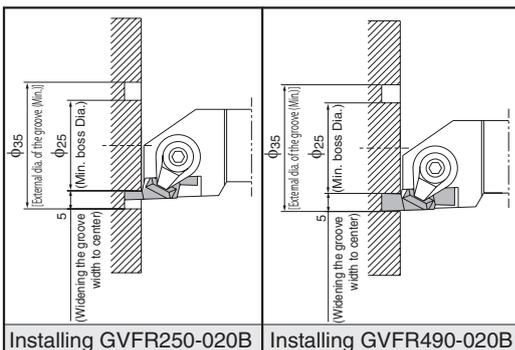
• When machining the initial groove on the face at MAX. $\phi 50$.

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



• When widening the groove width to inner diameter.

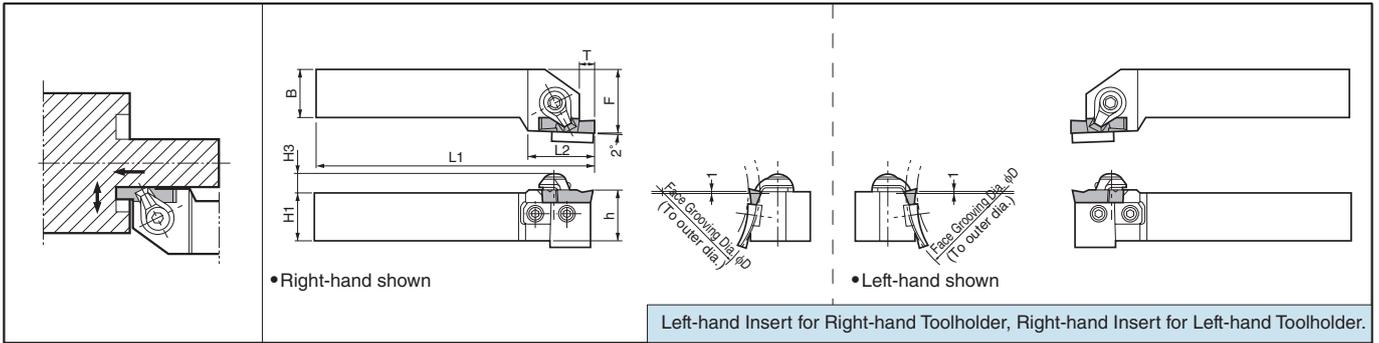
Face Grooving Dia. ϕD MIN. ($\phi 25$ Boss Dia.) is the limitation regardless of insert width, even widening the groove width to the center from the initial groove at ϕD MIN. ($\phi 35$) or ϕD MAX. ($\phi 50$). The toolholder interferes with the workpiece when closer to the center.



Face Grooving Toolholders [GVF Insert]

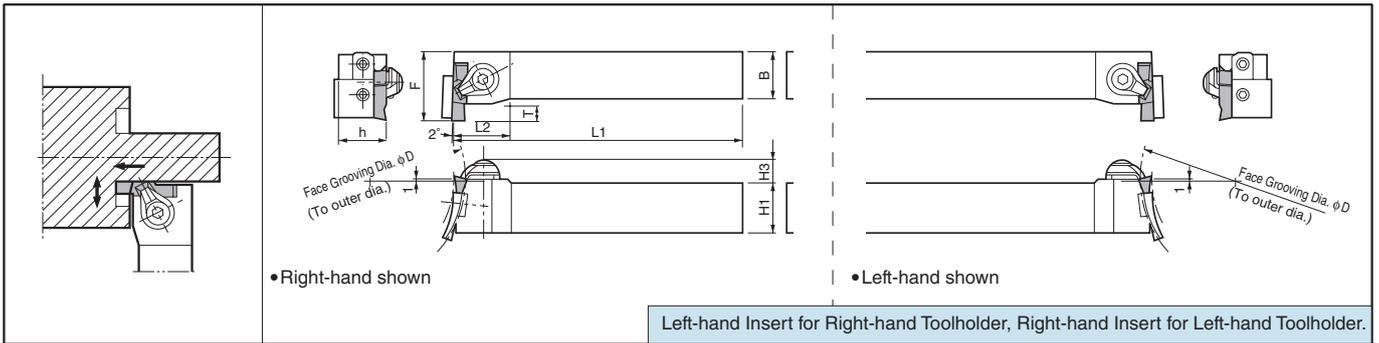
GFVS

This toolholder can machine various face grooving diameters by replacing the blade.



GFVT

This toolholder can machine various face grooving diameters by replacing the blade.



G

Grooving

Selection of Toolholder & Insert

GFVS				GFVT			
Toolholder	Right-hand (R)	Toolholder	Left-hand (L)	Toolholder	Right-hand (R)	Toolholder	Left-hand (L)
Insert	Left-hand (L)	Insert	Right-hand (R)	Insert	Left-hand (L)	Insert	Right-hand (R)

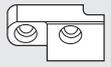
Combination of Base-Holder & Blade

Toolholder Description (Stamped below)	Std.		Blade Description	Toolholder Description (Unit Description)		Example of installation (GFVS)	How to refer to the face grooving toolholder and blade
	R	L					
GFVS ^{R/L} 2020K-HB GFVT ^{R/L} 2020K-HB	●	●	SF ^{R/L} -351B	GFVS ^{R/L} 2020K -351B		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	GFVT ^{R/L} 2020K -352B			
			-501B	-501B			
			-502B	-502B			
			-701B	-701B			
GFVS ^{R/L} 2525M-HB GFVT ^{R/L} 2525M-HB	●	●	SF ^{R/L} -351B	GFVS ^{R/L} 2525M -351B			
	●	●	-352B	GFVT ^{R/L} 2525M -352B			
			-501B	-501B			
			-502B	-502B			
			-701B	-701B			
GFVS ^{R/L} 2525M-HC GFVT ^{R/L} 2525M-HC	●	●	SF ^{R/L} -501C	GFVS ^{R/L} 2525M -501C			
	●	●	-502C	GFVT ^{R/L} 2525M -502C			
			-701C	-701C			
			-702C	-702C			
			-1001C	-1001C			
			-1002C	-1002C			
			-1501C	-1501C			
		-1502C	-1502C				

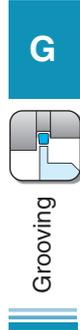
- Right-hand Blade for Right-hand Toolholder, Left-hand Blade for Left-hand Toolholder.
- Installation of GFVT type is also pursuing example of installation of GFVS type.

● : Std. Item

● Toolholder Dimensions

Description	Std.		Dimension (mm)									Face Grooving Dia. φD		Spare Parts				Applicable Inserts ➔ G97
	R	L	H1	h	H3	B	L1	L2	F	T	MIN.	MAX.	Clamp Set 	Wrench 	Blade 	Bolt 		
GFVS ^{φ/L} 2020K-351B 2525M-351B 2020K-352B 2525M-352B 2020K-501B 2525M-501B 2020K-502B 2525M-502B 2020K-701B 2525M-701B 2020K-702B 2525M-702B	●	●	20	21		20	125	30	25	5.1			CPS-6V	LW-3	SF ^{φ/L} -351B	HH4X12	GVF%250~350-020B GVF%300-150BR GVF%400~490-020B GVF%400-200BR GVF%250~350-020B GVF%300-150BR GVF%400~490-020B GVF%400-200BR GVF%250~350-020B GVF%300-150BR GVF%400~490-020B GVF%400-200BR	
	●	●	25	26		25	150	32	32	(4.6)	35	50						
	●	●	20	21		20	125	30	25	5.1	(25)	(∞)						
	●	●	25	26		25	150	32	32	(5.1)								
	●	●	20	21	8.0	20	125	30	25	5.1								
	●	●	25	26		25	150	32	32	(4.6)	50	70						
	●	●	20	21		20	125	30	25	5.1	(25)	(∞)						
	●	●	25	26		25	150	32	32	(5.1)								
	●	●	20	21		20	125	30	25	5.1	70	100						
	●	●	25	26		25	150	32	32	(4.6)	(25)	(∞)						
GFVS ^{φ/L} 2525M-501C 2525M-502C 2525M-701C 2525M-702C 2525M-1001C 2525M-1002C 2525M-1501C 2525M-1502C	●	●								8.1(6.6)	50	70	CPS-8V	LW-4	SF ^{φ/L} -501C	HH4X12	GVF%350~450-040C GVF%500~600-040C GVF%350~450-040C GVF%500~600-040C GVF%350~450-040C GVF%500~600-040C GVF%350~450-040C GVF%500~600-040C	
	●	●								8.1(8.1)	(25)	(∞)						
	●	●								8.1(6.6)	70	100						
	●	●	25	26	9.5	25	150	32	32	8.1(8.1)	(25)	(∞)						
	●	●								8.1(6.6)	100	150						
	●	●								8.1(8.1)	(25)	(∞)						
	●	●								8.1(6.6)	150	250						
	●	●								8.1(8.1)	(25)	(∞)						
GFVT ^{φ/L} 2020K-351B 2525M-351B 2020K-352B 2525M-352B 2020K-501B 2525M-501B 2020K-502B 2525M-502B 2020K-701B 2525M-701B 2020K-702B 2525M-702B	●	●	20	21		20	125	22	30	5.1			CPS-6V	LW-3	SF ^{φ/L} -351B	HH4X12	GVF%250~350-020B GVF%300-150BR GVF%400~490-020B GVF%400-200BR GVF%250~350-020B GVF%300-150BR GVF%400~490-020B GVF%400-200BR GVF%250~350-020B GVF%300-150BR GVF%400~490-020B GVF%400-200BR	
	●	●	25	26		25	150	25	35	(4.6)	35	50						
	●	●	20	21		20	125	22	30	5.1	(25)	(∞)						
	●	●	25	26		25	150	25	35	(5.1)								
	●	●	20	21	8.0	20	125	22	30	5.1								
	●	●	25	26		25	150	25	35	(4.6)	50	70						
	●	●	20	21		20	125	22	30	5.1	(25)	(∞)						
	●	●	25	26		25	150	25	35	(5.1)								
	●	●	20	21		20	125	22	30	5.1	70	100						
	●	●	25	26		25	150	25	35	(4.6)	(25)	(∞)						
GFVT ^{φ/L} 2525M-501C 2525M-502C 2525M-701C 2525M-702C 2525M-1001C 2525M-1002C 2525M-1501C 2525M-1502C	●	●								8.1(6.6)	50	70	CPS-8V	LW-4	SF ^{φ/L} -501C	HH4X12	GVF%350~450-040C GVF%500~600-040C GVF%350~450-040C GVF%500~600-040C GVF%350~450-040C GVF%500~600-040C GVF%350~450-040C GVF%500~600-040C	
	●	●								8.1(8.1)	(25)	(∞)						
	●	●								8.1(6.6)	70	100						
	●	●	25	26	9.5	25	150	27	38	8.1(8.1)	(25)	(∞)						
	●	●								8.1(6.6)	100	150						
	●	●								8.1(8.1)	(25)	(∞)						
	●	●								8.1(6.6)	150	250						
	●	●								8.1(8.1)	(25)	(∞)						

- Note 1. [Dimension T shows the distance from the toolholder to the cutting edge. The grooving depth is the mentioned in ().]
2. The value () of Face Grooving Dia. (φD MAX.) is the maximum outer diameter value after the initial groove between MIN.-MAX. (It is possible to widen the groove to infinity ∞).
The value () of Face Grooving Dia. (φD 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 MIN.-MAX.
3. Standard toolholders are designed with the edge position 1.0mm above the center.
When using non-standard toolholders, set the edge position 1.0mm above the center.
4. GFVS and GFVT are composed of a base-holder and a blade.
If the blade should be damaged, replace it with a new blade as listed in the left table.
(e.g.) GFVSR2020K-HB + SFR-351B = GFVSR2020K-351B
(e.g.) GFVTR2020K-HB + SFR-351B = GFVTR2020K-351B



Face Grooving Toolholders

Blade Dimensions

Shape	Description	Std.		Dimension (mm)				Face Grooving Dia. ϕ D		Applicable Inserts	Applicable Toolholders
		R	L	L	H	T	W	MIN.	MAX.		
	SF ^{R/L} -351B	●	●	30.5	11	4.7	2.0	35	50	GVF ^{1/2} 250~350-020B GVF ^{1/2} 300-150BR GVF ^{1/2} 400~490-020B GVF ^{1/2} 400-200BR	GFV(S/T) ^{1/2} ○○○○□ -○○○B (Toolholder Stamp GFV(S/T) ^{1/2} ○○○○□-HB)
	-352B	●	●								
	SF ^{R/L} -501B	●	●								
	-502B	●	●								
	SF ^{R/L} -701B	●	●	35	15	7.5	2.8	50	70	GVF ^{1/2} 250~350-020B GVF ^{1/2} 300-150BR GVF ^{1/2} 400~490-020B GVF ^{1/2} 400-200BR	GFV(S/T) ^{1/2} ○○○○□ -○○○C (Toolholder Stamp GFV(S/T) ^{1/2} ○○○○□-HC)
	-702B	●	●								
	SF ^{R/L} -501C	●	●								
	-502C	●	●								
	SF ^{R/L} -701C	●	●	35	20	7.5	4.3	70	100	GVF ^{1/2} 350~450-040C GVF ^{1/2} 500~600-040C	GFV(S/T) ^{1/2} ○○○○□ -○○○C (Toolholder Stamp GFV(S/T) ^{1/2} ○○○○□-HC)
	-702C	●	●								
	SF ^{R/L} -1001C	●	●								
	-1002C	●	●								
SF ^{R/L} -1501C	●	●	35	23	7.5	2.8	100	150	GVF ^{1/2} 350~450-040C GVF ^{1/2} 500~600-040C	GFV(S/T) ^{1/2} ○○○○□ -○○○C (Toolholder Stamp GFV(S/T) ^{1/2} ○○○○□-HC)	
-1502C	●	●									
SF ^{R/L} -1501C	●	●	35	23	7.5	4.3	150	250	GVF ^{1/2} 350~450-040C GVF ^{1/2} 500~600-040C	GFV(S/T) ^{1/2} ○○○○□ -○○○C (Toolholder Stamp GFV(S/T) ^{1/2} ○○○○□-HC)	
-1502C	●	●									

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

Face Grooving Diameter of GFVS / GFVT

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

(same as GFVS^{R/L}.....○○○B,○○○C → G95

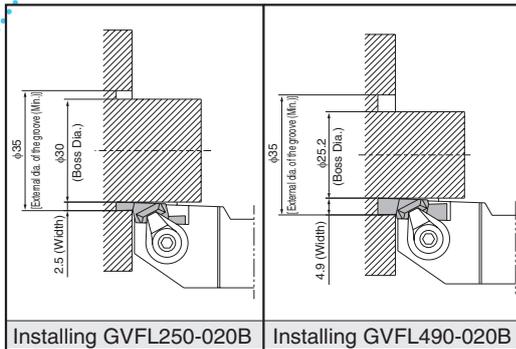
GFVT^{R/L}.....○○○B,○○○C → G95)

Description	Face Grooving Dia. ϕ D		Applicable Inserts
	MIN.	MAX.	
GFVS ^{R/L} 2020K-351B	35	50	GVF ^{1/2} R 250~350-020B GVF ^{1/2} R 300-150BR GVF ^{1/2} R 400~490-020B GVF ^{1/2} R 400-200BR
2525M-351B			
2020K-352B			
2525M-352B			

- It is possible to widen the groove to infinity ∞ when machining the initial groove within MIN.-MAX. and then widening to outer diameter.

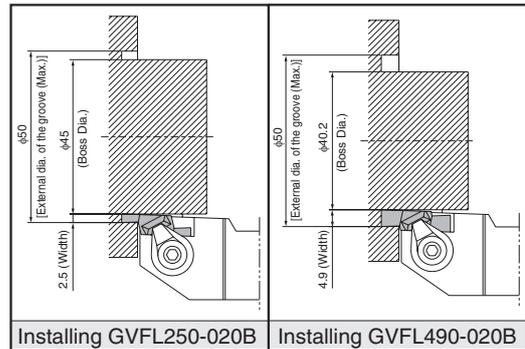
- When machining the initial groove on the face at MIN. ϕ 35

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



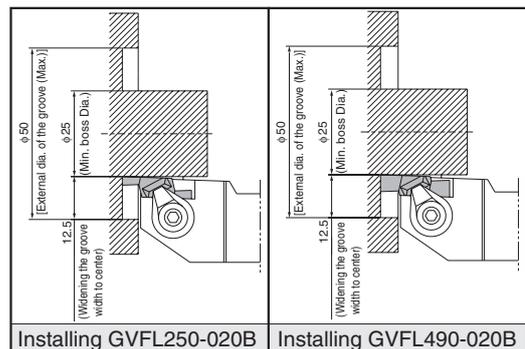
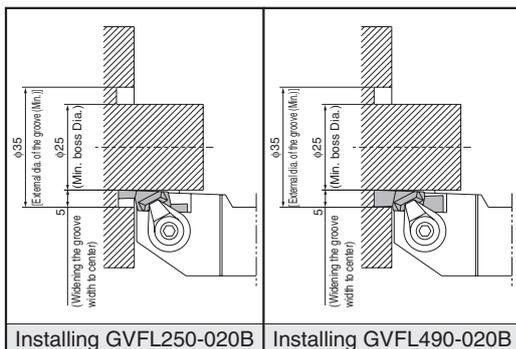
- When machining the initial groove on the face at MAX. ϕ 50.

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



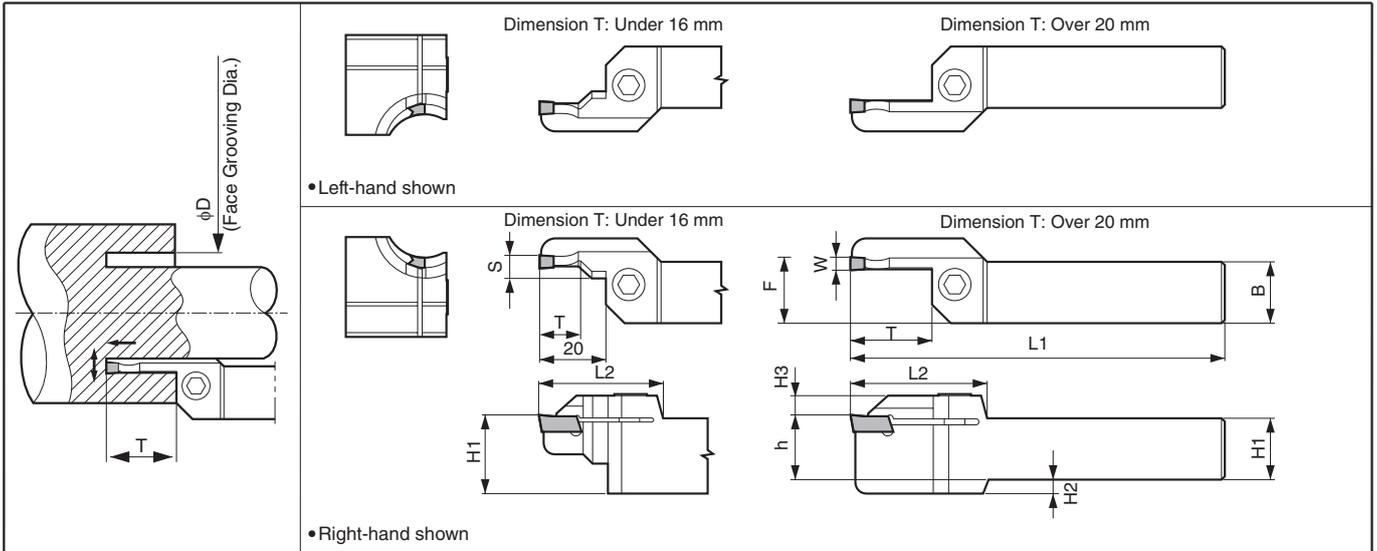
- When widening the groove width to inner diameter.

Face Grooving Dia. ϕ D MIN. (ϕ 25 Boss Dia.) is the limitation regardless of insert width, even widening the groove width to the center from the initial groove at ϕ D MIN. (ϕ 35) or ϕ D MAX. (ϕ 50). The toolholder interferes with the workpiece when closer to the center.



Face Grooving Toolholders

KFMS (Will be switched to KGDF ⚙️ G76~G83)



Toolholder Dimensions

Description	Std.		Dimension (mm)										Edge Width (mm)	Face Grooving Dia. ϕD		Spare Parts					
	R	L	H1-h	H2	H3	B	L1	L2	F	S	T	W	MIN.	MAX.	Clamp Bolt	Wrench					
KFMS ^{R/L} 2020K2530-3 2020K3040-3 2020K4050-3 2020K5065-3 2020K6585-3 2020K85110-3 2020K110145-3 2525M2530-3 2525M3040-3 2525M4050-3	●							39		6.1	13	3	25	30	HH5X20	LW-4					
	●							41	20.7		22		30	40							
	●		20	-	10	20	125						22	40			50				
	●							41	25.7				22	50			65				
	●							44		-	25		65	85							
	●			5									25	85			110				
	●							44					25	110			145				
	●●													25			30				
	●●							39		6.1	13			30			40				
	●●													40			50				
KFMS ^{R/L} 2525M5065-3 2525M6585-3 2525M85110-3 2525M110145-3 2020K2535-4 2020K3550-4 2020K5070-4 2020K70100-4 2020K100150-4 2020K150220-4 2020K220800-4 2525M2535-4 2525M3550-4 2525M5070-4 2525M70100-4 2525M100150-4 2525M150220-4 2525M220800-4	●●		25	-	10	25	150	41	25.7		22	4	50	65	HH5X25	LW-4					
	●●							41		-			65	85							
	●●			5									25	85			110				
	●●							44					25	110			145				
	●●													25			35				
	●●							39		7.1	12		4	35			50	HH5X20	LW-4		
	●●										20			50			70				
	●●		20	-	10	20	125		20.7	-	25			70			100				
	●●							44						100			150				
	●●			5										150			220				
●●											220	∞									
●●							39		7.1	12	25	35									
●●										20		35		50							
●●												50		70							
●●		25	-	10	25	150		25.7	-	25	70	100									
●●							44				100	150									
●●											150	220									
●●											220	∞									

● : Std. Item

● Toolholder Dimensions

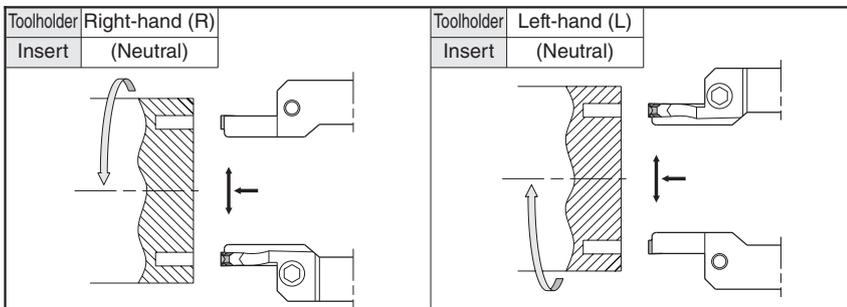
Description	Std.		Dimension (mm)											Edge Width (mm)	Face Grooving Dia. ϕD		Spare Parts		
	R	L	H1=h	H2	H3	B	L1	L2	F	S	T	W	MIN.	MAX.	Clamp Bolt	Wrench			
KFMS ^{R/L} 2020K2535-5 2020K3550-5 2020K5075-5 2020K75115-5 2020K115180-5 2020K180235-5 2020K235800-5	●							39				20		25	35	HH5X20	LW-4		
	●			-	10									35	50				
	●													50	75				
	●		20			20	125			20.7 (21.2)	-		25	75	115				
	●			5	10				44					115	180				
	●													180	235				
2525M2535-5 2525M3550-5 2525M5075-5 2525M75115-5 2525M115180-5 2525M180235-5 2525M235800-5	●●							39				20		25	35	HH5X25	LW-4		
	●●													35	50				
	●●													50	75				
	●●		25		-	10	25	150		25.7 (26.2)	-		25	75	115				
	●●													115	180				
	●●								51				32	180	235				
													235	∞					

· Dimension T shows available grooving depth.

· Face Grooving Dia. ϕD : The diameter range of the initial groove.

· For KFMS^{R/L}...-5 toolholder can hold a 6mm width insert. () value shows the dimension of a 6mm width insert.

◆ Selection of Toolholder & Insert



■ Applicable Inserts

Description	(mm)		P Carbon steel / Alloy steel	M Stainless Steel	K Cast Iron	N Non-ferrous Metals	S Titanium Alloys	H Hard materials (~40HRC)	H Hard materials (40HRC~)	Classification of usage						
	L	H								●	○	●	○	●	○	●
FMM30-03 └ FMM60-04	12	3.5									●	○	●	○	●	○
FMN3 └ FMN6	12	3.5									○					

Insert	Description	Dimension (mm)			Cermet TN90	CVD Coated Carbide CR9025	PVD Coated Carbide PR915	PR930	PR905	Carbide KW10	Applicable Toolholders
		W	r_e	M							
 Face Grooving Chip Control Oriented / M Class	FMM 30-03	3.0	0.3	2.0	●	●	●	●	●	●	KFMS ^{R/L} ... 3
	FMM 40-04	4.0		2.6	●	●	●	●	●	●	KFMS ^{R/L} ... 4
	FMM 50-04	5.0	0.4	3.4	●	●	●	●	●	●	KFMS ^{R/L} ... 5
	FMM 60-04	6.0		4.0	●	●	●	●	●	●	
 Face Grooving Sharp-Cutting Oriented / M Class	FMN 3	3.0		2.0	●	●	●	●	●	●	KFMS ^{R/L} ... 3
	FMN 4	4.0	0.25	2.6	●	●	●	●	●	●	KFMS ^{R/L} ... 4
	FMN 5	5.0		3.4	●	●	●	●	●	●	KFMS ^{R/L} ... 5
	FMN 6	6.0		4.0	●	●	●	●	●	●	

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

Recommended Cutting Conditions **G105**

◆ 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.

Description	ϕD				Interference
	25	26	27	28 and over	
KFMS ^{R/L} 2020K2530-3					 Remaining Boss Dia. ϕd
KFMS ^{R/L} 2525M2530-3	4	2	0	0	
KFMS ^{R/L} 2020K2535-4					
KFMS ^{R/L} 2525M2535-4	6	3	0	(No remaining Boss)	
KFMS ^{R/L} 2020K2535-5	7	4	1		
KFMS ^{R/L} 2525M2535-5	*(5)	*(2)	*(0)		

e.g.) KFMS^R 2525M2530-3 with $\phi 25$ as first cut towards the center, it will cause a rubbing with the toolholder cartridge if ϕd is 4.0mm.

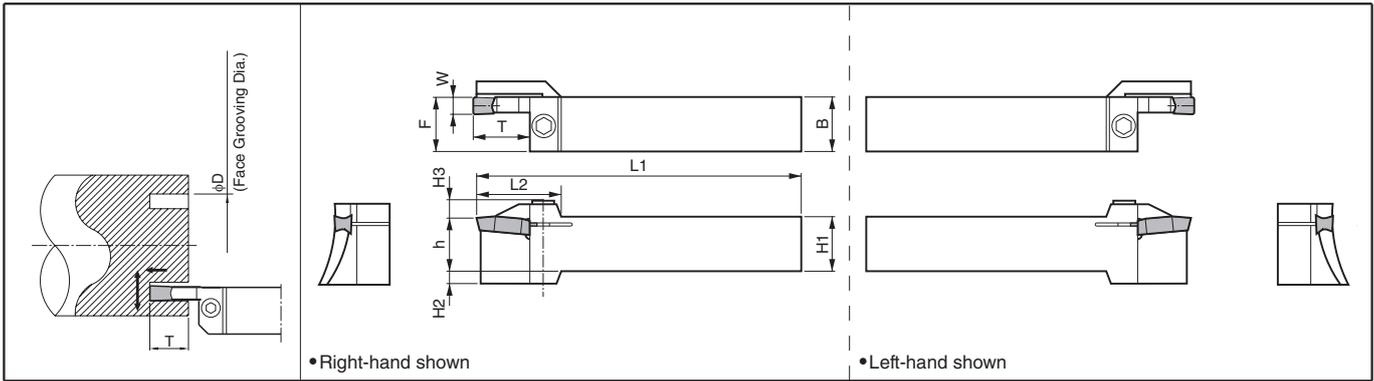
* () value shows the Dimension using FMM60-04 Insert.

● : Std. Item

Inserts are sold in 10 piece boxes.

Face Grooving Toolholders

KFMS-8



Toolholder Dimensions

Description	Std.	Dimension (mm)										Edge Width (mm)	Face Grooving Dia. ϕD		Spare Parts			
		R	L	H1=h	H2	H3	B	L1	L2	F	T		W	MIN.	MAX.	Clamp Bolt	Wrench	
KFMS^{R/L} 2525M5464-8	● ●			-					41				8	54 (0)	64 (∞)	HH6X25	LW-5	
2525M6382-8	● ●			2.4	9							63 (0)		82 (∞)				
2525M80115-8	● ●		25		6	8			40			80 (0)		115 (∞)				
2525M105160-8	● ●						25	150		26	25	105 (0)		160 (∞)				
2525M155510-8	● ●		25	6		8	25	150		43	26	8	155 (0)	510 (∞)				
3232P155510-8	●		32	-			32	170			33							

· Dimension T shows available grooving depth.

· The value () of Face Grooving Dia. (ϕD MAX.) is the maximum outer diameter value after the initial groove between MIN.~MAX. (It is possible to widen the groove to infinity ∞).
The value () of Face Grooving Dia. (ϕD 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 MIN.~MAX..

Applicable Inserts

Description	L	H	P	M	K	N	S	H	Dimension (mm)		Cermet	CVD Coated Carbide	PVD Coated Carbide			Carbide	Applicable Toolholders		
									W	r _ε			M	TN90	CR9025			PR915	PR930
GMM 8030-080MW	30	5.5	Carbon steel / Alloy steel	Stainless Steel	Cast Iron	Non-ferrous Metals	Titanium Alloys	Hard materials (~40HRC)	Hard materials (40HRC-)	8.0	0.8	6.0		●	●	●	●	●	KFMS^{R/L} ...8
GMG 8030-050MG			8.0	0.5	6.0	●	●		●	●									
GMGA 8030-400R			8.0	4.0	6.0													●	

· If using a full-R insert with KFMS-8 type toolholder, you need to modify the corner of insert adapter of toolholder. Recommended Cutting Conditions **G107**

G

Grooving

External

Internal

Face

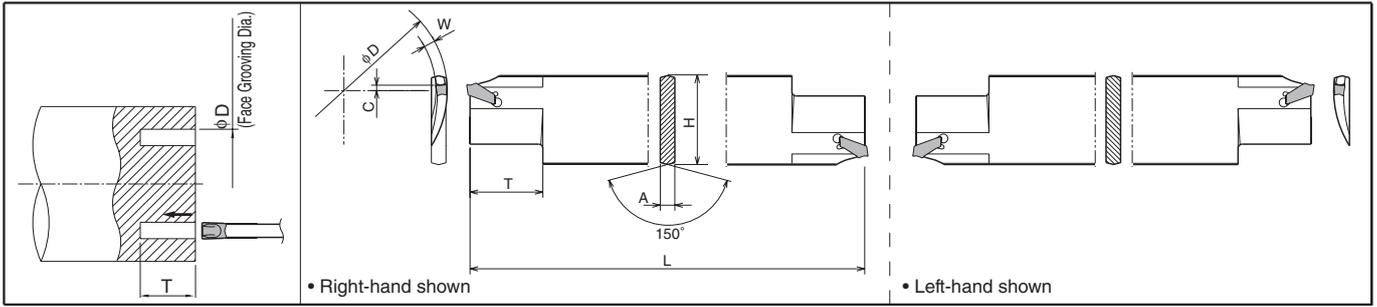
G100

Inserts are sold in 10 piece boxes.

● : Std. Item

Face Grooving Blade

KFTB-S



Blade Dimensions

Description	Std.		Dimension (mm)							Edge Width	Face Grooving Dia. φD		Spare Parts Releasing Wrench	Applicable Inserts	Applicable Blocks H31
	R	L	*H	L	A	T	C	W	MIN.		MAX.				
KFTB ^{R/L} 65100-4S 90150-4S 150250-4S 250800-4S	●	●	32	150	5.2	25	4		4.0	65	100	LTK-5	FTK4	KTKTB20-32 25-32 32-32	
	●	●				30	0			90	150				
	●	●			3.2		140			250					
	●	●					230			∞					
KFTB ^{R/L} 90150-5S 150250-5S 250800-5S	●	●	32	150	5.2	30	0		5.0	90	150		FTK5	KTKTBF25-32 32-32	
	●	●				32	0			150	250				
	●	●			4.0	38									
	●	●					250			∞					

• Dimension T shows available grooving depth.

• Face Grooving Dia. φD: 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 4mm above the Center.

*Dimension H shows virtual apex distance.

Applicable Inserts

Classification	Material	Continuous	Light Interruption	1st Choice	2nd Choice
P	Carbon steel / Alloy steel	●	○		
M	Stainless Steel	●	○		
K	Cast Iron	●	○		
N	Non-ferrous Metals	●	○		
S	Titanium Alloys	●	○		
H	Hard materials (~40HRC)	○			
	Hard materials (40HRC~)	○			

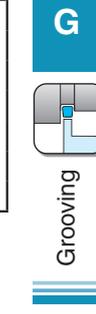
Insert	Description	Dimension (mm)		Cermet CVD Coated Carbide	PVD Coated Carbide	Carbide	Applicable Toolholders
		W	re				
	FTK 4	4.0	0.25	●	●	●	KFTB ^{R/L} 65100-4S 90150-4S 150250-4S 250800-4S
	5	5.0		●	●	●	KFTB ^{R/L} 90150-5S 150250-5S 250800-5S

Recommended Cutting Conditions G106

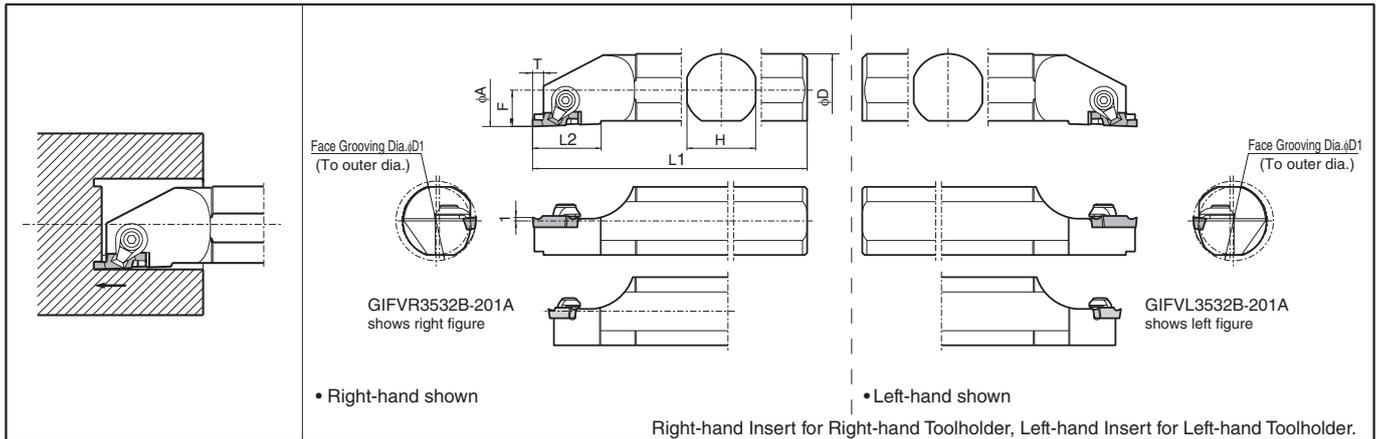
Selection of Blade and Insert

Combination of Blade + KTKTB				Combination of Blade + KTKTBF			
Blade	Right-hand (R)	Blade	Left-hand (L)	Blade	Right-hand (R)	Blade	Left-hand (L)
Insert	Neutral	Insert	Neutral	Insert	Neutral	Insert	Neutral
	Blade Block KFTBR + KTKTB		Blade Block KFTBL + KTKTB		Blade Block KFTBR + KTKTBF		Blade Block KFTBL + KTKTBF
	(Normal mounting)		(Reverse mounting)		(Normal mounting)		(Reverse mounting)

● : Std. Item
□ : Deleted from the next catalogue



GIFV



Toolholder Dimensions

Description	Std.		Dimension (mm)							Face Grooving Dia. $\phi D1$		Spare Parts				Applicable Inserts ➔ G97	
	R	L	ϕA	ϕD	H	L1	L2	F	T	MIN.	MAX.	Clamp Set		Wrench			
GIFV ^{R/L} 3532B-201A	●	●	35						23	2.2	35 (12)	∞	CPS-5V	-	FT-15	-	GVF ^{R/L} ...-...A GVF ^{R/L} ...-...AR
GIFV ^{R/L} 3532B-351B	●	●	35						30	4.6	35 (25)	50 (∞)	CPS-6V	-	LW-3	-	GVF ^{R/L} 250-350-020B GVF ^{R/L} 300-150BR
3532B-352B	●	●		5.1	35 (25)	50 (∞)											
5032B-501B	●	●	50	32	30	250		16	35	4.6	50 (25)	70 (∞)	-	-	-	-	GVF ^{R/L} 400-490-020B GVF ^{R/L} 400-200BR
5032B-502B	●	□		5.1	50 (25)	70 (∞)											
GIFV ^{R/L} 5032B-501C	●	●	50						35	6.6	50 (25)	70 (∞)	CPS-8V	-	LW-4	-	GVF ^{R/L} 350-450-040C
5032B-502C	●	●		8.1	50 (25)	70 (∞)											

Note 1. Dimension T shows available grooving depth.

2. Standard toolholders are designed with the edge position 1.0mm above the center.

Face Grooving Dia. $\phi D1$ depends on the application.

Applications	Description	Face Grooving Dia. $\phi d1$		Face Grooving Dia. $\phi D1$		Remarks
		(MIN.)	(MAX.)	MIN.	MAX. (MAX.)	
	GIFV ^{R/L} 3532B-201A	-	∞	35	50	-
	GIFV ^{R/L} 3532B-351B					
	3532B-352B					
	5032B-501B					
	5032B-502B					
	GIFV ^{R/L} 5032B-501C					
GIFV ^{R/L} 5032B-502C						
	GIFV ^{R/L} 3532B-201A	12	∞	35	50	If $\phi D2 \geq 58-2W$, the Face Grooving Dia. can be expanded to $\phi d1$ (MIN.) toward the Center. W = Edge Width If $\phi D2 \geq 75-2W$, the Face Grooving Dia. can be expanded to $\phi d1$ (MIN.) toward the Center. W = Edge Width
	GIFV ^{R/L} 3532B-351B					
	3532B-352B					
	5032B-501B					
	5032B-502B					
	GIFV ^{R/L} 5032B-501C					
GIFV ^{R/L} 5032B-502C						
	GIFV ^{R/L} 3532B-201A	25	∞	35	50	-
	GIFV ^{R/L} 3532B-351B					
	3532B-352B					
	5032B-501B					
	5032B-502B					
	GIFV ^{R/L} 5032B-501C					
GIFV ^{R/L} 5032B-502C						

The value () of Face Grooving Dia. ($\phi D1$ MAX.) is the maximum outer diameter value after the initial groove between MIN.-MAX. (It is possible to widen the groove to infinity ∞)

The value () of Face Grooving Dia. ($\phi d1$ 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 MIN.-MAX.

● : Std. Item
□ : Deleted from the next catalogue

Recommended Cutting Conditions

◆ GBA inserts (Ground Chipbreaker)

Workpiece Material	Recommended Insert Grades (Cutting Speed Vc: m/min)										(1) f for Grooving (mm/rev) (2) f for Turning (mm/rev) (3) ap for Turning (mm)					Remarks	
	MC	Cermet			MEGA	PVD Coated Carbide			Carbide	CBN	PCD	GBA○○% 033~100...	GBA○○% 125~200...	GBA○○% 230~300...	GBA○○% 330~400...		GBA○○% 400~480...
	PV7040	TN620	TC40N	TN90	PR1215	PR930	PR1115	PR905	KW10	KBN510	KBN525						
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	
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. MC indicates MEGACOAT Cermet. MEGA indicates MEGACOAT. ★ : 1st Recommendation ☆ : 2nd Recommendation

◆ GBA inserts (GM Chipbreaker)

Workpiece Material	Recommended Insert Grades (Cutting Speed Vc: m/min)				(1) f for Grooving (mm/rev) (2) f for Turning (mm/rev) (3) ap for Turning (mm)					Remarks
	Cermet		MEGACOAT		GBA43% 140-010GM	GBA43% 150-020GM	GBA43% 175-020GM~ 230-020GM	GBA43% 250-030GM~ 350-030GM	GBA43% 400-040GM	
	TN620	PR1215	PR1215	PR1215						
Carbon Steel	★ 80~240	☆ 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			
Alloy Steel	★ 80~220	☆ 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	(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.

◆ GBA inserts (MY Chipbreaker)

Workpiece Material	Recommended Insert Grades (Cutting Speed Vc: m/min)							(1) f for Grooving (mm/rev) (2) f for Turning (mm/rev) (3) ap for Turning (mm)					Remarks		
	Cermet		MEGA	PVD Coated Carbide			Carbide	CBN	PCD	GBA43% 175-020MY~ 200-020MY	GBA43% 230-020MY~ 265-030MY	GBA43% 300-030MY		GBA43% 330-030MY~ 350-030MY	GBA43% 400-040MY
	TN6020	TC40N	PR1215	PR930	PR1115	KW10	KBN510	KPD001 (KPD010)							
Carbon Steel	☆ 150~220	-	★ 80~200	☆ 80~200	☆ 80~200	-	-	-	(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		
Alloy Steel	☆ 130~200	-	★ 80~180	☆ 80~180	☆ 80~180	-	-	-	(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	-	☆ 60~150	☆ 60~150	★ 60~150	-	-	-	(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. MEGA indicates MEGACOAT. ★ : 1st Recommendation ☆ : 2nd Recommendation

◆ GB inserts (Ground Chipbreaker) Will be switched to GBA.

Workpiece Material	Recommended Insert Grades (Cutting Speed 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	CBN	PCD	GB○○% 050~100	GB○○% 125~200	GB○○% 230~300	GB○○% 330~400		GB○○% 400~480
	TN90	TC40N	TC60M	PR630	PR930	KW10	KBN510	KPD001 (KPD010)						
Carbon Steel	-	☆ 150~220	☆ 100~150	☆ 80~200	★ 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	
Alloy Steel	-	☆ 130~200	☆ 80~130	☆ 80~180	★ 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	-	-	☆ 60~100	☆ 60~150	★ 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	-	-	-	-	-	★ 60~100	-	-	(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	

★ : 1st Recommendation ☆ : 2nd Recommendation

G



Grooving



Recommended Cutting Conditions

◆ TGF inserts (Ground Chipbreaker)

Workpiece Material	Recommended Insert Grades (Cutting Speed 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	CBN	PCD	TGF32 [°] /L 033~050-005	TGF32 [°] /L 075~095-010	TGF32 [°] /L 100~145-010	TGF32 [°] /L 150~250-010	
	TC40N	PR1215	PR930	PR1115	KW10	KBN510	KPD001 (KPD010)					
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)0.03~0.07 (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	

• MEGA indicates MEGACOAT.

★ : 1st Recommendation ☆ : 2nd Recommendation

◆ TG inserts (Ground Chipbreaker) Will be switched to GBA.

Workpiece Material	Recommended Insert Grades (Cutting Speed Vc: m/min)							f (mm/rev)					Remarks					
	Cermet		PVD Coated Carbide		Carbide	CBN	PCD	TG○○ [°] /L 075~095	TG○○ [°] /L 125~200	TG○○ [°] /L 230~300	TG○○ [°] /L 330~400	TG○○ [°] /L 430~450						
	TN60	TC40N	TC60M	PR630	PR930	KW10	KBN510							KPD001 (KPD010)				
Carbon Steel	★ 150~220	-	-	-	-	-	-	-	-	-	-	-	0.03~0.07	0.03~0.08	0.05~0.1	0.05~0.12	0.05~0.12	Coolant
Alloy Steel	★ 130~200	-	-	-	-	-	-	-	-	-	-	-	0.02~0.06	0.03~0.07	0.05~0.09	0.05~0.1	0.05~0.1	

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

★ : 1st Recommendation ☆ : 2nd Recommendation

◆ GH inserts (Ground Chipbreaker)

Workpiece Material	Recommended Insert Grades (Cutting Speed 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			GH 40~50...	GH 55~70...	GH 75~80...	GH 100~120...		
	TN90	TC40N	TC60M	PR930	KW10	A65	A66N						PT600M
Carbon Steel	☆ 150~220	☆ 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	☆ 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	☆ 70~150	-	☆ 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 (Cutting Speed 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	Ceramic			GHU 40-20	GHU 50-20	GHU 60-20			
	TN60	TC40N	TC60M	CR9025	PR630	PR930				A65		A66N
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

G

Grooving

◆ GA Inserts (Molded Chipbreaker)

Workpiece Material	Recommended Insert Grades (Cutting Speed 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	PVD Coated Carbide		Carbide	GA 30	GA 40	GA 50	
	TN60	TN90	TC40N	TC60M	CR9025	PR630	PR930	KW10				
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)0.06~0.12 (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

◆ GIA Inserts (Molded Chipbreaker)

Workpiece Material	Recommended Insert Grades (Cutting Speed 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	PVD Coated Carbide		Carbide	GIA 30	GIA 40	GIA 50	
	TN60	TN90	TC40N	TC60M	CR9025	PR630	PR930	KW10				
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

◆ PSG-S (Tip-Bars)

Workpiece Material	Recommended Insert Grades (Cutting Speed Vc: m/min)				PSG05	PSG06 PSG07 PSG08	Remarks
	PVD Coated Carbide		Carbide				
	PR930		KW10				
Carbon Steel	★ 30~100				~0.03	~0.05	Coolant
Stainless Steel	★ 30~80				~0.02	~0.03	
Non-ferrous Metals			★ ~300		~0.05	~0.08	

★ : 1st Recommendation

Note for using the grooving tip-bars PSG-S type

How to Install

Small dia. internal grooving requires accurate installation because an error of insert height or angle can affect the machining precision. When installing, set the cutting edge higher than the center line as shown in the Table 1. The cutting edge of all the PSG-S type tip-bars is designed to be higher than the center line.

(L4 of Tip-Bars dimension)

◆ FMM / FMN

Workpiece Material	Recommended Insert Grades (Cutting Speed Vc: m/min)						Face Grooving (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.

★ : 1st Recommendation ☆ : 2nd Recommendation

FMM type Inserts are only for Deep Grooving, and when used for turning, set to ap=0.2mm and under.

Ref. to the notes below for turning conditions.

ap and f of FMM

	Recommended Cutting Conditions
ap (MAX.) (mm)	under 50% of Edge Width
f (MAX.) (mm/rev)	under 3~5% of Edge Width

• ap ≤ 0.5w

• f ≤ 0.03(Min.)~0.05(Max.)w

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 ≤ 0.01w²

G



Grooving

Recommended Cutting Conditions

◆ GV Inserts (Ground Chipbreaker)

Workpiece Material	Recommended Insert Grades (Cutting Speed Vc: m/min)						(1) f for Grooving (mm/rev) (2) f for Turning (mm/rev) (3) ap for Turning (mm)					Remarks		
	Cermet			MEGA COAT	PVD Coated Carbide	Carbide	GV ^{1/2} _L 100-300...SS 100-300...S	GV ^{1/2} _L 145-185...B	GV ^{1/2} _L 200-280...B	GV ^{1/2} _L 300-400...B				
	TN90	TC40N	TC60M	PR1225	PR930	KW10	GV ^{1/2} _L 100-340...A 200-300...AR		GV ^{1/2} _L 200-100BR	GV ^{1/2} _L 300-150BR	GV ^{1/2} _L 280-300...C		GV ^{1/2} _L 340-400...C	GV ^{1/2} _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. 0.5	(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. 0.5	
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 grade or carbide for turning with edge width 1mm (GV^{1/2}100SS / 100S / 100A)

★ : 1st Recommendation ☆ : 2nd Recommendation

◆ GVF Inserts (Ground Chipbreaker)

Workpiece Material	Recommended Insert Grades (Cutting Speed Vc: m/min)							(1) f for Grooving (mm/rev) (2) f for Turning (mm/rev) (3) ap for Turning (mm)					Remarks
	Cermet				MEGA COAT	PVD Coated Carbide	Carbide	GVF ^{1/2} _L 200-340...A	GVF ^{1/2} _L 250-350...B	GVF ^{1/2} _L 400-490...B	GVF ^{1/2} _L 350-450...C	GVF ^{1/2} _L 500-600...C	
	TN60	TN90	TC40N	TC60M	PR1225	PR930	KW10	GVF ^{1/2} _L 200-100AR ~300-150AR	GVF ^{1/2} _L 300-150BR	GVF ^{1/2} _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	
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 0.5mm if a good surface finish is required.

★ : 1st Recommendation ☆ : 2nd Recommendation

◆ FTK

Workpiece Material	Recommended Insert Grades (Cutting Speed Vc: m/min)					Edge Width (mm)				Remarks
	Cermet	CVD Coated Carbide	PVD Coated Carbide	Carbide		4.0	5.0			
	TN90	CR9025	PR660	PR930	KW10	f (mm/rev)				
Carbon Steel	☆ 120-200	★ 80-180	☆ 60-130	☆ 60-130	-	0.05-0.15	0.05-0.15			
Alloy Steel	☆ 100-160	★ 70-150	☆ 60-130	☆ 60-130	-	0.05-0.15	0.05-0.15			
Stainless Steel	☆ 80-150	☆ 60-140	★ 50-120	☆ 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 (Cutting Speed Vc: m/min)				(1) f for Grooving (mm/rev) (2) f for Turning (mm/rev) (3) ap for Turning (mm)				Remarks
	CBN		PCD		GMN2	GMN3	GMN4 GMN5	GMN6	
	KBN510 KBN525		KPD001 (KPD010)						
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	
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

G

Grooving

◆ GMG / GMM / GMN / GMGA

Workpiece Material	Recommended Insert Grades (Cutting Speed Vc: m/min)						Grooving				Turning				Remarks
	Cermet	CVD Coated Carbide	PVD Coated Carbide		Carbide		Edge Width W (mm)				Edge Width W (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	

Ref. to the notes below for turning conditions.

★ : 1st Recommendation ☆ : 2nd Recommendation

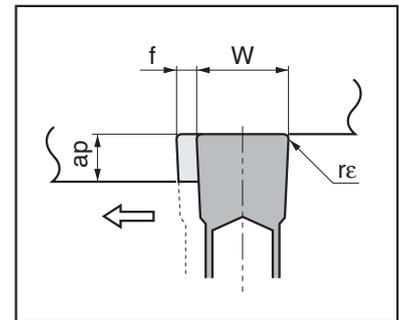
(1) When using KGM Toolholder

	Recommended Cutting Conditions	
ap (MAX.) (mm)	under 80% of Edge Width	· $ap \leq 0.8W$
f (MAX.) (mm/rev)	under 10% of Edge Width	· $f \leq 0.1W$

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

Load(mm ²) \ 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

· $ap \times f \leq \frac{1}{2} \times 0.8W \times 0.1W = 0.04W^2$



(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)	under 50% of Edge Width	· $ap \leq 0.5W$
f (MAX.) (mm/rev)	under 4% of Edge Width	· $f \leq 0.04W$

should be as follows. (under 50% of KGM)

Load(mm ²) \ 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

· $ap \times f \leq 0.02W^2$

(4) When using KIGM Toolholder

	Recommended Cutting Conditions	
ap (MAX.) (mm)	under 70% of Edge Width	· $ap \leq 0.7W$
f (MAX.) (mm/rev)	under 8% of Edge Width	· $f \leq 0.08W$

should be as follows. (under 70% of KGM)

Load(mm ²) \ Edge Width(mm)	3.0	4.0	5.0
ap x f	~0.25	~0.44	~0.70

· $ap \times f \leq 0.04W^2$

◆ GMG / GMM / GMN / GMGA 8030 (Face Grooving)

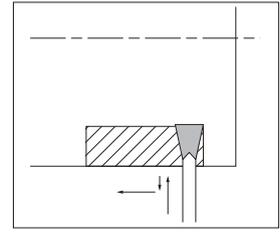
Workpiece Material	Recommended Insert Grades (Cutting Speed Vc: m/min)						Face Grooving		Turning		Remarks
	Cermet	CVD Coated Carbide	PVD Coated Carbide		Carbide		Edge Width W (mm)		Edge Width W (mm)		
	TN90	CR9025	PR915	PR930	PR905	KW10	8.0		8.0		
							f (mm/rev)		f (mm/rev)		
Carbon Steel	☆ 100-220	☆ 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

Guide for External Grooving

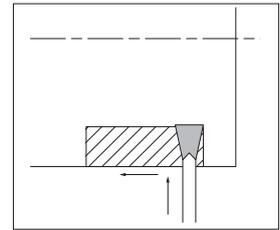
Point (I) (Turning after Grooving)

- 1) Grooving Depth Over 0.5mm: 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 0.5mm: 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 Over 0.5mm: At roughing)

Fig.1



Turning subsequent to grooving
(Grooving Depth under 0.5mm: At finishing)

Fig.2

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 over 0.5mm is recommended.)
- Note) If the workpiece is not supported at the center, reduce the feed rate when grooving towards center.

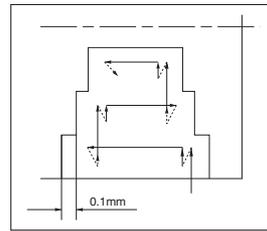


Fig.3

G

Grooving

Guide for Face Grooving

<Toolholder Selection>

- (1) Choose the best tool depending on the groove width.
The Cutting Dia. ϕD listed in the catalog indicates the depth of the first plunge of face grooving as shown in Fig.1.



- (2) Confirm Grooving Depth (dimension T)



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

<Guide for turning>

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

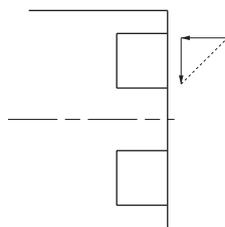


Fig.3

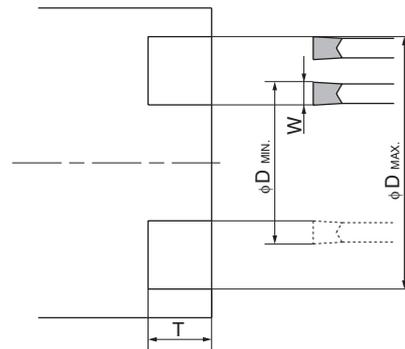


Fig.1

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

Fig.2 Toolholder's Hand and Rotation

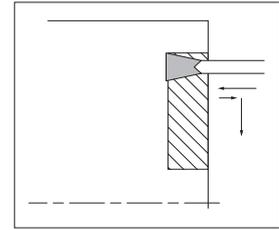
■ Guide for Face Grooving (Continued)

● Point (I) (Turning after Grooving)

1) Grooving Depth Over 0.5mm: 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.)



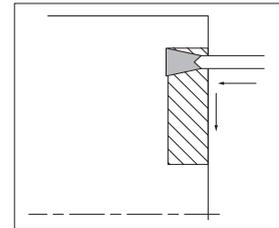
Before turning, pull the tool back about 0.1mm after grooving.
(Grooving Depth Over 0.5mm: At roughing)

Fig.4

2) Grooving Depth under 0.5mm: 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 under 0.5mm: 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 over 0.5mm is recommended.)

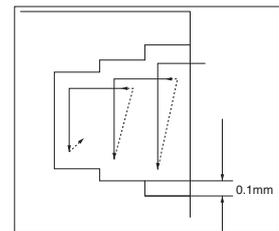


Fig.6

● Trouble shooting

Trouble	Countermeasures
Whitish trace remains at the groove bottom.	<p>(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.</p> <p>(2) Check the insert edge's parallelness.</p> <p>Adjustment: Apply the insert edge to the workpiece face and adjust the toolholder within the angle of $\pm 5'$. (Fig.7)</p> <p>Fig.7</p>
Chips are entangled.	<p>(1) Install the toolholder in the reverse position. Adjust the coolant flow to the cutting edge.</p> <p>(2) When widening the groove, do not machine one deep groove. Instead, repeat shallow grooving and turning.</p>
Insert cracks when turning.	Reverse the facing direction.
Groove is not straight.	<p>Check the edge's parallelness. Decrease the feed rate.</p>

Guide for Grooving

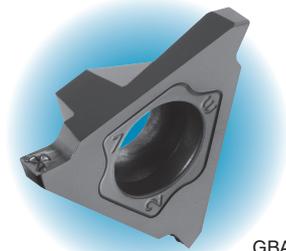
● Guide for Grooving with Cermet Insert (Steel)

1. Set the f under 0.12mm/rev (0.05~0.10mm/rev normally).
2. Coolant is recommended.
3. Set the cutting speed $V_c=150\sim 220\text{m/min}$.
4. Set the toolholder overhang as short as possible.

● How to Improve Surface Finish (when surface roughness below $3\mu\text{m Rz}$ is required)

1. Increase the cutting speed ($V_c=220\text{m/min MAX.}$)
2. Program retention time at the groove bottom.
3. Apply a light hone to the cutting edge by hand lapper.

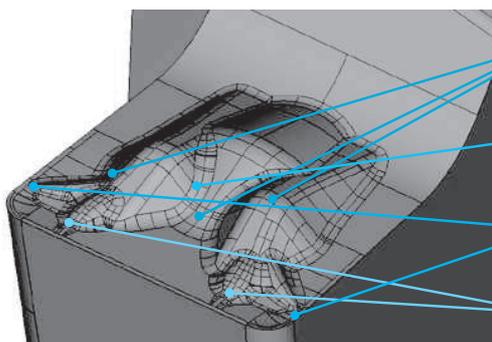
● Chip Control of Grooving Insert with Molded Chipbreaker



GBA type GM chipbreaker

1. Good chip control to cover wide application range stable chip control. at high cutting speed, covering wide range of feed rate
2. Improved chip control and excellent surface finish. Superior chip control performance and MEGACOAT PR1215 realizes the excellent surface quality
3. Chip control improvement at automated production line. (prevent frequent machine stop)

Multi Bump Design



Center bump and dent squeeze and control chips

Helps modifying chip shape

Stable chip control at shoulder grooving and chamfering

Front bump: Stabilize chip control at low feed rate

Smooth chip control due to optimum bump layout on the chipbreaker

■ Alternative Toolholder Reference Table for Grooving Toolholder

Description	Conventional Toolholder				Alternative Toolholder			See Page
	Overall length (mm)	Spare Parts			Description	Overall length (mm)	Remarks	
		Clamp Screw	Wrench	Wrench				
KTGF^{®/L} 1010K-16F	125				KTGF^{®/L} 1010JX-16F	120		G16
1212M-16F	150	SB-4070TRW	FT-8	-	1212JX-16F	120		
1616M-16F	150				1616JX-16F	120		
KGM^{®/L} 0810K-1.5-125	125				-	-	No replacement	G36
1010K-1.5-125	125	SE-40120TR	-	LTW-15S	KGM^{®/L} 1010JX-1.5	120		
1212M-1.5-150	150				1212JX-1.5	120		
KGM^{®/L} 0810K-2-125	125				-	-	No replacement	
1010K-2-125	125	SE-40120TR	-	LTW-15S	KGM^{®/L} 1010JX-2	120		
1212M-2-150	150				1212JX-2	120		
1616M-2-150	150	SE-50125TR	-	LTW-20	1616JX-2	120		
KGM^{®/L} 1010K-2.5-125	125	SE-40120TR	-	LTW-15S	KGM^{®/L} 1010JX-2.5	120		
1212M-2.5-150	150				1212JX-2.5	120		
1616M-2.5-150	150	SE-50125TR	-	LTW-20	1616JX-2.5	120		
KGM^{®/L} 1616M-3-150	150	SE-50125TR	-	LTW-20	KGM^{®/L} 1616JX-3	120		

Note) The corresponding alternative toolholder may be different from the conventional toolholder in insert clamping system or insert size. Make sure of their specifications by referring to the catalog or other documents.