Grooving

G1~G80

Product Lineup		**G2~G3**
External Grooving		**G4~G27**
KGBA / KGBAS		G9
KGB / KGBS changes to KGBA / KGBAS.		G11
KTGF-F / KTGF		G12
S…KTGF	Sleeve Holder	G13
KTG changes to KGBA.		G15
KGH / KGHS		G16
KGA		G17
KGM (Automatic Lathe / Long Shank)		G22
KGM / KGM-T		G23
KGMM / KGMS		G24
KGMU		G25
KN91		G26
KGMW (For Aluminum Wheel)		G27
Internal Grooving		**G28~G48**
HPG	2-Edge Tip-Bar	G30
PSG-S changes to HPG.	Tip-Bar	G32
VNG	System Tip-Bar	G33
SIGE-EH / SIGE-WH / SIGE-WH-90		G34
GIV / GIV-E / GIV-W		G40
KIGBA		G43
KITG changes to KIGBA.		G44
KIGH		G45
KIGM-V		G46
KIGM-8 / KIGMU-8		G47
KGIA		G48
Face Grooving		**G49~G71**
HPFG	2-Edge Tip-Bar	G53
TWFG / TWFGT	Twin Bar	G54
VNFG	System Tip-Bar	G56
PSFG-S changes to HPFG.	Tip-Bar	G57
GFVS-AA / GFVT-AA		G58
GFV		G60
GFVS / GFVT		G62
KFMS		G66
KFMS-8		G68
KFTB-S		G69
GIFV (Boring Bar Type)		G70
Technical Information		**G72~G79**
Recommended Cutting Conditions		G72
Guide for Machining		G78

Summary of Face Grooving

Micro Face Grooving ø6~

G55

STW

Min. Face Grooving Dia.: ø6
Width: 0.5~2.0
Depth: 1.0~3.0

G55

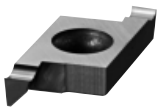
STWS

Min. Face Grooving Dia.: ø6
Width: 0.5~2.0
Depth: 1.0~3.0

G55

S..-STW

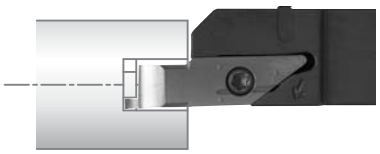
Min. Face Grooving Dia.: ø6
Width: 0.5~2.0
Depth: 1.0~3.0



Lay-down twin bar

Up-right twin bar

Small Dia. Face Grooving ø8~

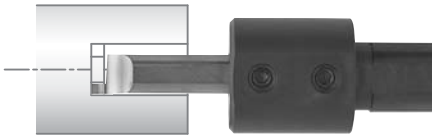


G56

VNFG

Min. Face Grooving Dia.: ø8
Width: 1.0~3.0
Depth: 2.0~3.0

System Tip-Bar



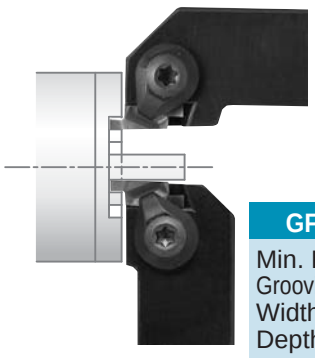
G53

HPFG

Min. Face Grooving Dia.: ø8
Width: 1.0~3.0
Depth: 2.0~3.0

2-Edge Tip-Bar

Small Dia. Face Grooving ø8~



GFVS-AA

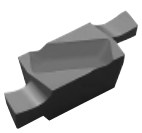
Min. Face Grooving Dia.: ø8
Width: 1.0~3.0
Depth: 2.2

G58

GFVT-AA

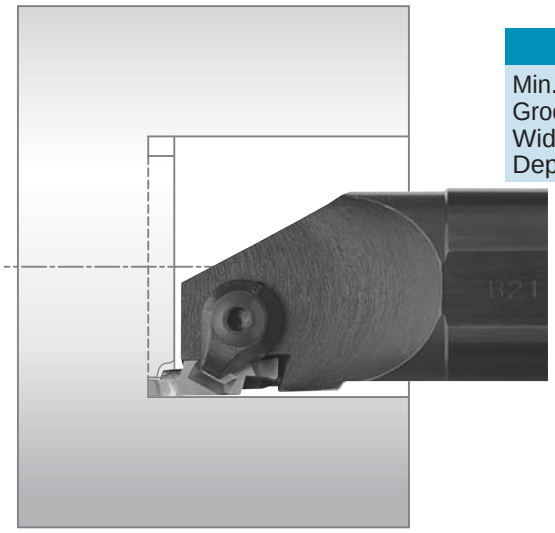
Min. Face Grooving Dia.: ø8
Width: 1.0~3.0
Depth: 2.2

G58



Ground Chipbreaker

Face Grooving ø35~

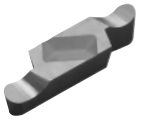


G70

GIFV

Min. Face Grooving Dia.: ø35~50
Width: 2.0~6.0
Depth: 2.2~8.1

Ground Chipbreaker



Ground Chipbreaker Full-R

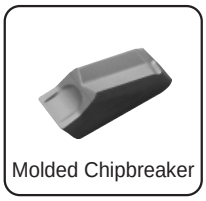
Summary of Face Grooving

General Face Grooving ø20~

➡G69

KFTB

Min. Face
Grooving Dia.: ø65~250
Width: 4.0~5.0
Depth: 25~38

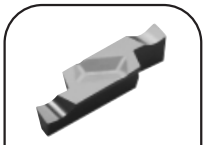


Molded Chipbreaker

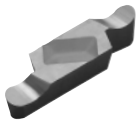
➡G62

GFVS

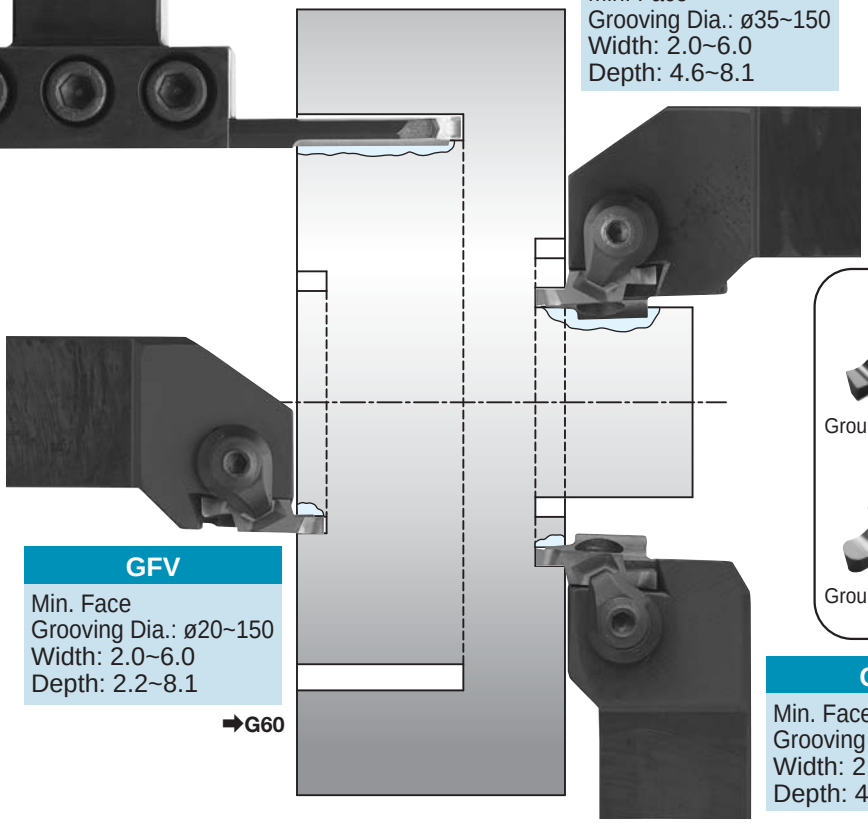
Min. Face
Grooving Dia.: ø35~150
Width: 2.0~6.0
Depth: 4.6~8.1



Ground Chipbreaker



Ground Chipbreaker
Full-R

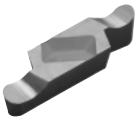


GFV

Min. Face
Grooving Dia.: ø20~150
Width: 2.0~6.0
Depth: 2.2~8.1

➡G60

Ground Chipbreaker



Ground Chipbreaker
Full-R

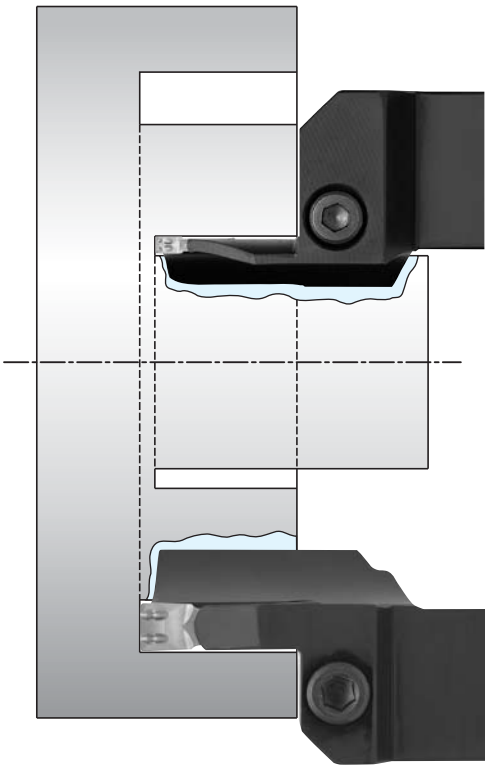
GFVT

Min. Face
Grooving Dia.: ø35~150
Width: 2.5~6.0
Depth: 4.6~8.1

➡G62

Face Grooving & Traversing ø25~

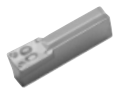
(CERACUT Plunge & Turn)



KFMS

Min. Face
Grooving Dia.: ø25~235
Width: 3.0~6.0
Depth: 13~32

➡G66

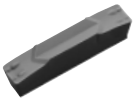


Molded Chipbreaker

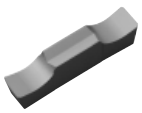
➡G68

KFMS-8

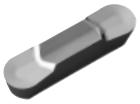
Min. Face
Grooving Dia.: ø54~155
Width: 8
Depth: 25



Molded Chipbreaker



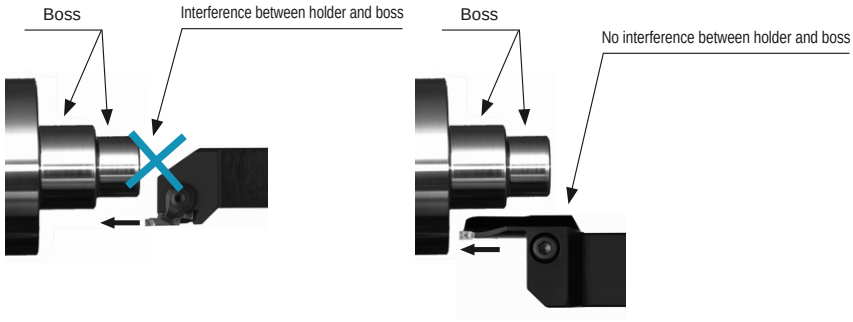
Ground Chipbreaker



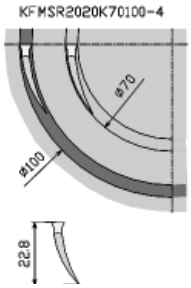
Ground Chipbreaker
Full-R

Caution for Face Grooving

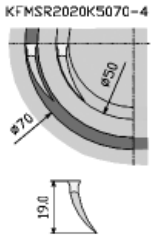
1) For face grooving, holder description to be selected is different depending on with or without boss



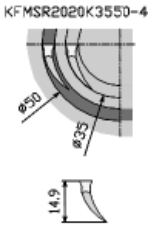
2) Selection of Face Grooving Toolholder



Shape of below Jaw



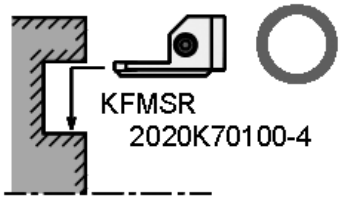
Shape of below Jaw

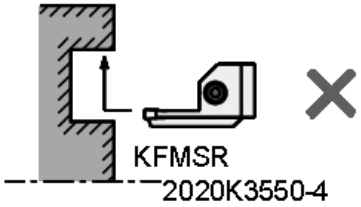


Shape of below Jaw

For holders which can machine a face groove of the same dimension, the holders with larger cutting dia. have longer dimension of below jaw and higher holder rigidity.

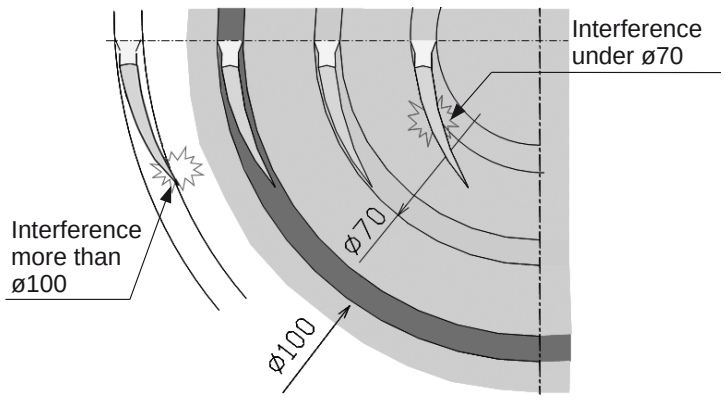
Widening groove (traversing) should be performed from outer to inner





3) Interference of Face Grooving Toolholder

e.g.) KFMSR2525M70100-4



- Usage example of face grooving toolholder.

When face grooving, KFMSR2525M70100-4 should be between ø70~ø100 for groove outer diameter at first. If it is machined for ø100 and over or ø70 and below at first, the jaw of holder interferes with the workpiece.

Face Grooving Diameter Table

● Specification Table of Shallow Grooving Insert (Depth ≦ 8.1mm)

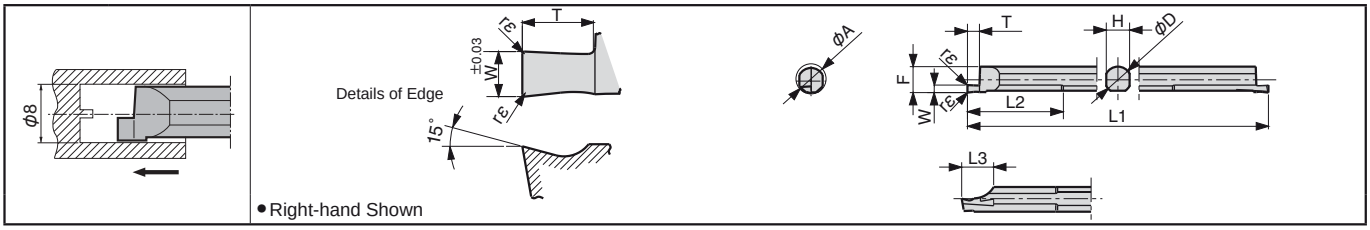
Type	Width (mm)	Depth (mm)	Face Grooving Dia.øD (mm)	Reference Page
TWFG (Lay-down Twin Bar)	0.5~2.0	1.0~3.0	6~∞ (Traversing is not available)	**G54**
TWFGT (Up-right Twin Bar)	0.5~2.0	1.0~3.0	6~∞ (Traversing is not available)	
VNFG (System Tip-Bar)	1.0~3.0	2.0~3.0	8~∞ (Traversing is not available)	**G56**
HPFG (2 Edges Tip-Bar)	1.0~3.0	2.0~3.0	8~∞ (Traversing is not available)	**G53**
PSFG-S (Tip-Bar)	1.0~3.0	2.0	8~∞ (Traversing is not available)	**G57**
GFVS-AA, GFVT-AA	1.0~3.0	2.2	8~∞ (ap has to be less than corner-R(rε) when traversing with edge width 1.0mm)	**G58**
GFV 201A	2.0~3.4	2.2	20~∞	**G60**
KGMM KGMS	3.0	3.0~3.5	22~∞	**G24**
	4.0	4.0	28~∞	
	5.0	4.0	30~∞	
GIFV 201A	2.0~3.4	2.2	35~∞	**G70**
GFV, GFVS, GFVT 351B	2.5~3.5	4.6	35~50	**G60 G62 G70**
GIFV 352B	4.0~4.9	5.1	35~50	
GFV, GFVS, GFVT GIFV 501B	2.5~3.5	4.6	50~70	
502B	4.0~4.9	5.1	50~70	
501C	3.5~4.5	6.6	50~70	
502C	5.0~6.0	8.1	50~70	
GFV, GFVS, GFVT 701B	2.5~3.5	4.6	70~100	**G60 G62**
702B	4.0~4.9	5.1	70~100	
701C	3.5~4.5	6.6	70~100	
702C	5.0~6.0	8.1	70~100	
GFV, GFVS, GFVT 1001C	3.5~4.5	6.6	100~150	
1002C	5.0~6.0	8.1	100~150	
GFV, GFVS, GFVT 1501C	3.5~4.5	6.6	150~250	
1502C	5.0~6.0	8.1	150~250	

● Specification Table of Deep Grooving Insert (Depth ＞ 8.1mm)

Toolholder Type	Width (mm)	Depth (mm)	Face Grooving Dia.øD (mm)	Reference Page
KFMS$^{R}_{L}$-3	3.0	13	25~30	**G66**
			30~40	
			40~50	
		22	50~65	
			65~85	
		25	85~110	
			110~145	
KFMS$^{R}_{L}$-4	4.0	12	25~35	
		20	35~50	
		25	50~70	
			70~100	
			100~150	
			150~220	
			220~∞	
KFMS$^{R}_{L}$-5	5.0 6.0	20	25~35	**G67**
			35~50	
		25	50~75	
			75~115	
			115~180	
			180~235	
			235~∞	
KFMS$^{R}_{L}$-8	8.0	25	54~64	**G68**
			63~82	
			80~115	
			105~160	
			155~510	

Blade type	Width (mm)	Depth (mm)	Face Grooving Dia.øD (mm)	Reference Page
KFTB$^{R}_{L}$-4S	4.0	25	65~100	**G69**
		30	90~150	
			140~250	
			230~∞	
KFTB$^{R}_{L}$-5S	5.0	30	90~150	
		32	150~250	
		38	250~∞	

HPFG

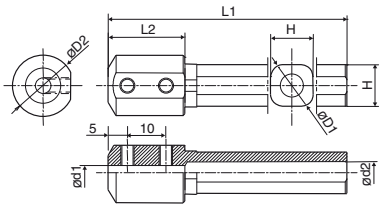


Tip-Bar Dimensions

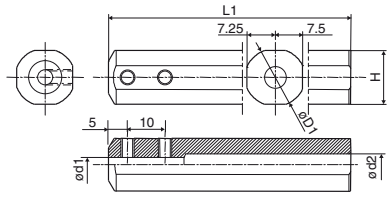
Description		Min. Face Grooving Dia.	Dimension (mm)									Insert Grade			
												PVD Coated Carbide		Carbide	
		øA	W±0.03	rε	øD	H	L1	L2	L3	F	T	PR930		KW10	
												R	L	R	L
HPFGR/L	0807-10	8	1	+0 -0.02 0.05	7	6.2	80	25	8.5	6.9	2	●	●	●	
	0807-20		2								3	●	●	●	
	0807-30		3									●	●	●	

・Dimension T: shows available grooving depth.

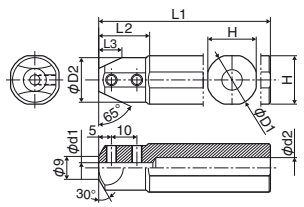
Applicable Sleeve



(Tip-Bar installation side) Fig.1



(Tip-Bar installation side) Fig.2



(Tip-Bar installation side) Fig.3

Description	Std.	Dimension (mm)								Drawing	Spare Parts		Applicable Machine Manufactuer	Applicable Tip-Bar
		*ød1	øD1	øD2	ød2	H	L1	L2	L3		Screw	Wrench		
PSH 0712-80	●	7	12	16	8	11	80	20	-	Fig.1	HS4×4P	LW-2	(General use)	HPFGR/L0807…
PSH 0716-100	●	7	16	-	8	15	100	-	-	Fig.2				
PSH 0720-120	●	7	20	17.5	8	19	120	20	7.5	Fig.3	HS4×4P	LW-2	Amada Wasino Eguro Precision Tsugami Miyano (General use)	
PSH 0725.0-135	●	7	25	18	8	24	135	23	8					
PSH 0719-120	●	7	19.05	17.5	8	18	120	20	7.5	Fig.3	HS4×4P	LW-2	Citizen Machinery	
PSH 0720-120	●	7	20	17.5	8	19	120	20	7.5					
PSH 0725-120	●	7	25.4	18	8	24.4	120	23	8					
PSH 0722-135	●	7	22	18	8	21	135	22	8	Fig.3	HS4×4P	LW-2	Star Micronics Nomura VTC	
PSH 0723-120	●	7	23	18	8	22	120	22	8	Fig.3	HS4×4P	LW-2	Nomura VTC	

*: Length of ød1…25mm (PSH07)

・Names of machine builders are listed in the order of the Japanese syllabary with omitted titles of respect.

Recommended Cutting Conditions

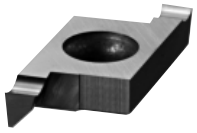
Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)		HPFGR / L 0807-10	HPFGR / L 0807-20	HPFGR / L 0807-30	Remarks
	PVD Coated Carbide	Carbide				
	PR930	KW10	f (mm/rev)			
Carbon Steel / Alloy Steel	★ 30~100	–	~0.02	~0.04	~0.05	Coolant
Stainless Steel	★ 30~80	–	~0.01	~0.02	~0.03	
Non-ferrous Metals	–	★ ~300	~0.04	~0.06	~0.08	

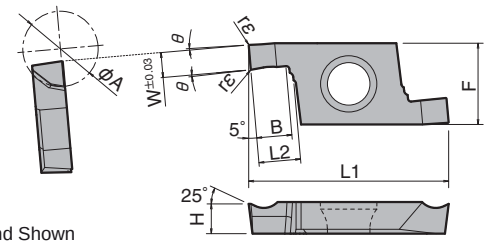
★: 1st Recommendation ☆: 2nd Recommendation

● : Std. Item ○ : Check Availability R : Std. Item (R-hand Only) L : Std. Item (L-hand Only)

Tip-Bars are sold in 1 piece boxes.

TWFG (Lay-down type)





• Left-hand Shown

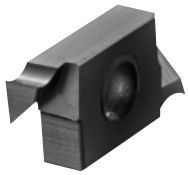
Example of installing insert for straight square shank

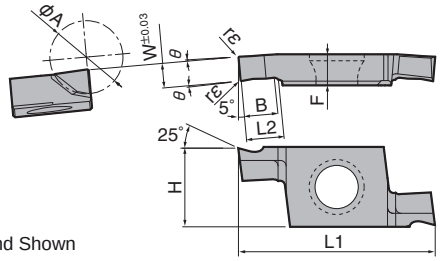
Insert Dimensions

Description		Min. Cutting Dia.	Dimension (mm)							Angle (°)	Insert Grade PVD Coated Carbide		Insert Grade Carbide	Ref. Page for Toolholder
		øA	W	rε	H	L1	L2	F	B	θ	PR1025		KW10	
TWFGL	050	6	0.5	0.05	2.38	16	3	6.5	1.0	1.5°	L		L	G55
	080		0.8						1.5		L		L	
	100		1.0						2.2	2°	L		L	
	125		1.25								L		L	
	150		1.5								L		L	
	180		1.8						3.0		L		L	
	200		2.0								L		L	

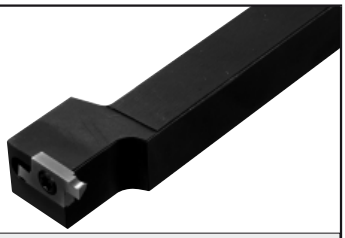
· Dimension B: shows available grooving depth.

TWFGT (Up-right type)





• Right-hand Shown



Example of installing insert for L-shape square shank

Insert Dimensions

Description		Min. Cutting Dia.	Dimension (mm)							Angle (°)	Insert Grade PVD Coated Carbide		Insert Grade Carbide	Ref. Page for Toolholder
		øA	W	rε	H	L1	L2	F	B	θ	PR1025		KW10	
TWFGTR	050	6	0.5	0.05	6.4	16	3	2.35	1.0	1.5°	R		R	G55
	080		0.8						1.5		R		R	
	100		1.0						2.2	2°	R		R	
	125		1.25								R		R	
	150		1.5								R		R	
	180		1.8						3.0		R		R	
	200		2.0								R		R	

· Dimension B: shows available grooving depth.

Recommended Cutting Conditions (TWFG / TWFGT)

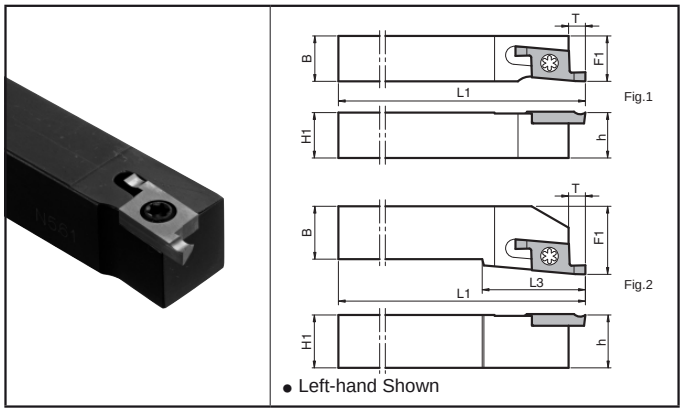
Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)		TWFGL050 TWFGL080 TWFGL100 TWFGTR050 TWFGTR080 TWFGTR100	TWFGL125 TWFGL150 TWFGTR125 TWFGTR150	TWFGL180 TWFGL200 TWFGTR180 TWFGTR200	Remarks
	PVD Coated Carbide	Carbide				
	PR1025	KW10	f (mm/rev)			
Carbon Steel / Alloy Steel	★ 30~100		~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 ☆ : 2nd Recommendation

● : Std. Item ○ : Check Availability R : Std. Item (R-hand Only) L : Std. Item (L-hand Only)

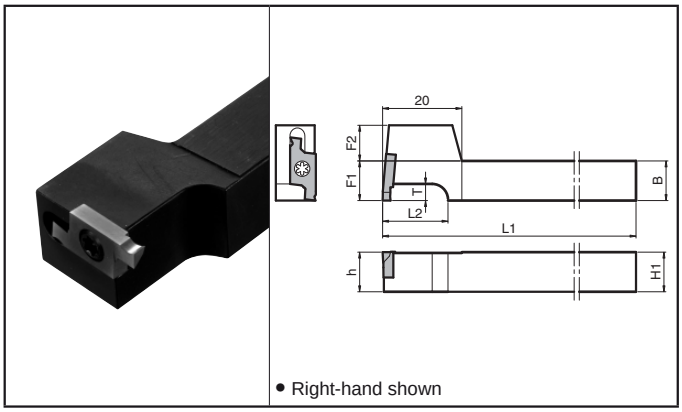
Twin Bars are sold in 5 piece boxes.

STW (Square shank for Lay-down type inserts)



● Left-hand Shown

STWS (Square shank for Up-right inserts: L-shape)



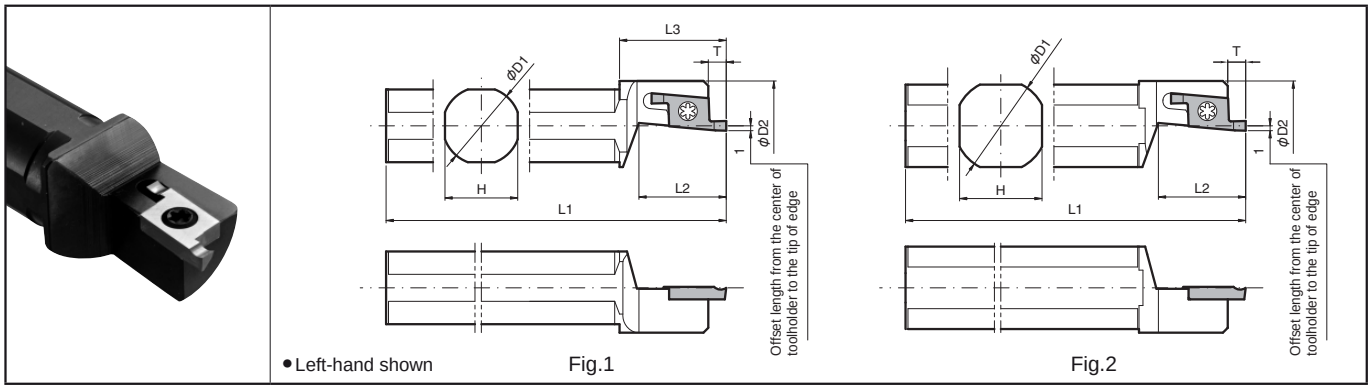
● Right-hand shown

Toolholder Dimensions

Description		Std.	Dimension (mm)									Drawing	Spare Parts		Applicable Inserts ➔ G54
			H1=h	B	L1	L2	L3	F1	F2	T	F3		Clamp Screw	Wrench	
STWL	1010F-15	●	10	10	80	-	-	10	-	3	-	Fig.1	SB-3080TR	LTW-10S	TWFGL ○○○
	1212F-15	●	12	12				12							
	1010K-15	●	10	10	125			10							
	1212K-15	●	12	12				12							
	1616K-15	●	16	16				16							
	2020K-15	●	20	20			25	25				Fig.2			
	2525M-15	●	25	25	150			32							
STWSR	1010F-15T	●	10	10	80	16	-	10	9	3	-	-	SB-3080TR	LTW-10S	TWFGTR ○○○
	1212F-15T	●	12	12				12	7						
	1010K-15T	●	10	10	125			10	9						
	1212K-15T	●	12	12				12	7						
	1616K-15T	●	16	16		20		16	3						

・ Dimension T shows the distance from the Toolholder to the cutting edge. Dimension B shows available grooving depth.

S..-STW (Round shank for Lay-down type inserts)



● Left-hand shown

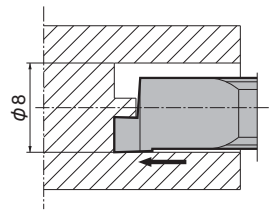
Toolholder Dimensions

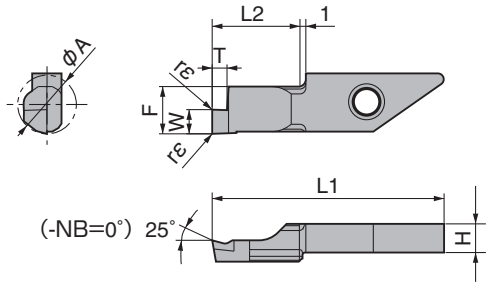
Description		Std.	Dimension (mm)								Drawing	Spare Parts		Applicable Inserts ➔ G54
			øD1	øD2	H	L1	L2	L3	T			Clamp Screw	Wrench	
S12F-	STWL15	●	12	20	11	80	18	22	3		Fig.1	SB-3080TR	LTW-10S	TWFGL ○○○
S14H-	STWL15	●	14		13	100								
S15F-	STWL15	●	15.875		15	85								
S16F-	STWL15	●	16											
S19G-	STWL15	●	19.05	18.5	17	90		-	3		Fig.2			
S19K-	STWL15	●				120								
S20G-	STWL15	●	20	19.5	18	90								
S20K-	STWL15	●				120								
S22K-	STWL15	●	22	21.5	20	125	22							
S25.0J-	STWL15	●	25	24.5	23	110								
S25K-	STWL15	●	25.4	25	23	120								

・ Dimension T shows the distance from the Toolholder to the cutting edge. Dimension B shows available grooving depth.

● : Std. Item ○ : Check Availability R : Std. Item (R-hand Only) L : Std. Item (L-hand Only)

VNFG (System Tip-Bar)





• Right-hand Shown

Insert Dimensions

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

Description		Min. Cutting Dia.	Dimension (mm)							Cermet	PVD Coated Carbide			Carbide	PCD		Ref. Page for Toolholder
		øA	W±0.03	rε	H	L1	L2	F	T	TC60	PR630	PR915	PR930	KW10	KPD001	KPD010	
VNFGR	0810-10	8	1.0	0.05	3.9	29.6	10	7.3	2.0	●	●		●	●			F12 F13 F14
	0820-10	8	2.0							●	●		●	●			
	0830-10	8	3.0						3.0	●	●		●	●			
VNFGR	0820-10NB	8	2.0	0.05	3.9	29.6	10	7.3	2.0						○	○	
	0830-10NB	8	3.0						3.0						○	○	

• Dimension T shows available grooving depth.

Recommended Cutting Conditions

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)				VNFG0810	VNFG0820	VNFG0830	Remarks
	Cermet	PVD Coated Carbide		Carbide				
	TC60	PR630	PR930	KW10	f (mm/rev)			
Carbon Steel / Alloy Steel	☆ 60~120	☆ 30~100	★ 30~100		~0.02	~0.04	~0.05	Coolant
Stainless Steel	☆ 50~100	☆ 30~80	★ 30~80		~0.01	~0.02	~0.03	
Non-ferrous Metals				★ ~300	~0.04	~0.06	~0.08	

★ : 1st Recommendation ☆ : 2nd Recommendation

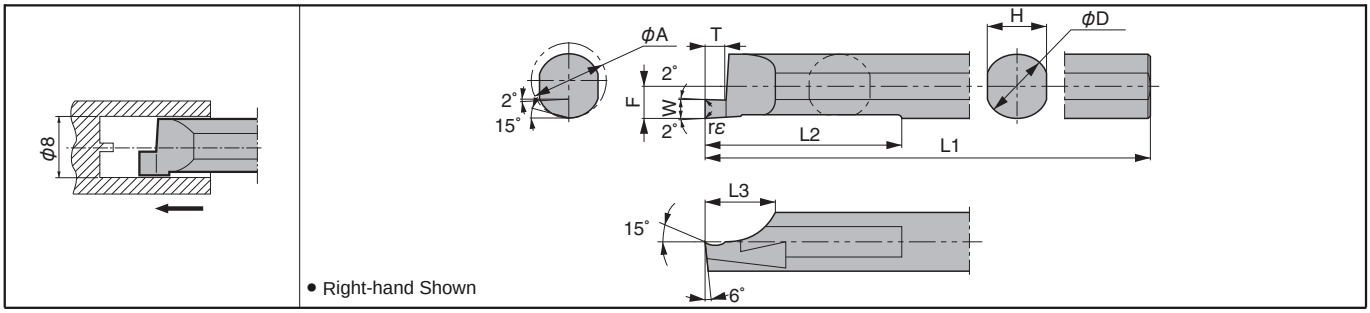
System Tip-Bars are sold in 5 piece boxes.

CBN & PCD Tools are sold in 1 piece boxes.

● : Std. Item ○ : Check Availability
R : Std. Item (R-hand Only) L : Std. Item (L-hand Only)

PSFG-S (Tip Bar)

This insert will be switched to **HPFG** (2-Edge See Page ➡ **G53**).



Tip-Bar Dimensions

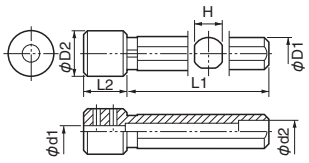
Classification of usage									
● : Continuous / 1st Choice ○ : Continuous / 2nd Choice	P	Carbon Steel / Alloy Steel				●			
	M	Stainless Steel				●			
	K	Cast Iron					●		
	N	Non-ferrous Metals					●		
	S	Titanium Alloy					●		
	H	Hard materials (under 40HRC)				●			
		Hard materials (over 40HRC)							

Description		Min. Cutting Dia.	Dimension (mm)									Cermet	PVD Coated Carbide			Carbide	PCD	
		øA	W±0.03	rε	H	L1	L2	F	T	F	T	TC60	PR630	PR915	PR930	KW10	KPD001	KPD010
PSFGR/L	0810-20S	8	1.0	0.05	6.8	6.2	80	25.5	7	3.4	2.0	●	●		●	●		
	0820-20S	8	2.0									●	●		●	●		
	0830-20S	8	3.0									●	●		●	●		

・Dimension T shows available grooving depth.

Applicable Sleeve

This sleeve is for 1-Edge Tip-Bar. For 2-Edge Tip-Bar, use ➡ **G53**.

Shape	Description	(Previous Description)	Std.	Dimension (mm)							Spare Parts		Applicable Tip-Bar
				øD1	øD2	ød1	ød2	H	L1	L2	Screw	Wrench	
	PH 0712-60	PH -0712	●	12	19	6.8	8	11	60	20	HS4X4	LW-2	PSFGR/L08○○-20S
	PH 0716-80	PH -0716	●	16	22	6.8	Rp¼ (PS¼)	15	80	20	HS4X4	LW-2	PSFGR/L08○○-20S

(Tip-Bar installation side)

・Besides the above Sleeves, Collet Chucks are also available in the market.

Recommended Cutting Conditions

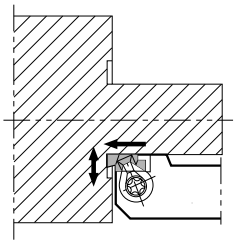
Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)				PSFG0810	PSFG0820	PSFG0830	Remarks
	Cermet	PVD Coated Carbide		Carbide				
	TC60	PR630	PR930	KW10	f (mm/rev)			
Carbon Steel / Alloy Steel	☆ 60~120	☆ 30~100	★ 30~100		~0.02	~0.04	~0.05	Coolant
Stainless Steel	☆ 50~100	☆ 30~80	★ 30~80		~0.01	~0.02	~0.03	
Non-ferrous Metals				★ ~300	~0.04	~0.06	~0.08	

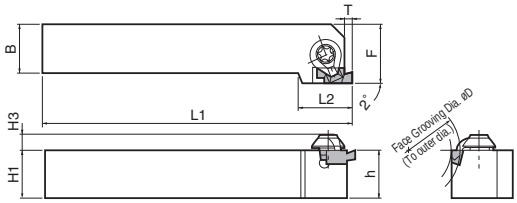
★ : 1st Recommendation ☆ : 2nd Recommendation

● : Std. Item ○ : Check Availability R : Std. Item (R-hand Only) L : Std. Item (L-hand Only)

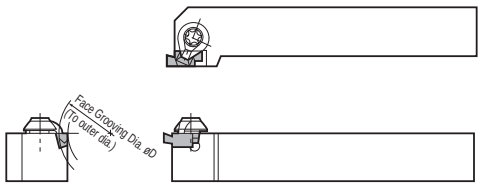
Tip-Bars are sold in 1 piece boxes.

GFVS-AA





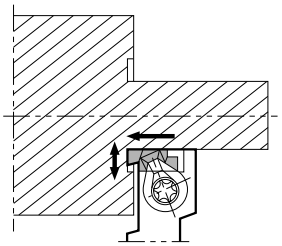
● Right-hand Shown



● Left-hand Shown

L-hand Insert for R-hand Toolholder, R-hand Insert for L-hand Toolholder.

GFVT-AA



Without Offset (□10mm, □12mm)

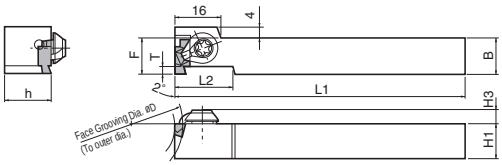
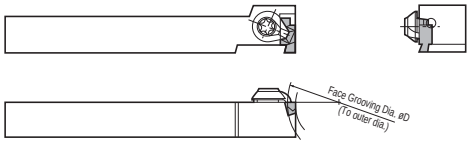


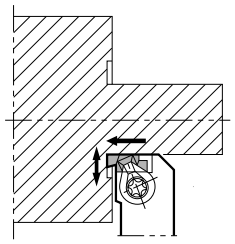
Fig.1

● Right-hand Shown



● Left-hand Shown

L-hand Insert for R-hand Toolholder, R-hand Insert for L-hand Toolholder.



With Offset (□16mm, □20mm, □25mm)

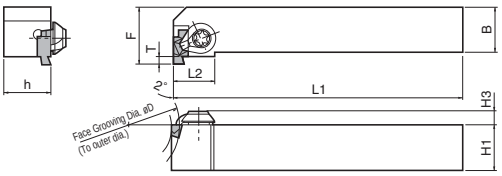
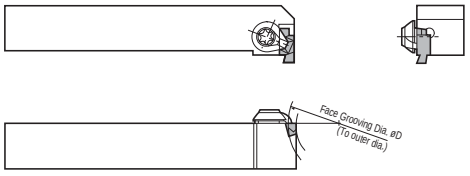


Fig.2

● Right-hand Shown



● Left-hand Shown

L-hand Insert for R-hand Toolholder, R-hand Insert for L-hand Toolholder.

● Toolholder Dimensions

Description		Std. R	Std. L	Dimension (mm) H1	h	H3	B	L1	L2	F	T	Face Grooving Dia. øD MIN.	Face Grooving Dia. øD MAX.	Drawing	Spare Parts: Clamp Set	Spare Parts: Wrench	Applicable Inserts ⇒G59
GFVS R/L	1010F-08AA	●	●	10	10		10	80		15							
	1212H-08AA	●	●	12	12		12	100		16							
	1616H-08AA	●	●	16	16	5.5	16	100	18	20	2.2	8 (0)	∞ (∞)	-	CPS-5V	FT-15	GVF L/R 100-005AA ⟆ GVF L/R 300-005AA
	2020K-08AA	●	●	20	20		20	125		25							
	2525M-08AA	●	●	25	25		25	150		32							
GFVT R/L	1010F-08AA	●	●	10	10		10	80	20	10				Fig.1			
	1212H-08AA	●	●	12	12		12	100		12							
	1616H-08AA	●	●	16	16	5.5	16	100		20	2.2	8 (0)	∞ (∞)		CPS-5V	FT-15	GVF L/R 100-005AA ⟆ GVF L/R 300-005AA
	2020K-08AA	●	●	20	20		20	125	14	25				Fig.2			
	2525M-08AA	●	●	25	25		25	150		32							

Note 1: Dimension T shows available grooving depth.

2. The value ( ) of Face Grooving External Dia. (øD 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 External Dia. (øD 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 ○ : Check Availability R : Std. Item (R-hand Only) L : Std. Item (L-hand Only)

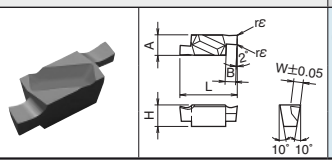
Applicable Inserts

(mm)

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

P	Carbon Steel / Alloy Steel					●			
M	Stainless Steel					●			
K	Cast Iron						◕		
N	Non-ferrous Metals						◕		
S	Titanium Alloy						◕		
H	Hard materials (under 40HRC)					●			
	Hard materials (over 40HRC)								

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

Insert (R-hand shown)	Description	(Previous Description)	Dimension (mm) W	B	rε	Cermet TN90	Cermet TC40	Cermet TC60	PVD Coated Carbide PR630	PVD Coated Carbide PR930	Carbide KW10	PCD KPD001	PCD KPD010	Applicable Toolholder	Ref. Page for Toolholder
	GVF$^{R}_{L}$ 100-005AA	GVF$^{R}_{L}$ 100AA	1.00	2.2	0.05					●	○			GVFS$^{R}_{L}$····08AA GVFT$^{R}_{L}$····08AA	G58
	200-005AA	200AA	2.00							●	○				
	300-005AA	300AA	3.00							●	○				

・Dimension B: shows available grooving depth.

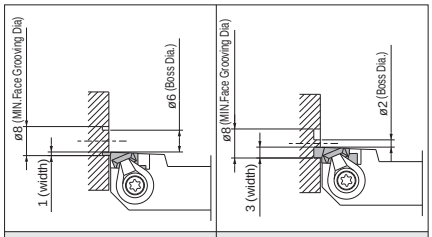
・GVF$^{R}_{L}$...005AA inserts are not compatible with GVF$^{R}_{L}$...−○○○A (see page **G65**) inserts because their Side Relief Angle is 10˚.

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

Description		Face Grooving Dia. øD MIN.	Face Grooving Dia. øD MAX.	Applicable Inserts
GFVS$^{R}_{L}$	1010F-08AA	8	∞	GVF$^{L}_{R}$100AA ~ GVF$^{L}_{R}$300AA
	1212H-08AA			
	1616H-08AA			
	2020K-08AA	(0)	(∞)	
	2525M-08AA			

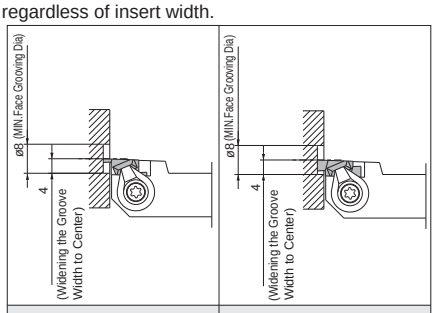
- It is available to infinity ∞ in case of machining the first groove bigger than MIN.
- It is available to infinity ∞ when machining toward outer diameter.
- Refers to the machining of the initial groove with MIN.ø8.

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



Installing GVFL100AA | Installing GVFL300AA

- When widening the groove width to inner diameter. For machining up to the center of the workpiece regardless of insert width.



Installing GVFL100AA | Installing GVFL300AA

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

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min) PVD Coated Carbide PR630	PVD Coated Carbide PR930	Carbide KW10	Grooving f (mm/rev)	Traversing* ap (mm)	Traversing* f (mm/rev)	Remarks
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	

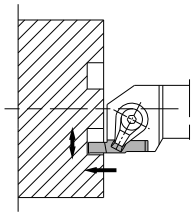
* ap has to be set for less than corner-R(rε) when traversing of edge width 1.0 mm (GVF$^{R}_{L}$100AA).

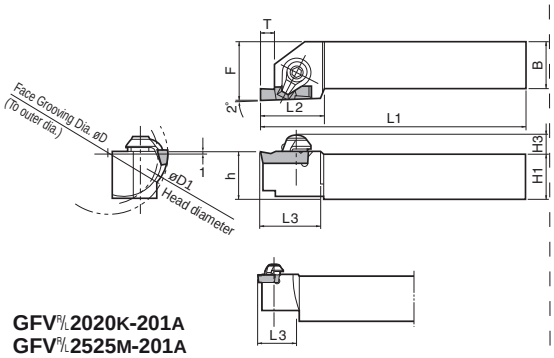
★ : 1st Recommendation ☆ : 2nd Recommendation

● : Std. Item ○ : Check Availability R : Std. Item (R-hand Only) L : Std. Item (L-hand Only)

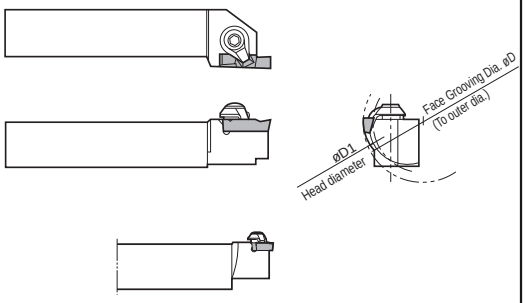
Inserts are sold in 10 piece boxes.

GFV





GFV$^{R}_{L}$2020K-201A
GFV$^{R}_{L}$2525M-201A
Shows right Figure.



● Right-hand Shown

● Left-hand Shown

R-hand Insert is for R-hand Toolholder, L-hand Insert is for L-hand Toolholder.

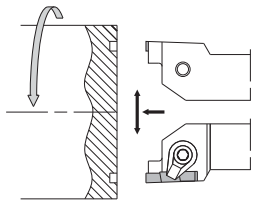
Toolholder Dimensions

Description		Std. R	Std. L	H1	h	H3	B	L1	L2	L3	F	T	øD1	Face Grooving Dia. øD MIN.	Face Grooving Dia. øD MAX.	Spare Parts: Clamp Set	Spare Parts: Clamp Set	Spare Parts: Wrench	Applicable Inserts G65
GFV$^{R}_{L}$	2020K-201A	●	●	20	21	6.5	20	125	20	19	25	2.2	40	20 (12)	∞	CPS-5V	-	FT-15	GVF$^{R}_{L}$200A~340A
	2525M-201A	●	●	25	26		25	150	23	22	32								GVF$^{R}_{L}$100AR~150AR
GFV$^{R}_{L}$	2020K-351B	●	●	20	21	8.0	20	125	28	26	25	4.6	35	35 (25)	50 (∞)	-	CPS-6V	LW-3	GVF$^{R}_{L}$250B~350B
	2525M-351B	●	●	25	26		25	150	30	28	32								GVF$^{R}_{L}$150BR
	2020K-352B	●	●	20	21		20	125	28	26	25	5.1							GVF$^{R}_{L}$400B~490B
	2525M-352B	●	●	25	26		25	150	30	28	32								GVF$^{R}_{L}$200BR
	2020K-501B	●	●	20	21		20	125	28	26	25	4.6	50	50 (25)	70 (∞)				GVF$^{R}_{L}$250B~350B
	2525M-501B	●	●	25	26		25	150	30	28	32								GVF$^{R}_{L}$150BR
	2020K-502B	●	●	20	21		20	125	28	26	25	5.1							GVF$^{R}_{L}$400B~490B
	2525M-502B	●	●	25	26		25	150	30	28	32								GVF$^{R}_{L}$200BR
	2020K-701B	●	●	20	21		20	125	28	26	25	4.6	70	70 (25)	100 (∞)				GVF$^{R}_{L}$250B~350B
	2525M-701B	●	●	25	26		25	150	30	28	32								GVF$^{R}_{L}$150BR
	2020K-702B	●	●	20	21		20	125	28	26	25	5.1							GVF$^{R}_{L}$400B~490B
	2525M-702B	●	●	25	26		25	150	30	28	32								GVF$^{R}_{L}$200BR
GFV$^{R}_{L}$	2525M-501C	●	●	25	26	9.5	25	150	35	33	32	6.6	50	50 (25)	70 (∞)	-	CPS-8V	LW-4	GVF$^{R}_{L}$350C~450C
	2525M-502C	●	●									8.1							GVF$^{R}_{L}$500C~600C
	2525M-701C	●	●									6.6	70	70 (25)	100 (∞)				GVF$^{R}_{L}$350C~450C
	2525M-702C	●	●									8.1							GVF$^{R}_{L}$500C~600C
	2525M-1001C	●	●							35		6.6	100	100 (25)	150 (∞)				GVF$^{R}_{L}$350C~450C
	2525M-1002C	●	●									8.1							GVF$^{R}_{L}$500C~600C
	2525M-1501C	●	●									6.6	150	150 (25)	250 (∞)				GVF$^{R}_{L}$350C~450C
	2525M-1502C	●	●									8.1							GVF$^{R}_{L}$500C~600C

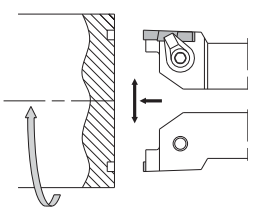
Note1. Dimension T shows available grooving depth.
2. øD1 shows toolholder head diameter to L3.
3. The value ( ) of Face Grooving Dia. (øD Max) is the maximum outer diameter value after the initial groove between MIN~MAX. (It is possible to widen the groove to infinity ∞).
The value ( ) of Face Grooving Dia. (øD 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

Toolholder	R-hand
Insert	R-hand



Toolholder	L-hand
Insert	L-hand



● : Std. Item ○ : Check Availability R : Std. Item (R-hand Only) L : Std. Item (L-hand Only)

◆ Face Grooving Diameter of GFV

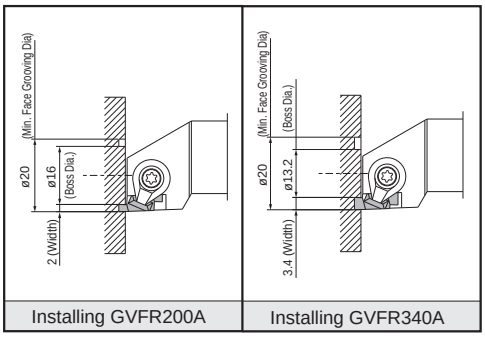
① e.g.) GFV$^{R}_{L}$…-201A

Description		Face Grooving Dia. øD MIN.	Face Grooving Dia. øD MAX.	Applicable Inserts
GFV$^{R}_{L}$	**2020K-201A**	20	∞	GVF$^{R}_{L}$200A~340A
	2525M-201A	(12)	(∞)	GVF$^{R}_{L}$100AR~150AR

- It is available to infinity ∞ in case of machining the first groove bigger than MIN.
- It is available to infinity ∞ when machining toward outer diameter.

- When machining the initial groove on the face of MIN. ø20

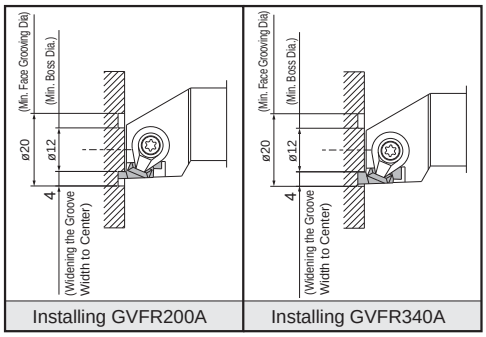
If the initial groove is made smaller than this, the toolholder interferes with the workpiece.



Installing GVFR200A | Installing GVFR340A

- When widening the groove width to inner diameter.

Face groove diameter D MIN (12) is the limit; the toolholder interferes with the workpiece in case of smaller than ø12.



Installing GVFR200A | Installing GVFR340A

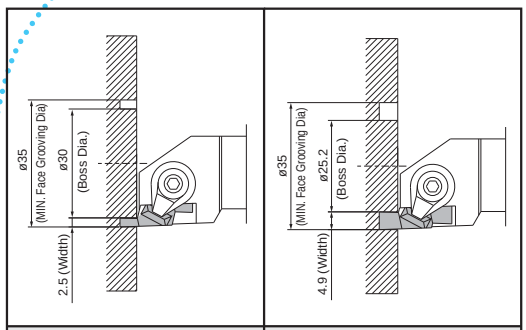
② e.g.) GFV$^{R}_{L}$…-351B / 352B (same as GFV$^{R}_{L}$…-○○○B type, GFV$^{R}_{L}$…-○○○C type)

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

- 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.ø35

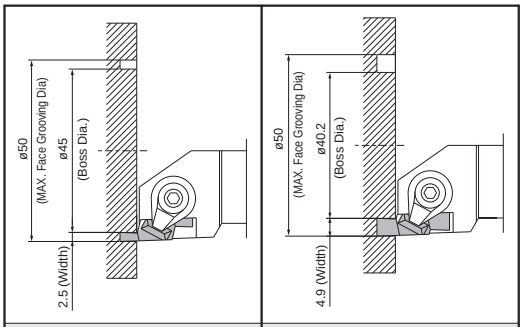
If the initial groove is made smaller than this, the toolholder interferes with the workpiece.



Installing GVFR250B | Installing GVFR490B

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

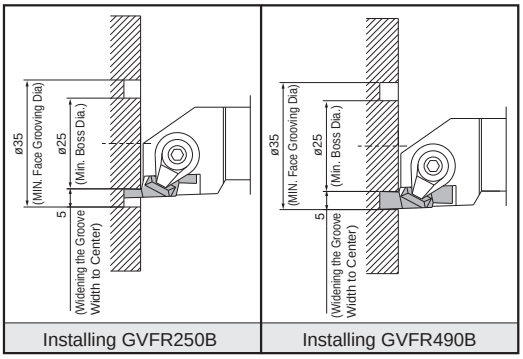
If the first groove is bigger than this, the toolholder intereferes with the workpiece.



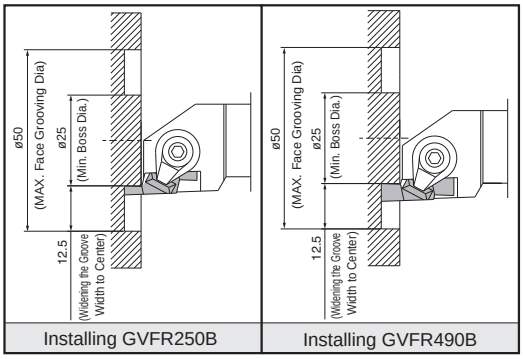
Installing GVFR250B | Installing GVFR490B

- When widening the groove width to inner diameter.

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



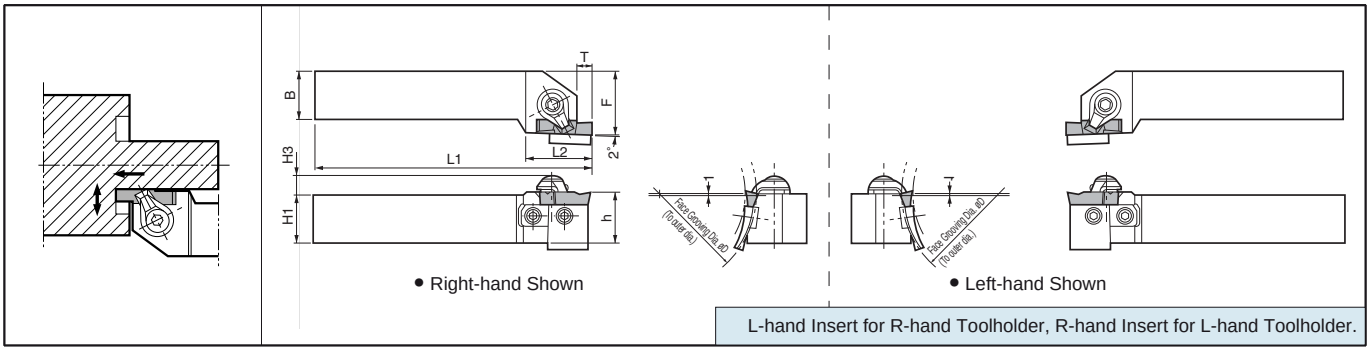
Installing GVFR250B | Installing GVFR490B



Installing GVFR250B | Installing GVFR490B

GFVS

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

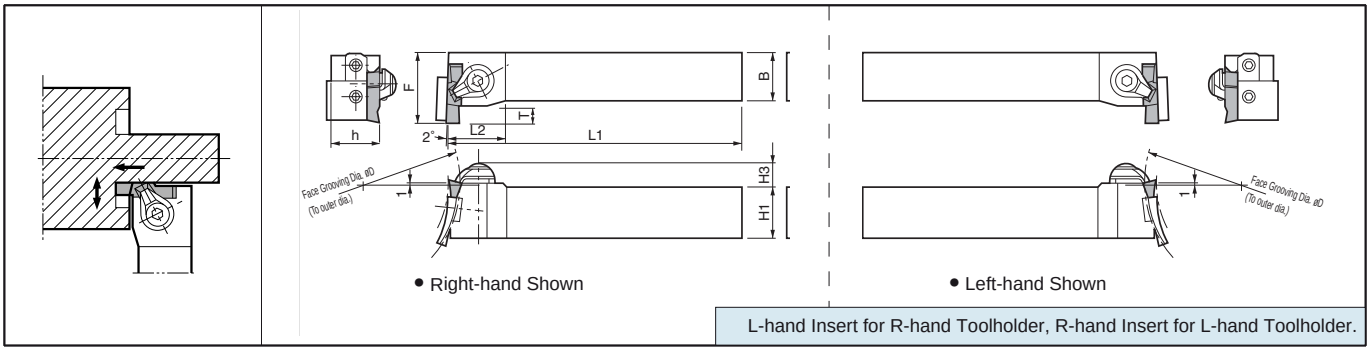


● Right-hand Shown ● Left-hand Shown

L-hand Insert for R-hand Toolholder, R-hand Insert for L-hand Toolholder.

GFVT

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

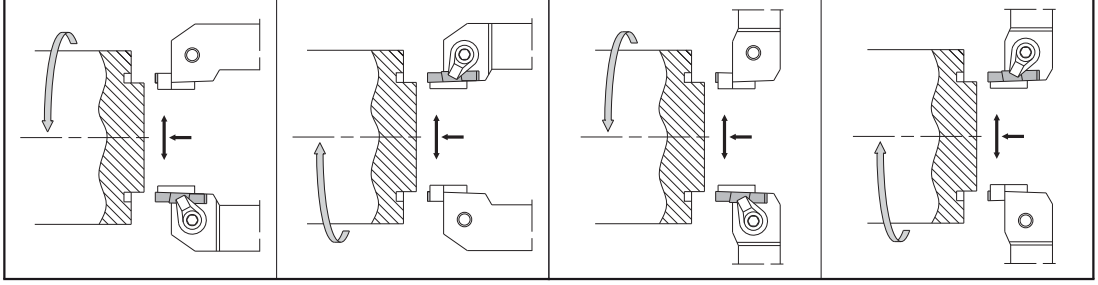


● Right-hand Shown ● Left-hand Shown

L-hand Insert for R-hand Toolholder, R-hand Insert for L-hand Toolholder.

◆ Selection of Toolholder & Insert

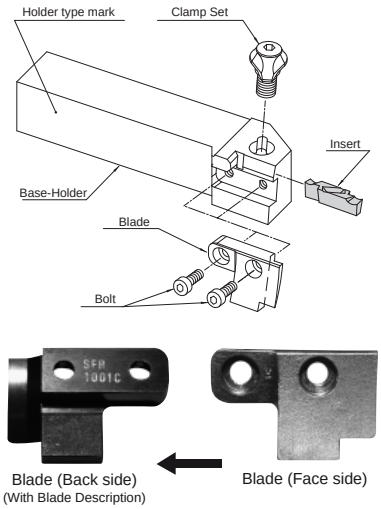
GFVS type				GFVT type			
Toolholder	R-hand	Toolholder	L-hand	Toolholder	R-hand	Toolholder	L-hand
Insert	L-hand	Insert	R-hand	Insert	L-hand	Insert	R-hand



● Combination of Base-Holder & Blade

Base-Holder (Stamped below)	Std. R	Std. L	Blade Description		Toolholder (Integrated Tool)	
GFVS$^{R}_{L}$2020K-HB GFVT$^{R}_{L}$2020K-HB	●	●	SF$^{R}_{L}$	-351B	GFVS$^{R}_{L}$2020K	-351B
				-352B	GFVT$^{R}_{L}$2020K	-352B
				-501B		-501B
				-502B		-502B
				-701B		-701B
				-702B		-702B
GFVS$^{R}_{L}$2525M-HB GFVT$^{R}_{L}$2525M-HB	●	●	SF$^{R}_{L}$	-351B	GFVS$^{R}_{L}$2525M	-351B
				-352B	GFVT$^{R}_{L}$2525M	-352B
				-501B		-501B
				-502B		-502B
				-701B		-701B
				-702B		-702B
GFVS$^{R}_{L}$2525M-HC GFVT$^{R}_{L}$2525M-HC	●	●	SF$^{R}_{L}$	-501C	GFVS$^{R}_{L}$2525M	-501C
				-502C	GFVT$^{R}_{L}$2525M	-502C
				-701C		-701C
				-702C		-702C
				-1001C		-1001C
				-1002C		-1002C
				-1501C		-1501C
				-1502C		-1502C

Example of installation (GFVS)



How to refer to the face grooving toolholder and blade

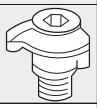
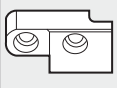
Q: Though "GFVSR2525M-HC" is marked on the face grooving holder, the size of cutting dia. is unknown. How could it be found out?

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 holder in the catalog. If "SFR-1001C" is integrated to "GFVSR2525M-HC", the description of the holder is "GVFSR2525M-1001C".

・R-hand Blade for R-hand Toolholder, L-hand Blade for L-hand Toolholder.
・Installation of GFVT type is also pursuing example of installation of GFVS type.

● : Std. Item ○ : Check Availability R : Std. Item (R-hand Only) L : Std. Item (L-hand Only)

● Toolholder Dimensions

Description		Std.		Dimension (mm)								Face Grooving Dia. øD		Spare Parts				Applicable Inserts ➔ G65
														Clamp Set	Wrench	Blade	Bolt	
		R	L	H1	h	H3	B	L1	L2	F	T	MIN.	MAX.					
GFVS$^{R}_{L}$	2020K-351B	●	●	20	21	8.0	20	125	30	25	5.1	35 (25)	50 (∞)	CPS-6V	LW-3	SF$^{R}_{L}$-351B	HH4X12	GVF$^{R}_{L}$250B~350B
	2525M-351B	●	●	25	26		25	150	32	32	(4.6)							GVF$^{R}_{L}$150BR
	2020K-352B	●	●	20	21		20	125	30	25	5.1					SF$^{R}_{L}$-352B		GVF$^{R}_{L}$400B~490B
	2525M-352B	●	●	25	26		25	150	32	32	(5.1)							GVF$^{R}_{L}$200BR
	2020K-501B	●	●	20	21		20	125	30	25	5.1	50 (25)	70 (∞)			SF$^{R}_{L}$-501B		GVF$^{R}_{L}$250B~350B
	2525M-501B	●	●	25	26		25	150	32	32	(4.6)							GVF$^{R}_{L}$150BR
	2020K-502B	●	●	20	21		20	125	30	25	5.1					SF$^{R}_{L}$-502B		GVF$^{R}_{L}$400B~490B
	2525M-502B	●	●	25	26		25	150	32	32	(5.1)							GVF$^{R}_{L}$200BR
	2020K-701B	●	●	20	21		20	125	30	25	5.1	70 (25)	100 (∞)			SF$^{R}_{L}$-701B		GVF$^{R}_{L}$250B~350B
	2525M-701B	●	●	25	26		25	150	32	32	(4.6)							GVF$^{R}_{L}$150BR
	2020K-702B	●	●	20	21		20	125	30	25	5.1					SF$^{R}_{L}$-702B		GVF$^{R}_{L}$400B~490B
	2525M-702B	●	●	25	26		25	150	32	32	(5.1)							GVF$^{R}_{L}$200BR
GFVS$^{R}_{L}$	2525M-501C	●	●	25	26	9.5	25	150	32	32	8.1(6.6)	50 (25)	70 (∞)	CPS-8V	LW-4	SF$^{R}_{L}$-501C	HH4X12	GVF$^{R}_{L}$350C~450C
	2525M-502C	●	●								8.1(8.1)					SF$^{R}_{L}$-502C		GVF$^{R}_{L}$500C~600C
	2525M-701C	●	●								8.1(6.6)	70 (25)	100 (∞)			SF$^{R}_{L}$-701C		GVF$^{R}_{L}$350C~450C
	2525M-702C	●	●								8.1(8.1)					SF$^{R}_{L}$-702C		GVF$^{R}_{L}$500C~600C
	2525M-1001C	●	●								8.1(6.6)	100 (25)	150 (∞)			SF$^{R}_{L}$-1001C		GVF$^{R}_{L}$350C~450C
	2525M-1002C	●	●								8.1(8.1)					SF$^{R}_{L}$-1002C		GVF$^{R}_{L}$500C~600C
	2525M-1501C	●	●								8.1(6.6)	150 (25)	250 (∞)			SF$^{R}_{L}$-1501C		GVF$^{R}_{L}$350C~450C
	2525M-1502C	●	●								8.1(8.1)					SF$^{R}_{L}$-1502C		GVF$^{R}_{L}$500C~600C
GFVT$^{R}_{L}$	2020K-351B	●	●	20	21	8.0	20	125	22	30	5.1	35 (25)	50 (∞)	CPS-6V	LW-3	SF$^{R}_{L}$-351B	HH4X12	GVF$^{R}_{L}$250B~350B
	2525M-351B	●	●	25	26		25	150	25	35	(4.6)							GVF$^{R}_{L}$150BR
	2020K-352B	●	●	20	21		20	125	22	30	5.1					SF$^{R}_{L}$-352B		GVF$^{R}_{L}$400B~490B
	2525M-352B	●	●	25	26		25	150	25	35	(5.1)							GVF$^{R}_{L}$200BR
	2020K-501B	●	●	20	21		20	125	22	30	5.1	50 (25)	70 (∞)			SF$^{R}_{L}$-501B		GVF$^{R}_{L}$250B~350B
	2525M-501B	●	●	25	26		25	150	25	35	(4.6)							GVF$^{R}_{L}$150BR
	2020K-502B	●	●	20	21		20	125	22	30	5.1					SF$^{R}_{L}$-502B		GVF$^{R}_{L}$400B~490B
	2525M-502B	●	●	25	26		25	150	25	35	(5.1)							GVF$^{R}_{L}$200BR
	2020K-701B	●	●	20	21		20	125	22	30	5.1	70 (25)	100 (∞)			SF$^{R}_{L}$-701B		GVF$^{R}_{L}$250B~350B
	2525M-701B	●	●	25	26		25	150	25	35	(4.6)							GVF$^{R}_{L}$150BR
	2020K-702B	●	●	20	21		20	125	22	30	5.1					SF$^{R}_{L}$-702B		GVF$^{R}_{L}$400B~490B
	2525M-702B	●	●	25	26		25	150	25	35	(5.1)							GVF$^{R}_{L}$200BR
GFVT$^{R}_{L}$	2525M-501C	●	●	25	26	9.5	25	150	27	38	8.1(6.6)	50 (25)	70 (∞)	CPS-8V	LW-4	SF$^{R}_{L}$-501C	HH4X12	GVF$^{R}_{L}$350C~450C
	2525M-502C	●	●								8.1(8.1)					SF$^{R}_{L}$-502C		GVF$^{R}_{L}$500C~600C
	2525M-701C	●	●								8.1(6.6)	70 (25)	100 (∞)			SF$^{R}_{L}$-701C		GVF$^{R}_{L}$350C~450C
	2525M-702C	●	●								8.1(8.1)					SF$^{R}_{L}$-702C		GVF$^{R}_{L}$500C~600C
	2525M-1001C	●	●								8.1(6.6)	100 (25)	150 (∞)			SF$^{R}_{L}$-1001C		GVF$^{R}_{L}$350C~450C
	2525M-1002C	●	●								8.1(8.1)					SF$^{R}_{L}$-1002C		GVF$^{R}_{L}$500C~600C
	2525M-1501C	●	●								8.1(6.6)	150 (25)	250 (∞)			SF$^{R}_{L}$-1501C		GVF$^{R}_{L}$350C~450C
	2525M-1502C	●	●								8.1(8.1)					SF$^{R}_{L}$-1502C		GVF$^{R}_{L}$500C~600C

Note 1. Dimension T shows the distance from the Toolholder to the cutting edge.
The grooving depth is the mentioned in ( ).

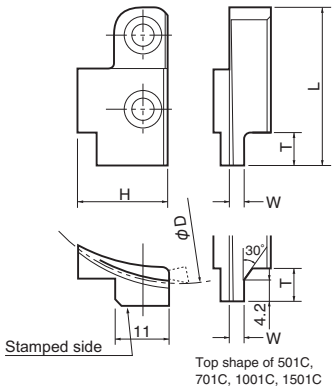
2. The value ( ) of Face Grooving diameter. (øD Max) is the maximum outer diameter value after the initial groove between MIN~MAX. (It is possible to widen the groove to infinity ∞).
The value ( ) of Face Grooving diameter. (øD Min) is the minimum diameter of the boss which remains in the center when 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 Toolholder, set the Edge position 1.0mm above the center.

4. GFVS and GFVT are composed of a base body 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

● : Std. Item ○ : Check Availability R : Std. Item (R-hand Only) L : Std. Item (L-hand Only)

Blade Dimension

Shape	Description	Std. R	Std. L	Dimension (mm) L	H	T	W	Face Grooving Dia. øD MIN.	MAX.	Applicable Inserts	Applicable Toolholder
	SF R/L -351B	●	●	30.5	11	4.7	2.0	35	50	GVF R/L 250B~350B,150BR	GFV(S / T) R/L○○○○□ -○○○B (Toolholder Stamp GFV(S / T) R/L○○○○□ -HB)
	-352B	●	●				3.4			GVF R/L 400B~490B,200BR	
	SF R/L -501B	●	●		15		2.0	50	70	GVF R/L 250B~350B,150BR	
	-502B	●	●				3.4			GVF R/L 400B~490B,200BR	
	SF R/L -701B	●	●		17		2.0	70	100	GVF R/L 250B~350B,150BR	
	-702B	●	●				3.4			GVF R/L 400B~490B,200BR	
	SF R/L -501C	●	●	35	15	7.5	2.8	50	70	GVF R/L 350C~450C	GFV(S / T) R/L○○○○□ -○○○C (Toolholder Stamp GFV(S / T) R/L○○○○□ -HC)
	-502C	●	●				4.3			GVF R/L 500C~600C	
	SF R/L -701C	●	●		20		2.8	70	100	GVF R/L 350C~450C	
	-702C	●	●				4.3			GVF R/L 500C~600C	
	SF R/L -1001C	●	●		23		2.8	100	150	GVF R/L 350C~450C	
	-1002C	●	●				4.3			GVF R/L 500C~600C	
	SF R/L -1501C	●	●		23		2.8	150	250	GVF R/L 350C~450C	
	-1502C	●	●				4.3			GVF R/L 500C~600C	

● Right-hand shown

· R-hand Blade for R-hand Toolholder, L-hand Blade for L-hand Toolholder.

Face Groove Diameter of GFVS / GFVT

ex) GFVS R/L. . . -351B / 352B

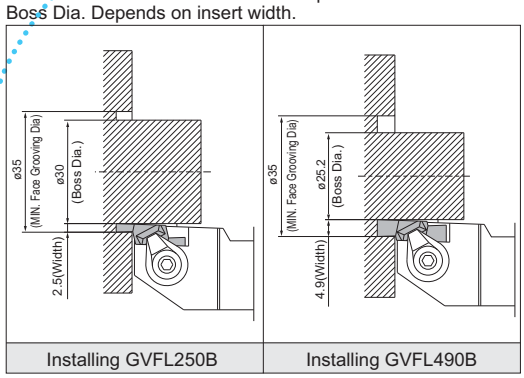
(same as GFVS R/L…-○○○B, GFVS R/L…-○○○C ➡ **G63**
GFVT R/L…-○○○B, GFVT R/L…-○○○C ➡ **G63**)

Description		Face Grooving Dia. øD MIN.	MAX.	Applicable Inserts
GFVS R/L	2020K-351B	35	50	GVF L/R 250B~350B
	2525M-351B			GVF L/R 150BR
	2020K-352B	(25)	(∞)	GVF L/R 400B~490B
	2525M-352B			GVF L/R 200BR

● It is available to infinity ∞ when machining toward outer diameter.

● When machining the initial groove on the face at MIN.ø35.

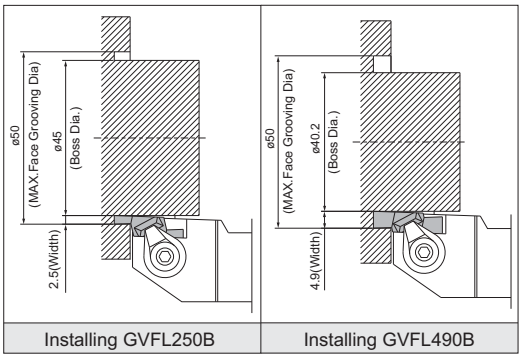
If the initial groove is made smaller than this, the toolholder interferes with the workpiece.
Boss Dia. Depends on insert width.



Installing GVFL250B | Installing GVFL490B

● When machining the initial groove on the face at MAX.ø50.

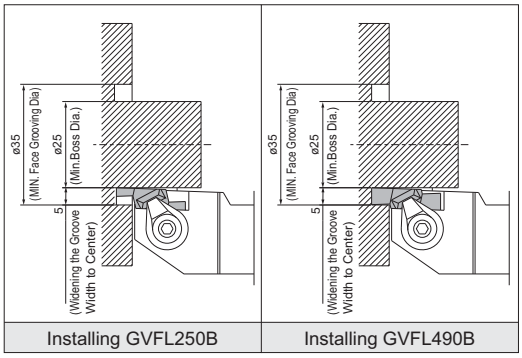
If the first groove is bigger than this, the toolholder intereferes with the workpiece.
Boss Dia. Depends on insert width.



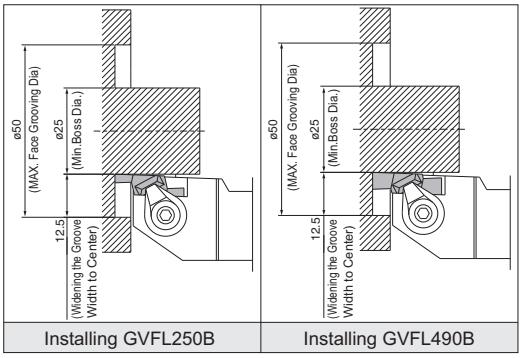
Installing GVFL250B | Installing GVFL490B

● When widening the groove width to inner diameter.

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



Installing GVFL250B | Installing GVFL490B



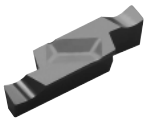
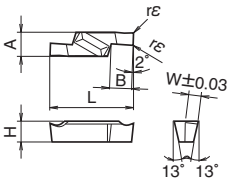
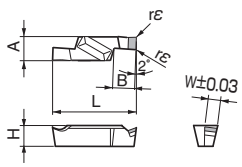
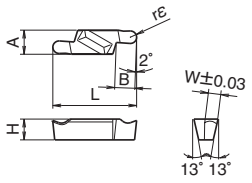
Installing GVFL250B | Installing GVFL490B

● : Std. Item ○ : Check Availability R : Std. Item (R-hand Only) L : Std. Item (L-hand Only)

Applicable Inserts (mm)

Description		A	L	H
GVF$^{R}_{L}$ ···- ○○○	A	4.3	12	4.5
···- ○○○	B	5.8	20	5.0
···- ○○○	C	7.0	27	7.0
···- ○○○	AR	4.3	12	4.5
···- ○○○	BR	5.8	20	5.0

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

Insert (R-hand shown)	Description	(Previous Description)	W	B	rε	Cermet TN90	Cermet TC40	Cermet TC60	PVD Coated Carbide PR630	PVD Coated Carbide PR930	Carbide KW10	PCD KPD001	PCD KPD010	Applicable Toolholder	Ref. Page for Toolholder
 	GVF$^{R}_{L}$ 200-020A	GVF$^{R}_{L}$ 200A	2.00	2.3	0.2			●		●	●			GFV$^{R}_{L}$ ···-201A	G60
	GVF$^{R}_{L}$ 230-020A	GVF$^{R}_{L}$ 230A	2.30					●		●	●				
	GVF$^{R}_{L}$ 250-020A	GVF$^{R}_{L}$ 250A	2.50					●		●	●				
	GVF$^{R}_{L}$ 270-020A	GVF$^{R}_{L}$ 270A	2.70					●		●	●				
	GVF$^{R}_{L}$ 290-020A	GVF$^{R}_{L}$ 290A	2.90					●		●	●				
	GVF$^{R}_{L}$ 340-020A	GVF$^{R}_{L}$ 340A	3.40					●		●	●				
	GVF$^{R}_{L}$ 250-020B	GVF$^{R}_{L}$ 250B	2.50	4.8	0.2			●		●	●			GFV$^{R}_{L}$ ···-○○ 1B	
	GVF$^{R}_{L}$ 300-020B	GVF$^{R}_{L}$ 300B	3.00					●		●	●			GFVS$^{R}_{L}$ ···-○○ 1B	
	GVF$^{R}_{L}$ 350-020B	GVF$^{R}_{L}$ 350B	3.50					●		●	●			GFVT$^{R}_{L}$ ···-○○ 1B	
	GVF$^{R}_{L}$ 400-020B	GVF$^{R}_{L}$ 400B	4.00	5.3				●		●	●			GFV$^{R}_{L}$ ···-○○ 2B	
	GVF$^{R}_{L}$ 430-020B	GVF$^{R}_{L}$ 430B	4.30					●		●	●			GFVS$^{R}_{L}$ ···-○○ 2B	
	GVF$^{R}_{L}$ 460-020B	GVF$^{R}_{L}$ 460B	4.60					●		●	●			GFVT$^{R}_{L}$ ···-○○ 2B	
	GVF$^{R}_{L}$ 490-020B	GVF$^{R}_{L}$ 490B	4.90					●		●	●				
	GVF$^{R}_{L}$ 350-040C	GVF$^{R}_{L}$ 350C	3.50	6.8	0.4			●		●	●			GFV$^{R}_{L}$ ···-○○ 1C	
	GVF$^{R}_{L}$ 400-040C	GVF$^{R}_{L}$ 400C	4.00					●		●	●			GFVS$^{R}_{L}$ ···-○○ 1C	
	GVF$^{R}_{L}$ 450-040C	GVF$^{R}_{L}$ 450C	4.50					●		●	●			GFVT$^{R}_{L}$ ···-○○ 1C	
	GVF$^{R}_{L}$ 500-040C	GVF$^{R}_{L}$ 500C	5.00	8.3				●		●	●			GFV$^{R}_{L}$ ···-○○ 2C	
	GVF$^{R}_{L}$ 550-040C	GVF$^{R}_{L}$ 550C	5.50					●		●	●			GFVS$^{R}_{L}$ ···-○○ 2C	
	GVF$^{R}_{L}$ 600-040C	GVF$^{R}_{L}$ 600C	6.00					●		●	●			GFVT$^{R}_{L}$ ···-○○ 2C	G60
 1-Edge	GVF$^{R}_{L}$ 250-020B	GVF$^{R}_{L}$ 250B	2.50	4.8	0.2								●	GFV$^{R}_{L}$ ···-○○ 1B	G62
	300-020B	300B	3.00										●	GFVS$^{R}_{L}$ ···-○○ 1B	
	400-020B	400B	4.00	5.3									○	GFVT$^{R}_{L}$ ···-○○ 1B	
	GVF$^{R}_{L}$ 350-020C	-	3.50	6.8	0.2								○	GFV$^{R}_{L}$ ···-○○ 2B	
	400-020C	-	4.00										○	GFVS$^{R}_{L}$ ···-○○ 2B	
	GVF$^{R}_{L}$ 350-040C	GVF$^{R}_{L}$ 350C	3.50	6.8	0.4								○	GFVT$^{R}_{L}$ ···-○○ 2B	
	400-040C	400C	4.00										○	GFV$^{R}_{L}$ ···-○○ 1C	
														GFVS$^{R}_{L}$ ···-○○ 1C	
														GFVT$^{R}_{L}$ ···-○○ 1C	
 Full-R	GVF$^{R}_{L}$ 200-100AR	GVF$^{R}_{L}$ 100AR	2.00	2.3	1.00					●	●			GFV$^{R}_{L}$ ···-201A	G60
	GVF$^{R}_{L}$ 250-125AR	GVF$^{R}_{L}$ 125AR	2.50		1.25					●	●				
	GVF$^{R}_{L}$ 300-150AR	GVF$^{R}_{L}$ 150AR	3.00		1.50					●	●				
	GVF$^{R}_{L}$ 300-150BR	GVF$^{R}_{L}$ 150BR	3.00	4.8	1.50					●	●			GFV$^{R}_{L}$ ···-○○ 1B	
														GFVS$^{R}_{L}$ ···-○○ 1B	
														GFVT$^{R}_{L}$ ···-○○ 1B	G60
	400-200BR	200BR	4.00	5.3	2.00					●	●			GFV$^{R}_{L}$ ···-○○ 2B	G62
														GFVS$^{R}_{L}$ ···-○○ 2B	
														GFVT$^{R}_{L}$ ···-○○ 2B	

· Dimension B: shows available grooving depth.

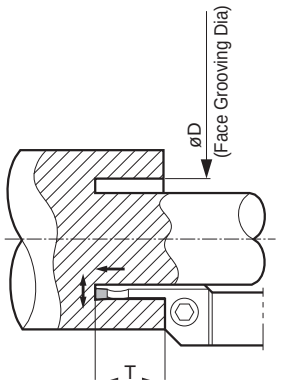
For recommended cutting conditions, see page G75

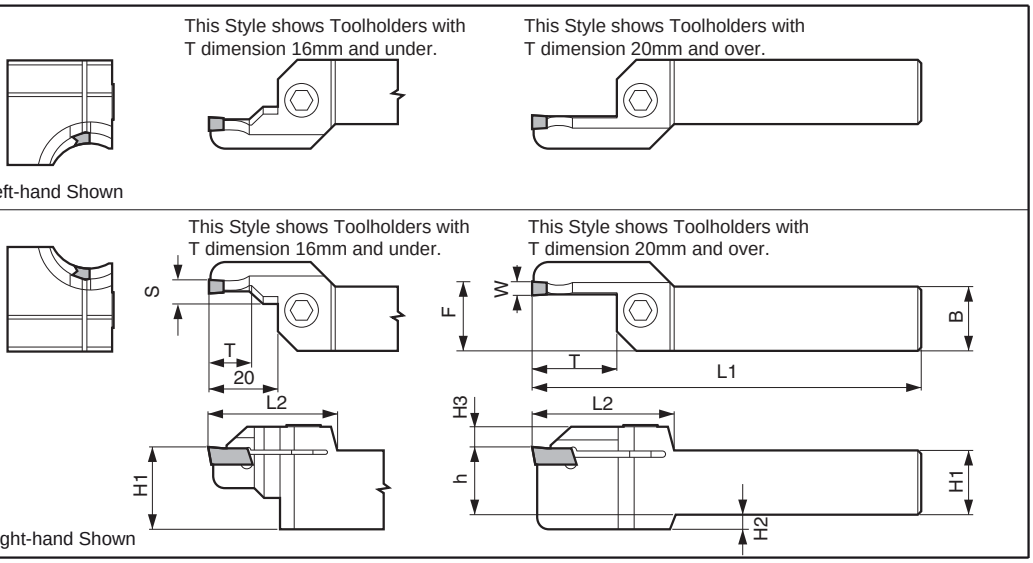
● : Std. Item ○ : Check Availability
R : Std. Item (R-hand Only) L : Std. Item (L-hand Only)

Inserts are sold in 10 piece boxes.

CBN & PCD Inserts are sold in 1 piece boxes.

KFMS





Toolholder Dimensions

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

● : Std. Item ○ : Check Availability R : Std. Item (R-hand Only) L : Std. Item (L-hand Only)

Toolholder Dimensions

Description		Std. R	Std. L	H1=h	H2	H3	B	L1	L2	F	S	T	Width (mm) W	Face Grooving Dia. øD MIN.	Face Grooving Dia. øD MAX.	Spare Parts: Screw	Spare Parts: Wrench
KFMS$^{R}_{L}$	2020K2535-5	●		20	-	10	20	125	39	20.7 (21.2)	-	20	5 (6)	25	35	HH5X20	LW-4
	2020K3550-5	●												35	50		
	2020K5075-5	●							44			25		50	75		
	2020K75115-5	●			5	10								75	115		
	2020K115180-5	●												115	180		
	2020K180235-5	●												180	235		
	2020K235800-5	●												235	∞		
	2525M2535-5	●	●	25	-	10	25	150	39	25.7 (26.2)	-	20		25	35	HH5X25	LW-4
	2525M3550-5	●	●											35	50		
	2525M5075-5	●	●						44			25		50	75		
	2525M75115-5	●	●											75	115		
	2525M115180-5	●	●						51			32		115	180		
	2525M180235-5	●	●											180	235		
	2525M235800-5	●	●											235	∞		

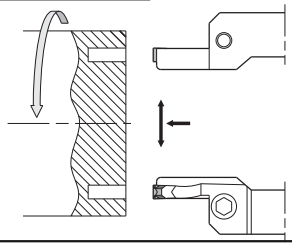
・Dimension T shows available grooving depth.

・Face Grooving Dia.øD: The diameter range of the initial groove.

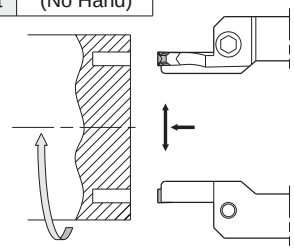
・For KFMS$^{R}_{L}$…-5 Toolholder can hold a 6mm width insert. ( ) value shows the dimension of a 6mm width insert.

Selection of Toolholder & Insert

Toolholder	R-hand
Insert	(No Hand)



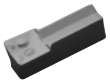
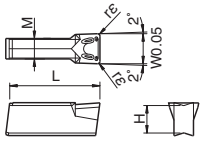
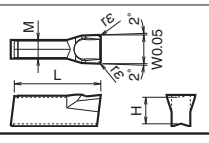
Toolholder	L-hand
Insert	(No Hand)



Applicable Inserts (mm)

Description	L	H
FMM30-03 ~ FMM60-04	12	3.5
FMN3 ~ FMN6	12	3.5

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

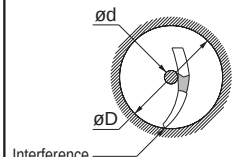
Insert		Description		Dimension (mm) W	rε	M	Cermet TN90	CVD Coated Carbide CR9025	PVD Coated Carbide PR915	PVD Coated Carbide PR930	PVD Coated Carbide PR905	Carbide KW10	Applicable Toolholder
 Face Grooving Chip Control Oriented / M Class		FMM	30-03	3.0	0.3	2.0	●	●	●	●	●	●	KFMS$^{R}_{L}$··· 3
			40-04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

・FMN type inserts are only for Deep Grooving and not applicable for Traversing.

Recommended Cutting Conditions ➡ G77

Limit of Traversing toward Center

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



Description \ øD	25	26	27	28 and over
	ød			
KFMS$^{R}_{L}$ 2020K2530-3 / KFMS$^{R}_{L}$ 2525M2530-3	4	2	0	0
KFMS$^{R}_{L}$ 2020K2535-4 / KFMS$^{R}_{L}$ 2525M2535-4	6	3	0	
KFMS$^{R}_{L}$ 2020K2535-5 / KFMS$^{R}_{L}$ 2525M2535-5	7 *(5)	4 *(2)	1 *(0)	(No remaining Boss)

e.g.)
KFMSR 2525M2530-3 with ø25 as first cut towards the center, it will encounter rubbing of the holder cartridge when ød is 4.0mm.

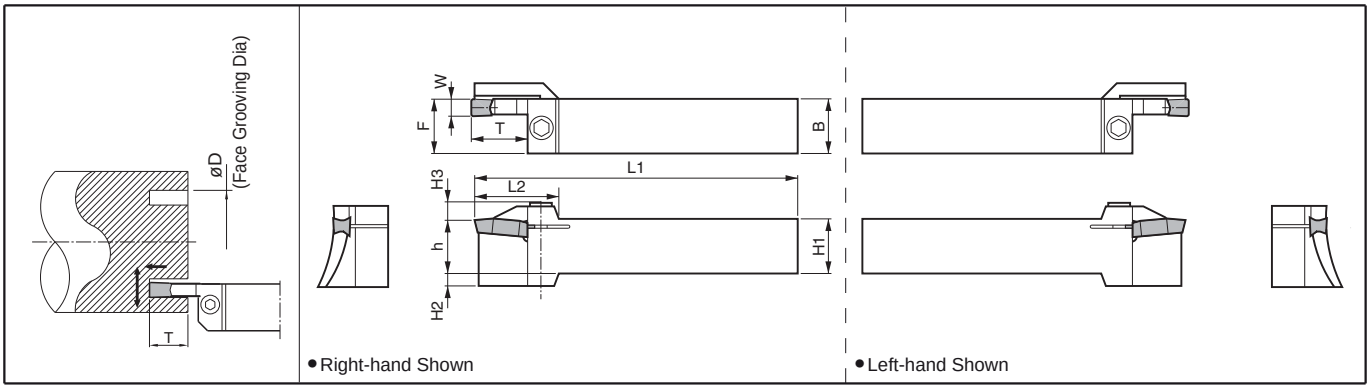
*( ) value shows the Dimension using FMM60-04 Insert.

● : Std. Item ○ : Check Availability R : Std. Item (R-hand Only) L : Std. Item (L-hand Only)

Inserts are sold in 10 piece boxes.

Face Grooving Toolholders

KFMS-8



Toolholder Dimensions

Description		Std. R	Std. L	Dimension (mm) H1=h	H2	H3	B	L1	L2	F	T	Width (mm) W	Face Grooving Dia. øD MIN.	Face Grooving Dia. øD MAX.	Spare Parts Screw	Spare Parts Wrench	Ref. Page for Recommended Cutting Conditions
KFMS$^{R}_{L}$	2525M5464-8	●	●	25	-	9	25	150	41	26	25	8	54 (0)	64 (∞)	HH6X25	LW-5	G76
	2525M6382-8	●	●		2.4								63 (0)	82 (∞)			
	2525M80115-8	●	●		6	8			40				80 (0)	115 (∞)			
	2525M105160-8	●	●										105 (0)	160 (∞)			
	2525M155510-8	●	●	25	6	8	25	150	43	26	25	8	155 (0)	510 (∞)			
	3232P155510-8	●		32	-		32	170		33							

・Dimension T shows available grooving depth.

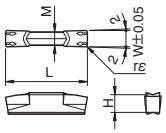
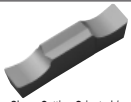
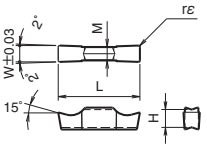
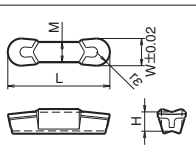
・The value ( ) of Face Grooving Dia. (øD Max) is the maximum outer diameter value after the initial groove between MIN ～ MAX. (It is possible to widen the groove to infinity ∞).
The value ( ) of Face Grooving Dia. (øD Min) is the minimum diameter of the boss which remains in the center when widening the groove width to a smaller value after the initial groove between MIN ～ MAX.

Applicable Inserts

(mm)

Description	L	H
GMM 8030-080MW	30	5.5
GMG 8030-050MG		
GMGA 8030-400R		

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

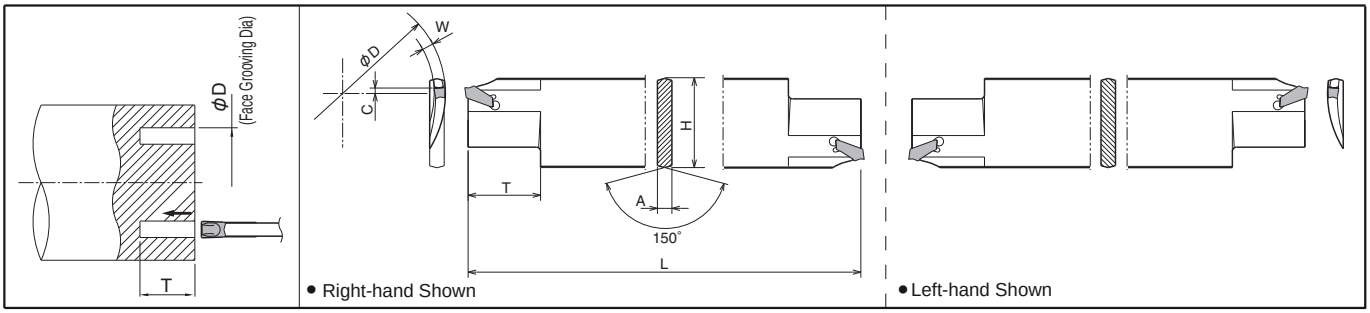
Insert		Description	(Previous Description)	Dimension (mm) W	rε	M	Cermet TN90	CVD Coated Carbide CR9025	PVD Coated Carbide PR915	PVD Coated Carbide PR930	PVD Coated Carbide PR905	Carbide KW10	Applicable Toolholder	Ref. Page for Toolholder
Chip Control Oriented / M Class		GMM 8030-080MW	GMM 8030-08	8.0	0.8	6.0		●	●	●	●	●	KFMS$^{R}_{L}$ ···8	G68
 Sharp-Cutting Oriented / Precision Class Ground Chipbreaker		GMG 8030-050MG	GMG 8030-05MG	8.0	0.5	6.0	●	●		●	●	●		
Sharp-Cutting Oriented / Precision Class Full-R / Copying		GMGA 8030-400R	GMGA 8030-40R	8.0	4.0	6.0						●		

● : Std. Item ○ : Check Availability R : Std. Item (R-hand Only) L : Std. Item (L-hand Only)

Inserts are sold in 10 piece boxes.

Face Grooving Blade

KFTB-S



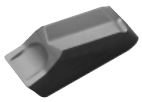
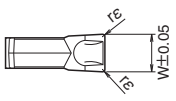
Blade Dimensions

Description		Std. R	Std. L	Dimension (mm) *H	L	A	T	C			Width (mm) W	Face Grooving Dia. øD MIN.	MAX.	Spare Parts Wrench	Applicable Inserts	Applicable Blocks ➔ H19
KFTB$^{R}_{L}$	65100-4S	●	●	32	150	5.2	25	4			4.0	65	100	LTK-5	FTK4	KTKTB20-32
	90150-4S	●	●				30	0				90	150			25-32
	150250-4S	●	●									140	250			32-32
	250800-4S	●	●			3.2						230	∞			
KFTB$^{R}_{L}$	90150-5S	●	●	32	150	5.2	30	0			5.0	90	150		FTK5	KTKTBF25-32
	150250-5S	●	●				32					150	250			32-32
	250800-5S	●	●			4.0	38					250	∞			

・Dimension T shows available grooving depth.
・Face Grooving Dia.øD: 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).
・KFTBR/L65100-4S toolholder is designed with the edge position 4mm above the Center.
* Dimension H shows the length between virtual tops.

Applicable Inserts

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

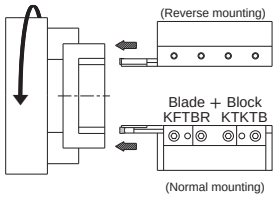
Insert		Description		Dimensions (mm) W	rε	Cermet TN90	CVD Coated Carbide CR9025	PVD Coated Carbide PR660	PR930	Carbide KW10	Applicable Toolholder	Ref. Page for Toolholder
		FTK	4	4.0	0.25	●	●	●	●	●	KFTB$^{R}_{L}$ 65100-4S 90150-4S 150250-4S 250800-4S	G69
			5	5.0		●	●	●	●	●	KFTB$^{R}_{L}$ 90150-5S 150250-5S 250800-5S	

For recommended cutting conditions, see page ➔ G75

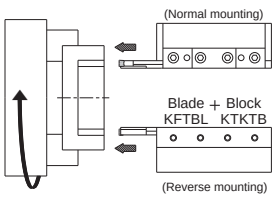
Selection of Blade and Insert

Combination of Blade + KTKTB

Blade	R-hand
Insert	No Hand

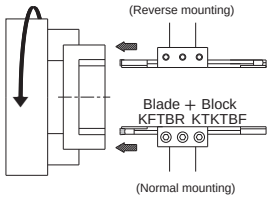


Blade	L-hand
Insert	No Hand

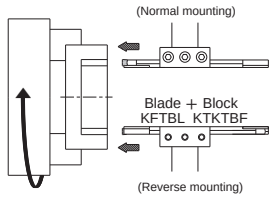


Combination of Blade + KTKTBF

Blade	R-hand
Insert	No Hand

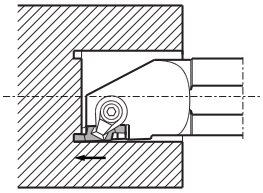


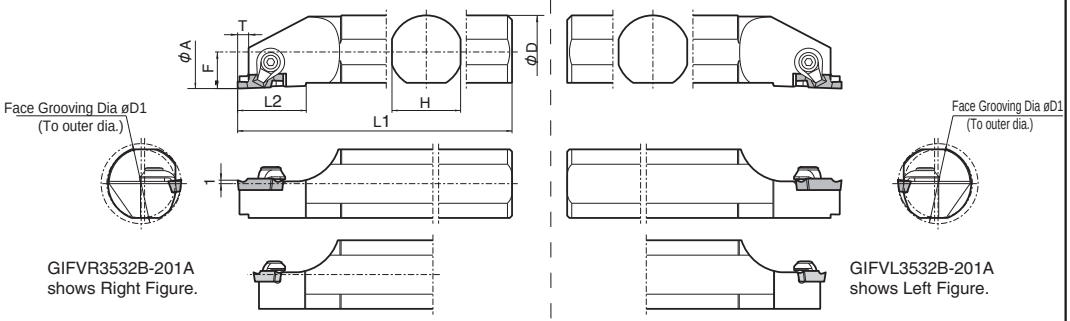
Blade	L-hand
Insert	No Hand



● : Std. Item ○ : Check Availability R : Std. Item (R-hand Only) L : Std. Item (L-hand Only)

GIFV

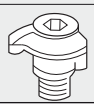
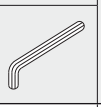




● Right-hand Shown ● Left-hand Shown

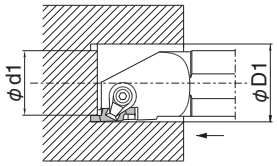
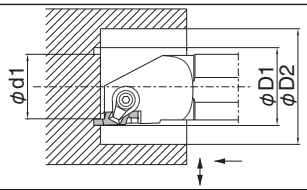
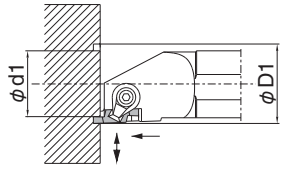
R-hand Insert for R-hand Toolholder, L-hand Insert for L-hand Toolholder.

● Toolholder Dimensions

Description		Std.		Dimension (mm)							Face Grooving Dia. øD1		Spare Parts				Applicable Inserts ➔ G71
													Clamp Set		Wrench		
		R	L	øA	øD	H	L1	L2	F	T	MIN.	MAX.					
GIFV$^{R}_{L}$	3532B-201A	●	●	35	32	30	250	23	16	2.2	35 (12)	∞	CPS-5V	-	FT-15	-	GVF$^{R}_{L}$200A~340A GVF$^{R}_{L}$100AR~150AR
GIFV$^{R}_{L}$	3532B-351B	●	●	35				30		4.6	35 (25)	50 (∞)	-	CPS-6V	-	LW-3	GVF$^{R}_{L}$250B~350B GVF$^{R}_{L}$150BR
	3532B-352B	●	●							5.1	35 (25)	50 (∞)					GVF$^{R}_{L}$400B~490B GVF$^{R}_{L}$200BR
	5032B-501B	●	●	50						4.6	50 (25)	70 (∞)					GVF$^{R}_{L}$250B~350B GVF$^{R}_{L}$150BR
	5032B-502B	●	●							5.1	50 (25)	70 (∞)					GVF$^{R}_{L}$400B~490B GVF$^{R}_{L}$200BR
GIFV$^{R}_{L}$	5032B-501C	●	●	50				35		6.6	50 (25)	70 (∞)		CPS-8V		LW-4	GVF$^{R}_{L}$350C~450C
	5032B-502C	●	●							8.1	50 (25)	70 (∞)					GVF$^{R}_{L}$500C~600C

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. øD1 depends on the application.

Application	Description		Face Grooving Dia. ød1	Face Grooving Dia. øD1			Remarks
			(MIN.)	MIN.	MAX.	(MAX.)	
	GIFV$^{R}_{L}$	3532B-201A	-	35	∞	∞	-
	GIFV$^{R}_{L}$	3532B-351B			50		
		3532B-352B		50	70		
		5032B-501B					
		5032B-502B					
	GIFV$^{R}_{L}$	5032B-501C					
		5032B-502C					
	GIFV$^{R}_{L}$	3532B-201A	12	35	∞	∞	If øD2 ≧ 58-2W, the Face Grooving Dia. can be expanded to ød1 (MIN.) toward the Center. W = Edge Width If øD2 ≧ 75-2W, the Face Grooving Dia. can be expanded to ød1 (MIN.) toward the Center. W = Edge Width
	GIFV$^{R}_{L}$	3532B-351B	25		50		
		3532B-352B		50	70		
		5032B-501B					
		5032B-502B					
	GIFV$^{R}_{L}$	5032B-501C					
		5032B-502C					
	GIFV$^{R}_{L}$	3532B-201A	12	35	∞	∞	-
	GIFV$^{R}_{L}$	3532B-351B	25		50		
		3532B-352B		50	70		
		5032B-501B					
		5032B-502B					
	GIFV$^{R}_{L}$	5032B-501C					
		5032B-502C					

・The value ( ) of Face Grooving Dia. (øD1 (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. (ød1 (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 ○ : Check Availability R : Std. Item (R-hand Only) L : Std. Item (L-hand Only)

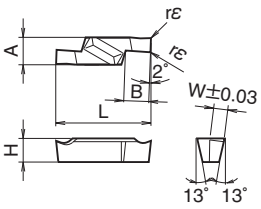
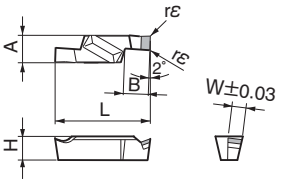
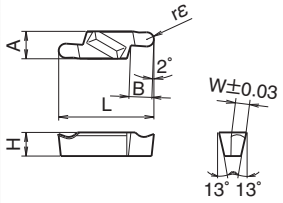
Applicable Inserts (mm)

Description	A	L	H
GVF$^{R}_{L}$ ···- ○○○ A	4.3	12	4.5
···- ○○○ B	5.8	20	5.0
···- ○○○ C	7.0	27	7.0
···- ○○○ AR	4.3	12	4.5
···- ○○○ BR	5.8	20	5.0

		Cermet			PVD Coated Carbide	Carbide		PCD	
		TN90	TC40	TC60	PR630	PR930	KW10	KPD001	KPD010
P	Carbon Steel / Alloy Steel					●			
M	Stainless Steel					●			
K	Cast Iron						●		
N	Non-ferrous Metals						●		●
S	Titanium Alloy						●		●
H	Hard materials (under 40HRC)					○			
	Hard materials (over 40HRC)								

Classification of usage

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

Insert (R-hand shown)	Description	(Previous Description)	W	B	rε	Applicable Toolholder	Ref. Page for Toolholder
	GVF$^{R}_{L}$ 200-020A	GVF$^{R}_{L}$ 200A	2.00	2.3	0.2	GIFV$^{R}_{L}$ ···-201A	G70
	GVF$^{R}_{L}$ 230-020A	GVF$^{R}_{L}$ 230A	2.30				
	GVF$^{R}_{L}$ 250-020A	GVF$^{R}_{L}$ 250A	2.50				
	GVF$^{R}_{L}$ 270-020A	GVF$^{R}_{L}$ 270A	2.70				
	GVF$^{R}_{L}$ 290-020A	GVF$^{R}_{L}$ 290A	2.90				
	GVF$^{R}_{L}$ 340-020A	GVF$^{R}_{L}$ 340A	3.40				
	GVF$^{R}_{L}$ 250-020B	GVF$^{R}_{L}$ 250B	2.50	4.8		GIFV$^{R}_{L}$···-○○1B	
	GVF$^{R}_{L}$ 300-020B	GVF$^{R}_{L}$ 300B	3.00				
	GVF$^{R}_{L}$ 350-020B	GVF$^{R}_{L}$ 350B	3.50				
	GVF$^{R}_{L}$ 400-020B	GVF$^{R}_{L}$ 400B	4.00	5.3		GIFV$^{R}_{L}$···-○○2B	
	GVF$^{R}_{L}$ 430-020B	GVF$^{R}_{L}$ 430B	4.30				
	GVF$^{R}_{L}$ 460-020B	GVF$^{R}_{L}$ 460B	4.60				
	GVF$^{R}_{L}$ 490-020B	GVF$^{R}_{L}$ 490B	4.90				
	GVF$^{R}_{L}$ 350-040C	GVF$^{R}_{L}$ 350C	3.50	6.8	0.4	GIFV$^{R}_{L}$···-○○1C	
	GVF$^{R}_{L}$ 400-040C	GVF$^{R}_{L}$ 400C	4.00				
	GVF$^{R}_{L}$ 450-040C	GVF$^{R}_{L}$ 450C	4.50				
	GVF$^{R}_{L}$ 500-040C	GVF$^{R}_{L}$ 500C	5.00	8.3		GIFV$^{R}_{L}$···-○○2C	
	GVF$^{R}_{L}$ 550-040C	GVF$^{R}_{L}$ 550C	5.50				
	GVF$^{R}_{L}$ 600-040C	GVF$^{R}_{L}$ 600C	6.00				
1-Edge 	GVF$^{R}_{L}$ 250-020B	GVF$^{R}_{L}$ 250B	2.50	4.8	0.2	GIFV$^{R}_{L}$···-○○1B	
	GVF$^{R}_{L}$ 300-020B	GVF$^{R}_{L}$ 300B	3.00				
	400-020B	400B	4.00	5.3		GIFV$^{R}_{L}$···-○○2B	
	GVF$^{R}_{L}$ 350-020C	-	3.50	6.8	0.2	GIFV$^{R}_{L}$···-○○1C	
	400-020C	-	4.00				
	GVF$^{R}_{L}$ 350-040C	GVF$^{R}_{L}$ 350C	3.50	6.8	0.4		
	400-040C	400C	4.00				
Full-R 	GVF$^{R}_{L}$ 200-100AR	GVF$^{R}_{L}$ 100AR	2.00	2.3	1.00	GIFV$^{R}_{L}$···-201A	
	GVF$^{R}_{L}$ 250-125AR	GVF$^{R}_{L}$ 125AR	2.50		1.25		
	GVF$^{R}_{L}$ 300-150AR	GVF$^{R}_{L}$ 150AR	3.00		1.50		
	GVF$^{R}_{L}$ 300-150BR	GVF$^{R}_{L}$ 150BR	3.00	4.8	1.50	GIFV$^{R}_{L}$···-○○1B	
	400-200BR	200BR	4.00	5.3	2.00	GIFV$^{R}_{L}$···-○○2B	

・Dimension B: shows available grooving depth.

Recommended Cutting Conditions ➔ G75

● : Std. Item ○ : Check Availability R : Std. Item (R-hand Only) L : Std. Item (L-hand Only)

Inserts are sold in 10 piece boxes.

CBN & PCD Inserts are sold in 1 piece boxes.

Recommended Cutting Conditions

GBA insert (Ground Chipbreaker)

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)									① f at Grooving (mm/rev) ② f at Traversing (mm/rev) ③ 〃 ap (mm)					Remarks
	Cermet		PVD Coated Carbide				Carbide	CBN	PCD						
	TC40	TN90	PR630	PR930	PR1115	PR905	KW10	KBN510 KBN525	KPD001 (KPD010)	GBA○○R/L 033~100	GBA○○R/L 125~200	GBA○○R/L 230~300	GBA○○R/L 330~400	GBA○○R/L 400~480	
Carbon Steel	☆ 150-220	☆ 150-220	☆ 80-200	☆ 80-180	★ 80-180	-	-	-	-	①0.03~0.08 ②Traversing N.A. ③Traversing N.A.	①0.04~0.09 ②0.04~0.09 ③Max. 0.3	①0.05~0.1 ②0.05~0.1 ③Max. 0.5	①0.05~0.12 ②0.05~0.1 ③Max. 0.5	①0.05~0.12 ②0.05~0.1 ③Max. 0.8	Coolant
Alloy Steel	☆ 130-200	☆ 130-200	☆ 80-180	☆ 80-160	★ 80-160	-	-	-	-	①0.03~0.07 ②Traversing N.A. ③Traversing N.A.	①0.04~0.08 ②0.04~0.08 ③Max. 0.3	①0.05~0.09 ②0.05~0.09 ③Max. 0.5	①0.05~0.1 ②0.05~0.1 ③Max. 0.5	①0.05~0.1 ②0.05~0.1 ③Max. 0.8	
Stainless Steel	-	☆ 70-150	☆ 60-150	☆ 60-130	★ 60-130	-	-	-	-	①0.03~0.07 ②Traversing N.A. ③Traversing N.A.	①0.04~0.08 ②0.04~0.08 ③Max. 0.3	①0.05~0.09 ②0.05~0.09 ③Max. 0.5	①0.05~0.1 ②0.05~0.1 ③Max. 0.5	①0.05~0.1 ②0.05~0.1 ③Max. 0.8	
Cast Iron	-	-	-	-	-	★ 80-180	☆ 60-120	★ 150-400	-	①0.03~0.08 ②Traversing N.A. ③Traversing N.A.	①0.04~0.09 ②0.04~0.09 ③Max. 0.3	①0.05~0.1 ②0.05~0.1 ③Max. 0.5	①0.05~0.12 ②0.05~0.1 ③Max. 0.5	①0.05~0.12 ②0.05~0.1 ③Max. 0.8	
Aluminum	-	-	-	-	-	-	★ 150-400	-	★ 150-2000	①0.05~0.12 ②Traversing N.A. ③Traversing N.A.	①0.05~0.15 ②0.05~0.15 ③Max. 0.5	①0.05~0.15 ②0.05~0.15 ③Max. 0.8	①0.08~0.15 ②0.08~0.15 ③Max. 0.8	①0.08~0.15 ②0.08~0.15 ③Max. 0.8	
Brass	-	-	-	-	-	-	★ 150-300	-	★ 200-800	①0.05~0.12 ②Traversing N.A. ③Traversing N.A.	①0.05~0.15 ②0.05~0.15 ③Max. 0.5	①0.05~0.15 ②0.05~0.15 ③Max. 0.8	①0.08~0.15 ②0.08~0.15 ③Max. 0.8	①0.08~0.15 ②0.08~0.15 ③Max. 0.8	
Hard Materials	-	-	-	-	-	-	-	★ 80-120	-	-	①0.02~0.05 ②Traversing N.A. ③Traversing N.A.	①0.03~0.07 ②0.01~0.04 ③Max. 0.1	-	-	

* Above cutting condition is for external grooving. Set both cutting speed and feed rate lower than 10% for internal grooving. ★ : 1st Recommendation ☆ : 2nd Recommendation

GBA insert (MY Chipbreaker)

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)								① f at Grooving (mm/rev) ② f at Traversing (mm/rev) ③ 〃 ap (mm)					Remarks
	Cermet		PVD Coated Carbide			Carbide	CBN	PCD						
	TN6020	TC40	PR630	PR930	PR1115	KW10	KBN510	KPD001 (KPD010)	GBA43R/L 175MY~200MY	GBA43R/L 230MY~265MY	GBA43R/L 300MY	GBA43R/L 330MY ~350MY	GBA43R/L 400MY	
Carbon Steel	☆ 150-220	-	-	☆ 80-200	★ 80-200	-	-	-	①0.03~0.08 ②0.03~0.08 ③Max. 0.3	①0.04~0.09 ②0.04~0.09 ③Max. 0.3	①0.05~0.1 ②0.05~0.1 ③Max. 0.5	①0.05~0.12 ②0.05~0.1 ③Max. 0.5	①0.05~0.12 ②0.05~0.1 ③Max. 0.8	Coolant
Alloy Steel	☆ 130-200	-	-	☆ 80-180	★ 80-180	-	-	-	①0.03~0.07 ②0.03~0.1 ③Max. 0.3	①0.04~0.08 ②0.04~0.08 ③Max. 0.3	①0.05~0.09 ②0.05~0.09 ③Max. 0.5	①0.05~0.1 ②0.05~0.1 ③Max. 0.5	①0.05~0.1 ②0.05~0.1 ③Max. 0.8	
Stainless Steel	☆ 70-150	-	-	☆ 60-150	★ 60-150	-	-	-	①0.03~0.07 ②0.03~0.1 ③Max. 0.3	①0.04~0.08 ②0.04~0.08 ③Max. 0.3	①0.05~0.09 ②0.05~0.09 ③Max. 0.5	①0.05~0.1 ②0.05~0.1 ③Max. 0.5	①0.05~0.1 ②0.05~0.1 ③Max. 0.8	

* Above cutting condition is for external grooving. Set both cutting speed and feed rate lower than 10% for internal grooving. ★ : 1st Recommendation ☆ : 2nd Recommendation

GB insert (Ground Chipbreaker)

➡ changes to GBA type.

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)								① f at Grooving (mm/rev) ② f at Traversing (mm/rev) ③ 〃 ap (mm)					Remarks
	Cermet			PVD Coated Carbide		Carbide	CBN	PCD						
	TN90	TC40	TC60	PR630	PR930	KW10	KBN510	KPD001 (KPD010)	GB○○R/L 050~100	GB○○R/L 125~200	GB○○R/L 230~300	GB○○R/L 330~400	GB○○R/L 400~480	
Carbon Steel	-	☆ 150-220	☆ 100-150	☆ 80-200	★ 80-180	-	-	-	①0.03~0.08 ②Traversing N.A. ③Traversing N.A.	①0.04~0.09 ②0.04~0.09 ③Max. 0.3	①0.05~0.1 ②0.05~0.1 ③Max. 0.5	①0.05~0.12 ②0.05~0.1 ③Max. 0.5	①0.05~0.12 ②0.05~0.1 ③Max. 0.8	Coolant
Alloy Steel	-	☆ 130-200	☆ 80-130	☆ 80-180	★ 80-160	-	-	-	①0.03~0.07 ②Traversing N.A. ③Traversing N.A.	①0.04~0.08 ②0.04~0.08 ③Max. 0.3	①0.05~0.09 ②0.05~0.09 ③Max. 0.5	①0.05~0.1 ②0.05~0.1 ③Max. 0.5	①0.05~0.1 ②0.05~0.1 ③Max. 0.8	
Stainless Steel	-	-	☆ 60-100	☆ 60-150	★ 60-130	-	-	-	①0.03~0.07 ②Traversing N.A. ③Traversing N.A.	①0.04~0.08 ②0.04~0.08 ③Max. 0.3	①0.05~0.09 ②0.05~0.09 ③Max. 0.5	①0.05~0.1 ②0.05~0.1 ③Max. 0.5	①0.05~0.1 ②0.05~0.1 ③Max. 0.8	
Cast Iron	-	-	-	-	-	★ 60-100	-	-	①0.03~0.08 ②Traversing N.A. ③Traversing N.A.	①0.04~0.09 ②0.04~0.09 ③Max. 0.3	①0.05~0.1 ②0.05~0.1 ③Max. 0.5	①0.05~0.12 ②0.05~0.1 ③Max. 0.5	①0.05~0.12 ②0.05~0.1 ③Max. 0.8	
Aluminum	-	-	-	-	-	★ 150-400	-	★ 150-2000	①0.05~0.12 ②Traversing N.A. ③Traversing N.A.	①0.05~0.15 ②0.05~0.15 ③Max. 0.5	①0.05~0.15 ②0.05~0.15 ③Max. 0.8	①0.08~0.15 ②0.08~0.15 ③Max. 0.8	①0.08~0.15 ②0.08~0.15 ③Max. 0.8	
Brass	-	-	-	-	-	★ 150-300	-	★ 200-800	①0.05~0.12 ②Traversing N.A. ③Traversing N.A.	①0.05~0.15 ②0.05~0.15 ③Max. 0.5	①0.05~0.15 ②0.05~0.15 ③Max. 0.8	①0.08~0.15 ②0.08~0.15 ③Max. 0.8	①0.08~0.15 ②0.08~0.15 ③Max. 0.8	

* Above cutting condition is for external grooving. Set both cutting speed and feed rate lower than 10% for internal grooving. ★ : 1st Recommendation ☆ : 2nd Recommendation

◆ TGF insert (Ground Chipbreaker)

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)								① f at Grooving (mm/rev) ② f at Traversing (mm/rev) ③ // ap (mm)				Remarks
	Cermet			PVD Coated Carbide		Carbide	CBN	PCD					
	TN90	TC40	TC60	PR930	PR1115	KW10	KBN510	KPD001 (KPD010)	TGF32R/L 033~050	TGF32R/L 075~095	TGF32R/L 100~145	TGF32R/L 150~250	
Carbon Steel	☆ 150-220	☆ 150-220	☆ 100-150	☆ 80-180	★ 80-180	-	-	-	①0.01~0.05 ②Traversing N.A. ③Traversing N.A.	①0.02~0.07 ②Traversing N.A. ③Traversing N.A.	①0.03~0.08 ②0.03~0.06 ③Max. 0.2	①0.03~0.08 ②0.03~0.06 ③Max. 0.2	Coolant
Alloy Steel	☆ 130-200	☆ 130-200	☆ 80-130	☆ 80-160	★ 80-160	-	-	-	①0.01~0.04 ②Traversing N.A. ③Traversing N.A.	①0.02~0.06 ②Traversing N.A. ③Traversing N.A.	①0.03~0.07 ②0.02~0.05 ③Max. 0.2	①0.03~0.07 ②0.02~0.05 ③Max. 0.2	
Stainless Steel	☆ 70-150	-	☆ 60-100	☆ 60-130	★ 60-130	-	-	-	①0.01~0.04 ②Traversing N.A. ③Traversing N.A.	①0.02~0.06 ②Traversing N.A. ③Traversing N.A.	①0.03~0.07 ②0.02~0.05 ③Max. 0.2	①0.03~0.07 ②0.02~0.05 ③Max. 0.2	
Cast Iron	-	-	-	-	-	★ 60-100	-	-	①0.01~0.05 ②Traversing N.A. ③Traversing N.A.	①0.02~0.07 ②Traversing N.A. ③Traversing N.A.	①0.03~0.08 ②0.03~0.06 ③Max. 0.2	①0.03~0.08 ②0.03~0.06 ③Max. 0.2	
Aluminum	-	-	-	-	-	★ 150-400	-	★ 150-2000	①0.01~0.05 ②Traversing N.A. ③Traversing N.A.	①0.02~0.07 ②Traversing N.A. ③Traversing N.A.	①0.03~0.08 ②0.03~0.06 ③Max. 0.2	①0.03~0.08 ②0.03~0.06 ③Max. 0.2	
Brass	-	-	-	-	-	★ 150-300	-	★ 200-800	①0.01~0.04 ②Traversing N.A. ③Traversing N.A.	①0.02~0.06 ②Traversing N.A. ③Traversing N.A.	①0.03~0.07 ②0.02~0.05 ③Max. 0.2	①0.03~0.07 ②0.02~0.05 ③Max. 0.2	

★ : 1st Recommendation ☆ : 2nd Recommendation

◆ TG insert (Ground Chipbreaker)

changes to GBA.

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)								Feed Rate (mm/rev)					Remarks
	Cermet			PVD Coated Carbide		Carbide	CBN	PCD						
	TN60	TC40	TC60	PR630	PR930	KW10	KBN510	KPD001 (KPD010)	TG○○R/L 075~095	TG○○R/L 125~200	TG○○R/L 230~300	TG○○R/L 330~400	TG○○R/L 430~450	
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 rate lower than 10% for internal grooving.

★ : 1st Recommendation ☆ : 2nd Recommendation

◆ GH insert (Ground Chipbreaker)

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)								① f at Grooving (mm/rev) ② f at Traversing (mm/rev) ③ // ap (mm)				Remarks
	Cermet			PVD Coated Carbide		Carbide	Ceramic						
	TN90	TC40	TC60	PR630	PR930	KW10	A65	A66N	GH 40~50	GH 55~70	GH 75~80	GH 100~120	
Carbon Steel	☆ 150-220	☆ 150-220	☆ 100-150	☆ 80-200	★ 80-180	-	-	-	①0.07~0.2 ②0.07~0.15 ③Max. 1.0	①0.07~0.2 ②0.07~0.15 ③Max. 1.0	①0.1~0.25 ②0.1~0.2 ③Max. 1.5	①0.15~0.3 ②0.15~0.25 ③Max. 2.0	Coolant
Alloy Steel	☆ 130-200	☆ 130-200	☆ 80-130	☆ 80-180	★ 80-160	-	-	-	①0.07~0.18 ②0.07~0.13 ③Max. 1.0	①0.07~0.18 ②0.07~0.13 ③Max. 1.0	①0.1~0.23 ②0.1~0.18 ③Max. 1.5	①0.15~0.27 ②0.15~0.22 ③Max. 2.0	
Stainless Steel	☆ 70-150	-	☆ 60-100	☆ 60-150	★ 60-130	-	-	-	①0.07~0.16 ②0.07~0.13 ③Max. 1.0	①0.07~0.16 ②0.07~0.13 ③Max. 1.0	①0.1~0.21 ②0.1~0.18 ③Max. 1.5	①0.15~0.25 ②0.15~0.22 ③Max. 2.0	
Cast Iron	-	-	-	-	-	★ 60~100	☆ 150~300	☆ 150~300	KW10 ①0.07~0.2 ②0.07~0.15 ③Max. 1.0 A65 / A66N ①0.03~0.07 ②Traversing N.A. ③Traversing N.A.	KW10 ①0.07~0.2 ②0.07~0.15 ③Max. 1.0 A65 / A66N ①0.03~0.07 ②Traversing N.A. ③Traversing N.A.	KW10 ①0.1~0.25 ②0.1~0.2 ③Max. 1.5 A65 / A66N ①0.05~0.09 ②Traversing N.A. ③Traversing N.A.	KW10 ①0.15~0.3 ②0.15~0.25 ③Max. 2.0 A65 / A66N ①0.05~0.09 ②Traversing N.A. ③Traversing N.A.	
Aluminum	-	-	-	-	-	★ 150-400	-	-	①0.07~0.2 ②0.07~0.15 ③Max. 1.0	①0.07~0.2 ②0.07~0.15 ③Max. 1.0	①0.1~0.25 ②0.1~0.2 ③Max. 1.5	①0.15~0.3 ②0.15~0.25 ③Max. 2.0	
Brass	-	-	-	-	-	★ 150-300	-	-	①0.07~0.2 ②0.07~0.15 ③Max. 1.0	①0.07~0.2 ②0.07~0.15 ③Max. 1.0	①0.1~0.25 ②0.1~0.2 ③Max. 1.5	①0.15~0.3 ②0.15~0.25 ③Max. 2.0	
Hard Materials	-	-	-	-	-	-	☆ 40-80	☆ 40-80	①0.02~0.05 ②0.01~0.03 ③Max. 0.1	①0.02~0.05 ②0.01~0.03 ③Max. 0.2	①0.02~0.05 ②0.01~0.04 ③Max. 0.2		

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

★ : 1st Recommendation ☆ : 2nd Recommendation

◆ GHU insert (Molded Chipbreaker)

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)								① f at Grooving (mm/rev) ② f at Traversing (mm/rev) ③ // ap (mm)					Remarks
	Cermet			CVD Coated Carbide	PVD Coated Carbide		Ceramic							
	TN60	TC40	TC60	CR9025	PR630	PR930	A65	A66N	GHU 40	GHU 50	GHU 60			
Carbon Steel	☆ 130-200	-	-	☆ 80-180	-	-	-	-	①0.06~0.12 ②0.05~0.1 ③Max. 1.0	①0.06~0.12 ②0.05~0.1 ③Max. 1.0	①0.06~0.15 ②0.05~0.12 ③Max. 1.5			Coolant
Alloy Steel	☆ 100-180	-	-	☆ 80-160	-	-	-	-	①0.06~0.12 ②0.05~0.1 ③Max. 1.0	①0.06~0.12 ②0.05~0.1 ③Max. 1.0	①0.06~0.15 ②0.05~0.12 ③Max. 1.5			
Stainless Steel	-	-	-	☆ 60-130	-	-	-	-	①0.06~0.1 ②0.05~0.08 ③Max. 0.8	①0.06~0.1 ②0.05~0.08 ③Max. 0.8	①0.06~0.12 ②0.05~0.1 ③Max. 1.2			

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

★ : 1st Recommendation ☆ : 2nd Recommendation

Recommended Cutting Conditions

GA insert (Molded Chipbreaker)

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)								① f at Grooving (mm/rev) ② f at Traversing (mm/rev) ③ 〃 ap (mm)					Remarks
	Cermet				CVD Coated Carbide	PVD Coated Carbide		Carbide						
	TN60	TN90	TC40	TC60	CR9025	PR630	PR930	KW10	GA 30	GA 40	GA 50			
Carbon Steel	☆ 130-200	-	-	-	★ 80-180	-	-	-	①0.06~0.18 ②0.05~0.15 ③Max. 0.8	①0.06~0.21 ②0.05~0.17 ③Max. 1.0	①0.06~0.25 ②0.05~0.2 ③Max. 1.3			Coolant
Alloy Steel	☆ 100-180	-	-	-	★ 80-160	-	-	-	①0.06~0.15 ②0.05~0.12 ③Max. 0.3	①0.06~0.18 ②0.05~0.15 ③Max. 0.5	①0.06~0.22 ②0.05~0.18 ③Max. 0.8			
Stainless Steel	-	-	-	-	★ 60-130	-	-	-	①0.06~0.1 ②0.05~0.08 ③Max. 0.8	①0.06~0.1 ②0.05~0.08 ③Max. 0.8	①0.06~0.12 ②0.05~0.1 ③Max. 1.2			

★ : 1st Recommendation ☆ : 2nd Recommendation

GIA insert (Molded Chipbreaker)

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)								① f at Grooving (mm/rev) ② f at Traversing (mm/rev) ③ 〃 ap (mm)					Remarks
	Cermet				CVD Coated Carbide	PVD Coated Carbide		Carbide						
	TN60	TN90	TC40	TC60	CR9025	PR630	PR930	KW10	GIA 30	GIA 40	GIA 50			
Carbon Steel	☆ 60-120	-	-	-	★ 60-120	-	-	-	①0.04~0.08 ②0.02~0.08 ③Max. 0.3	①0.04~0.09 ②0.02~0.08 ③Max. 0.4	①0.05~0.1 ②0.05~0.08 ③Max. 0.5			Coolant
Alloy Steel	☆ 60-100	-	-	-	★ 60-100	-	-	-	①0.04~0.07 ②0.02~0.07 ③Max. 0.3	①0.04~0.07 ②0.02~0.07 ③Max. 0.4	①0.05~0.08 ②0.05~0.08 ③Max. 0.5			
Stainless Steel	-	-	-	-	★ 60-80	-	-	-	①0.04~0.07 ②0.02~0.07 ③Max. 0.3	①0.04~0.07 ②0.02~0.07 ③Max. 0.4	①0.05~0.08 ②0.05~0.08 ③Max. 0.5			

★ : 1st Recommendation ☆ : 2nd Recommendation

GMN insert (CBN / PCD)

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)		① f at Grooving (mm/rev) ② f at Traversing (mm/rev) ③ 〃 ap (mm)				Remarks
	CBN	PCD					
	KBN510 KBN525 (KBN10B)	KPD001 (KPD010)	GMN2	GMN3	GMN4 GMN5	GMN6	
Aluminum	-	★ 150-2000	①0.05~0.15 ②0.05~0.15 ③Max. 0.5	①0.05~0.15 ②0.05~0.15 ③Max. 0.8	①0.08~0.18 ②0.08~0.18 ③Max. 0.8	①0.10~0.20 ②0.10~0.20 ③Max. 0.8	Coolant
Brass	-	★ 200-800	①0.05~0.15 ②0.05~0.15 ③Max. 0.5	①0.05~0.15 ②0.05~0.15 ③Max. 0.8	①0.08~0.18 ②0.08~0.18 ③Max. 0.8	①0.10~0.20 ②0.10~0.20 ③Max. 0.8	
Cast Iron	★ 150-400	-	①0.04~0.09 ②0.04~0.09 ③Max. 0.3	①0.05~0.1 ②0.05~0.1 ③Max. 0.5	①0.05~0.12 ②0.05~0.12 ③Max. 0.5	①0.05~0.15 ②0.05~0.15 ③Max. 0.8	
Hard Materials	★ 80-120	-	①0.02~0.05 ②0.01~0.03 ③Max. 0.1	①0.03~0.07 ②0.01~0.05 ③Max. 0.2	①0.03~0.08 ②0.03~0.08 ③Max. 0.3	①0.05~0.1 ②0.05~0.1 ③Max. 0.4	

* Above cutting condition is for external grooving. Set feed rate lower than 20% for face grooving.

★ : 1st Recommendation

◆ GV insert (Ground Chipbreaker)

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)						① f at Grooving (mm/rev) ② f at Traversing (mm/rev) ③ // ap (mm)							Remarks
	Cermet			PVD Coated Carbide		Carbide	GV$^{R}_{L}$ 100SS~300SS 100S~300S	GV$^{R}_{L}$ 145B~185B	GV$^{R}_{L}$ 200B~280B	GV$^{R}_{L}$ 300B~400B				
	TN90	TC40	TC60	PR630	PR930	KW10	GV$^{R}_{L}$ 100A~340A 100AR~150AR		GV$^{R}_{L}$ 100BR	GV$^{R}_{L}$ 150BR	GV$^{R}_{L}$ 280C~300C	GV$^{R}_{L}$ 340C~400C	GV$^{R}_{L}$ 430C~500C	
Carbon Steel	☆ 120-180	☆ 120-180	☆ 80-120	☆ 80-160	★ 80-140	-	①0.03-0.08 ②0.03-0.08 ③Max. 0.3	①0.03-0.08 ②0.03-0.08 ③Max. 0.3	①0.04-0.09 ②0.04-0.09 ③Max. 0.3	①0.05-0.12 ②0.05-0.1 ③Max. 0.5	①0.04-0.09 ②0.04-0.09 ③Max. 0.3	①0.05-0.12 ②0.05-0.1 ③Max. 0.5	①0.05-0.12 ②0.05-0.1 ③Max. 0.5	Coolant
Alloy Steel	☆ 100-160	☆ 100-160	☆ 80-100	☆ 80-140	★ 80-120	-	①0.03-0.07 ②0.03-0.1 ③Max. 0.3	①0.03-0.07 ②0.03-0.1 ③Max. 0.3	①0.04-0.08 ②0.04-0.08 ③Max. 0.3	①0.05-0.1 ②0.05-0.1 ③Max. 0.5	①0.04-0.08 ②0.04-0.08 ③Max. 0.3	①0.05-0.1 ②0.05-0.1 ③Max. 0.5	①0.05-0.1 ②0.05-0.1 ③Max. 0.5	
Stainless Steel	☆ 70-130	-	☆ 60-100	☆ 60-130	★ 60-110	-	①0.03-0.07 ②0.03-0.1 ③Max. 0.3	①0.03-0.07 ②0.03-0.1 ③Max. 0.3	①0.04-0.08 ②0.04-0.08 ③Max. 0.3	①0.05-0.1 ②0.05-0.1 ③Max. 0.5	①0.04-0.08 ②0.04-0.08 ③Max. 0.3	①0.05-0.1 ②0.05-0.1 ③Max. 0.5	①0.05-0.1 ②0.05-0.1 ③Max. 0.5	
Cast Iron	-	-	-	-	-	★ 60-100	①0.03-0.08 ②0.03-0.08 ③Max. 0.3	①0.03-0.08 ②0.03-0.08 ③Max. 0.3	①0.04-0.09 ②0.04-0.09 ③Max. 0.3	①0.05-0.12 ②0.05-0.1 ③Max. 0.5	①0.04-0.09 ②0.04-0.09 ③Max. 0.3	①0.05-0.12 ②0.05-0.1 ③Max. 0.5	①0.05-0.12 ②0.05-0.1 ③Max. 0.5	
Aluminum	-	-	-	-	-	★ 150-300	①0.05-0.12 ②0.05-0.12 ③Max. 0.5	①0.05-0.12 ②0.05-0.12 ③Max. 0.5	①0.05-0.15 ②0.05-0.15 ③Max. 0.5	①0.08-0.15 ②0.08-0.15 ③Max. 0.8	①0.05-0.15 ②0.05-0.15 ③Max. 0.5	①0.08-0.15 ②0.08-0.15 ③Max. 0.8	①0.08-0.15 ②0.08-0.15 ③Max. 0.8	
Brass	-	-	-	-	-	★ 100-250	①0.05-0.12 ②0.05-0.12 ③Max. 0.5	①0.05-0.12 ②0.05-0.12 ③Max. 0.5	①0.05-0.15 ②0.05-0.15 ③Max. 0.5	①0.08-0.15 ②0.08-0.15 ③Max. 0.8	①0.05-0.15 ②0.05-0.15 ③Max. 0.5	①0.08-0.15 ②0.08-0.15 ③Max. 0.8	①0.08-0.15 ②0.08-0.15 ③Max. 0.8	

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

★ : 1st Recommendation ☆ : 2nd Recommendation

◆ GVF insert (Ground Chipbreaker)

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)								① f at Grooving (mm/rev) ② f at Traversing (mm/rev) ③ // ap (mm)					Remarks
	Cermet				CVD Coated Carbide	PVD Coated Carbide		Carbide	GVF$^{R}_{L}$ 200A~340A	GVF$^{R}_{L}$ 250B~350B	GVF$^{R}_{L}$ 400B~490B	GVF$^{R}_{L}$ 350C~450C	GVF$^{R}_{L}$ 500C~600C	
	TN60	TN90	TC40	TC60	CR9025	PR630	PR930	KW10	GVF$^{R}_{L}$ 100AR~150AR	GVF$^{R}_{L}$ 150BR	GVF$^{R}_{L}$ 200BR			
Carbon Steel	-	☆ 150-220	☆ 150-220	☆ 100-150	-	☆ 80-200	★ 80-180	-	①0.03-0.08 ②0.03-0.08 ③Max. 0.3	①0.04-0.09 ②0.04-0.09 ③Max. 0.3	①0.05-0.1 ②0.05-0.1 ③Max. 0.5	①0.05-0.12 ②0.05-0.1 ③Max. 0.5	①0.05-0.12 ②0.05-0.1 ③Max. 0.8	Coolant
Alloy Steel	-	☆ 130-200	☆ 130-200	☆ 80-130	-	☆ 80-180	★ 80-160	-	①0.03-0.07 ②0.03-0.1 ③Max. 0.3	①0.04-0.08 ②0.04-0.08 ③Max. 0.3	①0.05-0.09 ②0.05-0.09 ③Max. 0.5	①0.05-0.1 ②0.05-0.1 ③Max. 0.5	①0.05-0.1 ②0.05-0.1 ③Max. 0.8	
Stainless Steel	-	☆ 70-150	-	☆ 60-100	-	☆ 60-150	★ 60-130	-	①0.03-0.07 ②0.03-0.1 ③Max. 0.3	①0.04-0.08 ②0.04-0.08 ③Max. 0.3	①0.05-0.09 ②0.05-0.09 ③Max. 0.5	①0.05-0.1 ②0.05-0.1 ③Max. 0.5	①0.05-0.1 ②0.05-0.1 ③Max. 0.8	
Cast Iron	-	-	-	-	-	-	-	★ 60-100	①0.03-0.08 ②0.03-0.08 ③Max. 0.3	①0.04-0.09 ②0.04-0.09 ③Max. 0.3	①0.05-0.1 ②0.05-0.1 ③Max. 0.5	①0.05-0.12 ②0.05-0.1 ③Max. 0.5	①0.05-0.12 ②0.05-0.1 ③Max. 0.8	
Aluminum	-	-	-	-	-	-	-	★ 150-400	①0.05-0.12 ②0.05-0.12 ③Max. 0.5	①0.05-0.15 ②0.05-0.15 ③Max. 0.5	①0.05-0.15 ②0.05-0.15 ③Max. 0.8	①0.08-0.15 ②0.08-0.15 ③Max. 0.8	①0.08-0.15 ②0.08-0.15 ③Max. 0.8	
Brass	-	-	-	-	-	-	-	★ 150-300	①0.05-0.12 ②0.05-0.12 ③Max. 0.5	①0.05-0.15 ②0.05-0.15 ③Max. 0.5	①0.05-0.15 ②0.05-0.15 ③Max. 0.8	①0.08-0.15 ②0.08-0.15 ③Max. 0.8	①0.08-0.15 ②0.08-0.15 ③Max. 0.8	

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

★ : 1st Recommendation ☆ : 2nd Recommendation

◆ FTK Recommended Cutting Conditions

Workpiece Material	Recommended Insert Grade (Cutting Speed: 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				Coolant
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	-	-	-	-	★ 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

GMG • GMM • GMN • GMGA

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)						Grooving				Traversing				Remarks
	Cermet	CVD Coated Carbide	PVD Coated Carbide			Carbide	Width (mm)				Width (mm)				
	TN90	CR9025	PR915	PR930	PR905	KW10	2.0~3.0	4.0	5.0	6.0 / 8.0	2.0~3.0	4.0	5.0	6.0 / 8.0	
							f (mm/rev)				f (mm/rev)				
Carbon Steel	☆ 100~220	☆ 80~200	☆ 80~200	★ 80~200	-	-	0.05~0.15	0.10~0.25	0.15~0.35	0.20~0.35	0.10~0.20	0.15~0.30	0.20~0.40	0.25~0.40	Coolant
Alloy Steel	☆ 80~200	☆ 70~180	☆ 70~180	★ 70~180	-	-	0.05~0.15	0.10~0.25	0.15~0.35	0.20~0.35	0.10~0.20	0.15~0.30	0.20~0.40	0.25~0.40	
Stainless Steel	☆ 70~160	☆ 60~150	★ 60~150	☆ 60~150	-	-	0.05~0.15	0.10~0.20	0.15~0.35	0.20~0.35	0.10~0.20	0.15~0.25	0.20~0.40	0.25~0.40	
Cast Iron	-	-	-	-	★ 100~200	☆ 70~150	0.05~0.20	0.10~0.30	0.15~0.40	0.20~0.40	0.10~0.25	0.15~0.35	0.20~0.45	0.25~0.45	
Aluminum	-	-	-	-	-	★ 200~500	0.05~0.20	0.08~0.25	0.10~0.25	0.12~0.30	0.10~0.20	0.10~0.25	0.10~0.25	0.15~0.30	
Brass	-	-	-	-	-	★ 100~200	0.05~0.15	0.08~0.20	0.10~0.25	0.12~0.30	0.10~0.20	0.10~0.25	0.10~0.25	0.15~0.30	

★ : 1st Recommendation ☆ : 2nd Recommendation

◆ See the notes below for traversing conditions.

① Case of KGM Toolholder

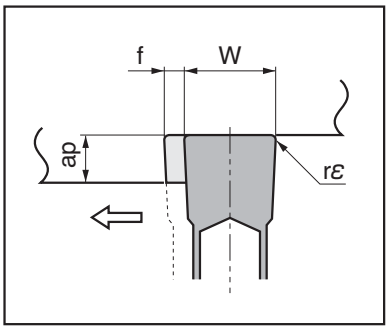
	Recommended Conditions
ap (MAX) mm	under 80% of Edge Width
f (MAX) mm/rev	under 10% of Edge Width

・ap≦0.8w
・f≦0.1w

(ap)×(f) shall not exceed 1/2 of ap(Max)×f(Max)

Load (mm^2) \ Edge Width (mm)	2.0~2.5	3.0	4.0	5.0	6.0	8.0
ap×f	~0.20	~0.36	~0.64	~1.00	~1.44	~2.56

・ap×f≦ $\frac{1}{2}$×0.8w×0.1w=0.04w^2



② Case of KGM-T Toolholder (Deep Grooving Type)
Use 90% of KGM conditions

③ Case of KGMM / KGMS / KFMS-8 Toolholder

	Recommended Conditions
ap (MAX) mm	under 50% of Edge Width
f (MAX) mm/rev	under 4% of Edge Width

・ap≦0.5w
・f≦0.04w

ap×f 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×f	~0.10	~0.18	~0.32	~0.50	~0.72	~1.28

・ap×f≦0.02w^2

④ Case of KIGM Toolholder

	Recommended Conditions
ap (MAX) mm	under 70% of Edge Width
f (MAX) mm/rev	under 8% of Edge Width

・ap≦0.7w
・f≦0.08w

ap×f should be as follows. (Under 70% of KGM)

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

・ap×f≦0.04w^2

GMG / GMM / GMGA 8030 (Face Grooving)

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)						Face Grooving			Traversing			Remarks
	Cermet	CVD Coated Carbide	PVD Coated Carbide			Carbide	Width (mm)			Width (mm)			
	TN90	CR9025	PR915	PR930	PR905	KW10	8.0			8.0			
							f (mm/rev)			f (mm/rev)			
Carbon Steel	☆ 100~220	☆ 80~160	☆ 80~160	★ 80~160	-	-	0.1~0.2			0.1~0.25			Coolant
Alloy Steel	☆ 80~160	☆ 70~160	☆ 70~160	★ 70~160	-	-	0.1~0.2			0.1~0.25			
Stainless Steel	☆ 70~140	☆ 60~130	★ 60~130	☆ 60~130	-	-	0.1~0.2			0.1~0.25			
Cast Iron	-	-	-	-	★ 80~180	☆ 70~130	0.1~0.3			0.1~0.35			
Aluminum	-	-	-	-	-	★ 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

FMM • FMN

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)						Face Grooving (FMM type / FMN type)			Traversing (Case of FMM type)			Remarks
	Cermet	CVD Coated Carbide	PVD Coated Carbide			Carbide	Width (mm)			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	-	-	-	-	-	★ 200~500	0.03~0.05	0.03~0.08	0.05~0.10	0.05~0.10	0.05~0.25	0.10~0.30	
Brass	-	-	-	-	-	★ 100~200	0.03~0.05	0.03~0.08	0.05~0.10	0.05~0.10	0.05~0.25	0.10~0.30	

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

★ : 1st Recommendation ☆ : 2nd Recommendation

◆ See the notes below for traversing conditions.

ap and f of FMM

	Recommended Conditions	
ap (MAX) mm	under 50% of Edge Width	・ap≦0.5w
f (MAX) mm/rev	under 3~5% of Edge Width	・f≦ [0.03 (Min.)~0.05 (MAX.)] w

ap×f should be as follows.

Load (mm^2) \ Edge Width (mm)	3.0	4.0	5.0	6.0
ap×f	~0.09	~0.14	~0.25	~0.36

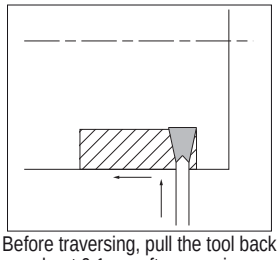
・ap×f≦0.01 w^2

Guide for External Machining

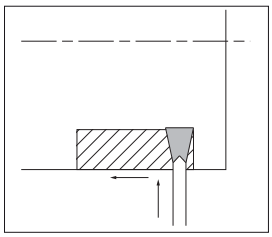
Point (Ⅰ) (Traversing after Grooving)

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

② Grooving Depth under 0.5mm: At finishing (Refer to Fig.2)
Traversing subsequent to grooving is possible because shallow groove depths relate a small load on the cutting edge.
(Dwell-motion is not necessary.)



Before traversing, pull the tool back about 0.1mm after grooving
(Grooving Depth Over 0.5mm: At roughing)
Fig.1



Traversing subsequent to grooving
(Grooving Depth under 0.5mm: At finishing)
Fig.2

Point (Ⅱ)

When widening the groove width, apply the “Step Turning” as shown in Fig.3.
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

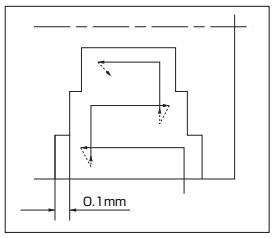


Fig.3

Guide for Face Grooving

〈Toolholder Selection〉

① Choose the best tool depending on the groove width.
The machining Dia. øD 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 Toolholder's hand is recommended so as to be mounted in reverse. (Fig.2)
This will provide smooth chip flow and chip clearance.

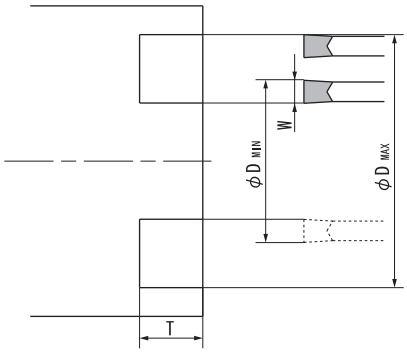


Fig.1

〈Traversing Tips〉

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

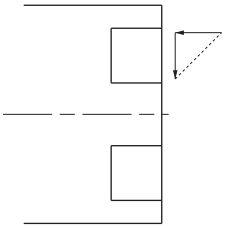


Fig.3

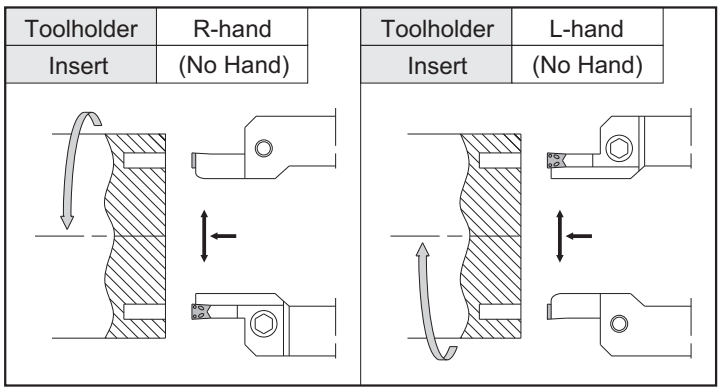
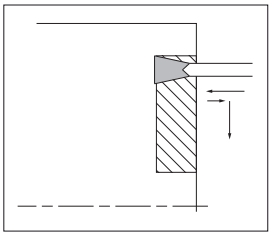


Fig.2 Toolholder's Hand and Rotation

Guide for Face Grooving (Continued)

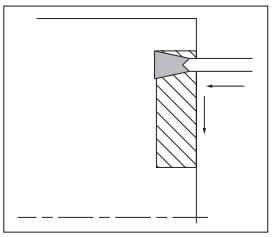
Point (Ⅰ) (Traversing after Grooving)

① Grooving Depth Over 0.5mm: At roughing (Refer to Fig.4)
Before traversing, pull the tool back about 0.1mm after grooving, instead of traversing subsequent to grooving.
(Failure to pull the tool back before traverse cutting will result in an unbalanced load applied on only one side of the cutting edge.)



Before traversing, pull the tool back about 0.1mm after grooving
(Grooving Depth Over 0.5mm: At roughing)
Fig.4

② Grooving Depth under 0.5mm: At finishing (Refer to Fig.5)
Traversing subsequent to grooving is possible because shallow groove depths relate a small load on the cutting edge.
(Dwell-motion is not necessary.)



Traversing subsequent to grooving
(Grooving Depth under 0.5mm: At finishing)
Fig.5

Point (Ⅱ)

When widening the groove width, apply the “Step Turning” as shown in Fig.6.
The widened groove and side walls should be finished last.
(For better chip control, ap over 0.5mm is recommended.)

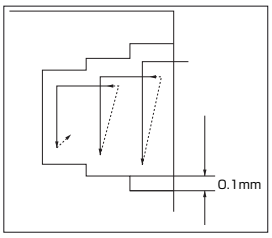
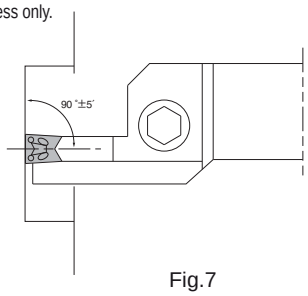


Fig.6

Trouble shooting

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

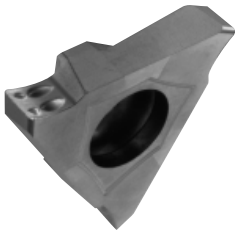
Guide for Grooving by Cermet Insert (Steel)

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=150-220m/min.
4. Set the toolholder overhang as short as possible.

How to Improve Surface Finish (when surface roughness below 3 μm Rz is required)

1. Increase the cutting speed (V_C=220m/min.MAX)
2. Program dwell-motion at the groove bottom.
3. Apply a light hone to the cutting edge by hand lapper.

Chip Control of Grooving Insert with Molded Chipbreaker

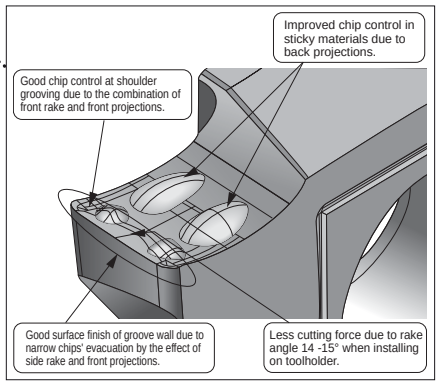


GBA-MY

3-Edge Molded Chipbreaker

- Advantages of MY Chipbreaker

1. Molded chipbreaker curls chips spirally and evacuates chips easily.
2. High precision molded Insert with economical 3 cutting edges.
3. Can be used in automated production.



Recommended Cutting Conditions

GBA insert (Ground Chipbreaker)

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)									① f at Grooving (mm/rev) ② f at Traversing (mm/rev) ③ 〃 ap (mm)					Remarks
	Cermet		PVD Coated Carbide				Carbide	CBN	PCD						
	TC40	TN90	PR630	PR930	PR1115	PR905	KW10	KBN510 KBN525	KPD001 (KPD010)	GBA○○R/L 033~100	GBA○○R/L 125~200	GBA○○R/L 230~300	GBA○○R/L 330~400	GBA○○R/L 400~480	
Carbon Steel	☆ 150-220	☆ 150-220	☆ 80-200	☆ 80-180	★ 80-180	-	-	-	-	①0.03~0.08 ②Traversing N.A. ③Traversing N.A.	①0.04~0.09 ②0.04~0.09 ③Max. 0.3	①0.05~0.1 ②0.05~0.1 ③Max. 0.5	①0.05~0.12 ②0.05~0.1 ③Max. 0.5	①0.05~0.12 ②0.05~0.1 ③Max. 0.8	Coolant
Alloy Steel	☆ 130-200	☆ 130-200	☆ 80-180	☆ 80-160	★ 80-160	-	-	-	-	①0.03~0.07 ②Traversing N.A. ③Traversing N.A.	①0.04~0.08 ②0.04~0.08 ③Max. 0.3	①0.05~0.09 ②0.05~0.09 ③Max. 0.5	①0.05~0.1 ②0.05~0.1 ③Max. 0.5	①0.05~0.1 ②0.05~0.1 ③Max. 0.8	
Stainless Steel	-	☆ 70-150	☆ 60-150	☆ 60-130	★ 60-130	-	-	-	-	①0.03~0.07 ②Traversing N.A. ③Traversing N.A.	①0.04~0.08 ②0.04~0.08 ③Max. 0.3	①0.05~0.09 ②0.05~0.09 ③Max. 0.5	①0.05~0.1 ②0.05~0.1 ③Max. 0.5	①0.05~0.1 ②0.05~0.1 ③Max. 0.8	
Cast Iron	-	-	-	-	-	★ 80-180	☆ 60-120	★ 150-400	-	①0.03~0.08 ②Traversing N.A. ③Traversing N.A.	①0.04~0.09 ②0.04~0.09 ③Max. 0.3	①0.05~0.1 ②0.05~0.1 ③Max. 0.5	①0.05~0.12 ②0.05~0.1 ③Max. 0.5	①0.05~0.12 ②0.05~0.1 ③Max. 0.8	
Aluminum	-	-	-	-	-	-	★ 150-400	-	★ 150-2000	①0.05~0.12 ②Traversing N.A. ③Traversing N.A.	①0.05~0.15 ②0.05~0.15 ③Max. 0.5	①0.05~0.15 ②0.05~0.15 ③Max. 0.8	①0.08~0.15 ②0.08~0.15 ③Max. 0.8	①0.08~0.15 ②0.08~0.15 ③Max. 0.8	
Brass	-	-	-	-	-	-	★ 150-300	-	★ 200-800	①0.05~0.12 ②Traversing N.A. ③Traversing N.A.	①0.05~0.15 ②0.05~0.15 ③Max. 0.5	①0.05~0.15 ②0.05~0.15 ③Max. 0.8	①0.08~0.15 ②0.08~0.15 ③Max. 0.8	①0.08~0.15 ②0.08~0.15 ③Max. 0.8	
Hard Materials	-	-	-	-	-	-	-	★ 80-120	-	-	①0.02~0.05 ②Traversing N.A. ③Traversing N.A.	①0.03~0.07 ②0.01~0.04 ③Max. 0.1	-	-	

* Above cutting condition is for external grooving. Set both cutting speed and feed rate lower than 10% for internal grooving. ★ : 1st Recommendation ☆ : 2nd Recommendation

GBA insert (MY Chipbreaker)

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)								① f at Grooving (mm/rev) ② f at Traversing (mm/rev) ③ 〃 ap (mm)					Remarks
	Cermet		PVD Coated Carbide			Carbide	CBN	PCD						
	TN6020	TC40	PR630	PR930	PR1115	KW10	KBN510	KPD001 (KPD010)	GBA43R/L 175MY~200MY	GBA43R/L 230MY~265MY	GBA43R/L 300MY	GBA43R/L 330MY ~350MY	GBA43R/L 400MY	
Carbon Steel	☆ 150-220	-	-	☆ 80-200	★ 80-200	-	-	-	①0.03~0.08 ②0.03~0.08 ③Max. 0.3	①0.04~0.09 ②0.04~0.09 ③Max. 0.3	①0.05~0.1 ②0.05~0.1 ③Max. 0.5	①0.05~0.12 ②0.05~0.1 ③Max. 0.5	①0.05~0.12 ②0.05~0.1 ③Max. 0.8	Coolant
Alloy Steel	☆ 130-200	-	-	☆ 80-180	★ 80-180	-	-	-	①0.03~0.07 ②0.03~0.1 ③Max. 0.3	①0.04~0.08 ②0.04~0.08 ③Max. 0.3	①0.05~0.09 ②0.05~0.09 ③Max. 0.5	①0.05~0.1 ②0.05~0.1 ③Max. 0.5	①0.05~0.1 ②0.05~0.1 ③Max. 0.8	
Stainless Steel	☆ 70-150	-	-	☆ 60-150	★ 60-150	-	-	-	①0.03~0.07 ②0.03~0.1 ③Max. 0.3	①0.04~0.08 ②0.04~0.08 ③Max. 0.3	①0.05~0.09 ②0.05~0.09 ③Max. 0.5	①0.05~0.1 ②0.05~0.1 ③Max. 0.5	①0.05~0.1 ②0.05~0.1 ③Max. 0.8	

* Above cutting condition is for external grooving. Set both cutting speed and feed rate lower than 10% for internal grooving. ★ : 1st Recommendation ☆ : 2nd Recommendation

GB insert (Ground Chipbreaker)

➡ changes to GBA type.

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)								① f at Grooving (mm/rev) ② f at Traversing (mm/rev) ③ 〃 ap (mm)					Remarks
	Cermet			PVD Coated Carbide		Carbide	CBN	PCD						
	TN90	TC40	TC60	PR630	PR930	KW10	KBN510	KPD001 (KPD010)	GB○○R/L 050~100	GB○○R/L 125~200	GB○○R/L 230~300	GB○○R/L 330~400	GB○○R/L 400~480	
Carbon Steel	-	☆ 150-220	☆ 100-150	☆ 80-200	★ 80-180	-	-	-	①0.03~0.08 ②Traversing N.A. ③Traversing N.A.	①0.04~0.09 ②0.04~0.09 ③Max. 0.3	①0.05~0.1 ②0.05~0.1 ③Max. 0.5	①0.05~0.12 ②0.05~0.1 ③Max. 0.5	①0.05~0.12 ②0.05~0.1 ③Max. 0.8	Coolant
Alloy Steel	-	☆ 130-200	☆ 80-130	☆ 80-180	★ 80-160	-	-	-	①0.03~0.07 ②Traversing N.A. ③Traversing N.A.	①0.04~0.08 ②0.04~0.08 ③Max. 0.3	①0.05~0.09 ②0.05~0.09 ③Max. 0.5	①0.05~0.1 ②0.05~0.1 ③Max. 0.5	①0.05~0.1 ②0.05~0.1 ③Max. 0.8	
Stainless Steel	-	-	☆ 60-100	☆ 60-150	★ 60-130	-	-	-	①0.03~0.07 ②Traversing N.A. ③Traversing N.A.	①0.04~0.08 ②0.04~0.08 ③Max. 0.3	①0.05~0.09 ②0.05~0.09 ③Max. 0.5	①0.05~0.1 ②0.05~0.1 ③Max. 0.5	①0.05~0.1 ②0.05~0.1 ③Max. 0.8	
Cast Iron	-	-	-	-	-	★ 60-100	-	-	①0.03~0.08 ②Traversing N.A. ③Traversing N.A.	①0.04~0.09 ②0.04~0.09 ③Max. 0.3	①0.05~0.1 ②0.05~0.1 ③Max. 0.5	①0.05~0.12 ②0.05~0.1 ③Max. 0.5	①0.05~0.12 ②0.05~0.1 ③Max. 0.8	
Aluminum	-	-	-	-	-	★ 150-400	-	★ 150-2000	①0.05~0.12 ②Traversing N.A. ③Traversing N.A.	①0.05~0.15 ②0.05~0.15 ③Max. 0.5	①0.05~0.15 ②0.05~0.15 ③Max. 0.8	①0.08~0.15 ②0.08~0.15 ③Max. 0.8	①0.08~0.15 ②0.08~0.15 ③Max. 0.8	
Brass	-	-	-	-	-	★ 150-300	-	★ 200-800	①0.05~0.12 ②Traversing N.A. ③Traversing N.A.	①0.05~0.15 ②0.05~0.15 ③Max. 0.5	①0.05~0.15 ②0.05~0.15 ③Max. 0.8	①0.08~0.15 ②0.08~0.15 ③Max. 0.8	①0.08~0.15 ②0.08~0.15 ③Max. 0.8	

* Above cutting condition is for external grooving. Set both cutting speed and feed rate lower than 10% for internal grooving. ★ : 1st Recommendation ☆ : 2nd Recommendation

◆ TGF insert (Ground Chipbreaker)

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)								① f at Grooving (mm/rev) ② f at Traversing (mm/rev) ③ // ap (mm)				Remarks
	Cermet			PVD Coated Carbide		Carbide	CBN	PCD					
	TN90	TC40	TC60	PR930	PR1115	KW10	KBN510	KPD001 (KPD010)	TGF32R/L 033~050	TGF32R/L 075~095	TGF32R/L 100~145	TGF32R/L 150~250	
Carbon Steel	☆ 150-220	☆ 150-220	☆ 100-150	☆ 80-180	★ 80-180	-	-	-	①0.01~0.05 ②Traversing N.A. ③Traversing N.A.	①0.02~0.07 ②Traversing N.A. ③Traversing N.A.	①0.03~0.08 ②0.03~0.06 ③Max. 0.2	①0.03~0.08 ②0.03~0.06 ③Max. 0.2	Coolant
Alloy Steel	☆ 130-200	☆ 130-200	☆ 80-130	☆ 80-160	★ 80-160	-	-	-	①0.01~0.04 ②Traversing N.A. ③Traversing N.A.	①0.02~0.06 ②Traversing N.A. ③Traversing N.A.	①0.03~0.07 ②0.02~0.05 ③Max. 0.2	①0.03~0.07 ②0.02~0.05 ③Max. 0.2	
Stainless Steel	☆ 70-150	-	☆ 60-100	☆ 60-130	★ 60-130	-	-	-	①0.01~0.04 ②Traversing N.A. ③Traversing N.A.	①0.02~0.06 ②Traversing N.A. ③Traversing N.A.	①0.03~0.07 ②0.02~0.05 ③Max. 0.2	①0.03~0.07 ②0.02~0.05 ③Max. 0.2	
Cast Iron	-	-	-	-	-	★ 60-100	-	-	①0.01~0.05 ②Traversing N.A. ③Traversing N.A.	①0.02~0.07 ②Traversing N.A. ③Traversing N.A.	①0.03~0.08 ②0.03~0.06 ③Max. 0.2	①0.03~0.08 ②0.03~0.06 ③Max. 0.2	
Aluminum	-	-	-	-	-	★ 150-400	-	★ 150-2000	①0.01~0.05 ②Traversing N.A. ③Traversing N.A.	①0.02~0.07 ②Traversing N.A. ③Traversing N.A.	①0.03~0.08 ②0.03~0.06 ③Max. 0.2	①0.03~0.08 ②0.03~0.06 ③Max. 0.2	
Brass	-	-	-	-	-	★ 150-300	-	★ 200-800	①0.01~0.04 ②Traversing N.A. ③Traversing N.A.	①0.02~0.06 ②Traversing N.A. ③Traversing N.A.	①0.03~0.07 ②0.02~0.05 ③Max. 0.2	①0.03~0.07 ②0.02~0.05 ③Max. 0.2	

★ : 1st Recommendation ☆ : 2nd Recommendation

◆ TG insert (Ground Chipbreaker)

changes to GBA.

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)								Feed Rate (mm/rev)					Remarks
	Cermet			PVD Coated Carbide		Carbide	CBN	PCD						
	TN60	TC40	TC60	PR630	PR930	KW10	KBN510	KPD001 (KPD010)	TG○○R/L 075~095	TG○○R/L 125~200	TG○○R/L 230~300	TG○○R/L 330~400	TG○○R/L 430~450	
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 rate lower than 10% for internal grooving.

★ : 1st Recommendation ☆ : 2nd Recommendation

◆ GH insert (Ground Chipbreaker)

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)								① f at Grooving (mm/rev) ② f at Traversing (mm/rev) ③ // ap (mm)				Remarks
	Cermet			PVD Coated Carbide		Carbide	Ceramic						
	TN90	TC40	TC60	PR630	PR930	KW10	A65	A66N	GH 40~50	GH 55~70	GH 75~80	GH 100~120	
Carbon Steel	☆ 150-220	☆ 150-220	☆ 100-150	☆ 80-200	★ 80-180	-	-	-	①0.07~0.2 ②0.07~0.15 ③Max. 1.0	①0.07~0.2 ②0.07~0.15 ③Max. 1.0	①0.1~0.25 ②0.1~0.2 ③Max. 1.5	①0.15~0.3 ②0.15~0.25 ③Max. 2.0	Coolant
Alloy Steel	☆ 130-200	☆ 130-200	☆ 80-130	☆ 80-180	★ 80-160	-	-	-	①0.07~0.18 ②0.07~0.13 ③Max. 1.0	①0.07~0.18 ②0.07~0.13 ③Max. 1.0	①0.1~0.23 ②0.1~0.18 ③Max. 1.5	①0.15~0.27 ②0.15~0.22 ③Max. 2.0	
Stainless Steel	☆ 70-150	-	☆ 60-100	☆ 60-150	★ 60-130	-	-	-	①0.07~0.16 ②0.07~0.13 ③Max. 1.0	①0.07~0.16 ②0.07~0.13 ③Max. 1.0	①0.1~0.21 ②0.1~0.18 ③Max. 1.5	①0.15~0.25 ②0.15~0.22 ③Max. 2.0	
Cast Iron	-	-	-	-	-	★ 60~100	☆ 150~300	☆ 150~300	KW10 ①0.07~0.2 ②0.07~0.15 ③Max. 1.0 A65 / A66N ①0.03~0.07 ②Traversing N.A. ③Traversing N.A.	KW10 ①0.07~0.2 ②0.07~0.15 ③Max. 1.0 A65 / A66N ①0.03~0.07 ②Traversing N.A. ③Traversing N.A.	KW10 ①0.1~0.25 ②0.1~0.2 ③Max. 1.5 A65 / A66N ①0.05~0.09 ②Traversing N.A. ③Traversing N.A.	KW10 ①0.15~0.3 ②0.15~0.25 ③Max. 2.0 A65 / A66N ①0.05~0.09 ②Traversing N.A. ③Traversing N.A.	
Aluminum	-	-	-	-	-	★ 150-400	-	-	①0.07~0.2 ②0.07~0.15 ③Max. 1.0	①0.07~0.2 ②0.07~0.15 ③Max. 1.0	①0.1~0.25 ②0.1~0.2 ③Max. 1.5	①0.15~0.3 ②0.15~0.25 ③Max. 2.0	
Brass	-	-	-	-	-	★ 150-300	-	-	①0.07~0.2 ②0.07~0.15 ③Max. 1.0	①0.07~0.2 ②0.07~0.15 ③Max. 1.0	①0.1~0.25 ②0.1~0.2 ③Max. 1.5	①0.15~0.3 ②0.15~0.25 ③Max. 2.0	
Hard Materials	-	-	-	-	-	-	☆ 40-80	☆ 40-80	①0.02~0.05 ②0.01~0.03 ③Max. 0.1	①0.02~0.05 ②0.01~0.03 ③Max. 0.2	①0.02~0.05 ②0.01~0.04 ③Max. 0.2		

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

★ : 1st Recommendation ☆ : 2nd Recommendation

◆ GHU insert (Molded Chipbreaker)

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)								① f at Grooving (mm/rev) ② f at Traversing (mm/rev) ③ // ap (mm)					Remarks
	Cermet			CVD Coated Carbide	PVD Coated Carbide		Ceramic							
	TN60	TC40	TC60	CR9025	PR630	PR930	A65	A66N	GHU 40	GHU 50	GHU 60			
Carbon Steel	☆ 130-200	-	-	☆ 80-180	-	-	-	-	①0.06~0.12 ②0.05~0.1 ③Max. 1.0	①0.06~0.12 ②0.05~0.1 ③Max. 1.0	①0.06~0.15 ②0.05~0.12 ③Max. 1.5			Coolant
Alloy Steel	☆ 100-180	-	-	☆ 80-160	-	-	-	-	①0.06~0.12 ②0.05~0.1 ③Max. 1.0	①0.06~0.12 ②0.05~0.1 ③Max. 1.0	①0.06~0.15 ②0.05~0.12 ③Max. 1.5			
Stainless Steel	-	-	-	☆ 60-130	-	-	-	-	①0.06~0.1 ②0.05~0.08 ③Max. 0.8	①0.06~0.1 ②0.05~0.08 ③Max. 0.8	①0.06~0.12 ②0.05~0.1 ③Max. 1.2			

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

★ : 1st Recommendation ☆ : 2nd Recommendation

Recommended Cutting Conditions

GA insert (Molded Chipbreaker)

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)								① f at Grooving (mm/rev) ② f at Traversing (mm/rev) ③ 〃 ap (mm)					Remarks
	Cermet				CVD Coated Carbide	PVD Coated Carbide		Carbide						
	TN60	TN90	TC40	TC60	CR9025	PR630	PR930	KW10	GA 30	GA 40	GA 50			
Carbon Steel	☆ 130-200	-	-	-	★ 80-180	-	-	-	①0.06~0.18 ②0.05~0.15 ③Max. 0.8	①0.06~0.21 ②0.05~0.17 ③Max. 1.0	①0.06~0.25 ②0.05~0.2 ③Max. 1.3			Coolant
Alloy Steel	☆ 100-180	-	-	-	★ 80-160	-	-	-	①0.06~0.15 ②0.05~0.12 ③Max. 0.3	①0.06~0.18 ②0.05~0.15 ③Max. 0.5	①0.06~0.22 ②0.05~0.18 ③Max. 0.8			
Stainless Steel	-	-	-	-	★ 60-130	-	-	-	①0.06~0.1 ②0.05~0.08 ③Max. 0.8	①0.06~0.1 ②0.05~0.08 ③Max. 0.8	①0.06~0.12 ②0.05~0.1 ③Max. 1.2			

★ : 1st Recommendation ☆ : 2nd Recommendation

GIA insert (Molded Chipbreaker)

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)								① f at Grooving (mm/rev) ② f at Traversing (mm/rev) ③ 〃 ap (mm)					Remarks
	Cermet				CVD Coated Carbide	PVD Coated Carbide		Carbide						
	TN60	TN90	TC40	TC60	CR9025	PR630	PR930	KW10	GIA 30	GIA 40	GIA 50			
Carbon Steel	☆ 60-120	-	-	-	★ 60-120	-	-	-	①0.04~0.08 ②0.02~0.08 ③Max. 0.3	①0.04~0.09 ②0.02~0.08 ③Max. 0.4	①0.05~0.1 ②0.05~0.08 ③Max. 0.5			Coolant
Alloy Steel	☆ 60-100	-	-	-	★ 60-100	-	-	-	①0.04~0.07 ②0.02~0.07 ③Max. 0.3	①0.04~0.07 ②0.02~0.07 ③Max. 0.4	①0.05~0.08 ②0.05~0.08 ③Max. 0.5			
Stainless Steel	-	-	-	-	★ 60-80	-	-	-	①0.04~0.07 ②0.02~0.07 ③Max. 0.3	①0.04~0.07 ②0.02~0.07 ③Max. 0.4	①0.05~0.08 ②0.05~0.08 ③Max. 0.5			

★ : 1st Recommendation ☆ : 2nd Recommendation

GMN insert (CBN / PCD)

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)		① f at Grooving (mm/rev) ② f at Traversing (mm/rev) ③ 〃 ap (mm)				Remarks
	CBN	PCD					
	KBN510 KBN525 (KBN10B)	KPD001 (KPD010)	GMN2	GMN3	GMN4 GMN5	GMN6	
Aluminum	-	★ 150-2000	①0.05~0.15 ②0.05~0.15 ③Max. 0.5	①0.05~0.15 ②0.05~0.15 ③Max. 0.8	①0.08~0.18 ②0.08~0.18 ③Max. 0.8	①0.10~0.20 ②0.10~0.20 ③Max. 0.8	Coolant
Brass	-	★ 200-800	①0.05~0.15 ②0.05~0.15 ③Max. 0.5	①0.05~0.15 ②0.05~0.15 ③Max. 0.8	①0.08~0.18 ②0.08~0.18 ③Max. 0.8	①0.10~0.20 ②0.10~0.20 ③Max. 0.8	
Cast Iron	★ 150-400	-	①0.04~0.09 ②0.04~0.09 ③Max. 0.3	①0.05~0.1 ②0.05~0.1 ③Max. 0.5	①0.05~0.12 ②0.05~0.12 ③Max. 0.5	①0.05~0.15 ②0.05~0.15 ③Max. 0.8	
Hard Materials	★ 80-120	-	①0.02~0.05 ②0.01~0.03 ③Max. 0.1	①0.03~0.07 ②0.01~0.05 ③Max. 0.2	①0.03~0.08 ②0.03~0.08 ③Max. 0.3	①0.05~0.1 ②0.05~0.1 ③Max. 0.4	

* Above cutting condition is for external grooving. Set feed rate lower than 20% for face grooving.

★ : 1st Recommendation

◆ GV insert (Ground Chipbreaker)

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)						① f at Grooving (mm/rev) ② f at Traversing (mm/rev) ③ // ap (mm)							Remarks
	Cermet			PVD Coated Carbide		Carbide	GV$^{R}_{L}$ 100SS~300SS 100S~300S	GV$^{R}_{L}$ 145B~185B	GV$^{R}_{L}$ 200B~280B	GV$^{R}_{L}$ 300B~400B				
	TN90	TC40	TC60	PR630	PR930	KW10	GV$^{R}_{L}$ 100A~340A 100AR~150AR		GV$^{R}_{L}$ 100BR	GV$^{R}_{L}$ 150BR	GV$^{R}_{L}$ 280C~300C	GV$^{R}_{L}$ 340C~400C	GV$^{R}_{L}$ 430C~500C	
Carbon Steel	☆ 120-180	☆ 120-180	☆ 80-120	☆ 80-160	★ 80-140	-	①0.03-0.08 ②0.03-0.08 ③Max. 0.3	①0.03-0.08 ②0.03-0.08 ③Max. 0.3	①0.04-0.09 ②0.04-0.09 ③Max. 0.3	①0.05-0.12 ②0.05-0.1 ③Max. 0.5	①0.04-0.09 ②0.04-0.09 ③Max. 0.3	①0.05-0.12 ②0.05-0.1 ③Max. 0.5	①0.05-0.12 ②0.05-0.1 ③Max. 0.5	Coolant
Alloy Steel	☆ 100-160	☆ 100-160	☆ 80-100	☆ 80-140	★ 80-120	-	①0.03-0.07 ②0.03-0.1 ③Max. 0.3	①0.03-0.07 ②0.03-0.1 ③Max. 0.3	①0.04-0.08 ②0.04-0.08 ③Max. 0.3	①0.05-0.1 ②0.05-0.1 ③Max. 0.5	①0.04-0.08 ②0.04-0.08 ③Max. 0.3	①0.05-0.1 ②0.05-0.1 ③Max. 0.5	①0.05-0.1 ②0.05-0.1 ③Max. 0.5	
Stainless Steel	☆ 70-130	-	☆ 60-100	☆ 60-130	★ 60-110	-	①0.03-0.07 ②0.03-0.1 ③Max. 0.3	①0.03-0.07 ②0.03-0.1 ③Max. 0.3	①0.04-0.08 ②0.04-0.08 ③Max. 0.3	①0.05-0.1 ②0.05-0.1 ③Max. 0.5	①0.04-0.08 ②0.04-0.08 ③Max. 0.3	①0.05-0.1 ②0.05-0.1 ③Max. 0.5	①0.05-0.1 ②0.05-0.1 ③Max. 0.5	
Cast Iron	-	-	-	-	-	★ 60-100	①0.03-0.08 ②0.03-0.08 ③Max. 0.3	①0.03-0.08 ②0.03-0.08 ③Max. 0.3	①0.04-0.09 ②0.04-0.09 ③Max. 0.3	①0.05-0.12 ②0.05-0.1 ③Max. 0.5	①0.04-0.09 ②0.04-0.09 ③Max. 0.3	①0.05-0.12 ②0.05-0.1 ③Max. 0.5	①0.05-0.12 ②0.05-0.1 ③Max. 0.5	
Aluminum	-	-	-	-	-	★ 150-300	①0.05-0.12 ②0.05-0.12 ③Max. 0.5	①0.05-0.12 ②0.05-0.12 ③Max. 0.5	①0.05-0.15 ②0.05-0.15 ③Max. 0.5	①0.08-0.15 ②0.08-0.15 ③Max. 0.8	①0.05-0.15 ②0.05-0.15 ③Max. 0.5	①0.08-0.15 ②0.08-0.15 ③Max. 0.8	①0.08-0.15 ②0.08-0.15 ③Max. 0.8	
Brass	-	-	-	-	-	★ 100-250	①0.05-0.12 ②0.05-0.12 ③Max. 0.5	①0.05-0.12 ②0.05-0.12 ③Max. 0.5	①0.05-0.15 ②0.05-0.15 ③Max. 0.5	①0.08-0.15 ②0.08-0.15 ③Max. 0.8	①0.05-0.15 ②0.05-0.15 ③Max. 0.5	①0.08-0.15 ②0.08-0.15 ③Max. 0.8	①0.08-0.15 ②0.08-0.15 ③Max. 0.8	

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

★ : 1st Recommendation ☆ : 2nd Recommendation

◆ GVF insert (Ground Chipbreaker)

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)								① f at Grooving (mm/rev) ② f at Traversing (mm/rev) ③ // ap (mm)					Remarks
	Cermet				CVD Coated Carbide	PVD Coated Carbide		Carbide	GVF$^{R}_{L}$ 200A~340A	GVF$^{R}_{L}$ 250B~350B	GVF$^{R}_{L}$ 400B~490B	GVF$^{R}_{L}$ 350C~450C	GVF$^{R}_{L}$ 500C~600C	
	TN60	TN90	TC40	TC60	CR9025	PR630	PR930	KW10	GVF$^{R}_{L}$ 100AR~150AR	GVF$^{R}_{L}$ 150BR	GVF$^{R}_{L}$ 200BR			
Carbon Steel	-	☆ 150-220	☆ 150-220	☆ 100-150	-	☆ 80-200	★ 80-180	-	①0.03-0.08 ②0.03-0.08 ③Max. 0.3	①0.04-0.09 ②0.04-0.09 ③Max. 0.3	①0.05-0.1 ②0.05-0.1 ③Max. 0.5	①0.05-0.12 ②0.05-0.1 ③Max. 0.5	①0.05-0.12 ②0.05-0.1 ③Max. 0.8	Coolant
Alloy Steel	-	☆ 130-200	☆ 130-200	☆ 80-130	-	☆ 80-180	★ 80-160	-	①0.03-0.07 ②0.03-0.1 ③Max. 0.3	①0.04-0.08 ②0.04-0.08 ③Max. 0.3	①0.05-0.09 ②0.05-0.09 ③Max. 0.5	①0.05-0.1 ②0.05-0.1 ③Max. 0.5	①0.05-0.1 ②0.05-0.1 ③Max. 0.8	
Stainless Steel	-	☆ 70-150	-	☆ 60-100	-	☆ 60-150	★ 60-130	-	①0.03-0.07 ②0.03-0.1 ③Max. 0.3	①0.04-0.08 ②0.04-0.08 ③Max. 0.3	①0.05-0.09 ②0.05-0.09 ③Max. 0.5	①0.05-0.1 ②0.05-0.1 ③Max. 0.5	①0.05-0.1 ②0.05-0.1 ③Max. 0.8	
Cast Iron	-	-	-	-	-	-	-	★ 60-100	①0.03-0.08 ②0.03-0.08 ③Max. 0.3	①0.04-0.09 ②0.04-0.09 ③Max. 0.3	①0.05-0.1 ②0.05-0.1 ③Max. 0.5	①0.05-0.12 ②0.05-0.1 ③Max. 0.5	①0.05-0.12 ②0.05-0.1 ③Max. 0.8	
Aluminum	-	-	-	-	-	-	-	★ 150-400	①0.05-0.12 ②0.05-0.12 ③Max. 0.5	①0.05-0.15 ②0.05-0.15 ③Max. 0.5	①0.05-0.15 ②0.05-0.15 ③Max. 0.8	①0.08-0.15 ②0.08-0.15 ③Max. 0.8	①0.08-0.15 ②0.08-0.15 ③Max. 0.8	
Brass	-	-	-	-	-	-	-	★ 150-300	①0.05-0.12 ②0.05-0.12 ③Max. 0.5	①0.05-0.15 ②0.05-0.15 ③Max. 0.5	①0.05-0.15 ②0.05-0.15 ③Max. 0.8	①0.08-0.15 ②0.08-0.15 ③Max. 0.8	①0.08-0.15 ②0.08-0.15 ③Max. 0.8	

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

★ : 1st Recommendation ☆ : 2nd Recommendation

◆ FTK Recommended Cutting Conditions

Workpiece Material	Recommended Insert Grade (Cutting Speed: 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				Coolant
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	-	-	-	-	★ 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

GMG • GMM • GMN • GMGA

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)						Grooving				Traversing				Remarks
	Cermet	CVD Coated Carbide	PVD Coated Carbide			Carbide	Width (mm)				Width (mm)				
	TN90	CR9025	PR915	PR930	PR905	KW10	2.0~3.0	4.0	5.0	6.0 / 8.0	2.0~3.0	4.0	5.0	6.0 / 8.0	
							f (mm/rev)				f (mm/rev)				
Carbon Steel	☆ 100~220	☆ 80~200	☆ 80~200	★ 80~200	-	-	0.05~0.15	0.10~0.25	0.15~0.35	0.20~0.35	0.10~0.20	0.15~0.30	0.20~0.40	0.25~0.40	Coolant
Alloy Steel	☆ 80~200	☆ 70~180	☆ 70~180	★ 70~180	-	-	0.05~0.15	0.10~0.25	0.15~0.35	0.20~0.35	0.10~0.20	0.15~0.30	0.20~0.40	0.25~0.40	
Stainless Steel	☆ 70~160	☆ 60~150	★ 60~150	☆ 60~150	-	-	0.05~0.15	0.10~0.20	0.15~0.35	0.20~0.35	0.10~0.20	0.15~0.25	0.20~0.40	0.25~0.40	
Cast Iron	-	-	-	-	★ 100~200	☆ 70~150	0.05~0.20	0.10~0.30	0.15~0.40	0.20~0.40	0.10~0.25	0.15~0.35	0.20~0.45	0.25~0.45	
Aluminum	-	-	-	-	-	★ 200~500	0.05~0.20	0.08~0.25	0.10~0.25	0.12~0.30	0.10~0.20	0.10~0.25	0.10~0.25	0.15~0.30	
Brass	-	-	-	-	-	★ 100~200	0.05~0.15	0.08~0.20	0.10~0.25	0.12~0.30	0.10~0.20	0.10~0.25	0.10~0.25	0.15~0.30	

★ : 1st Recommendation ☆ : 2nd Recommendation

◆ See the notes below for traversing conditions.

① Case of KGM Toolholder

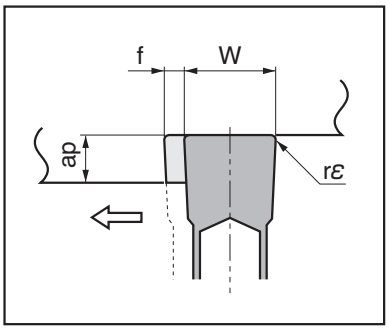
	Recommended Conditions
ap (MAX) mm	under 80% of Edge Width
f (MAX) mm/rev	under 10% of Edge Width

・ap≦0.8w
・f≦0.1w

(ap)×(f) shall not exceed 1/2 of ap(Max)×f(Max)

Load (mm^2) \ Edge Width (mm)	2.0~2.5	3.0	4.0	5.0	6.0	8.0
ap×f	~0.20	~0.36	~0.64	~1.00	~1.44	~2.56

・ap×f≦ $\frac{1}{2}$×0.8w×0.1w=0.04w^2



② Case of KGM-T Toolholder (Deep Grooving Type)
Use 90% of KGM conditions

③ Case of KGMM / KGMS / KFMS-8 Toolholder

	Recommended Conditions
ap (MAX) mm	under 50% of Edge Width
f (MAX) mm/rev	under 4% of Edge Width

・ap≦0.5w
・f≦0.04w

ap×f 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×f	~0.10	~0.18	~0.32	~0.50	~0.72	~1.28

・ap×f≦0.02w^2

④ Case of KIGM Toolholder

	Recommended Conditions
ap (MAX) mm	under 70% of Edge Width
f (MAX) mm/rev	under 8% of Edge Width

・ap≦0.7w
・f≦0.08w

ap×f should be as follows. (Under 70% of KGM)

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

・ap×f≦0.04w^2

GMG / GMM / GMGA 8030 (Face Grooving)

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)						Face Grooving			Traversing			Remarks
	Cermet	CVD Coated Carbide	PVD Coated Carbide			Carbide	Width (mm)			Width (mm)			
	TN90	CR9025	PR915	PR930	PR905	KW10	8.0			8.0			
							f (mm/rev)			f (mm/rev)			
Carbon Steel	☆ 100~220	☆ 80~160	☆ 80~160	★ 80~160	-	-	0.1~0.2			0.1~0.25			Coolant
Alloy Steel	☆ 80~160	☆ 70~160	☆ 70~160	★ 70~160	-	-	0.1~0.2			0.1~0.25			
Stainless Steel	☆ 70~140	☆ 60~130	★ 60~130	☆ 60~130	-	-	0.1~0.2			0.1~0.25			
Cast Iron	-	-	-	-	★ 80~180	☆ 70~130	0.1~0.3			0.1~0.35			
Aluminum	-	-	-	-	-	★ 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

FMM • FMN

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)						Face Grooving (FMM type / FMN type)			Traversing (Case of FMM type)			Remarks
	Cermet	CVD Coated Carbide	PVD Coated Carbide			Carbide	Width (mm)			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	-	-	-	-	-	★ 200~500	0.03~0.05	0.03~0.08	0.05~0.10	0.05~0.10	0.05~0.25	0.10~0.30	
Brass	-	-	-	-	-	★ 100~200	0.03~0.05	0.03~0.08	0.05~0.10	0.05~0.10	0.05~0.25	0.10~0.30	

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

★ : 1st Recommendation ☆ : 2nd Recommendation

◆ See the notes below for traversing conditions.

ap and f of FMM

	Recommended Conditions	
ap (MAX) mm	under 50% of Edge Width	・ap≦0.5w
f (MAX) mm/rev	under 3~5% of Edge Width	・f≦ [0.03 (Min.)~0.05 (MAX.)] w

ap×f should be as follows.

Load (mm^2) \ Edge Width (mm)	3.0	4.0	5.0	6.0
ap×f	~0.09	~0.14	~0.25	~0.36

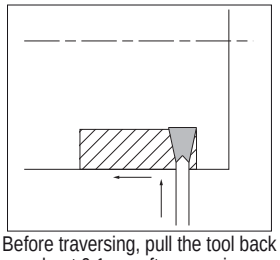
・ap×f≦0.01 w^2

Guide for External Machining

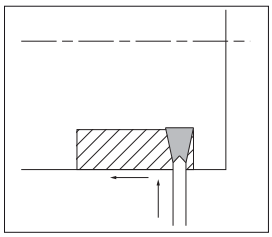
Point (Ⅰ) (Traversing after Grooving)

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

② Grooving Depth under 0.5mm: At finishing (Refer to Fig.2)
Traversing subsequent to grooving is possible because shallow groove depths relate a small load on the cutting edge.
(Dwell-motion is not necessary.)



Before traversing, pull the tool back about 0.1mm after grooving
(Grooving Depth Over 0.5mm: At roughing)
Fig.1



Traversing subsequent to grooving
(Grooving Depth under 0.5mm: At finishing)
Fig.2

Point (Ⅱ)

When widening the groove width, apply the “Step Turning” as shown in Fig.3.
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

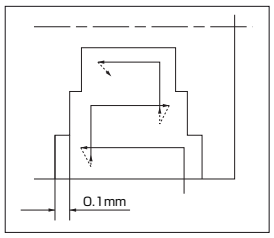


Fig.3

Guide for Face Grooving

〈Toolholder Selection〉

① Choose the best tool depending on the groove width.
The machining Dia. øD 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 Toolholder's hand is recommended so as to be mounted in reverse. (Fig.2)
This will provide smooth chip flow and chip clearance.

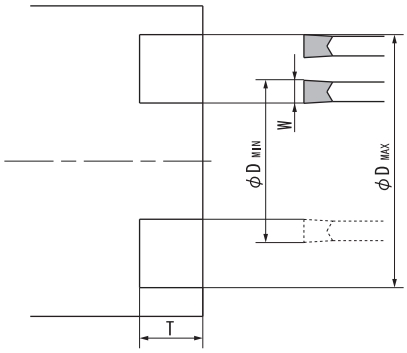


Fig.1

〈Traversing Tips〉

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

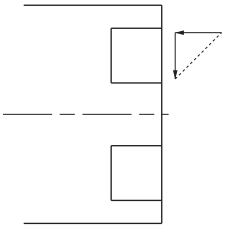


Fig.3

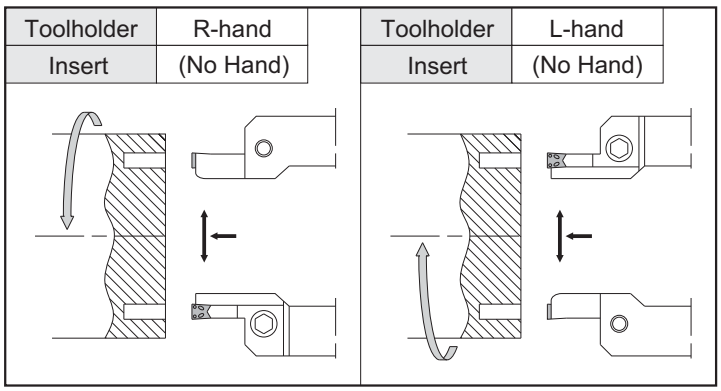
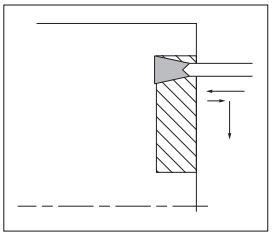


Fig.2 Toolholder's Hand and Rotation

Guide for Face Grooving (Continued)

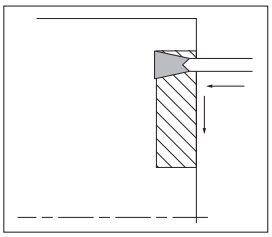
Point (Ⅰ) (Traversing after Grooving)

① Grooving Depth Over 0.5mm: At roughing (Refer to Fig.4)
Before traversing, pull the tool back about 0.1mm after grooving, instead of traversing subsequent to grooving.
(Failure to pull the tool back before traverse cutting will result in an unbalanced load applied on only one side of the cutting edge.)



Before traversing, pull the tool back about 0.1mm after grooving
(Grooving Depth Over 0.5mm: At roughing)
Fig.4

② Grooving Depth under 0.5mm: At finishing (Refer to Fig.5)
Traversing subsequent to grooving is possible because shallow groove depths relate a small load on the cutting edge.
(Dwell-motion is not necessary.)



Traversing subsequent to grooving
(Grooving Depth under 0.5mm: At finishing)
Fig.5

Point (Ⅱ)

When widening the groove width, apply the “Step Turning” as shown in Fig.6.
The widened groove and side walls should be finished last.
(For better chip control, ap over 0.5mm is recommended.)

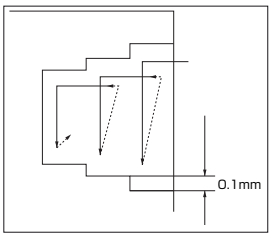
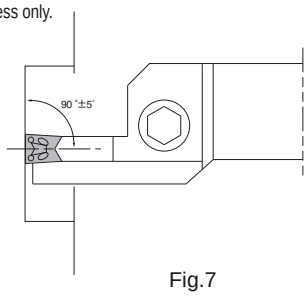


Fig.6

Trouble shooting

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

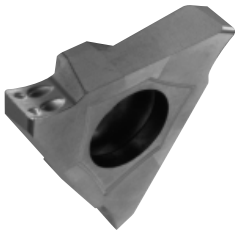
Guide for Grooving by Cermet Insert (Steel)

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=150-220m/min.
4. Set the toolholder overhang as short as possible.

How to Improve Surface Finish (when surface roughness below 3 μm Rz is required)

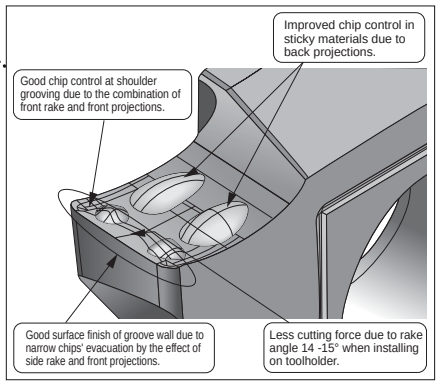
1. Increase the cutting speed (V_C=220m/min.MAX)
2. Program dwell-motion at the groove bottom.
3. Apply a light hone to the cutting edge by hand lapper.

Chip Control of Grooving Insert with Molded Chipbreaker



GBA-MY

3-Edge Molded Chipbreaker

- Advantages of MY Chipbreaker

1. Molded chipbreaker curls chips spirally and evacuates chips easily.
2. High precision molded Insert with economical 3 cutting edges.
3. Can be used in automated production.