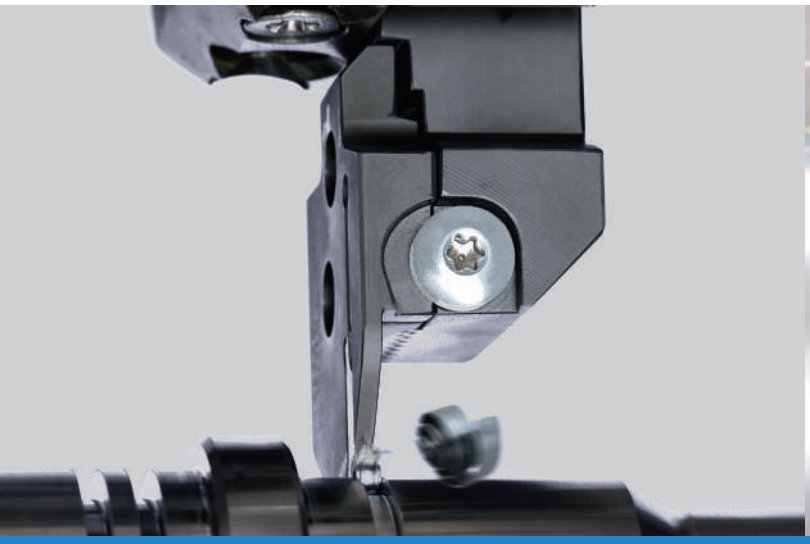
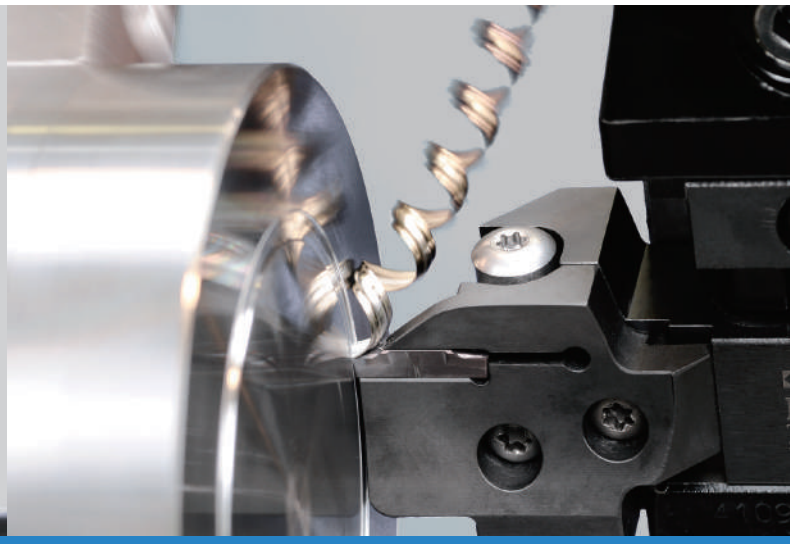
Grooving / Cut-Off

KGD/KGDF





Improved Grooving Performance with Expansive Lineup of Chipbreakers and Toolholders

Good chip control

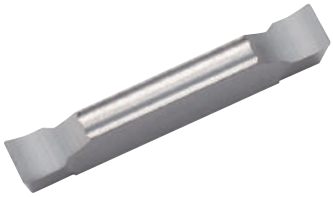
MEGACOAT/MEGACOAT NANO coating technology for long tool life and high efficiency machining

Comprehensive Toolholder Lineup

NEW

Inserts for Face Grooving
(For Aluminum / Non-ferrous metals)

GS Chipbreaker



External Grooving / Cut-Off

KGD

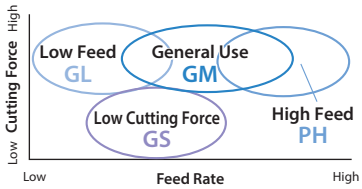
Good chip control

MEGACOAT/MEGACOAT NANO coating technology for long tool life and high efficiency machining

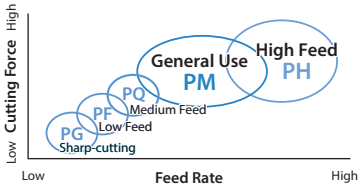
1 Wide Range of Chipbreakers

Application Maps

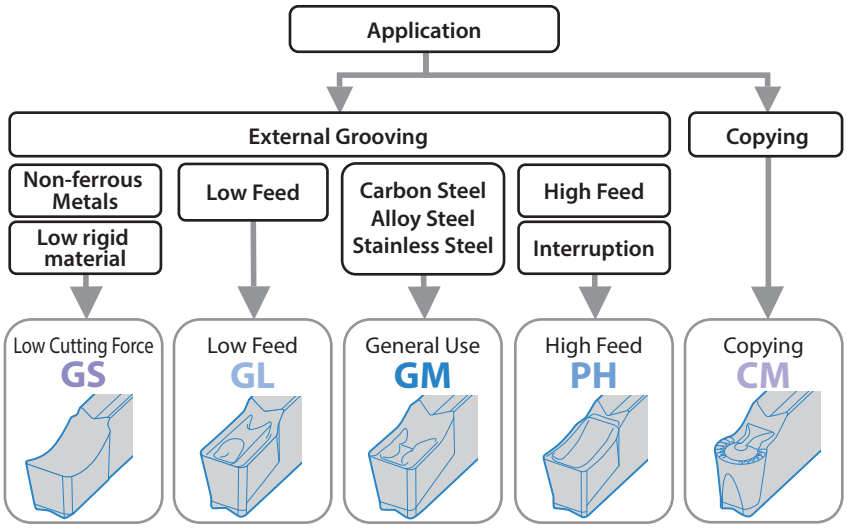
External Grooving and Turning



Cut-Off



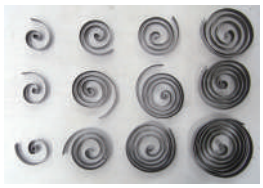
Chipbreaker Selection(External)



Comparison of Chip Control (Internal evaluation)
Cutting Conditions : Vc = 150 m/min, f = 0.15 mm/rev Workpiece : SCM415

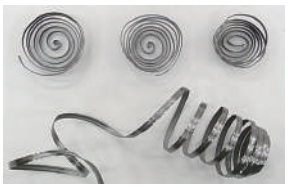
Better chip control than competitors. Reduces damage of cutting edge caused by crushing chips

GM Chipbreaker



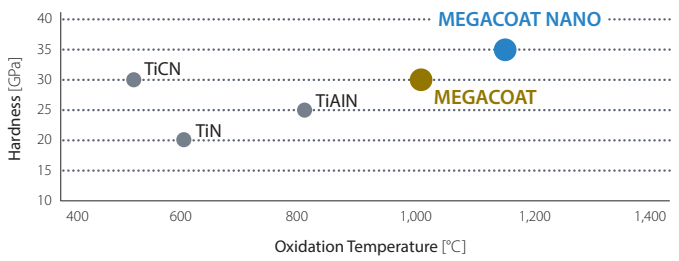
Competitor A

Competitor B



2 MEGACOAT/MEGACOAT NANO coating technology for long tool life

Coating Properties



PR1225(MEGACOAT)
For Steel Grooving and Cut-off

PR1215 (MEGACOAT)
Superior wear resistance
For machining of cast iron

PR1535 (MEGACOAT NANO)
For machining of stainless steel

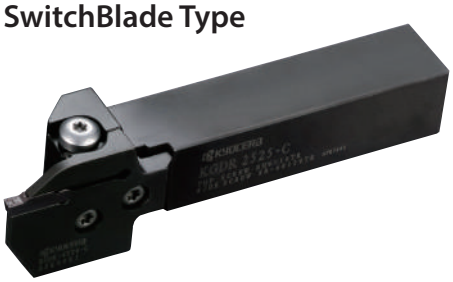
3 Various Toolholder Lineup

Available two types of toolholder, Integral type and SwitchBlade type

Integral Type

Integral type toolholder
with wide lineup (for various groove width and depth)

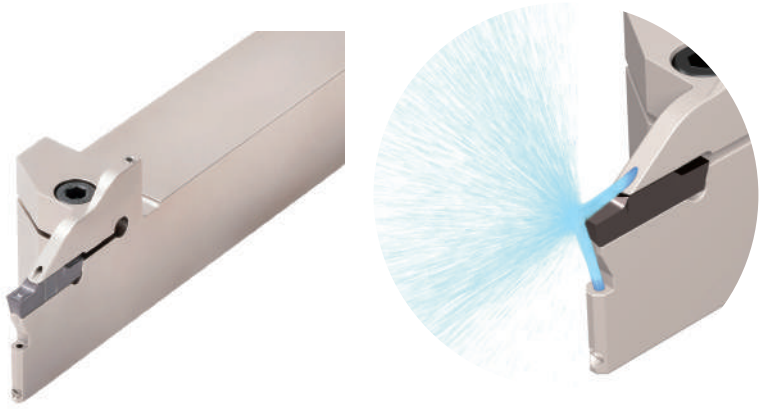
SwitchBlade Type



SwitchBlade type toolholder
Applicable for various types of grooving and cut-off , such as external and face grooving by replacing blade parts

High Pressure Coolant Toolholder Lineup

JCT

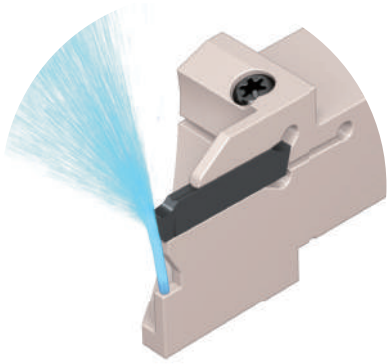


Coolant is directed from two directions

Discharges coolant in two directions toward both the rake surface and the flank face of the insert

Excellent Chip Control and Long Tool Life

JCTM for Small Parts Machining



Delivers coolant directly to front flank face

Cooling the cutting edge leads to longer tool life

Long Tool Life

Integral type / SwitchBlade type Selection Reference

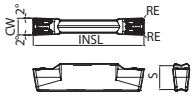
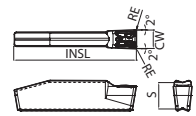
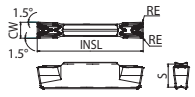
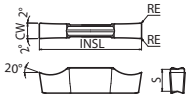
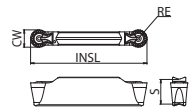
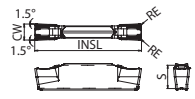
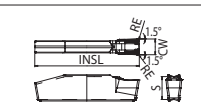
Integral Type	SwitchBlade Type
• Various toolholder lineup Available for various groove depth (shallow /medium / deep) Optimum overhang length • Available for low-rigid machine and workpiece • For small machine with limited work space (Automatic lathe, small lathe, etc.) • Coolant-through holders for high pressure coolant	• Suitable for high-mix low-volume production Suitable for grooving with various width Applicable for various groove width by replacing blades • Suitable for difficult-to-cut material Tough cutting conditions Toolholder cost reduction (replaceable blade) • Face grooving is possible by changing blade * Make sure right hand / left hand

Face Grooving KGDF Toolholder and GDFM Inserts ➡ P21

GDM/GDMS/GDG (External Grooving and Traversing)

Applicable Inserts

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

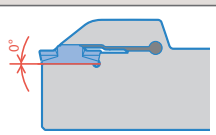
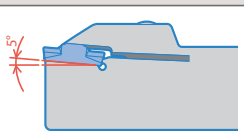
Insert			Description		Dimensions (mm)					Cermet		MEGACOAT NANO	MEGACOAT		Carbide
					Edge Width CW	Tolerance	RE	INSL	S	TN620	TN90	PR1535	PR1225	PR1215	GW15
Grooving and Turning	 General Use		GDM	2420N-020GM	2.4	±0.03	0.2	20	4.3	●	●	●	●	●	
				3020N-020GM	3.0					●	●	●	●	●	
				3020N-040GM			0.4			●	●	●	●	●	
				4020N-020GM	4.0		0.2			●	●	●	●	●	
				4020N-040GM			0.4			●	●	●	●	●	
				4020N-080GM			0.8			●	●	●	●	●	
				5020N-040GM	5.0	±0.04	0.4			●	●	●	●	●	
				5020N-080GM			0.8			●		●	●	●	
				6020N-040GM	6.0		0.4			●	●	●	●	●	
				6020N-080GM			0.8			●	●	●	●	●	
				8030N-080GM	8.0	±0.05		30	5.5			●	●	●	
	 General Use 1-edge		GDMS	2220N-020GM	2.2	±0.03	0.2	20	4.3	●	●	●	●	●	
				3020N-040GM	3.0		0.4			●		●	●	●	
				4020N-040GM	4.0					●	●	●	●	●	
				5020N-080GM	5.0	±0.04	0.8			●		●	●	●	
				6020N-080GM	6.0					●		●	●	●	
	 Low Feed		GDM	2420N-020GL	2.4	±0.03	0.2	20	4.3	●	●	●	●	●	
				3020N-020GL	3.0					●	●	●	●	●	
				3020N-040GL			0.4			●	●	●	●	●	
				4020N-020GL	4.0		0.2			●	●	●	●	●	
				4020N-040GL			0.4			●		●	●	●	
				5020N-040GL	5.0	±0.04				●	●	●	●	●	
				6020N-040GL	6.0					●		●	●	●	
Grooving	 Low Cutting Force		GDG	2520N-020GS	2.5	±0.02	0.2	20	4.3	●	●	●	●	●	●
				3020N-020GS	3.0					●	●	●	●	●	●
				3520N-020GS	3.5					●		●	●	●	●
				4020N-040GS	4.0		0.4			●	●	●	●	●	●
				5020N-040GS	5.0					●	●	●	●	●	●
				6020N-040GS	6.0					●		●	●	●	●
				8030N-040GS	8.0			30	5.5	●		●	●	●	●
Full-R / Copying			GDM	3020N-150R-CM	3.0	±0.03	1.5	20	4.3	●	●	●	●	●	
				4020N-200R-CM	4.0		2.0			●	●	●	●	●	
				5020N-250R-CM	5.0	±0.04	2.5	*21		●	●	●	●	●	
				6020N-300R-CM	6.0		3.0			●		●	●	●	
Grooving and Cut-Off	 High Feed		GDM	2020N-020PH	2.0	±0.03	0.2	20	4.3			●	●	●	
				3020N-030PH	3.0		0.3					●	●	●	
				4020N-030PH	4.0							●	●	●	
	 High Feed 1-edge		GDMS	2020N-020PH	2.0	±0.03	0.2	20				●	●	●	
				3020N-030PH	3.0		0.3					●	●	●	
				4020N-030PH	4.0							●	●	●	

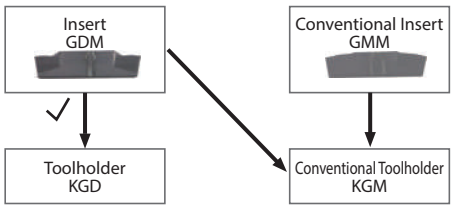
* GDM50/60-CM differs from other descriptions in length (INSL) to avoid interference of a toolholder with workpiece.

Inserts are sold in 10 piece boxes.
● : Standard Stock

* KGD / KGM Combinations

Insert Setting Angle of KGD / KGM Toolholders

KGD : 0°~1°	Conventional Tools KGM···5°
	

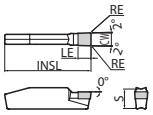
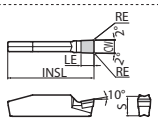


Installing conventional inserts to the KGD toolholder is not recommended.

GDGS (CBN / PCD) / GDM / GDG (Cut-Off)

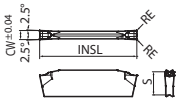
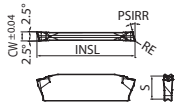
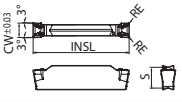
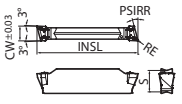
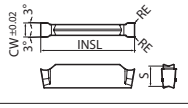
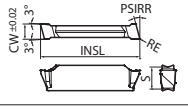
Applicable Inserts

GDGS (CBN / PCD) Classification of usage					
◕ : Continuous~Light Interruption / 1st Choice ◔ : Continuous~Light Interruption / 2nd Choice ● : Continuous / 1st Choice ○ : Continuous / 2nd Choice	N	Non-ferrous Metals			●
	S	Titanium Alloy			●
	H	Hard materials (In case hardness is under 40HRC)			
		Hard materials (In case hardness is over 40HRC)	●		
		Powdered Steel		●	

Insert			Description		Dimensions (mm)					MEGA COAT CBN	CBN	PCD
					Edge Width CW	Tolerance	RE	INSL	S	LE	KBN05M	KBN570	KPD001
Grooving	 1-edge	CBN 	GDGS	2020N-020NB	2.0	±0.03	0.2	20	4.3	2.9	●	●	●
				3020N-020NB	3.0		0.2						●
				3020N-040NB			0.4				●	●	
				4020N-020NB	4.0		0.2						●
				4020N-040NB			0.4				●	●	
				5020N-020NB	5.0		0.2						●
				5020N-040NB			0.4				●	●	
				6020N-020NB	6.0		0.2						●
				6020N-040NB			0.4				●		
		PCD 											

CBN & PCD Inserts are sold in 1 piece boxes.
● : Standard Stock

GDM/GDG (Cut-Off) Classification of usage							
◕ : Continuous~Light Interruption / 1st Choice ◔ : Continuous~Light Interruption / 2nd Choice ● : Continuous / 1st Choice ○ : Continuous / 2nd Choice	P	Carbon Steel / Alloy Steel	◔	◕	◔		
	M	Stainless Steel	◕	◔	◔		
	N	Non-ferrous Metals				◕	◔

Insert Handed Insert shows Right-hand			Description		Dimensions (mm)					Angle	MEGACOAT NANO	MEGACOAT		DLC Coated Carbide	Carbide
					Edge Width CW	Tolerance	RE	INSL	S	PSIR $^{R}/_{L}$	PR1535	PR1225	PR1215	PDL025	GW15
Cut-Off (Low Feed)			GDM	1316N-003PF	1.3	±0.04	0.03	16	3.7	–	●	●	●		
				1316N-015PF			0.15				●	●	●		
				1516N-003PF	1.5		0.03				●	●	●		
				1516N-015PF			0.15				●	●	●		
				2020N-003PF	2.0		0.03	20	4.3		●	●	●		
				2020N-015PF			0.15				●	●	●		
				2520N-003PF	2.5		0.03				●	●	●		
				2520N-015PF			0.15				●	●	●		
				3020N-003PF	3.0		0.03				●	●	●		
				3020N-015PF			0.15				●	●	●		
	 15° Lead Angle		GDM	1316 $^{R}/_{L}$-003PF-15D	1.3	±0.04	0.03	16	3.7	15°	●	●	●		
				1516 $^{R}/_{L}$-003PF-15D	1.5		0.03				●	●	●		
				1516R-015PF-15D			0.15				R	R	R		
				2020 $^{R}/_{L}$-003PF-15D	2.0		0.03	20	4.3		●	●	●		
				2020R-015PF-15D			0.15				R	R	R		
				2520 $^{R}/_{L}$-003PF-15D	2.5		0.03				●	●	●		
				2520R-015PF-15D			0.15				R	R	R		
				3020 $^{R}/_{L}$-003PF-15D	3.0		0.03				●	●	●		
				3020R-015PF-15D			0.15				R	R	R		
Cut-Off (Medium Feed)			GDM	2020N-010PQ	2.0	±0.03	0.1	20	4.3	–	●	●	●		
				2520N-010PQ	2.5						●	●	●		
				3020N-010PQ	3.0						●	●	●		
	 15° Lead Angle		GDM	2020R-010PQ-15D	2.0	±0.03	0.1	20	4.3	15°	R	R	R		
				2520R-010PQ-15D	2.5						R	R	R		
				3020R-010PQ-15D	3.0						R	R	R		
Cut-Off (Low Cutting Force)			GDG	2020N-005PG	2.0	±0.02	0.05	20	4.3	–	●	●		●	●
				2520N-005PG	2.5						●	●		●	●
				3020N-005PG	3.0						●	●		●	●
	 15° Lead Angle		GDG	2020R-005PG-15D	2.0	±0.02	0.05	20	4.3	15°	R	R		R	R
				2520R-005PG-15D	2.5						R	R		R	R
				3020R-005PG-15D	3.0						R	R		R	R

PF chipbreaker has a large corner-R (RE)
Using PF/PM chipbreaker (designed for cut-off) for grooving will not create a flat bottom (Ref. to the right figure)

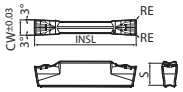
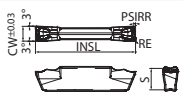
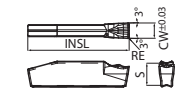
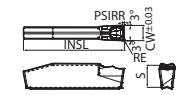
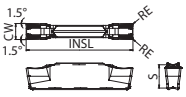
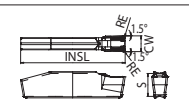
Groove bottom created by PF/PM chipbreaker

Inserts are sold in 10 piece boxes.
● : Standard Stock R : Right-hand Only

GDM/GDMS (Cut-Off)

Applicable Inserts

Classification of usage					
●: Continuous~Light Interruption / 1st Choice ○: Continuous~Light Interruption / 2nd Choice	P	Carbon Steel / Alloy Steel	○	●	○
	M	Stainless Steel	●	○	○
	N	Non-ferrous Metals			

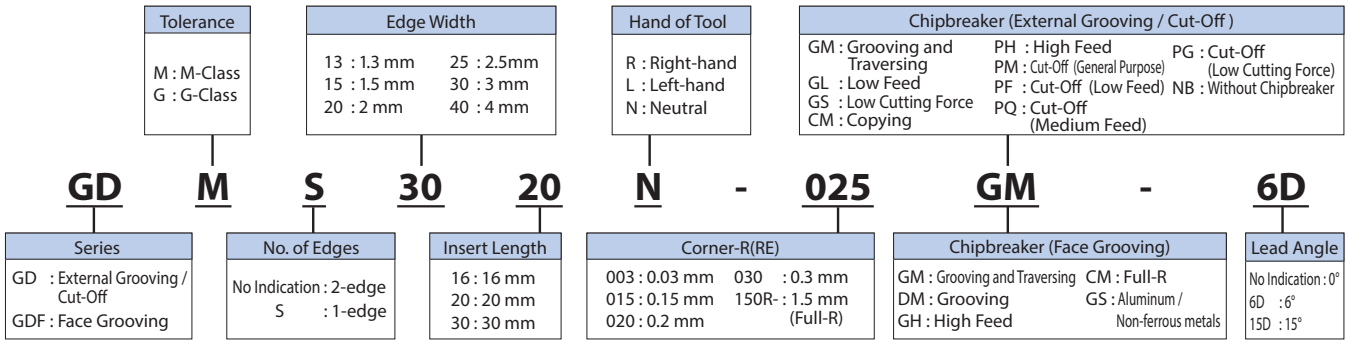
Insert (Handed Insert shows Right-hand)			Description		Dimensions (mm) Edge Width CW	Tolerance	RE	INSL	S	Angle PSIR R/L	MEGACOAT NANO PR1535	MEGACOAT PR1225	MEGACOAT PR1215
Cut-Off (General Purpose)			GDM	2020N-020PM	2.0	±0.03	0.2	20	4.3	–	●	●	●
				2520N-020PM	2.5						●	●	●
				3020N-025PM	3.0		0.25				●	●	●
				4020N-030PM	4.0		0.3				●	●	●
	 6° Lead Angle		GDM	2020R-020PM-6D	2.0	±0.03	0.2	20	4.3	6°	R	R	R
				2520R-020PM-6D	2.5						R	R	R
				3020R-025PM-6D	3.0		0.25				R	R	R
	 1-edge		GDMS	2020N-020PM	2.0	±0.03	0.2	20	4.3	–	●	●	●
				3020N-025PM	3.0		0.25				●	●	●
				4020N-030PM	4.0		0.3				●	●	●
	 6° Lead Angle 1-edge		GDMS	2020R-020PM-6D	2.0	±0.03	0.2	20	4.3	6°	R	R	R
				3020R-025PM-6D	3.0		0.25				R	R	R
				4020R-030PM-6D	4.0		0.3				R	R	R
Cut-Off (High feed rate)			GDM	2020N-020PH	2.0	±0.03	0.2	20	4.3	–	●	●	●
				3020N-030PH	3.0		0.3				●	●	●
				4020N-030PH	4.0						●	●	●
	 1-edge		GDMS	2020N-020PH	2.0	±0.03	0.2	20		–	●	●	●
				3020N-030PH	3.0		0.3				●	●	●
				4020N-030PH	4.0						●	●	●

Using PF/PM chipbreaker (designed for cut-off) for grooving will not create a flat bottom (Ref. to the right figure)

Groove bottom created by PF/PM chipbreaker

Inserts are sold in 10 piece boxes.
●: Standard Stock R : Right-hand Only

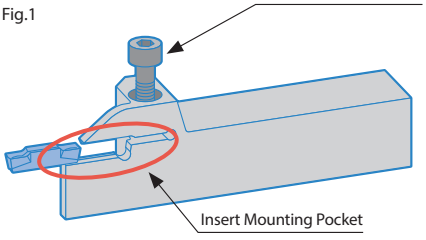
Inserts Identification System



Setting the Insert

1. Completely eliminate chips from the insert mounting part. (see Fig.1)
2. Put the insert into the toolholder and push until it contacts the holder's surface for fixing the insert's back end. (see Fig.1, Fig.2)
3. Keeping the insert pushed against the toolholder's locating surface, tighten the insert clamp bolt at an appropriate torque.
4. Make sure there is no gap between the insert and the toolholder's locating surface and that the insert is set straight. (see Fig.2, Fig.3)

Fig.1



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

Fig.2

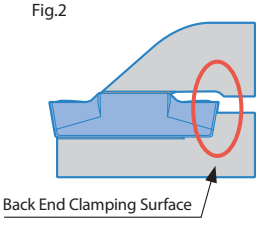
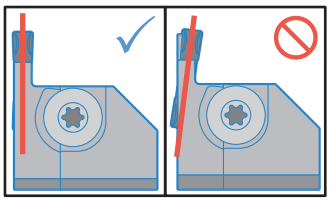
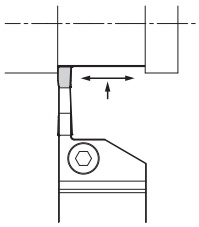
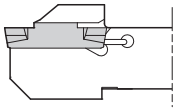


Fig.3

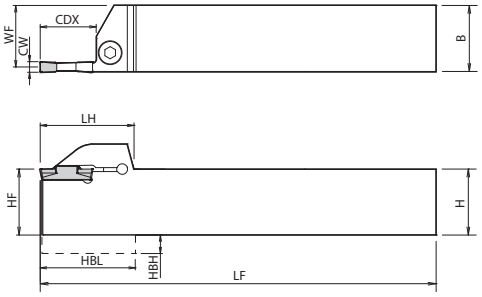


KGD (Integral Type)





KGD R/L1216JX-3T06
KGD R/L1216JX-4T06
shows above figure



• Right-hand shown

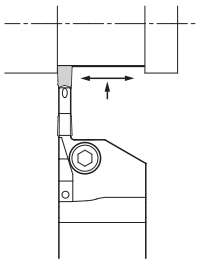
Toolholder Dimensions

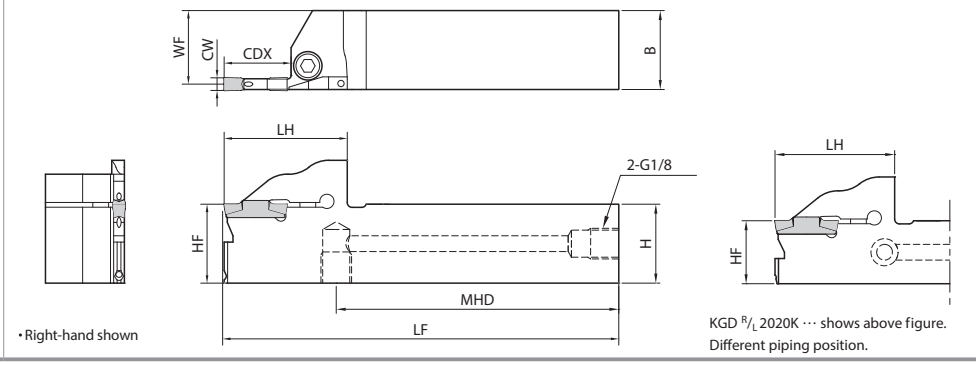
Width (mm)	Max. Grooving Depth (mm)	Description	Stock R	Stock L	H	HF	HBH	B	LF	LH	HBL	WF	CDX	Edge Width CW (mm) MIN.	Edge Width CW (mm) MAX.	Spare Parts: Clamp Bolt	Spare Parts: Wrench
2	6	KGD R/L 1616H-2T06	●	●	16	16	4.0	16	100	27.7	28.0	15.2	6	2.0	3.0	HH5X16	LW-4
		KGD R/L 2020K-2T06	●	●	20	20	–	20	125	28.0	–	19.2					
		KGD R/L 2525M-2T06	●	●	25	25		25	150			24.2				HH5X25	
	10	KGD R/L 1616H-2T10	●	●	16	16	4.0	16	100	30.2	30.5	15.2	10			HH5X16	
		KGD R/L 2020K-2T10	●	●	20	20	–	20	125	30.5	–	19.2					
		KGD R/L 2525M-2T10	●	●	25	25		25	150			24.2				HH5X25	
	17	KGD R/L 1616H-2T17	●	●	16	16	4.0	16	100	31.2	31.5	15.2	17			HH5X16	
		KGD R/L 2012K-2T17	●	●	20	20	–	12	125	32.5	–	11.2					
		KGD R/L 2020K-2T17	●	●				20				19.2					
		KGD R/L 2525M-2T17	●	●	25	25		25	150			24.2				HH5X25	
2.4	17	KGD R/L 2012K-2.4T17	●	●	20	20	–	12	125	32.5	–	11.0	17	2.4	3.0	HH5X16	LW-4
		KGD R/L 2020K-2.4T17	●	●				20				19.0					
3	6	KGD R/L 1216JX-3T06	●	●	12	12	2.0	16	120	19.5	19	14.8	6	3.0	4.0	SE-50125TR	LTW-20
		KGD R/L 1616H-3T06	●	●	16	16	4.0		100	27.7	28.0					HH5X16	LW-4
		KGD R/L 2020K-3T06	●	●	20	20	–	20	125	28.0	–	18.8					
		KGD R/L 2525M-3T06	●	●	25	25		25	150			23.8				HH5X25	
	10	KGD R/L 1616H-3T10	●	●	16	16	4.0	16	100	30.2	30.5	14.8	10			HH5X16	
		KGD R/L 2020K-3T10	●	●	20	20	–	20	125	30.5	–	18.8					
		KGD R/L 2525M-3T10	●	●	25	25		25	150			23.8				HH5X25	
	20	KGD R/L 1616H-3T20	●	●	16	16	4.0	16	100	34.2	34.5	14.8	20			HH5X16	
		KGD R/L 2012K-3T20	●	●	20	20	–	12	125	34.5	–	10.8					
		KGD R/L 2020K-3T20	●	●				20				18.8					
		KGD R/L 2525M-3T20	●	●	25	25		25	150	35.5		23.8				HH5X25	
4	6	KGD R/L 1216JX-4T06	●	●	12	12	2.0	16	120	19.5	19	14.3	6	4.0	5.0	SE-50125TR	LTW-20
	10	KGD R/L 2020K-4T10	●	●	20	20	–	20	125	30.5	–	18.3	10			HH5X16	LW-4
		KGD R/L 2525M-4T10	●	●	25	25		25	150			23.3				HH5X25	
	20	KGD R/L 2020K-4T20	●	●	20	20	–	20	125	34.5	–	18.3	20			HH5X16	
		KGD R/L 2525M-4T20	●	●	25	25		25	150	35.5		23.3				HH5X25	
	25	KGD R/L 2525M-4T25	●	●	25	25		25	150	40.5		23.3	25				
5	10	KGD R/L 2020K-5T10	●	●	20	20	–	20	125	30.5	–	17.8	10	5.0	6.0	HH5X16	LW-4
		KGD R/L 2525M-5T10	●	●	25	25		25	150			22.8				HH5X25	
	17	KGD R/L 2020K-5T17	●	●	20	20		20	125	37.5		17.8	17				
		KGD R/L 2525M-5T17	●	●	25	25		25	150			22.8					
	25	KGD R/L 2525M-5T25	●	●	25	25		25	150	40.5		22.8	25				
6	15	KGD R/L 2525M-6T15	●	●	25	25	–	25	150	32.5	–	22.4	15	6.0	6.0	HH5X25	LW-4
	30	KGD R/L 2525M-6T30	●	●	25	25		25	150	45.5		22.4	30				
8	25	KGD R/L 2525M-8T25	●	●	25	25	7.0	25	150	43.3	44.2	22.0	25	8.0	8.0	HH6X25	LW-5
		3232P-8T25	●	●	32	32	–	32	170		–	29.0					

Note 1) CDX : Maximum depth to which processing can be made. If the CDX is 20mm or more, the maximum groove-depth of groove made by the 2-edge insert will be 18mm.
2) Recommended tightening torque for clamp bolt is 6.5N • m for HH5X○○, 8.0N • m for HH6X25 and 2.5N • m for SE-50125TR.
3) Above toolholders can also be used for cut-off applications.

● : Standard Stock
Recommended Cutting Conditions ➡ P18 ~ P20

KGD-JCT (External Grooving / Cut-Off)





Toolholder Dimensions

Pressure Resistance : ~ 15MPa

Groove Widths (mm)	Max. Grooving Depth (mm)	Description		Stock		Dimensions (mm)								Edge Width CW (mm)		Spare Parts		
																Arbor Bolt	Wrench	Plug
				R	L	H	HF	B	LF	LH	WF	CDX	MHD	MIN.	MAX.			
3	6	KGD R/L	2020K-3T06JCT	●	●	20	20	20	125	31.5	18.8	6	96.2	3.0	4.0	HH5X16	LW-4	HSG1/8X8.0
			2525K-3T06JCT	●	●	25	25	25			23.8		96.5			HH5X25		
	10		2020K-3T10JCT	●	●	20	20	20		34.0	18.8	10	94.2			HH5X16		
			2525K-3T10JCT	●	●	25	25	25			23.8		94.5			HH5X25		
	20		2020K-3T20JCT	●	●	20	20	20		38.0	18.8	20	90.2			HH5X16		
			2525K-3T20JCT	●	●	25	25	25		39.0	23.8		89.5			HH5X25		
4	10	KGD R/L	2020K-4T10JCT	●	●	20	20	20	125	34.0	18.3	10	94.2	4.0	5.0	HH5X16	LW-4	HSG1/8X8.0
			2525K-4T10JCT	●	●	25	25	25			23.3		94.5			HH5X25		
	20	KGD R/L	2020K-4T20JCT	●	●	20	20	20		38.0	18.3	20	90.2			HH5X16		
			2525K-4T20JCT	●	●	25	25	25		39.0	23.3		89.5			HH5X25		
	25	KGD R/L	2525K-4T25JCT	●	●	25	25	25		44.0	23.3	25	84.5					

Please see P8 for piping parts.

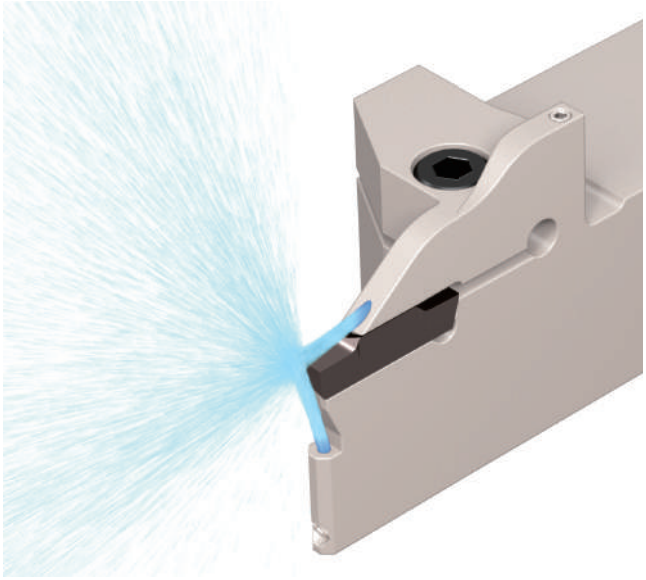
● : Standard Stock

Recommended Cutting Conditions ➡ P18 ~ P20

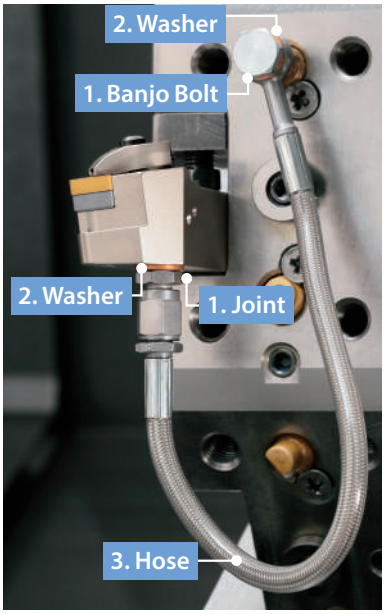
Coolant is directed from two directions

Discharges coolant in two directions toward both the rake surface and the flank face of the insert

Excellent Chip Control and Long Tool Life

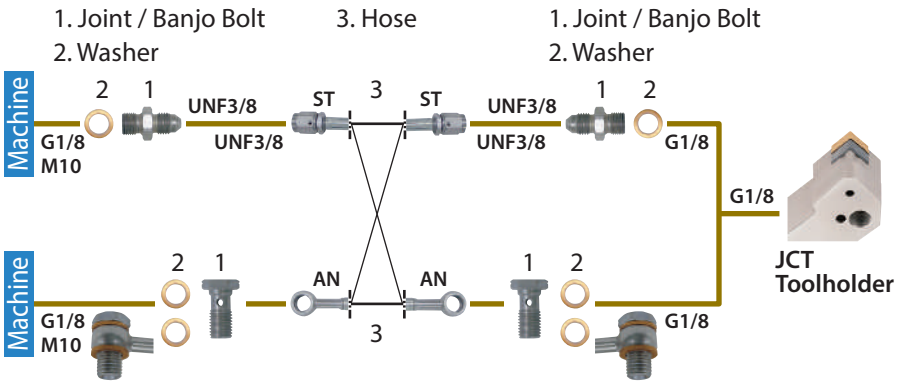


Easy Connection with High Pressure Hose and Joint



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

<Piping Installation Guide>

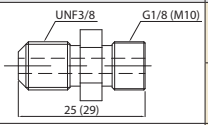
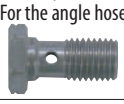
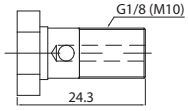


Piping Parts

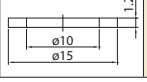
Optional Piping Parts Available.
Choose from parts below to match your machine specifications.
1. Joint / Banjo bolt × 2 2. Washer × 2-4 3. Hose × 1

1. Joint / Banjo Bolt

Pressure Resistance : ~ 30MPa

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

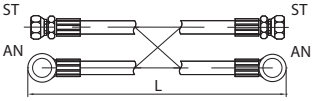
2. Washer Pressure Resistance : ~ 30MPa

Shape		Description	Stock
		WS-10	●

* Use 2 washers for a banjo bolt.

3. Hose

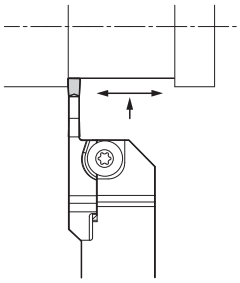
Pressure Resistance : ~ 30MPa

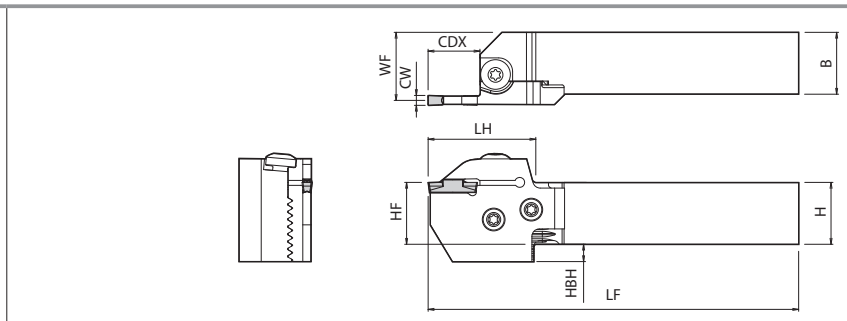
Shape		Description	Stock	Thread Standard		Dimensions (mm) L
Straight / Straight 		HS-ST-ST-200	●	UNF3/8	UNF3/8	200
		HS-ST-ST-250	●			250
Straight / Angle 		HS-ST-AN-200	●	UNF3/8	– (Banjo bolt)	200
		HS-ST-AN-250	●			250
Angle / Angle 		HS-AN-AN-200	●	– (Banjo bolt)	– (Banjo bolt)	200
		HS-AN-AN-250	●			250

Precautions

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

KGD-S (0˚ SwitchBlade Type)





• Right-hand shown (Right-hand Blade and Right-hand Toolholder)

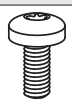
Toolholder Dimensions (Blade + Toolholder)

Shank Angle	Width	Max. Grooving Depth	Shank Size	Unit Description (Standard Stock Description)	Stock		Blade Description ➡ P12	Toolholder Description ➡ P12	Dimensions (mm)								Edge Width CW (mm)	
					R	L			H	HF	HBH	B	LF	LH	WF	CDX	MIN.	MAX.
	(mm)	(mm)	(mm)															
0°	2	17	□20	KGD R/L 2020X-2T17S	●	–	KGD R/L-2T17-C	KGD R/L2020-C	20	20	12	20	122		23.4			
			□25	2525X-2T17S	●	●		KGD R/L2525-C	25	25	7	25	147	40	28.4	17	2.0	3.0
			□32	No Unit Description ➡				KGD R/L3232-C	32	32	–	32	167		35.4			
	3	10	□20	KGD R/L 2020X-3T10S	●	–	KGD R/L-3T10-C	KGD R/L2020-C	20	20	12	20	115		23.0			
			□25	2525X-3T10S	●	–		KGD R/L2525-C	25	25	7	25	140	33	28.0	10		
			□32	No Unit Description ➡				KGD R/L3232-C	32	32	–	32	160		35.0			
		20	□20	KGD R/L 2020X-3T20S	●	●	KGD R/L-3T20-C	KGD R/L2020-C	20	20	12	20	125		23.0		3.0	4.0
			□25	2525X-3T20S	●	●		KGD R/L2525-C	25	25	7	25	150	43	28.0	20		
			□32	3232X-3T20S	●	–		KGD R/L3232-C	32	32	–	32	170		35.0			
	4	10	□20	KGD R/L 2020X-4T10S	●	–	KGD R/L-4T10-C	KGD R/L2020-C	20	20	12	20	115		22.5			
			□25	2525X-4T10S	●	–		KGD R/L2525-C	25	25	7	25	140	33	27.5	10		
			□32	No Unit Description ➡				KGD R/L3232-C	32	32	–	32	160		34.5			
		20	□20	KGD R/L 2020X-4T20S	●	–	KGD R/L-4T20-C	KGD R/L2020-C	20	20	12	20	125		22.5			
			□25	2525X-4T20S	●	●		KGD R/L2525-C	25	25	7	25	150	43	27.5	20	4.0	5.0
			□32	3232X-4T20S	●	–		KGD R/L3232-C	32	32	–	32	170		34.5			
		25	□20	KGD R/L 2020X-4T25S	●	●	KGD R/L-4T25-C	KGD R/L2020-C	20	20	12	20	130		22.5			
			□25	2525X-4T25S	●	●		KGD R/L2525-C	25	25	7	25	155	48	27.5	25		
			□32	3232X-4T25S	●	–		KGD R/L3232-C	32	32	–	32	175		34.5			
	5	10	□20	KGD R/L 2020X-5T10S	●	●	KGD R/L-5T10-C	KGD R/L2020-C	20	20	12	20	115		22.0			
			□25	2525X-5T10S	●	–		KGD R/L2525-C	25	25	7	25	140	33	27.0	10		
			□32	No Unit Description ➡				KGD R/L3232-C	32	32	–	32	160		34.0			
		25	□20	No Unit Description ➡			KGD R/L-5T25-C	KGD R/L2020-C	20	20	12	20	130		22.0		5.0	6.0
			□25	KGD R/L 2525X-5T25S	●	●		KGD R/L2525-C	25	25	7	25	155	48	27.0	25		
			□32	3232X-5T25S	●	–		KGD R/L3232-C	32	32	–	32	175		34.0			

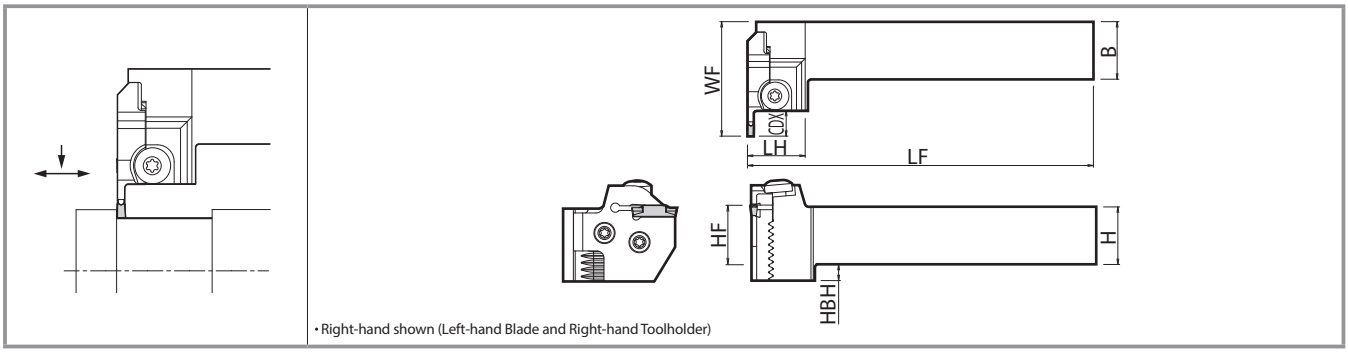
Note 1) When using the toolholder in normal mounting position, the lower jaw of toolholder may interfere with the tool presetter.
2) The toolholder and blade descriptions are printed on the toolholder body. (Unit description is not printed.)
KGD-S : **Right-hand Blade for Right-hand Toolholder, Left-hand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

● : Standard Stock
Recommended Cutting Conditions ➡ P18 ~ P20

Spare Parts (Common with separate types) * The parts are included in the toolholder and unit.

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

KGDS-S (90˚ SwitchBlade Type)



• Right-hand shown (Left-hand Blade and Right-hand Toolholder)

Toolholder Dimensions (Blade + Toolholder)

Shank Angle	Width	Max. Grooving Depth	Shank Size	Blade Description ➡P12	Toolholder Description ➡P12	Unit Description (Standard Stock Description)	Stock		Dimensions (mm)								Edge Width CW (mm)	
	(mm)	(mm)	(mm)				R	L	H	HF	HBH	B	LF	LH	WF	CDX	MIN.	MAX.
90°	2	17	□20	KGD L/R-2T17-C	KGDS R/L2020-C	–	–	–	20	20	12	20	125	27.7	56.7	17	2.0	3.0
			□25		KGDS R/L2525-C	–	–	–	25	25	7	25	150					
	3	10	□20	KGD L/R-3T10-C	KGDS R/L2020-C	KGDS R/L 2020X-3T10S	●	●	20	20	12	20	125		49.7	10	3.0	4.0
			□25		KGDS R/L2525-C	2525X-3T10S	●	●	25	25	7	25	150					
		20	□20	KGD L/R-3T20-C	KGDS R/L2020-C	–	–	–	20	20	12	20	125		59.7	20		
			□25		KGDS R/L2525-C	–	–	–	25	25	7	25	150					
	4	10	□20	KGD L/R-4T10-C	KGDS R/L2020-C	–	–	–	20	20	12	20	125		49.7	10	4.0	5.0
			□25		KGDS R/L2525-C	–	–	–	25	25	7	25	150					
		20	□20	KGD L/R-4T20-C	KGDS R/L2020-C	–	–	–	20	20	12	20	125		59.7	20		
			□25		KGDS R/L2525-C	–	–	–	25	25	7	25	150					
		25	□20	KGD L/R-4T25-C	KGDS R/L2020-C	–	–	–	20	20	12	20	125		64.7	25		
			□25		KGDS R/L2525-C	–	–	–	25	25	7	25	150					
	5	10	□20	KGD L/R-5T10-C	KGDS R/L2020-C	–	–	–	20	20	12	20	125		49.7	10	5.0	6.0
			□25		KGDS R/L2525-C	–	–	–	25	25	7	25	150					
		25	□20	KGD L/R-5T25-C	KGDS R/L2020-C	–	–	–	20	20	12	20	125		64.7	25		
			□25		KGDS R/L2525-C	–	–	–	25	25	7	25	150					

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

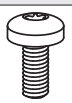
2) The toolholder and blade descriptions are printed on the toolholder body. (Unit description is not printed.)
KGDS-S: **Left-hand Blade for Right-hand Toolholder, Right-hand Blade for Left-hand Toolholder.**
The toolholder is applicable for all blade with suitable hand.

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

● : Standard Stock

Recommended Cutting Conditions ➡P18 ~ P20

Spare Parts (Common with separate types) * The parts are included in the toolholder and unit.

Unit Description	Spare Parts		
	Clamp Bolt (for Insert Clamp)	Clamp Screw (for Blade)	Wrench
			
KGDS R/L ··· S	BH6X10TR	SB-60120TR	LTW-25

Toolholders Identification System (External Grooving, Cut-Off / Integral Type, SwitchBlade Type)

KGD **R** **1616** **H** - **3** **T** **06** (Integral Type)

Toolholder hand	Shank Size	Toolholder Length	Applicable Inserts	Max. Grooving Depth
R : Right-hand L : Left-hand	16 × 16 mm	H : 100 mm	GDM/GDMS 3 ~ 4 mm	06 : 6 mm

KGD **R** **2020** **K** - **3** **T** **06** **JCT** (Coolant-through Holders)

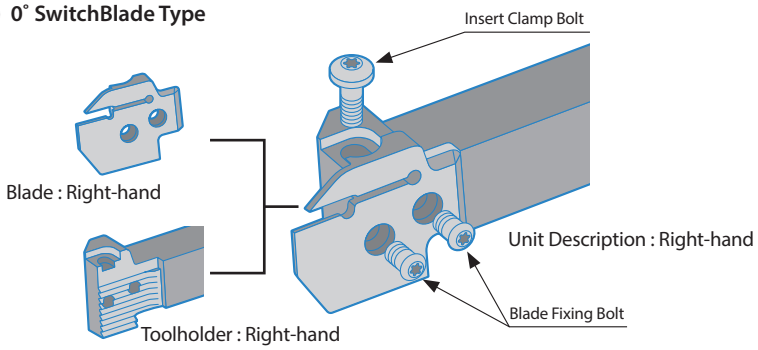
Toolholder hand	Shank Size	Toolholder Length	Applicable Inserts	Max. Grooving Depth	Others
R : Right-hand L : Left-hand	20 × 20 mm	K : 125 mm	GDM/GDMS 3 ~ 4 mm	06 : 6 mm	Coolant-through Holders

KGD
KGDS **R** **2020** **X** - **3** **T** **10** **S** (SwitchBlade Type / Unit Description)

Toolholder hand	Shank Size	Toolholder Length	Applicable Inserts	Max. Grooving Depth
R : Right-hand L : Left-hand	20 × 20 mm	Unit Description	GDM/GDMS 3 ~ 4 mm	10 : 10 mm

Structure of Toolholder Unit (External Grooving, Cut-Off)

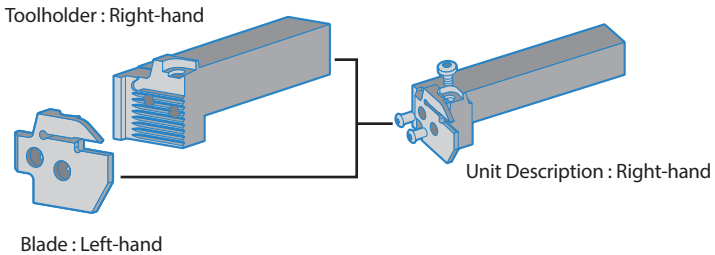
1) 0° SwitchBlade Type



Toolholder (KGD R/L ●● -C)
+
Blade (KGD R/L - ● T ●● -C)

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

2) 90° SwitchBlade Type

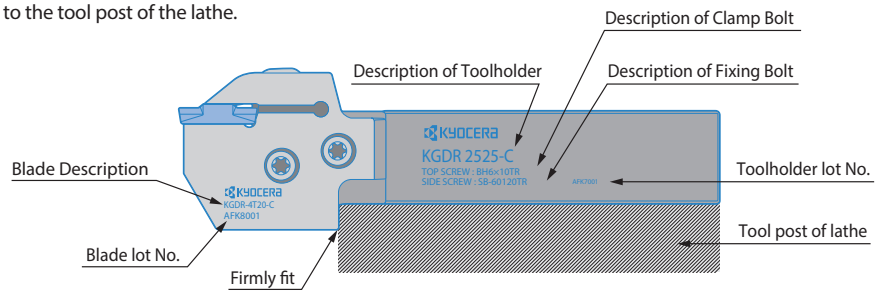


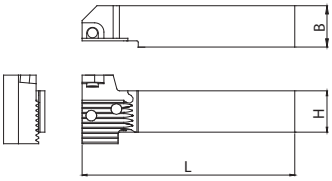
Toolholder (KGDS R/L ●● -C)
+
Blade (KGD L/R - ● T ●● -C)

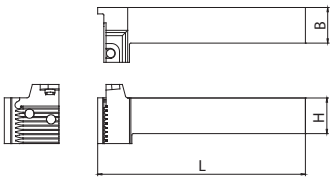
⇒Left-hand Blade for Right-hand Toolholder,
Right-hand Blade for Left-hand Toolholder.

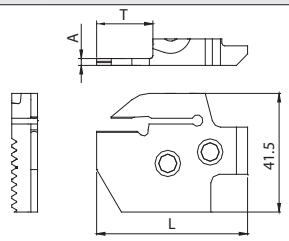
SwitchBlade Type Toolholder Identification System and Their Setting to Lathe

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



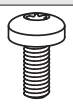
Shape of 0° type Right-hand shown	Toolholder Description		Stock		Dimensions (mm)		
			R	L	L	B	H
	KGD R/L	2020-C	●	●	104	20	20
		2525-C	●	●	129	25	25
		3232-C	●	●	149	32	32

Shape of 90° type Right-hand shown	Toolholder Description		Stock		Dimensions (mm)		
			R	L	L	B	H
	KGDS R/L	2020-C	●	●	122	20	20
		2525-C	●	●	147	25	25

Shape of Blade Right-hand shown	Blade Description		Stock		Dimensions (mm)		
			R	L	L	B	H
	KGD R/L	-2T17-C	●	●	51.2	17.2	1.7
		-3T10-C	●	●	44.2	10.2	2.4
		-3T20-C	●	●	53.2	20.2	
		-4T10-C	●	●	44.2	10.2	3.4
		-4T20-C	●	●	54.2	20.2	
		-4T25-C	●	●	59.2	25.2	
		-5T10-C	●	●	44.2	10.2	4.4
		-5T25-C	●	●	59.2	25.2	

● : Standard Stock

Spare Parts

Unit Description	Spare Parts		
	Clamp Bolt (for Insert Clamp)	Clamp Bolt (for Blade)	Wrench
			
KGD R/L ··· S KGDS R/L ··· S	BH6X10TR	SB-60120TR	LTW-25

* The parts are included in the toolholder and unit.

Setting the Blade (SwitchBlade Type Toolholder)

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

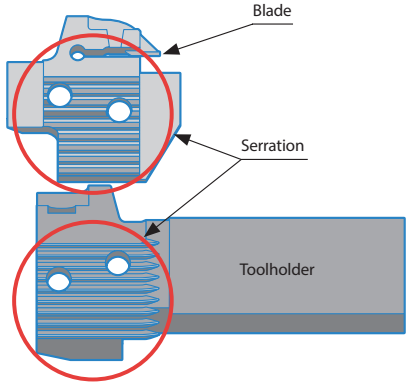


Fig.1

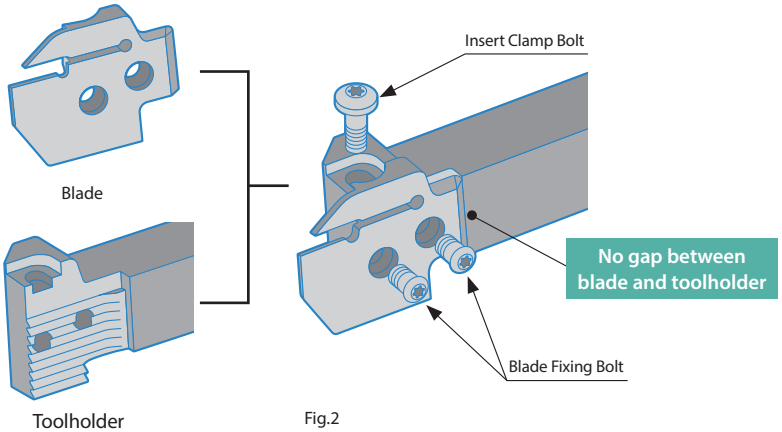
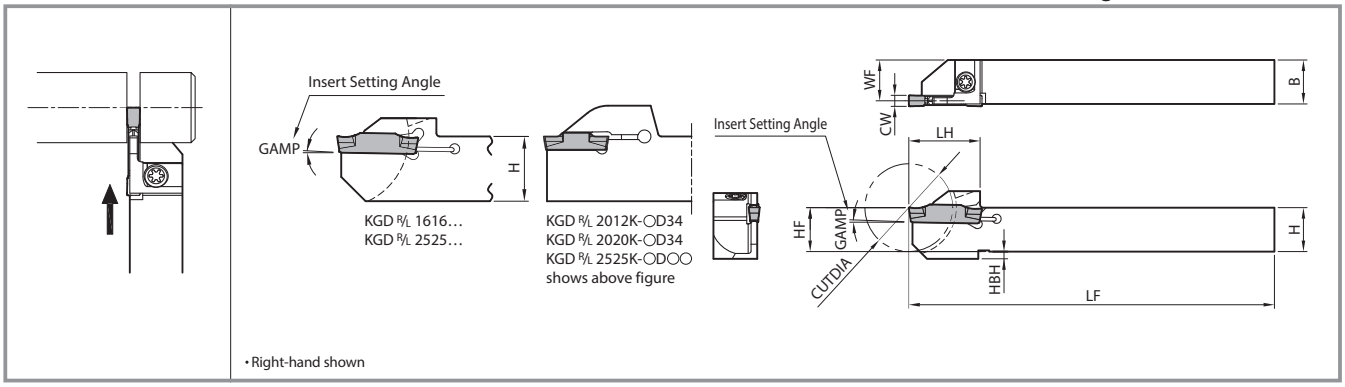


Fig.2

KGD (Small parts machining)

Edge Width : 1.3 ~ 4.0mm



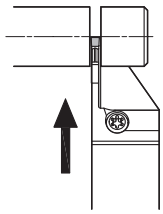
Toolholder Dimensions

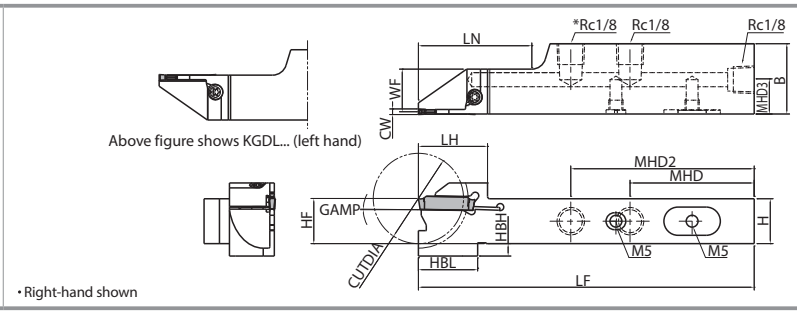
Description		Stock		Cut-Off Dia. (mm)	Dimensions (mm)							Angle	Edge Width CW (mm)		Spare Parts	
															Clamp Screw	Wrench
		R	L	CUTDIA	H	HF	HBH	B	LF	LH	WF	GAMP	MIN.	MAX.		
KGD R/L	1010JX-1.3D16	●	●	16	10	10	2	10	120	18	9.9	5°	1.3	1.3	SB-40120TR	LTW-15S
	1010JX-1.3	●	●	20							9.5					
	1212F-1.3D16	●	●	16	12	12		12	85	19.5	11.9					
	1212JX-1.3D16	●	●						120							
	1212F-1.3	●	●	24					85		11.5					
	1212JX-1.3	●	●						120							
KGD R/L	1010JX-1.5D16	●	●	16	10	10	2	10	120	18	9.7	5°	1.5	1.5	SB-40120TR	LTW-15S
	1010JX-1.5	●	●	20							9.4					
	1212F-1.5D16	●	●	16	12	12		12	85	19.5	11.7					
	1212JX-1.5D16	●	●						120							
	1212F-1.5	●	●	24					85		11.4					
	1212JX-1.5	●	●						120							
KGD R/L	1010JX-2	●	●	20	10	10	2	10	120	18	9.2	1°	2.0	3.0	SB-40120TR	LTW-15S
	1212F-2	●	●	24	12	12		12	85	19.5	11.2					
	1212JX-2	●	●						120							
	1616JX-2	●	●	32	16	16	–	16		24.5	15.2					
	2012K-2D34	●	●	34	20	20		12	125	32.5	11.2	0°			HH5X16	LW-4
	2020K-2D34	●	●					20			19.2					
	2525K-2D34	●	●		25	25		25			24.2					
KGD R/L	1010JX-2.4	●	●	20	10	10	2	10	120	18	9	1°	2.4	3.0	SB-40120TR	LTW-15S
	1212F-2.4	●	●	24	12	12		12	85	19.5	11					
	1212JX-2.4	●	●						120							
	1616JX-2.4	●	●	32	16	16	–	16		24.5	15					
	2012K-2.4D34	●	●	34	20	20		12	125	32.5	11	0°			HH5X16	LW-4
	2020K-2.4D34	●	●					20			19					
	2525K-2.4D34	●	●		25	25		25			24					
KGD R/L	1212JX-3	●	●	24	12	12	2	12	120	19.5	10.8	1°	3.0	3.0	SB-40120TR	LTW-15S
	1616JX-3	●	●	32	16	16	–	16		24.5	14.8			4.0	SE-50125TR	LTW- 20
	1616JX-3D38	●	●	38						29						
	1913K-3D38	●	●		19	19		13	125		11.8					
	2012JX-3D42	●	●	42	20	20		12	120	31	10.8					
	2012JX-3D51	●	●	51						36						
	2020JX-3D42	●	●	42				20		31	18.8					
	2020JX-3D51	●	●	51						36						
	2525K-3D51	●	●		25	25		25	125	41.5	23.8	0°			HH5X16	LW-4

Note 1) 4mm width insert cannot be installed in KGD R/L1212JX-3.
2) Recommended tightening torque for clamp screw is 2.0N·m for SB-40120TR, 2.5N·m for SE-50125TR and 6.5N·m for HH5X16.
3) When machining material greater than ø36mm with KGD R/L...-3D38 or KGD R/L...-3D42 or KGD R/L...-3D51 toolholders, use 1- edge inserts.
Max. workpiece diameter for 2-edge inserts ø36mm.

● : Standard Stock
Recommended Cutting Conditions ➡ P18 ~ P20

KGD-JCTM (Direct coolant holder for small parts machining)





*KGD R/L12... : 2-Rc1/8

• Right-hand shown

Toolholder Dimensions

Description	Stock		Cutting Dia. (mm)	Dimensions (mm)											Angle	Edge Width CW (mm)		Spare Parts				Applicable Inserts
																		Clamp Screw	Wrench	Plug 1	Plug 2	
	R	L	CUTDIA	H=HF	HBH	B	LF	LH	HBL	LN	WF	MHD	MHD2	MHD3	GAMP	MIN.	MAX.					
KGDR 1218JX-2JCTM	●		24	12	8.5	18	120	19.5	21	44	11.2	54	-	8.4	1°	2.0	3.0	SB-40120TR	LTW-15S	GP-1	HS5X4LP	GDM Type GDG Type (GDMS Type) (GDGS Type)
KGDL 1218JX-2JCTM		●							21.5					7.7								
KGDR 1625JX-2JCTM	●		32	16	4.5	25		24.5	21	40	15.2	44	65	12.2								
KGDL 1625JX-2JCTM		●												7.7								
KGDR 1218JX-2.4JCTM	●		24	12	8.5	18	120	19.5	21	44	11	54	-	8.4	1°	2.4	3.0					
KGDL 1218JX-2.4JCTM		●							21.5					7.7								
KGDR 1625JX-2.4JCTM	●		32	16	4.5	25		24.5	21	40	15	44	65	12.2								
KGDL 1625JX-2.4JCTM		●												7.7								
KGDR 1218JX-3JCTM	●		24	12	8.5	18	120	19.5	21	44	10.8	54	-	8.6	1°	3.0	3.0					
KGDL 1218JX-3JCTM		●							21.5					7.7								
KGDR 1625JX-3JCTM	●		32	16	4.5	25		24.5	21	40	14.8	44	65	12.2			4.0					
KGDL 1625JX-3JCTM		●												7.7								

*For coolant holder piping parts, see pages 15 and 16

●: Standard Stock

Recommended Cutting Conditions ➡ P18 ~ P20

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

Internal Coolant without Piping

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

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

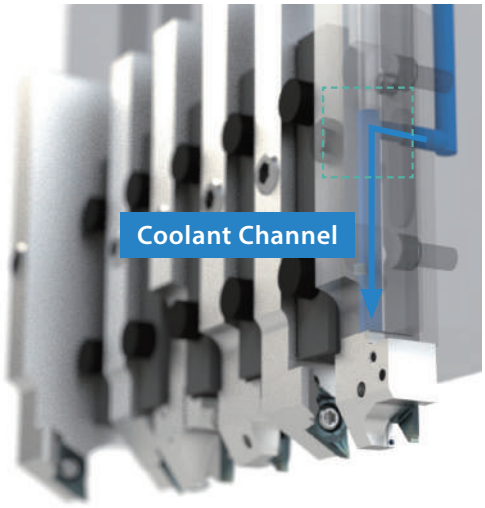
Applicable to Wide Range of Machines

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

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

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

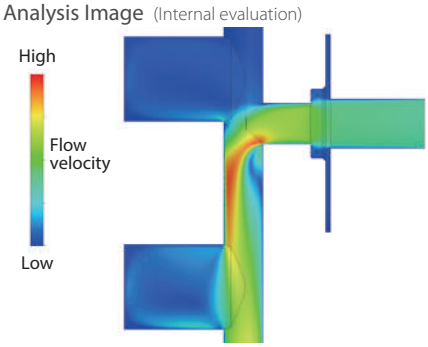
(Random order)
Based on Kyocera Survey in January 2021



Point

Appropriate hole design to reduce energy loss based on deep analysis

Analysis Image (Internal evaluation)

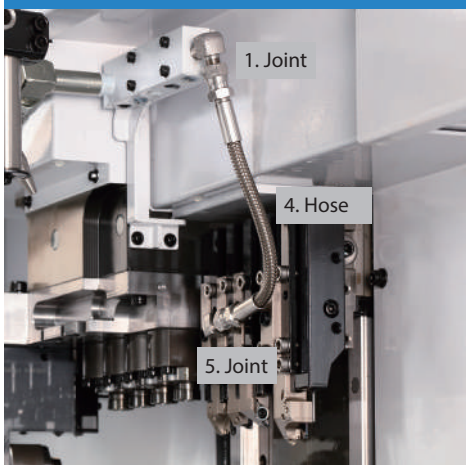


Piping Parts

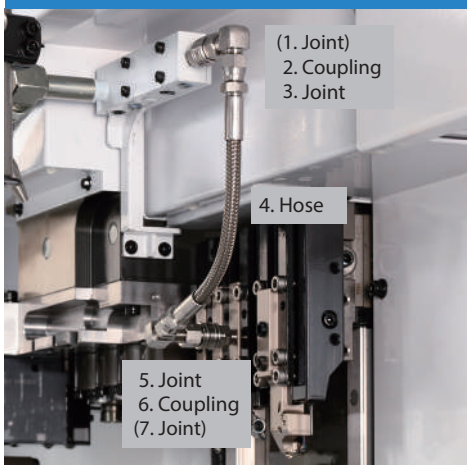
Pipe parts will be required separately if internal coolant is used.

Pump Pressure : Up to 20 MPa. Pump Pressure : Up to 7.5 MPa if coupling is used.

Without Coupling (Pump Pressure : Up to 20 MPa)



With Coupling (Pump Pressure : Up to 7.5 MPa)



Combination Part Description (Example)

Part	Description
1. Joint	J-ST-R1/8-G1/8
4. Hose	HS-G1/8-G1/8-500
5. Joint	J-ST-R1/8-G1/8

Convert the thread standards on the machine's side (Rc1/4, Rc1/8, NPT1/8, etc.) to the thread standard on the hose side (G1/8) for use.
Use sealing agents such as seal tapes when installing piping parts.

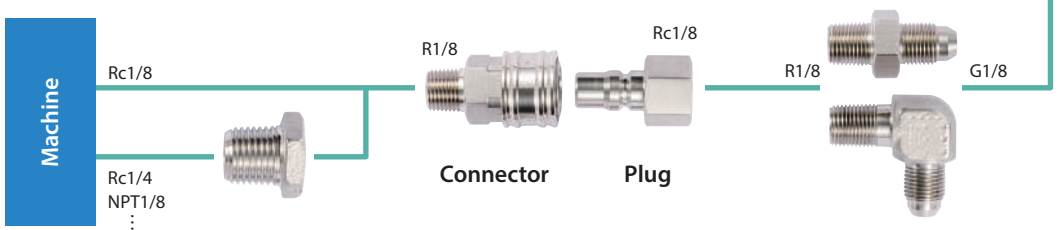
Combination Part Description (Example)

Part	Description
(1. Joint)	-
2. Coupling	CP-ST-R1/8, P-ST-RC1/8
3. Joint	J-ST-R1/8-G1/8
4. Hose	HS-G1/8-G1/8-500
5. Joint	J-ST-R1/8-G1/8
6. Coupling	P-ST-RC1/8, CP-ST-R1/8
(7. Joint)	-

Convert the thread standards on the machine's side (Rc1/4, Rc1/8, NPT1/8, etc.) to thread standards of the coupling (Rc1/8, etc.) or hose (G1/8) for use.
Use sealing agents such as seal tapes when installing piping parts.

Without Coupling (Pump Pressure : Up to 20 MPa)

With Coupling (Pump Pressure : Up to 7.5 MPa)

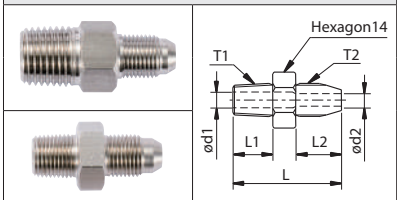
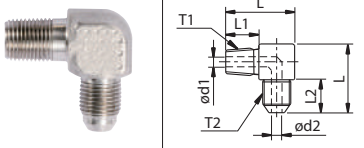
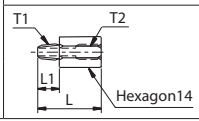


1. Joint　2. Coupling　3. Joint　4. Hose

Piping Part Dimensions

Joint (1, 3, 5, 7) Pressure Resistance : Up to 20.0 MPa

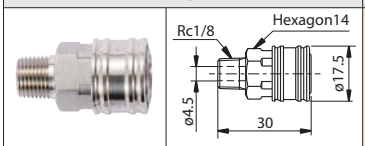
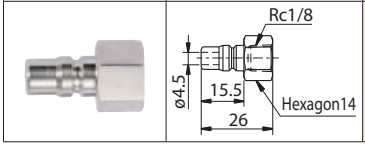
(Unit : mm)

Shape	Description	Stock	ød1	ød2	L	L1	L2	T1	T2
	J-ST-R1/4-G1/8	●	5.5	4.0	34	13	13	R1/4	G1/8
	J-ST-NPT1/8-G1/8	●	3.5	3.5	29	10	13	NPT1/8	G1/8
	J-ST-R1/8-G1/8	●	4.0	4.0	29	10	13	R1/8	G1/8
	J-AN-R1/8-G1/8	●	4.0	4.0	27	14	13	R1/8	G1/8
	J-ST-R1/4-RC1/8	●	–	–	17	12	–	R1/4	Rc1/8
	J-ST-NPT1/8-RC1/8	●	3.5	–	30	10	–	NPT1/8	Rc1/8
	J-ST-R1/8-RC1/8	●	3.5	–	33	13	–	R1/8	Rc1/8

● : Standard Stock

Coupler (2, 6) Pressure Resistance : Up to 7.5 MPa

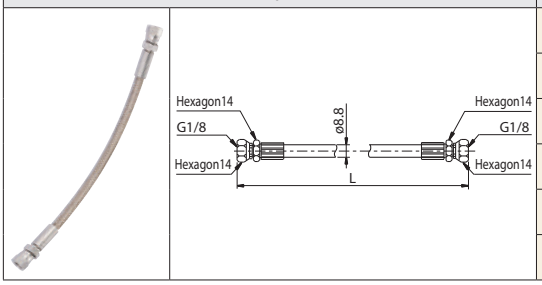
(Unit : mm)

Shape	Description	Stock
	CP-ST-R1/8	●
	P-ST-RC1/8	●

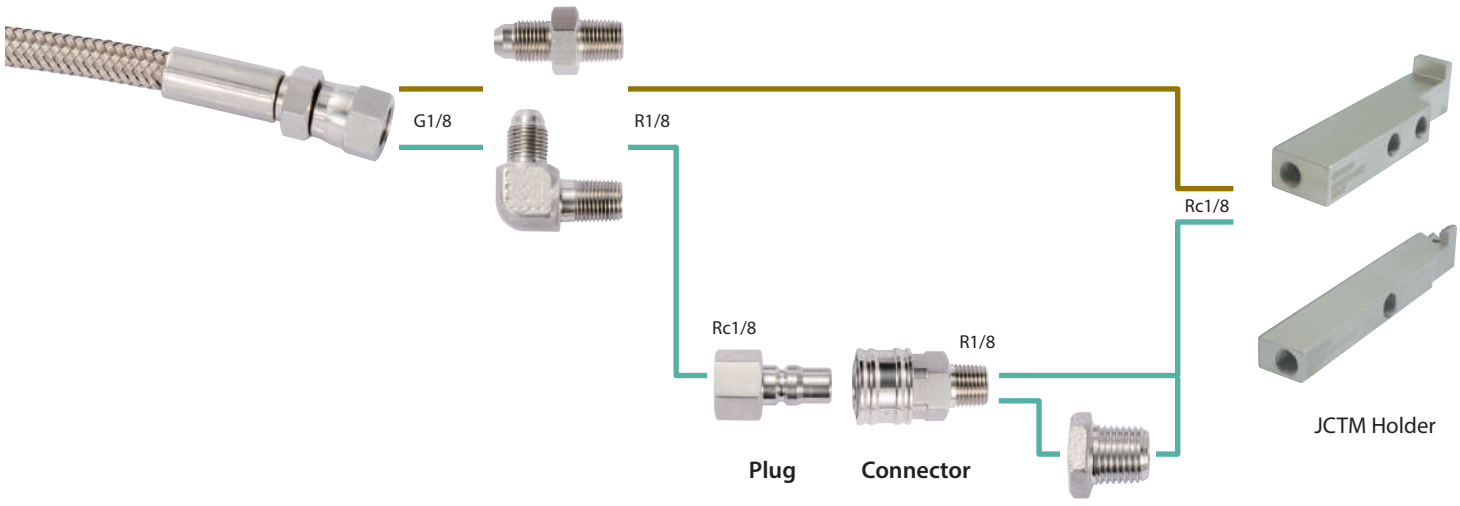
● : Standard Stock

Hose (4) Pressure Resistance : Up to 20.0 MPa

(Unit : mm)

Shape	Description	Stock	L
	HS-G1/8-G1/8-200	●	200
	HS-G1/8-G1/8-300	●	300
	HS-G1/8-G1/8-400	●	400
	HS-G1/8-G1/8-500	●	500
	HS-G1/8-G1/8-600	●	600
	HS-G1/8-G1/8-800	●	800

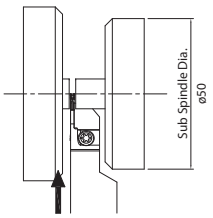
● : Standard Stock

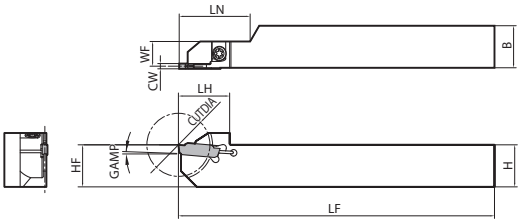


4. Hose 5. Joint 6. Coupling 7. Joint (Extension Joint)

KGDS (Small Diameter Cut-Off for Sub Spindle)

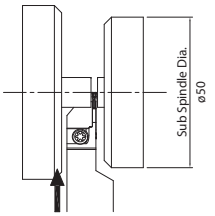
Right-hand

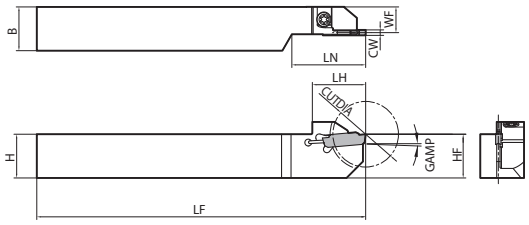




• Right-hand Shown

Left-hand





• Left-hand shown

Toolholder Dimensions

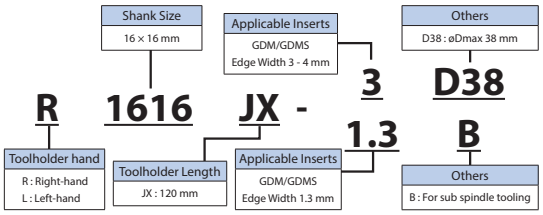
Description		Stock		Cut-Off Dia. (mm)	Dimensions (mm)							Angle	Edge Width CW (mm)		Spare Parts	
															Clamp Screw	Wrench
		R	L	CUTDIA	H	HF	B	LF	LH	LN	WF	GAMP	MIN.	MAX.		
KGDS R/L	1616JX-1.3B	●	●	24	16	16	16	120	19.5	27	9.5	5°	1.3	1.3	SB-40120TR	LTW-15S
	1616JX-1.5B	●	●								9.4		1.5	1.5		
	1616JX-2B	●	●								9.2	1°	2.0	3.0		

● : Standard Stock

Recommended Cutting Conditions ➡ P20

Toolholders Identification System (Small Parts Machining)

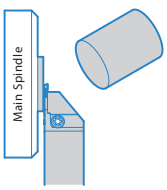
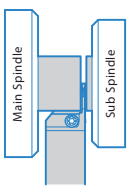
KGD
KGDS



KGD / KGDS Selection Reference

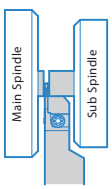
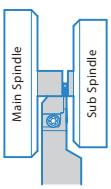
KGD Standard Type

Both Right-hand and Left-hand types are applicable to gang tool post. Basically Left-hand type is used for cut-off operation using a sub spindle.

KGDR (Right-hand)	KGDL (Left-hand)
	
1st Recommendation Use insert with lead angle to remove boss • No sub-spindle • Cut-off close to main spindle	1st Recommendation Insert without lead angle • Sub-spindle use • Cut-off close to sub-spindle

KGDS Sub Spindle Type

When machining workpiece with small diameter, use KGDS to reduce overhang distance from the main spindle.

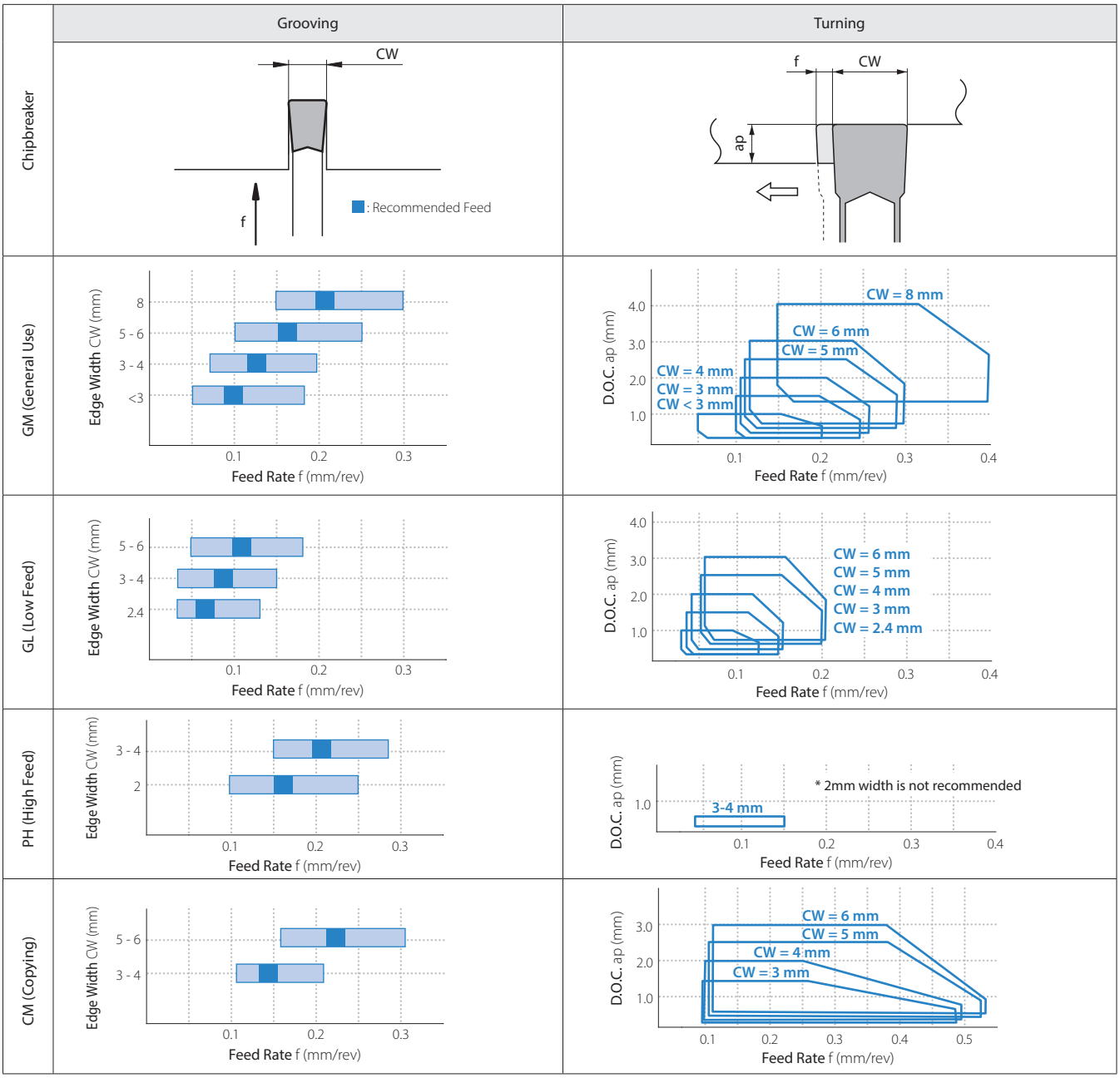
KGDSR (Right-hand)	KGDSL (Left-hand)
	
• Long workpiece and more rigidity • Cut-off near main spindle	• Short workpiece and less rigidity • Cut-off near sub-spindle

Recommended Cutting Conditions (External Grooving) ★1st Recommendation ☆2nd Recommendation

Workpiece	Chipbreaker	Recommended Insert Grade (Vc : m/min)								Notes
		Cermet		MEGACOAT NANO	MEGACOAT		Carbide	MEGACOAT CBN	CBN	PCD	
		TN620	TN90	PR1535	PR1225	PR1215	GW15	KBN05M	KBN570	KPD001	
Carbon Steel	GM	☆ 80 – 220	☆ 100 – 220	☆ 80 – 200	★ 80 – 200	☆ 100 – 200	-	-	-	-	Coolant
Alloy Steel	GL CM PH	☆ 70 – 200	☆ 80 – 200	☆ 70 – 180	★ 70 – 180	☆ 80 – 180	-	-	-	-	
Stainless Steel		-	-	★ 60 – 150	☆ 60 – 150	☆ 60 – 150	-	-	-	-	
Cast Iron	GS	-	-	-	-	★ 100 – 200	-	-	-	-	
Aluminum Alloy	GS	-	-	-	-	-	☆ 200 – 500	-	-	★ 150 – 2,000	
Brass	NB	-	-	-	-	-	☆ 100 – 200	-	-	★ 200 – 800	
Hard materials	NB	-	-	-	-	-	-	★ 80 – 150	-	-	
Powdered Steel		-	-	-	-	-	-	-	★ 100 – 250	-	

Recommended Cutting Conditions (Feed Rate / D.O.C.)

(Workpiece : S50C)



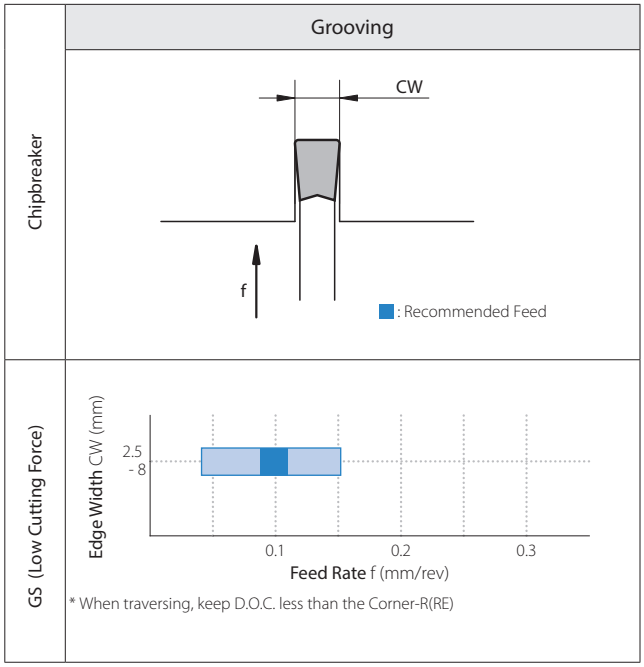
Note 1) The above values are based on the condition that CDX of toolholder is 17 mm or less.

2) If the toolholder is not for the 8mm width insert and its CDX is over 17mm, set the values for turning to less than 90% of recommended cutting conditions above.

Recommended Cutting Conditions (External Grooving)

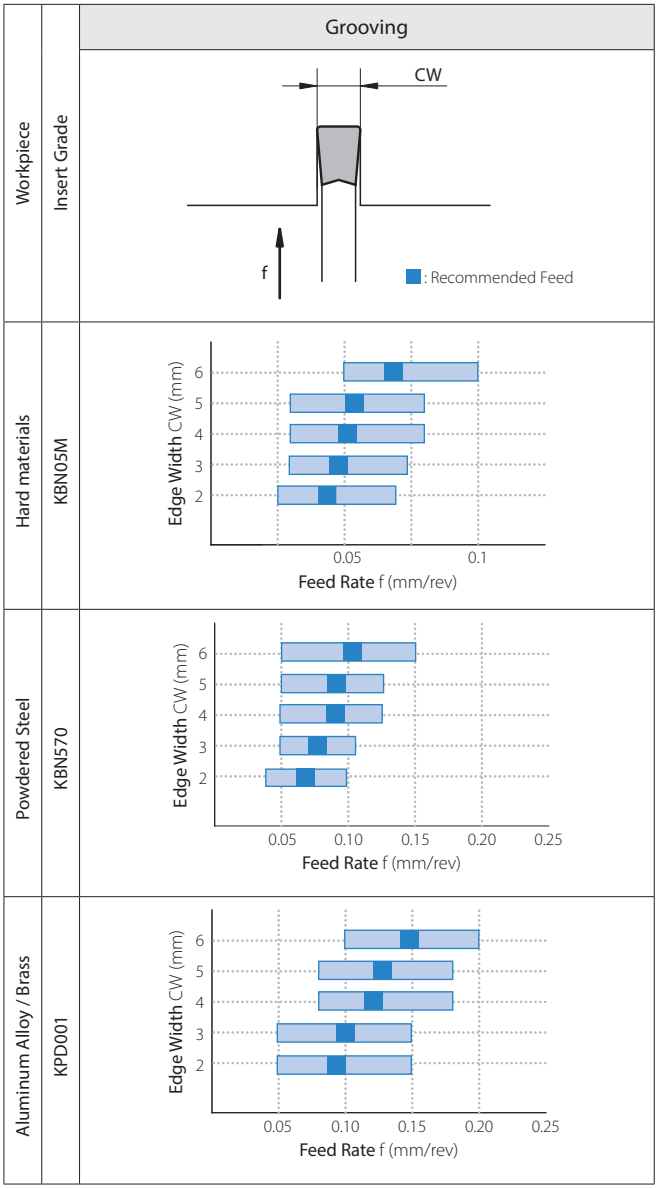
Recommended Cutting Conditions (Feed Rate / D.O.C.)

(Workpiece : S50C)



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

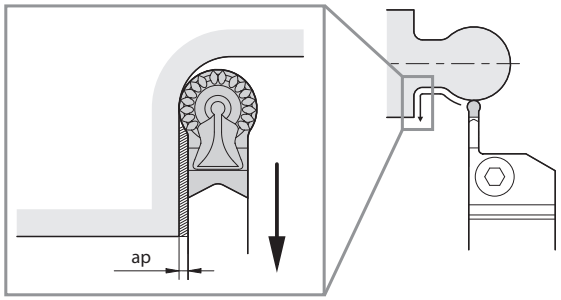
Recommended Cutting Conditions (Feed Rate)



CM Chipbreaker (Back Turning)

Estimated maximum cutting amount (D.O.C.) for back turning

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

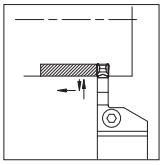


Guide for External Grooving

1) Turning After Grooving

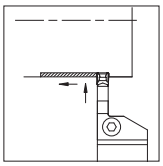
1. Grooving Depth Over 0.5mm : At Roughing (see Fig.1)
   Before turning, pull the tool back about 0.1mm after grooving, instead of turning subsequent to grooving.
   (Failure to pull the tool back before traverse cutting will result in an unbalanced load applied on only one side of the cutting edge.)
2. Grooving Depth Under 0.5mm : At Finishing (see Fig.2)
   Turning subsequent to grooving is possible because shallow groove depths relate a small load on the cutting edge.
   (Dwell-motion is not necessary)

Fig.1



Before turning, pull the tool back about 0.1mm after grooving
(Grooving depth over 0.5mm : At Roughing)

Fig.2

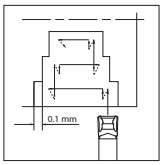


Turning subsequent to grooving
(Grooving depth under 0.5mm : At Finishing)

2)

1. When widening the groove width, apply the "Step Turning" as shown in Fig.3
2. The widened groove and side walls should be finished last.
   (For better chip control, D.O.C. 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



Recommended Cutting Conditions (Cut-off , PF / PQ / PG Chipbreakers)

★1st Recommendation ☆2nd Recommendation

Workpiece	Recommended Insert Grade (Vc : m/min)					Feed Rate f (mm/rev)										Notes
						PF (Corner-R (RE) = 0.03)			PF (Corner-R (RE) = 0.15)			PQ		PG		
	MEGACOAT NANO	MEGACOAT		DLC Coated Carbide	Carbide	Edge Width CW (mm)			Edge Width CW (mm)			Edge Width CW (mm)		Edge Width CW (mm)		
	PR1535	PR1225	PR1215	PDL025	GW15	1.3/1.5	2.0	2.5/3.0	1.3/1.5	2.0	2.5/3.0	2.0	2.5/3.0	2.0	2.5/3.0	
Carbon Steel	☆ 70 – 150	★ 70 – 150	☆ 70 – 180	-	-	0.01 – 0.04	0.02 – 0.06	0.02 – 0.08	0.01 – 0.05	0.03 – 0.08	0.04 – 0.10	0.03 – 0.1	0.04 – 0.12	0.01 – 0.04	0.01 – 0.05	Coolant
Alloy Steel	☆ 70 – 150	★ 70 – 150	☆ 70 – 180	-	-											
Stainless Steel	★ 60 – 120	☆ 60 – 120	☆ 60 – 150	-	-	0.01 – 0.03	0.01 – 0.04	0.01 – 0.05	0.01 – 0.04	0.03 – 0.07	0.04 – 0.08	0.02 – 0.07	0.02 – 0.08	0.01 – 0.03	0.01 – 0.04	
Cast Iron	-	-	★ 80 – 200	-	☆ 50 – 100	0.01 – 0.05	0.02 – 0.07	0.03 – 0.08	0.01 – 0.06	0.03 – 0.09	0.04 – 0.10	0.04 – 0.1	0.04 – 0.12	0.01 – 0.04	0.01 – 0.05	
Aluminum Alloy	-	-	-	★ 200 – 500	☆ 200 – 450	-	-	-	-	-	-	-	-	0.01 – 0.05	0.01 – 0.06	
Brass	-	-	-	-	★ 100 – 200	-	-	-	-	-	-	-	-	0.01 – 0.07	0.01 – 0.08	

Recommended Cutting Conditions (Cut-off , PM/PH Chipbreakers)

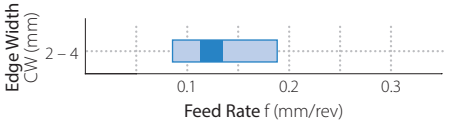
★1st Recommendation ☆2nd Recommendation

Workpiece	Recommended Insert Grade (Vc : m/min)			Feed Rate f (mm/rev)			Notes
				PM	PH		
	MEGACOAT NANO	MEGACOAT		Edge Width CW (mm)	Edge Width CW (mm)		
	PR1535	PR1225	PR1215	2.0 – 4.0	2.0	3.0 – 4.0	
Carbon Steel	☆ 80 – 200	★ 80 – 200	☆ 100 – 200	0.08 – 0.18	0.10 – 0.25	0.15 – 0.28	Coolant
Alloy Steel	☆ 70 – 180	★ 70 – 180	☆ 80 – 180				
Stainless Steel	★ 60 – 150	☆ 60 – 150	☆ 60 – 150	0.06 – 0.12	0.05 – 0.12	0.08 – 0.15	
Cast Iron	-	-	★ 100 – 200	0.08 – 0.18	0.10 – 0.25	0.15 – 0.28	

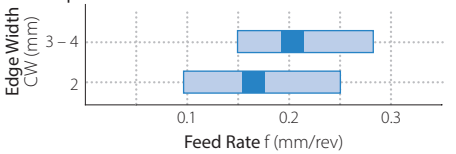
Example of feed

In the graph below indicates the most recommended value of feed (f)

• PM Chipbreaker (Workpiece : S50C)



• PH Chipbreaker (Workpiece : S50C)



Caution (Cut-off)

1. Be sure to perform wet processing. Apply enough coolant to the cutting edge.
2. Keep a constant rate during processing so that optimum product life will be achieved.
3. Cut-off as close to the chuck as possible.
4. To prevent impacts, reduce feed rate by 1/2 ~ 1/3 when nearing the center of the workpiece.

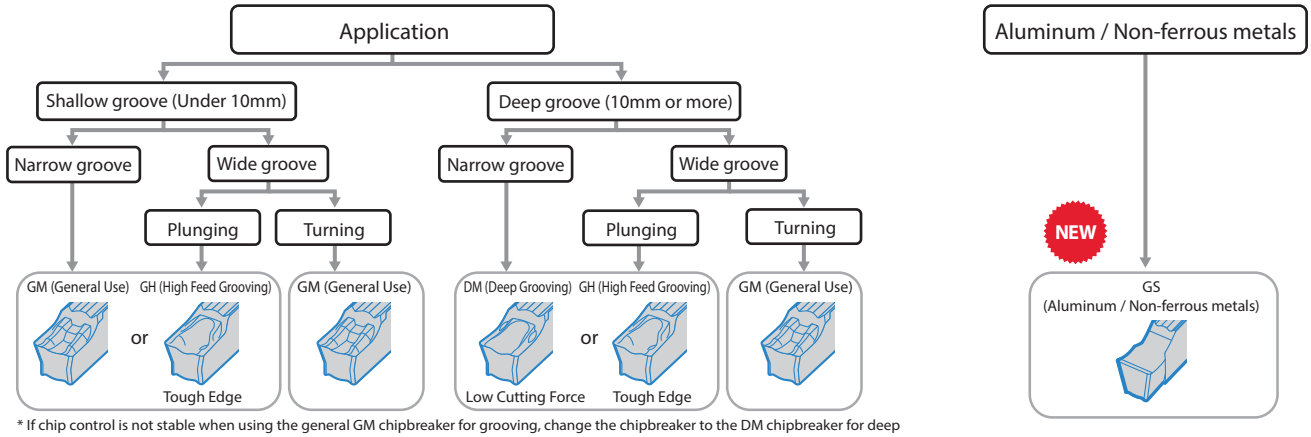
Face Grooving

KGDF

Good chip control
MEGACOAT coating technology for long tool life and high efficiency machining

1 Wide Range of Chipbreakers Available for Face Grooving

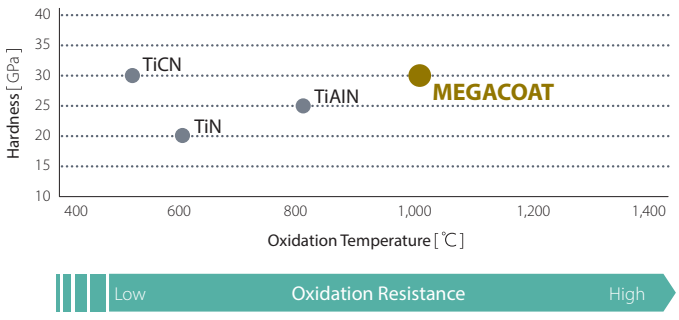
Chipbreaker Selection



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

2 MEGACOAT Coating Technology for Long Tool Life

Coating Properties



PR1225(MEGACOAT)
1st. Recommendation for face grooving

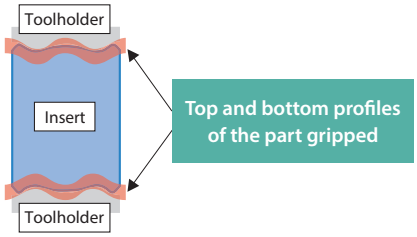
PR1215(MEGACOAT)
Superior wear resistance,
1st. Recommendation for machining of cast iron

3 High Clamping Strength

Prevents abnormal machining surface and / or insert breakage resulting from slip of insert

Improves repetitive installation accuracy of insert

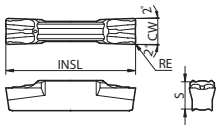
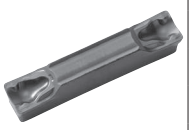
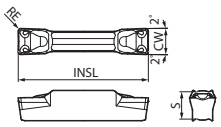
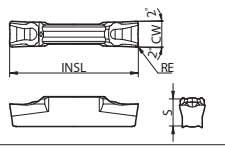
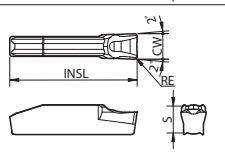
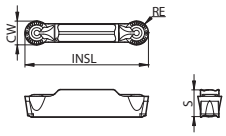
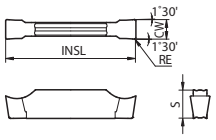
Insert clamping system "W Grip"



GDFM/GDFMS (Face Grooving)

Applicable Inserts

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

Insert			Description		Dimensions (mm)					Cermet		MEGACOAT		Carbide
					Edge Width CW	Tolerance	RE	INSL	S	TN620	TN90	PR1225	PR1215	GW15
Grooving and Turning			GDFM	2020N-020GM	2.0	±0.03	0.2	21	3.9		●	●	●	
				3020N-030GM	3.0		0.3	20	4.3		●	●	●	
				4020N-040GM	4.0		0.4		4.5		●	●	●	
				5020N-040GM	5.0	±0.04					●	●	●	
				5020N-080GM			0.8				●	●	●	
				6020N-040GM	6.0		0.4				●	●	●	
				6020N-080GM			0.8				●	●	●	
Grooving and Turning (High Feed)			GDFM	4020N-040GH	4.0	±0.03	0.4	20	4.5			●	●	
				5020N-040GH	5.0	±0.04						●	●	
				5020N-080GH			0.8					●	●	
				6020N-040GH	6.0		0.4					●	●	
				6020N-080GH			0.8					●	●	
Deep Grooving and Turning			GDFM	3020N-030DM	3.0	±0.03	0.3	20	4.3		●	●	●	
				4020N-040DM	4.0		0.4		4.5		●	●	●	
				5020N-040DM	5.0	±0.04					●	●	●	
				6020N-040DM	6.0						●	●	●	
	 1-edge		GDFMS	3020N-030DM	3.0	±0.03	0.3	20	4.3		●	●	●	
				4020N-040DM	4.0		0.4		4.5		●	●	●	
				5020N-040DM	5.0	±0.04					●	●	●	
				6020N-040DM	6.0						●	●	●	
Full-R			GDFM	3020N-150R-CM	3.0	±0.03	1.5	20	4.3	●		●	●	
				4020N-200R-CM	4.0		2.0	*21		●		●	●	
				5020N-250R-CM	5.0	±0.04	2.5		4.5	●		●	●	
				6020N-300R-CM	6.0		3.0	*22		●		●	●	
Aluminum / Non-ferrous metals			GDFG	3020N-020GS	3.0	±0.02	0.2	20	4.3					●
NEW				4020N-040GS	4.0		0.4		4.5					●
				5020N-040GS	5.0									●
				6020N-040GS	6.0									●

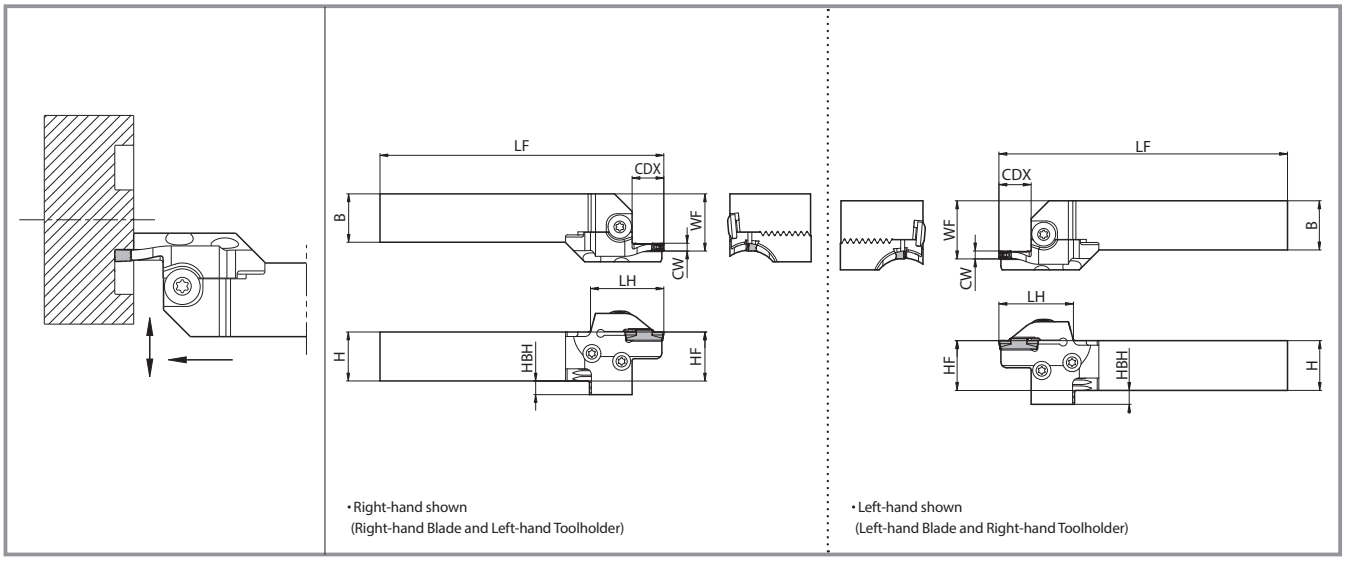
* GDFM40/50/60-CM differs from other descriptions in length (INSL) to avoid interference of a toolholder with workpiece.

● : Standard Stock

Inserts Identification System

G D F	M	S	30	20	N	-	030	DM
Series	Tolerance	No. of Edges	Edge Width	Insert Length	Hand of Tool		Corner-R(RE)	Chipbreaker
	M : M-Class	No Indication : 2-edge S : 1-edge	20 : 2 mm 30 : 3 mm ⋮	20 : 20 mm	N : Neutral		020 : 0.2 mm 030 : 0.3 mm 040 : 0.4 mm 150R : 1.5 mm(Full-R)	GM : Grooving and Turning DM : Grooving GH : High Feed CM : Full-R GS : Aluminum / Non-ferrous metals

KGDF (Face Grooving / SwitchBlade Type)



Toolholder Dimensions

Shank Angle	Edge Width CW	Shank Size	Max. Grooving Depth	Face Grooving Dia. (mm)		Blade Description ➡P31	Toolholder Description ➡P12	Unit Description (Standard Stock Description)	Stock		Dimensions (mm)							
	(mm)	(mm)	(mm)	DAXN [MIN.]	DAXX [MAX.]				R	L	H	HF	HBH	B	LF	LH	WF	CDX
0°	2	□20	6	25	30	KGDFR -25-2A-C	KGDL2020-C	KGDFR 2020X25-2AS	▲	–	20	20	12	20	115	33	24.5	6
				30	35	-30-2A-C		2020X30-2AS	–	–								
				35	45	-35-2A-C		2020X35-2AS	–	–								
				45	60	-45-2A-C		2020X45-2AS	–	–								
				60	80	-60-2A-C		2020X60-2AS	–	–								
				80	100	-80-2A-C		2020X80-2AS	–	–								
				100	130	-100-2A-C		2020X100-2AS	–	–								
			13	25	30	-25-2B-C		–							118	36		13
			15	30	35	-30-2B-C									120	38		15
				35	45	-35-2B-C												
				45	60	-45-2B-C												
				60	80	-60-2B-C												
				80	100	-80-2B-C												
				100	130	-100-2B-C												
		□25	6	25	30	KGDFR -25-2A-C	KGDL2525-C	KGDFR 2525X25-2AS	▲	–	25	25	7	25	140	33	29.5	6
				30	35	-30-2A-C		2525X30-2AS	▲	–								
				35	45	-35-2A-C		2525X35-2AS	▲	–								
				45	60	-45-2A-C		2525X45-2AS	▲	–								
				60	80	-60-2A-C		2525X60-2AS	▲	–								
				80	100	-80-2A-C		2525X80-2AS	▲	–								
				100	130	-100-2A-C		2525X100-2AS	▲	–								
			13	25	30	-25-2B-C		–							143	36		13
			15	30	35	-30-2B-C									145	38		15
				35	45	-35-2B-C												
				45	60	-45-2B-C												
				60	80	-60-2B-C												
				80	100	-80-2B-C												
				100	130	-100-2B-C												
		□32	6	25	30	KGDFR -25-2A-C	KGDL3232-C	–			32	32	–	32	160	33	36.5	6
				30	35	-30-2A-C												
				35	45	-35-2A-C												
				45	60	-45-2A-C												
				60	80	-60-2A-C												
				80	100	-80-2A-C												
				100	130	-100-2A-C												
			13	25	30	-25-2B-C									163	36		13
			15	30	35	-30-2B-C									165	38		15
				35	45	-35-2B-C												
				45	60	-45-2B-C												
				60	80	-60-2B-C												
				80	100	-80-2B-C												
				100	130	-100-2B-C												

Note 1) When the unit description is not available (the stock is "-"), please purchase toolholder and blade separately.
2) CDX : Maximum depth to which processing can be made. If the CDX is 20mm or more, the maximum groove-depth of groove made by the 2-edge insert will be 18mm.

▲ : To be replaced by a new product
Applicable Inserts ➡P22

KGDF (Face Grooving / SwitchBlade Type)

Toolholder Dimensions

Shank Angle	Edge Width CW	Shank Size	Max. Grooving Depth	Face Grooving Dia. (mm)		Blade Description ➡P31	Toolholder Description ➡P12	Unit Description (Standard Stock Description)	Stock		Dimensions (mm)							
	(mm)	(mm)	(mm)	DAXN [MIN.]	DAXX [MAX.]				R	L	H	HF	HBH	B	LF	LH	WF	CDX
0°	3	□20	13	25	30	KGDF R/L -25-3A-C	KGD L/R2020-C	KGDF R/L 2020X25-3AS	▲	▲	20	20	12	20	118	36	24.5	13
				30	40	-30-3A-C		2020X30-3AS	▲	–								
				40	50	-40-3A-C		2020X40-3AS	–	–								
			15	50	65	-50-3B-C		2020X50-3BS	▲	–					120	38		15
				65	85	-65-3B-C		2020X65-3BS	–	–								
				85	110	-85-3B-C		2020X85-3BS	–	–								
				110	145	-110-3B-C		2020X110-3BS	–	–								
			22	50	65	-50-3C-C		2020X50-3CS	▲	–					127	45		22
				65	85	-65-3C-C		2020X65-3CS	–	–								
			25	85	110	-85-3C-C		2020X85-3CS	–	–					130	48		25
				110	145	-110-3C-C		2020X110-3CS	–	–								
		□25	13	25	30	KGDF R/L -25-3A-C	KGD L/R2525-C	KGDF R/L 2525X25-3AS	▲	–	25	25	7	25	143	36	29.5	13
				30	40	-30-3A-C		2525X30-3AS	▲	–								
				40	50	-40-3A-C		2525X40-3AS	▲	–								
			15	50	65	-50-3B-C		2525X50-3BS	▲	▲					145	38		15
				65	85	-65-3B-C		2525X65-3BS	▲	▲								
				85	110	-85-3B-C		2525X85-3BS	▲	▲								
				110	145	-110-3B-C		2525X110-3BS	▲	–								
			22	50	65	-50-3C-C		2525X50-3CS	▲	–					152	45		22
				65	85	-65-3C-C		2525X65-3CS	–	–								
			25	85	110	-85-3C-C		2525X85-3CS	–	–					155	48		25
				110	145	-110-3C-C		2525X110-3CS	▲	–								
		□32	13	25	30	KGDF R/L -25-3A-C	KGD L/R3232-C	–			32	32	–	32	163	36	36.5	13
				30	40	-30-3A-C												
				40	50	-40-3A-C												
			15	50	65	-50-3B-C									165	38		15
				65	85	-65-3B-C												
				85	110	-85-3B-C												
				110	145	-110-3B-C												
			22	50	65	-50-3C-C									172	45		22
				65	85	-65-3C-C												
			25	85	110	-85-3C-C									175	48		25
				110	145	-110-3C-C												
0°	4	□20	13	25	35	KGDF R/L -25-4A-C	KGD L/R2020-C	KGDF R/L 2020X25-4AS	▲	–	20	20	12	20	118	36	24.5	13
			15	35	50	-35-4B-C		2020X35-4BS	▲	–					120	38		15
				50	70	-50-4B-C		2020X50-4BS	–	–								
				70	100	-70-4B-C		2020X70-4BS	–	–								
				100	150	-100-4B-C		2020X100-4BS	–	–								
				150	220	-150-4B-C		2020X150-4BS	–	–								
				220	∞	-220-4B-C		2020X220-4BS	–	–								
			25	35	50	-35-4C-C		2020X35-4CS	–	–					130	48		25
				50	70	-50-4C-C		2020X50-4CS	–	–								
				70	100	-70-4C-C		2020X70-4CS	–	–								
				100	150	-100-4C-C		2020X100-4CS	–	–								
				150	220	-150-4C-C		2020X150-4CS	–	–								
				220	∞	-220-4C-C		2020X220-4CS	–	–								
		□25	13	25	35	KGDF R/L -25-4A-C	KGD L/R2525-C	KGDF R/L 2525X25-4AS	▲	–	25	25	7	25	143	36	29.5	13
			15	35	50	-35-4B-C		2525X35-4BS	▲	▲					145	38		15
				50	70	-50-4B-C		2525X50-4BS	▲	▲								
				70	100	-70-4B-C		2525X70-4BS	▲	–								
				100	150	-100-4B-C		2525X100-4BS	▲	▲								
				150	220	-150-4B-C		2525X150-4BS	▲	–								
				220	∞	-220-4B-C		2525X220-4BS	▲	▲								
			25	35	50	-35-4C-C		2525X35-4CS	▲	–					155	48		25
				50	70	-50-4C-C		2525X50-4CS	▲	–								
				70	100	-70-4C-C		2525X70-4CS	▲	▲								
				100	150	-100-4C-C		2525X100-4CS	▲	–								
				150	220	-150-4C-C		2525X150-4CS	▲	–								
				220	∞	-220-4C-C		2525X220-4CS	▲	▲								
		□32	13	25	35	KGDF R/L -25-4A-C	KGD L/R3232-C	–			32	32	–	32	163	36	36.5	13
			15	35	50	-35-4B-C									165	38		15
				50	70	-50-4B-C												
				70	100	-70-4B-C												
				100	150	-100-4B-C												
				150	220	-150-4B-C												
				220	∞	-220-4B-C												
			25	35	50	-35-4C-C									175	48		25
				50	70	-50-4C-C												
				70	100	-70-4C-C												
				100	150	-100-4C-C												
				150	220	-150-4C-C												
				220	∞	-220-4C-C												

Note 1) When the unit description is not available (the stock is "-"), please purchase toolholder and blade separately.

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

▲ : To be replaced by a new product

Applicable Inserts ➡P22

KGDF (Face Grooving / SwitchBlade Type)

Toolholder Dimensions

Shank Angle	Edge Width CW	Shank Size	Max. Grooving Depth	Face Grooving Dia. (mm)		Blade Description ➡P31		Toolholder Description ➡P12	Unit Description (Standard Stock Description)		Stock		Dimensions (mm)							
	(mm)	(mm)	(mm)	DAXN [MIN.]	DAXX [MAX.]						R	L	H	HF	HBH	B	LF	LH	WF	CDX
0°	5	□20	15	25	35	KGDF R/L	-25-5B-C	KGD L/R2020-C	KGDF R/L	2020X25-5BS	–	–	20	20	12	20	120	38	24.5	15
				35	50		-35-5B-C			2020X35-5BS	–	–								
				50	75		-50-5B-C			2020X50-5BS	–	–								
				75	115		-75-5B-C			2020X75-5BS	▲	▲								
				115	180		-115-5B-C			2020X115-5BS	–	–								
				180	235		-180-5B-C			2020X180-5BS	–	–								
				235	∞		-235-5B-C			2020X235-5BS	–	–								
			20	25	35		-25-5C-C			2020X25-5CS	–	–					125	43		20
			25	35	50		-35-5C-C			2020X35-5CS	–	–					130	48		25
				50	75		-50-5C-C			2020X50-5CS	–	–								
				75	115		-75-5C-C			2020X75-5CS	–	–								
				115	180		-115-5C-C			2020X115-5CS	–	–								
				180	235		-180-5C-C			2020X180-5CS	–	–								
				235	∞		-235-5C-C			2020X235-5CS	–	–								
			32	75	115		-75-5D-C		–								137	55		32
				115	180		-115-5D-C													
				180	235		-180-5D-C													
				235	∞		-235-5D-C													
		□25	15	25	35	KGDF R/L	-25-5B-C	KGD L/R2525-C	KGDF R/L	2525X25-5BS	▲	–	25	25	7	25	145	38	29.5	15
				35	50		-35-5B-C			2525X35-5BS	–	–								
				50	75		-50-5B-C			2525X50-5BS	▲	–								
				75	115		-75-5B-C			2525X75-5BS	▲	▲								
				115	180		-115-5B-C			2525X115-5BS	–	–								
				180	235		-180-5B-C			2525X180-5BS	–	–								
				235	∞		-235-5B-C			2525X235-5BS	▲	–								
			20	25	35		-25-5C-C			2525X25-5CS	–	–					150	43		20
			25	35	50		-35-5C-C			2525X35-5CS	▲	–					155	48		25
				50	75		-50-5C-C			2525X50-5CS	▲	–								
				75	115		-75-5C-C		–											
				115	180		-115-5C-C													
				180	235		-180-5C-C													
				235	∞		-235-5C-C													
			32	75	115		-75-5D-C		KGDF R/L	2525X75-5DS	▲	–					162	55		32
				115	180		-115-5D-C			2525X115-5DS	▲	–								
				180	235		-180-5D-C			2525X180-5DS	▲	–								
				235	∞		-235-5D-C			2525X235-5DS	▲	–								
		□32	15	25	35	KGDF R/L	-25-5B-C	KGD L/R3232-C	–				32	32	–	32	165	38	36.5	15
				35	50		-35-5B-C													
				50	75		-50-5B-C													
				75	115		-75-5B-C													
				115	180		-115-5B-C													
				180	235		-180-5B-C													
				235	∞		-235-5B-C													
			20	25	35		-25-5C-C										170	43		20
			25	35	50		-35-5C-C										175	48		25
				50	75		-50-5C-C													
				75	115		-75-5C-C													
				115	180		-115-5C-C													
				180	235		-180-5C-C													
				235	∞		-235-5C-C													
			32	75	115		-75-5D-C										182	55		32
				115	180		-115-5D-C													
				180	235		-180-5D-C													
				235	∞		-235-5D-C													

Note 1) When the unit description is not available (the stock is "-"), please purchase toolholder and blade separately.

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

▲ : To be replaced by a new product

Applicable Inserts ➡ P22

KGDF (Face Grooving / SwitchBlade Type)

Toolholder Dimensions

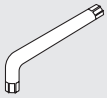
Shank Angle	Edge Width CW	Shank Size	Max. Grooving Depth	Face Grooving Dia. (mm)		Blade Description ➡P31		Toolholder Description ➡P12	Unit Description (Standard Stock Description)	Dimensions (mm)							
	(mm)	(mm)	(mm)	DAXN [MIN.]	DAXX [MAX.]					H	HF	HBH	B	LF	LH	WF	CDX
0°	6	□20	15	25	35	KGDF R/L	-25-6B-C	KGD L/R2020-C	–	20	20	12	20	120	38	24.5	15
				35	50		-35-6B-C										
				50	75		-50-6B-C										
				75	115		-75-6B-C										
				115	180		-115-6B-C										
				180	235		-180-6B-C										
				235	∞		-235-6B-C										
			20	25	35		-25-6C-C							125	43		20
			25	35	50		-35-6C-C							130	48		25
				50	75		-50-6C-C										
				75	115		-75-6C-C										
				115	180		-115-6C-C										
				180	235		-180-6C-C										
				235	∞		-235-6C-C										
			32	75	115		-75-6D-C							137	55		32
				115	180		-115-6D-C										
				180	235		-180-6D-C										
				235	∞		-235-6D-C										
		□25	15	25	35	KGDF R/L	-25-6B-C	KGD L/R2525-C	–	25	25	7	25	145	38	29.5	15
				35	50		-35-6B-C										
				50	75		-50-6B-C										
				75	115		-75-6B-C										
				115	180		-115-6B-C										
				180	235		-180-6B-C										
				235	∞		-235-6B-C										
			20	25	35		-25-6C-C							150	43		20
			25	35	50		-35-6C-C							155	48		25
				50	75		-50-6C-C										
				75	115		-75-6C-C										
				115	180		-115-6C-C										
				180	235		-180-6C-C										
				235	∞		-235-6C-C										
			32	75	115		-75-6D-C							162	55		32
				115	180		-115-6D-C										
				180	235		-180-6D-C										
				235	∞		-235-6D-C										
		□32	15	25	35	KGDF R/L	-25-6B-C	KGD L/R3232-C	–	32	32	–	32	165	38	36.5	15
				35	50		-35-6B-C										
				50	75		-50-6B-C										
				75	115		-75-6B-C										
				115	180		-115-6B-C										
				180	235		-180-6B-C										
				235	∞		-235-6B-C										
			20	25	35		-25-6C-C							170	43		20
			25	35	50		-35-6C-C							175	48		25
				50	75		-50-6C-C										
				75	115		-75-6C-C										
				115	180		-115-6C-C										
				180	235		-180-6C-C										
				235	∞		-235-6C-C										
			32	75	115		-75-6D-C							182	55		32
				115	180		-115-6D-C										
				180	235		-180-6D-C										
				235	∞		-235-6D-C										

Note 1) Please purchase toolholder and blade separately.

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

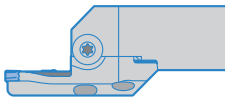
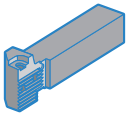
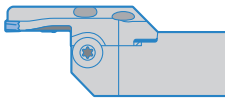
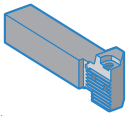
Applicable Inserts ➡P22

Spare Parts (Common with SwitchBlade types)

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

* The parts are included in the toolholder and unit.

KGDF Toolholder Assembly Identification (Face Grooving / SwitchBlade Type)

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

- Right-hand Blade for Left-hand Toolholder, Left-hand Blade for Right-hand Toolholder.
- The Unit Description is not printed on the product. It is printed on the box label.
- Combination of the toolholder and blade (both separately sold) can make up the corresponding assembly.
- The insert clamping bolt (BH6x10TR), blade fixing bolt (SB-60120TR) and wrench (LTW-25) which are included in the toolholder can be used.

Face Grooving Toolholder Assembly Identification System (Face Grooving / SwitchBlade Type)

Hand of Tool	Toolholder Shank Size	Toolholder Length	Width	Symbol of Assembly Toolholder
R : Right-hand L : Left-hand	2020 : □ 20 2525 : □ 25	X : Special	2 : 2 mm 3 : 3 mm ⋮	S : Indicates the unit description

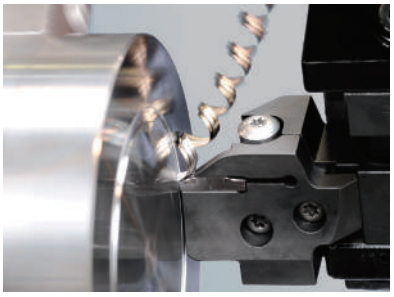
KGDF R 2020 X 25 - 3 A S

Series	External dia. of the groove (MIN.) : DAXN	* For the maximum external diameter which can be applied to the initial face grooving (you can also use 1-edge insert), ref. to the MAX. : DAXX value of "External dia. of the groove" in the dimension tables of toolholders and blades.
KGDF Face Grooving	Indicates the minimum external diameter suitable for the initial face grooving 25 : 25 mm • • 235 :235 mm	

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

Face Grooving Diameter (DAXN / DAXX)

Face grooving diameter (DAXN~DAXX) is the suitable value for the initial grooving on the unprocessed workpiece (See Fig.1).
Then, you can widen it up to the center towards the inside.
(excluding the models listed in the below table)
and towards the outside according to machine limits.



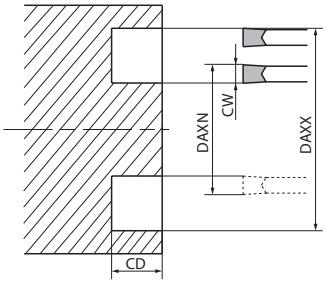
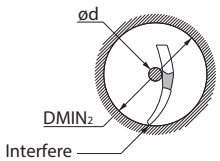


Fig.1

Limit of Turning toward Center

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



Remaining Boss Dia. ød

Description \ DMIN2		25	26	27	28 and over
		ød(mm)			
KGDF R/L	2020X25-3AS	4	2	0	0 (No remaining Boss)
	2525X25-3AS				
KGDF R/L	2020X25-4AS	6	3	0	
	2525X25-4AS				
KGDF R/L	2020X25-5AS	7	4	1	
	2525X25-5AS				
KGDF R/L	2020X25-6AS	9	4	1	
	2525X25-6AS				

e.g.) If a groove of external diameter ø25mm is created using KGDFR2020X25-3AS and turning is made toward the inside, a ø4mm portion will be left in middle due to interference of toolholder.

Face Grooving Blade Assembly Identification System

KGDF R – 25 – 3 A – C

Series
KGDF Face Grooving

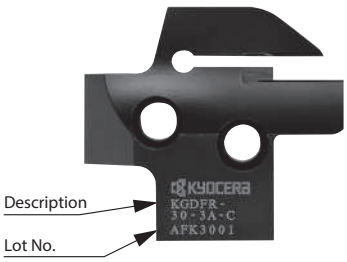
External dia. of the groove (MIN.) : DAXN
Indicates the minimum external diameter suitable for the initial face grooving
25 : 25 mm • • 235 : 235 mm

Hand of Tool
R : Right-hand L : Left-hand

Width	
2 : 2 mm	5 : 5 mm
3 : 3 mm	6 : 6 mm
4 : 4 mm	

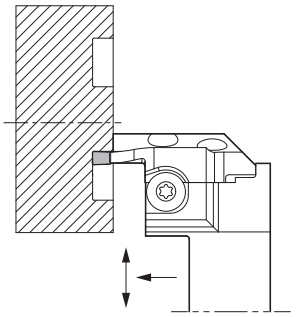
Grooving Depth	
A : 6/13 mm	2-Edge Insert (1-Edge Insert can also be used)
B : 13/15 mm	
C : 20 mm ~ 25 mm	1-Edge Insert
D : 32 mm	

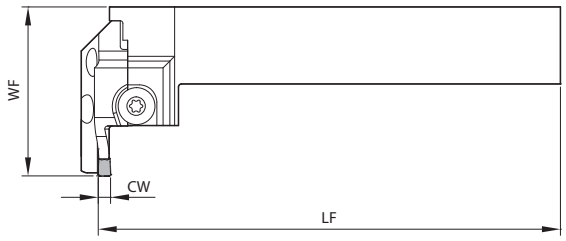
Blade Symbol
C : Applicable to toolholder with suffix "-C"



Example of printing of blade description

KGDF (Face Grooving / 90˚ SwitchBlade Type)





• Right-hand shown (Right-hand Blade and Right-hand Toolholder)

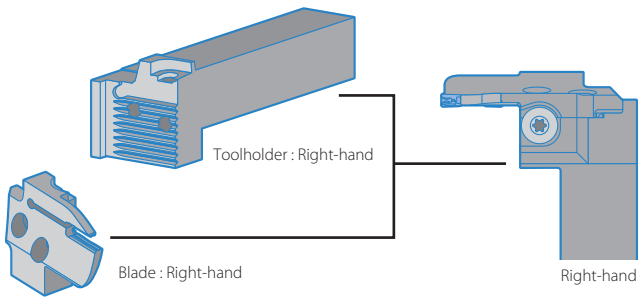
Toolholder Dimensions

Shank Angle	Edge Width CW	Shank Size	Max. Grooving Depth	Face Grooving Dia. (mm)		Blade Description ➡P31		Toolholder Description ➡P12	Dimensions (mm)	
	(mm)	(mm)	(mm)	DAXN [MIN.]	DAXX [MAX.]				LF	WF
90°	2	□20	6	25	30	KGDFR	-25-2A-C	KGDSR2020-C	125	49.7
				30	35		-30-2A-C			
				35	45		-35-2A-C			
				45	60		-45-2A-C			
				60	80		-60-2A-C			
				80	100		-80-2A-C			
				100	130		-100-2A-C			
			13	25	30		-25-2B-C			52.7
			15	30	35		-30-2B-C			54.7
				35	45		-35-2B-C			
				45	60		-45-2B-C			
				60	80		-60-2B-C			
				80	100		-80-2B-C			
				100	130		-100-2B-C			
		□25	6	25	30	KGDFR	-25-2A-C	KGDSR2525-C	150	49.7
				30	35		-30-2A-C			
				35	45		-35-2A-C			
				45	60		-45-2A-C			
				60	80		-60-2A-C			
				80	100		-80-2A-C			
				100	130		-100-2A-C			
			13	25	30		-25-2B-C			52.7
			15	30	35		-30-2B-C			54.7
				35	45		-35-2B-C			
				45	60		-45-2B-C			
				60	80		-60-2B-C			
				80	100		-80-2B-C			
				100	130		-100-2B-C			
90°	3	□20	13	25	30	KGDF R/L	-25-3A-C	KGDS R/L2020-C	125	52.7
				30	40		-30-3A-C			
				40	50		-40-3A-C			
			15	50	65		-50-3B-C			54.7
				65	85		-65-3B-C			
				85	110		-85-3B-C			
				110	145		-110-3B-C			
			22	50	65		-50-3C-C			59.7
				65	85		-65-3C-C			
			25	85	110		-85-3C-C			61.7
				110	145		-110-3C-C			
		□25	13	25	30	KGDF R/L	-25-3A-C	KGDS R/L2525-C	150	52.7
				30	40		-30-3A-C			
				40	50		-40-3A-C			
			15	50	65		-50-3B-C			54.7
				65	85		-65-3B-C			
				85	110		-85-3B-C			
				110	145		-110-3B-C			
			22	50	65		-50-3C-C			59.7
				65	85		-65-3C-C			
			25	85	110		-85-3C-C			61.7
				110	145		-110-3C-C			

Applicable Inserts ➡ P22

Shank Angle	Edge Width CW	Shank Size	Max. Grooving Depth	Face Grooving Dia. (mm)		Blade Description ➡P31		Toolholder Description ➡P12	Dimensions (mm)	
	(mm)	(mm)	(mm)	DAXN [MIN.]	DAXX [MAX.]				LF	WF
90°	4	□20	13	25	35	KGDF R/L	-25-4A-C	KGDS R/L2020-C	125	52.7
			15	35	50		-35-4B-C			54.7
				50	70		-50-4B-C			
				70	100		-70-4B-C			
				100	150		-100-4B-C			
				150	220		-150-4B-C			
				220	∞		-220-4B-C			
			25	35	50		-35-4C-C			64.7
				50	70		-50-4C-C			
				70	100		-70-4C-C			
				100	150		-100-4C-C			
				150	220		-150-4C-C			
				220	∞		-220-4C-C			
		□25	13	25	35	KGDF R/L	-25-4A-C	KGDS R/L2525-C	150	52.7
			15	35	50		-35-4B-C			54.7
				50	70		-50-4B-C			
				70	100		-70-4B-C			
				100	150		-100-4B-C			
				150	220		-150-4B-C			
				220	∞		-220-4B-C			
			25	35	50		-35-4C-C			64.7
				50	70		-50-4C-C			
				70	100		-70-4C-C			
				100	150		-100-4C-C			
				150	220		-150-4C-C			
				220	∞		-220-4C-C			

Applicable Inserts ➡ P22



- KGDF 90˚ SwitchBlade type is not available as unit (toolholder + blade). Blade and toolholder are available to assemble when purchasing individually.
- Right-hand Blade for Right-hand Toolholder, Left-hand Blade for Left-hand Toolholder.
- Insert clamp bolt (BH6x10TR), Blade fixing bolt (SB-60120TR) and Wrench (LTW-25) come with toolholder.

KGDF (Face Grooving / 90˚ SwitchBlade Type)

Combination of Blade & Toolholder

Shank Angle	Edge Width CW	Shank Size	Max. Grooving Depth	Face Grooving Dia. (mm)		Blade Description ➡P31		Toolholder Description ➡P12	Dimensions (mm)	
	(mm)	(mm)	(mm)	DAXN [MIN.]	DAXX [MAX.]				LF	WF
90°	5	□20	15	25	35	KGDF R/L	-25-5B-C	KGDS R/L2020-C	125	54.7
				35	50		-35-5B-C			
				50	75		-50-5B-C			
				75	115		-75-5B-C			
				115	180		-115-5B-C			
				180	235		-180-5B-C			
				235	∞		-235-5B-C			
			20	25	35		-25-5C-C			59.7
			25	35	50		-35-5C-C			64.7
				50	75		-50-5C-C			
				75	115		-75-5C-C			
				115	180		-115-5C-C			
				180	235		-180-5C-C			
				235	∞		-235-5C-C			
			32	75	115		-75-5D-C			71.7
				115	180		-115-5D-C			
				180	235		-180-5D-C			
				235	∞		-235-5D-C			
		□25	15	25	35	KGDF R/L	-25-5B-C	KGDS R/L2525-C	150	54.7
				35	50		-35-5B-C			
				50	75		-50-5B-C			
				75	115		-75-5B-C			
				115	180		-115-5B-C			
				180	235		-180-5B-C			
				235	∞		-235-5B-C			
			20	25	35		-25-5C-C			59.7
			25	35	50		-35-5C-C			64.7
				50	75		-50-5C-C			
				75	115		-75-5C-C			
				115	180		-115-5C-C			
				180	235		-180-5C-C			
				235	∞		-235-5C-C			
			32	75	115		-75-5D-C			71.7
				115	180		-115-5D-C			
				180	235		-180-5D-C			
				235	∞		-235-5D-C			

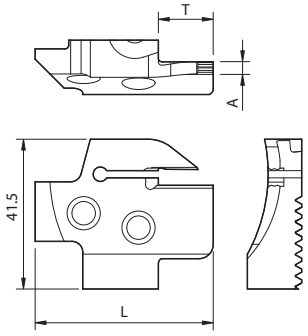
Applicable Inserts ➡P22

Shank Angle	Edge Width CW	Shank Size	Max. Grooving Depth	Face Grooving Dia. (mm)		Blade Description ➡P31		Toolholder Description ➡P12	Dimensions (mm)	
	(mm)	(mm)	(mm)	DAXN [MIN.]	DAXX [MAX.]				LF	WF
90°	6	□20	15	25	35	KGDF R/L	-25-6B-C	KGDS R/L2020-C	125	54.7
				35	50		-35-6B-C			
				50	75		-50-6B-C			
				75	115		-75-6B-C			
				115	180		-115-6B-C			
				180	235		-180-6B-C			
				235	∞		-235-6B-C			
			20	25	35		-25-6C-C			59.7
			25	35	50		-35-6C-C			64.7
				50	75		-50-6C-C			
				75	115		-75-6C-C			
				115	180		-115-6C-C			
				180	235		-180-6C-C			
				235	∞		-235-6C-C			
			32	75	115		-75-6D-C			71.7
				115	180		-115-6D-C			
				180	235		-180-6D-C			
				235	∞		-235-6D-C			
		□25	15	25	35	KGDF R/L	-25-6B-C	KGDS R/L2525-C	150	54.7
				35	50		-35-6B-C			
				50	75		-50-6B-C			
				75	115		-75-6B-C			
				115	180		-115-6B-C			
				180	235		-180-6B-C			
				235	∞		-235-6B-C			
			20	25	35		-25-6C-C			59.7
			25	35	50		-35-6C-C			64.7
				50	75		-50-6C-C			
				75	115		-75-6C-C			
				115	180		-115-6C-C			
				180	235		-180-6C-C			
				235	∞		-235-6C-C			
			32	75	115		-75-6D-C			71.7
				115	180		-115-6D-C			
				180	235		-180-6D-C			
				235	∞		-235-6D-C			

Applicable Inserts ➡P22

Face Grooving Blade

Blade Dimensions

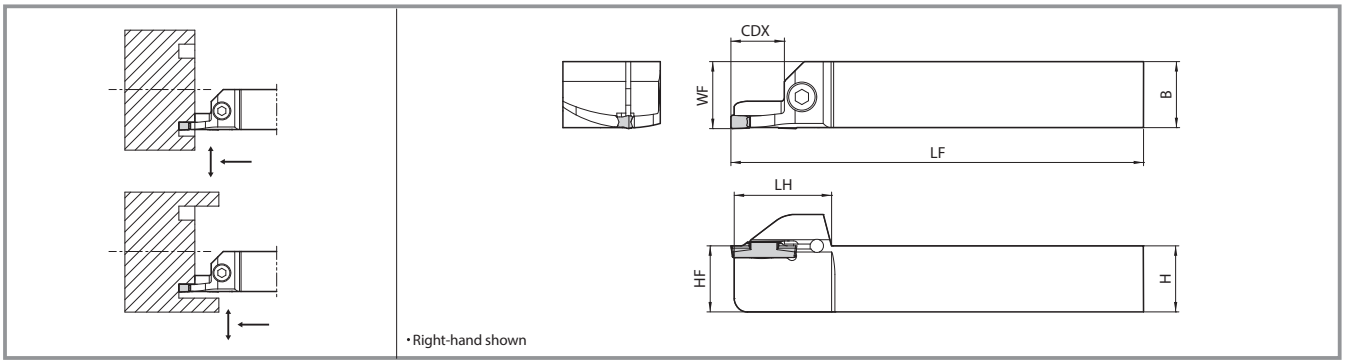


Right-hand shown

Blade Description		Stock R	Stock L	Dimensions (mm) L	T	A	Face Grooving Dia. (mm) DAXN [MIN.]	DAXX [MAX.]	Edge Width (mm) CW	Applicable Inserts ➡P22	Description of Toolholder ➡P12
KGDFR	-25-2A-C	●	–	44.35	6	1.5	25	30	2	GDFM 2020N-020GM	KGD $^{L}/_{R}$·····-C KGDS $^{R}/_{L}$·····-C
	-30-2A-C	●	–				30	35			
	-35-2A-C	●	–				35	45			
	-45-2A-C	●	–				45	60			
	-60-2A-C	●	–				60	80			
	-80-2A-C	●	–				80	100			
	-100-2A-C	●	–				100	130			
	-25-2B-C	●	–	47.35	13		25	30			
	-30-2B-C	●	–	49.35	15		30	35			
	-35-2B-C	●	–				35	45			
	-45-2B-C	●	–				45	60			
	-60-2B-C	●	–				60	80			
	-80-2B-C	●	–				80	100			
	-100-2B-C	●	–				100	130			
KGDF $^{R}/_{L}$	-25-3A-C	●	●	47.35	13	2	25	30	3	GDFM 3020N-030GM GDFM 3020N-030DM GDFMS 3020N-030DM GDFM3020N-150R-CM GDFG3020N-020GS	
	-30-3A-C	●	●				30	40			
	-40-3A-C	●	●				40	50			
	-50-3B-C	●	●	49.35	15		50	65			
	-65-3B-C	●	●				65	85			
	-85-3B-C	●	●				85	110			
	-110-3B-C	●	●				110	145			
	-50-3C-C	●	●	56.35	22		50	65			
	-65-3C-C	●	●				65	85			
	-85-3C-C	●	●	59.35	25		85	110			
	-110-3C-C	●	●				110	145			
KGDF $^{R}/_{L}$	-25-4A-C	●	●	47.35	13	3	25	35	4	GDFM 4020N-040GM GDFM 4020N-040GH GDFM 4020N-040DM GDFMS 4020N-040DM GDFM4020N-200R-CM GDFG4020N-040GS	
	-35-4B-C	●	●	49.35	15		35	50			
	-50-4B-C	●	●				50	70			
	-70-4B-C	●	●				70	100			
	-100-4B-C	●	●				100	150			
	-150-4B-C	●	●				150	220			
	-220-4B-C	●	●				220	∞			
	-35-4C-C	●	●	59.35	25		35	50			
	-50-4C-C	●	●				50	70			
	-70-4C-C	●	●				70	100			
	-100-4C-C	●	●				100	150			
	-150-4C-C	●	●				150	220			
	-220-4C-C	●	●				220	∞			
KGDF $^{R}/_{L}$	-25-5B-C	●	●	49.35	15	4	25	35	5	GDFM 5020N-040GM GDFM 5020N-080GM GDFM 5020N-040GH GDFM 5020N-080GH GDFM 5020N-040DM GDFMS 5020N-040DM GDFM5020N-250R-CM GDFG5020N-040GS	
	-35-5B-C	●	●				35	50			
	-50-5B-C	●	●				50	75			
	-75-5B-C	●	●				75	115			
	-115-5B-C	●	●				115	180			
	-180-5B-C	●	●				180	235			
	-235-5B-C	●	●				235	∞			
	-25-5C-C	●	●	54.35	20		25	35			
	-35-5C-C	●	●	59.35	25		35	50			
	-50-5C-C	●	●				50	75			
	-75-5C-C	●	●				75	115			
	-115-5C-C	●	●				115	180			
	-180-5C-C	●	●				180	235			
	-235-5C-C	●	●				235	∞			
	-75-5D-C	●	●	66.35	32		75	115			
	-115-5D-C	●	●				115	180			
	-180-5D-C	●	●				180	235			
	-235-5D-C	●	●				235	∞			
KGDF $^{R}/_{L}$	-25-6B-C	●	●	49.35	15	5	25	35	6	GDFM 6020N-040GM GDFM 6020N-080GM GDFM 6020N-040GH GDFM 6020N-080GH GDFM 6020N-040DM GDFMS 6020N-040DM GDFM6020N-300R-CM GDFG6020N-040GS	
	-35-6B-C	●	●				35	50			
	-50-6B-C	●	●				50	75			
	-75-6B-C	●	●				75	115			
	-115-6B-C	●	●				115	180			
	-180-6B-C	●	●				180	235			
	-235-6B-C	●	●				235	∞			
	-25-6C-C	●	●	54.35	20		25	35			
	-35-6C-C	●	●	59.35	25		35	50			
	-50-6C-C	●	●				50	75			
	-75-6C-C	●	●				75	115			
	-115-6C-C	●	●				115	180			
	-180-6C-C	●	●				180	235			
	-235-6C-C	●	●				235	∞			
	-75-6D-C	●	●	66.35	32		75	115			
	-115-6D-C	●	●				115	180			
	-180-6D-C	●	●				180	235			
	-235-6D-C	●	●				235	∞			

● : Standard Stock

KGDF-Z (Face Grooving / Integral Type)



Toolholder Dimensions

Edge Width CW (mm)	Shank Size (mm)	Max. Grooving Depth (mm)	Face Grooving Dia. (mm) DAXN [MIN.]	DAXX [MAX.]	Description	Stock R	Stock L	Dimensions (mm) H	HF	B	LF	LH	WF	CDX
3	□20	15	50	65	KGDF R/L 2020K50-3B-Z	●	●	20	20	20	125	30.5	20.3	15
			65	85	2020K65-3B-Z	●	●							
			85	110	2020K85-3B-Z	●	●							
			110	145	2020K110-3B-Z	●	●							
	□25		50	65	KGDF R/L 2525M50-3B-Z	●	●	25	25	25	150		25.3	
			65	85	2525M65-3B-Z	●	●							
			85	110	2525M85-3B-Z	●	●							
			110	145	2525M110-3B-Z	●	●							
4	□20	15	50	70	KGDF R/L 2020K50-4B-Z	●	●	20	20	20	125	30.5	20.3	15
			70	100	2020K70-4B-Z	●	●							
			100	150	2020K100-4B-Z	●	●							
	□25		50	70	KGDF R/L 2525M50-4B-Z	●	●	25	25	25	150		25.3	
			70	100	2525M70-4B-Z	●	●							
			100	150	2525M100-4B-Z	●	●							
5	□20	15	50	75	KGDF R/L 2020K50-5B-Z	●	●	20	20	20	125	30.5	20.3	15
			75	115	2020K75-5B-Z	●	●							
			115	180	2020K115-5B-Z	●	●							
	□25		50	75	KGDF R/L 2525M50-5B-Z	●	●	25	25	25	150		25.3	
			75	115	2525M75-5B-Z	●	●							
			115	180	2525M115-5B-Z	●	●							

● : Standard Stock

Applicable Inserts ➡ P22
Recommended Cutting Conditions ➡ P33

Spare Parts

Description	Spare Parts	
	Clamp Bolt	Wrench
		
KGDF R/L • • • -Z	HH5 X 16	LW-4

Toolholder Identification System (Integral Type)

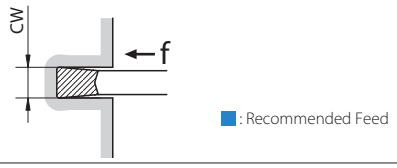
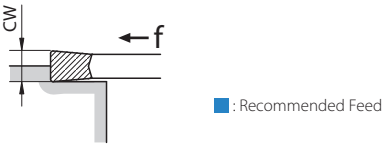
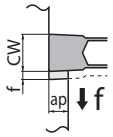
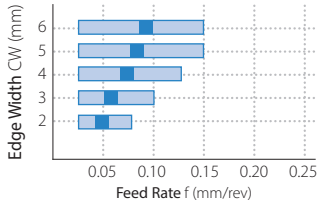
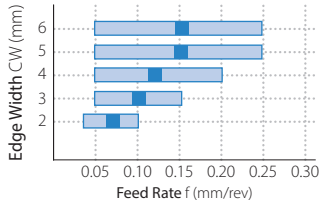
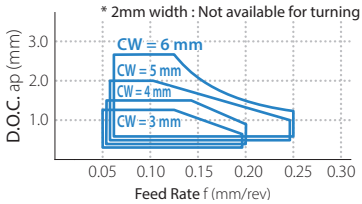
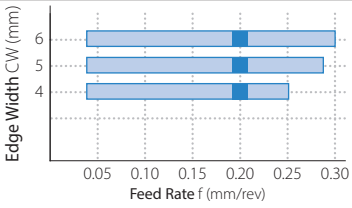
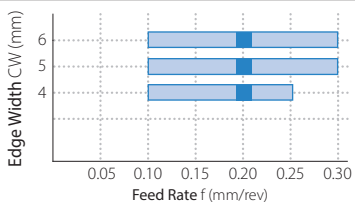
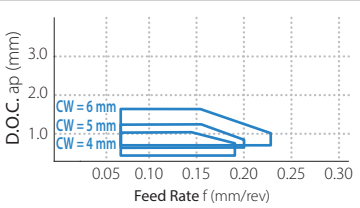
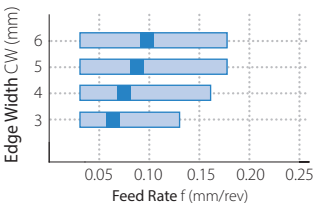
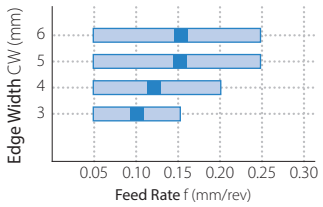
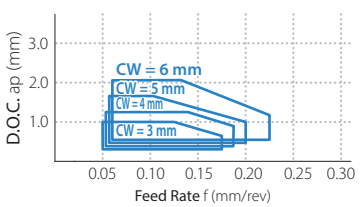
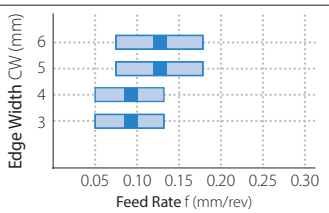
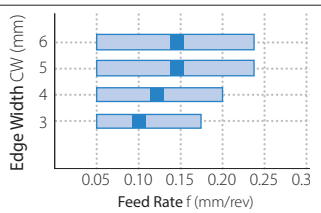
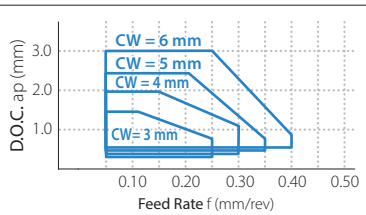
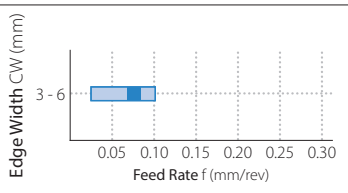
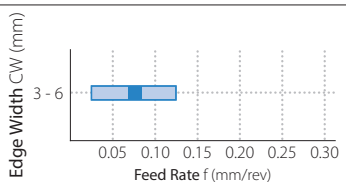
KGDF	R	2525	M	50	3	B	Z
Series	Hand of Tool	Shank Size	Toolholder Length	Min. Face Grooving Dia.	Edge Width	Grooving Depth	Toolholder Type
KGDF Face Grooving	R : Right-hand L : Left-hand	2020 : □20 mm 2525 : □25 mm	K : 125 mm M : 150 mm	50 : 50 mm ⋮ 115 : 115 mm	3 : 3 mm 4 : 4 mm 5 : 5 mm	B : 15 mm	Z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

Recommended Cutting Conditions (Face Grooving) ★1st Recommendation ☆2nd Recommendation

Workpiece	Recommended Insert Grade (Vc : m/min)					Notes
	Cermet		MEGACOAT		Carbide	
	TN620	TN90	PR1225	PR1215	GW15	
Carbon Steel	☆ 60 – 200	☆ 80 – 200	★ 60 – 160	☆ 80 – 160	–	Coolant
Alloy Steel	☆ 60 – 160	☆ 70 – 160	★ 60 – 150	☆ 60 – 150	–	
Stainless Steel	–	–	★ 50 – 120	☆ 50 – 120	–	
Cast Iron	–	–	–	★ 80 – 160	–	
Aluminum Alloy	–	–	–	–	★ 160 – 400	
Brass	–	–	–	–	★ 80 – 160	

Recommended Cutting Conditions (Feed Rate / D.O.C.)

(Workpiece : S50C)

Chipbreaker	Grooving	Shoulder Grooving (Side Grooving)	Turning
			
GM (Grooving and Turning)			
GH (Grooving, Turning and High Feed Grooving)			
DM (Deep Grooving and Turning)			
CM (Copying)			
GS (Aluminum / Non-ferrous metals)	 * When turning, keep ap less than or equal to the corner-R(RE)		–

When shouldering,

- If D.O.C. is set smaller, set feed higher.
- If D.O.C. is set larger, set feed lower.

1) The above values are based on the condition that the CDX of toolholder is 15 mm or less.
2) If the toolholder's CDX is over 15 mm, set the values for turning to 90% or less of those above.

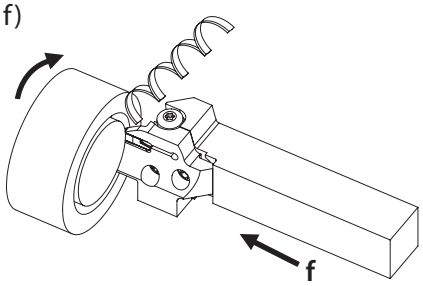
Guide for Face Grooving

1 Toolholder Selection

Check the range of applicable face grooving diameter as well as the groove width and depth.

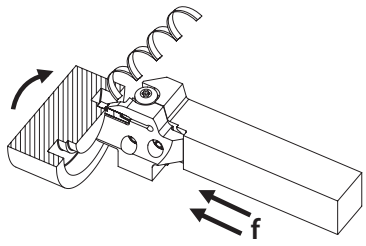
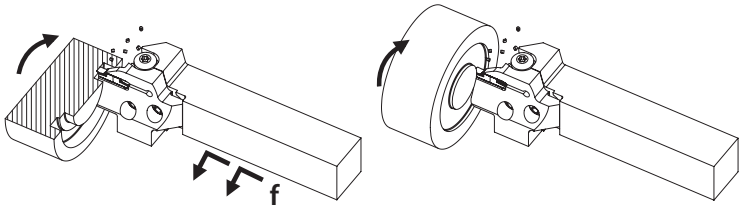
2 Cutting conditions (Feed rate : f)

When machining steel, set the feed rate (f) so that chips are created in a helical form when plunging.



3 Expanding Groove Width (Plunging and Turning)

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

Plunging (Grooving + Side Grooving)	Turning
	

4 Guide for Turning

A. When the cutting amount (D.O.C.) is over 0.5mm

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

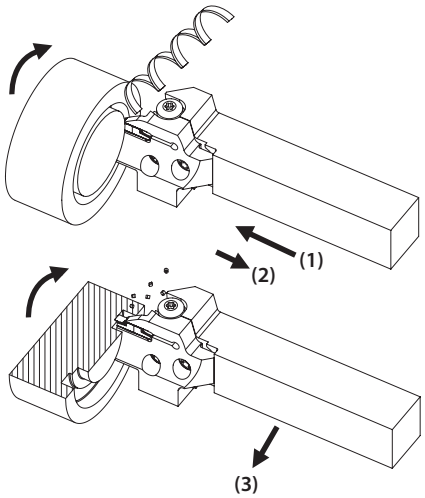
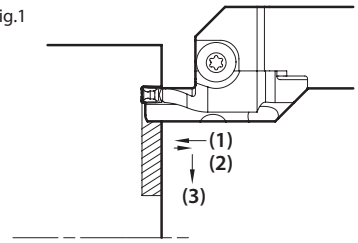
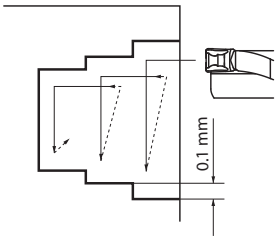


Fig.1



● When widening the face groove width (see Fig.2)
Apply the "Step Turning".
Then perform finishing.

Fig.2



B. When the cutting amount (D.O.C.) is under 0.5mm

(1) Plunging
(2) Perform turning
Machining without interruption is possible. (see Fig.3)

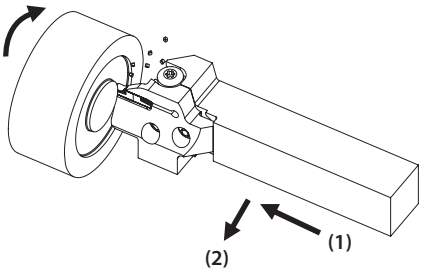
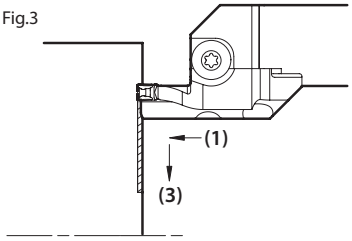


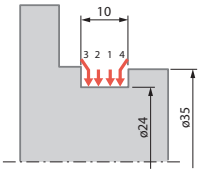
Fig.3



Case Studies

Gear SCr420H (Grooving)

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



Tool Life

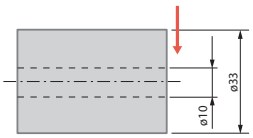
		Tool Life
GM Chipbreaker (PR1225)	1,500 pcs/edge	6 times
Competitor C (PVD Coated Carbide)	250 pcs/edge	

KGD-type and GM chipbreaker (PR1225) improved tool life to 6 times of Competitor C. No burned chips and good chip control.

(User evaluation)

Sleeve S45CF (Cut-off)

Vc = 103 m/min
f = 0.12 mm/rev
Wet
GDM3020N-025PM (PR1225)
KGDL2525X-3T20S



Tool Life

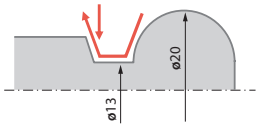
PM Chipbreaker (PR1225)	250 pcs/edge , capable of further machining
Competitor D (PVD Coated Carbide)	250 pcs/edge , with chipping

KGD-type and PM chipbreaker (PR1225) showed good edge condition after machining same number of workpieces as Competitor D. Available for further machining. (Comp. D caused chipping)

(User evaluation)

Ball Stud SCM435 (Copying)

Vc = 100 ~ 160 m/min
ap = 0.3 mm
f = 0.15 ~ 0.25 mm/rev
Wet
GDM3020N-150R-CM (PR1225)
KGDR2020X-3T10S



Tool Life

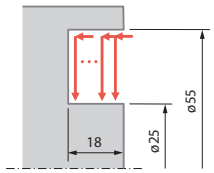
		Tool Life
CM Chipbreaker (PR1225)	800 pcs/edge	2 times
Conventional A	400 pcs/edge	

Resolve issues such as chip-bite and tangled chips due to its superior chip evacuation performance.
⇒ Resolve breakage of edge caused by chips.
Doubled tool life by reducing damage on the edge.

(User evaluation)

Piston SCM435H (Face Grooving)

Vc = 150 m/min
ap = 1, 1.8 mm (Turning)
f = 0.05 mm/rev (Grooving)
0.1, 0.15 mm/rev (Turning)
Wet
GDFM4020N-040GM (PR1225)
KGDFL2525X50-4CS



Tool Life

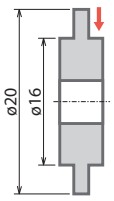
GM Chipbreaker (PR1225)	40 pcs/edge , capable of further machining
Conventional B	40 pcs/edge

KGDF+GM chipbreaker improved chip evacuation compared to Conventional B. (Resolved frequent breakage of toolholder.)
Smaller wear on the edge provided by MEGACOAT make the tool life longer. (Lower running cost by longer tool life)

(User evaluation)

Ring SCr415-equivalent

Vc = 160 m/min
(n = 3,200 min^{-1})
ap = 2.5 mm
f = 0.07 mm/rev
Wet, Normal Pressure
KGDR2020K-3T10JCT
GDM3020M-025PM PR1225



Tool Life

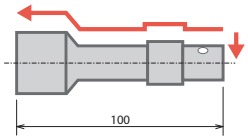
		Tool Life
KGD-JCT (Internal Coolant)	9,000 pcs / edge	x1.5
Competitor E (External Coolant)	6,000 pcs/edge	

Change to KGD-JCT (internal coolant) from Competitor E (external coolant) extended tool life by 1.5 times.

(User evaluation)

Valve SUM-equivalent

Vc = 160 m/min
ap = 14 mm
f = 0.12-0.15 mm/rev
Wet, Normal Pressure
KGDR2525K-3T20JCT
GDM3020M-040GM PR1535



Tool Life

		Chip Control	Surface Finish
KGD-JCT (Internal Coolant)	1,000 pcs / edge	Good	Good
Competitor F (Internal Coolant)	1,000 pcs/edge		

KGD-JCT maintained stable machining for the required number of pieces. Better chip control and surface finish.

(User evaluation)

CP277-8