

# GROOVING

# G

## G1 - G49

### EXTERNAL GROOVING

G2 - G32

#### Summary of External Grooving

G2

KTGF-F (WITHOUT OFFSET) / KTGF

G4

S...KTGF

Sleeve Holders

G5

KGBA / KGBAS

G12

KGD

G14

KKC

Cera-Notch System

G24

KGM (SWISS) / KGM

G30

KGM-T

G31

### INTERNAL GROOVING

G33 - G43

#### Summary of Internal Grooving

G33

EZG

EZ Bars

G34

HPG

Double-Sided Micro Bars

G36

VNG

Swiss IQ Bars

G37

SIGE-EH / SIGE-WH

G40

SIGE-WH-90 (SWISS)

G42

### FACE GROOVING

G44 - G49

#### Summary of Face Grooving

G44

EZFG

EZ Bars

G45

HPFG

Double-Sided Micro Bars

G47

VNFG

Swiss IQ Bars

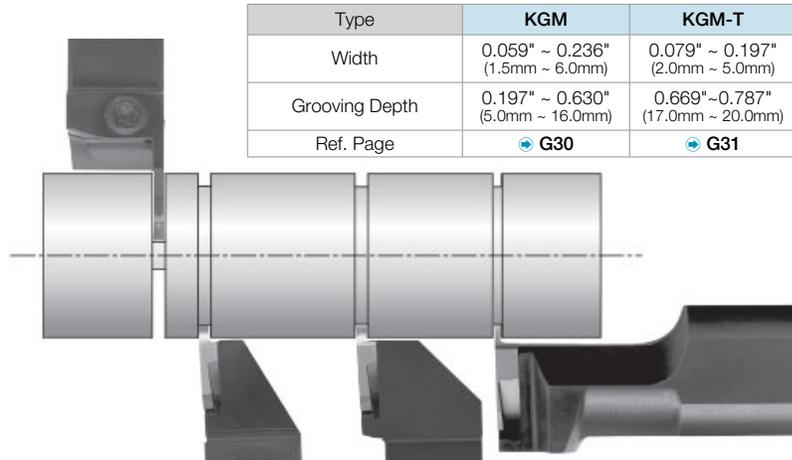
G47

TWFG / TWFGT

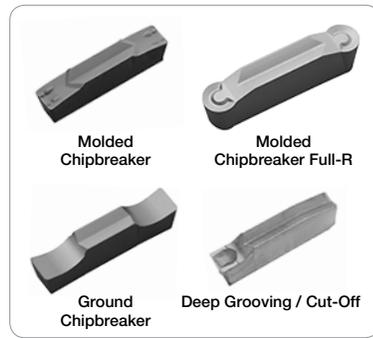
Twin Bars

G48

## External Grooving of Precision Parts (G3~G13, G26~G32)



Type	KGM	KGM-T
Width	0.059" ~ 0.236" (1.5mm ~ 6.0mm)	0.079" ~ 0.197" (2.0mm ~ 5.0mm)
Grooving Depth	0.197" ~ 0.630" (5.0mm ~ 16.0mm)	0.669" ~ 0.787" (17.0mm ~ 20.0mm)
Ref. Page	<a href="#">G30</a>	<a href="#">G31</a>

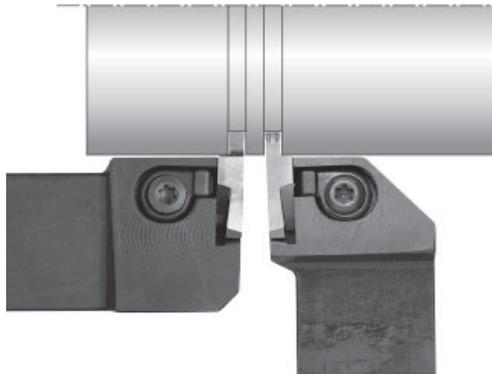


Type	KTGF-F	KTGF
Width	0.013" ~ 0.098" (0.33mm ~ 2.50mm)	
Grooving Depth	0.032" ~ 0.098" (0.80mm ~ 2.50mm)	
Ref. Page	<a href="#">G4</a>	

S-KTGF	
Width	0.013" ~ 0.098" (0.33mm ~ 2.50mm)
Grooving Depth	0.032" ~ 0.098" (0.80mm ~ 2.50mm)
Ref. Page	<a href="#">G5</a>

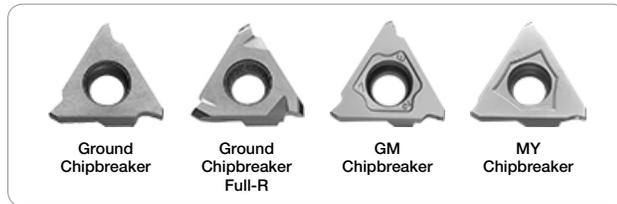


## Shallow Grooving [Grooving Depth : ~0.020" (5mm)]

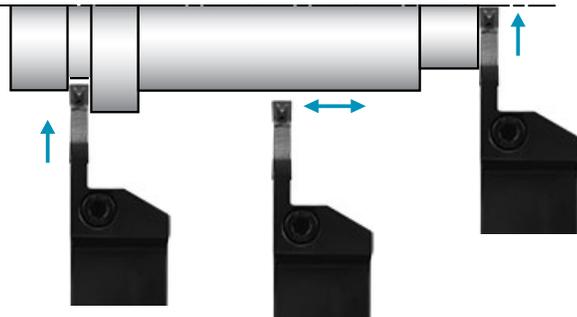


	General (Square)	Full-R (Round)	GM Chipbreaker	MY Chipbreaker
Edge Shape				

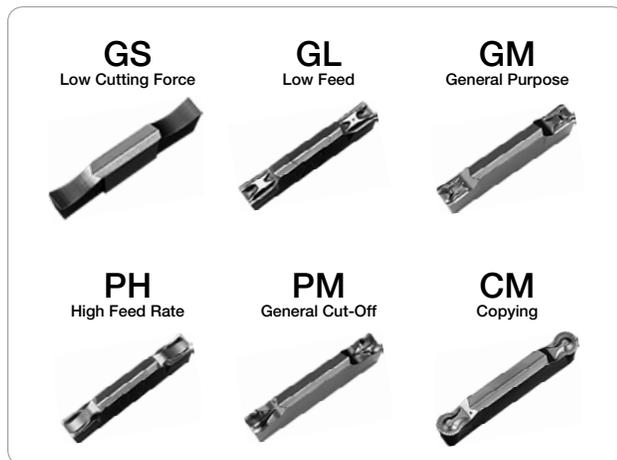
Type	KGBAS	KGBA
Width	0.013" ~ 0.189" (0.33mm ~ 4.80mm)	0.013" ~ 0.098" (0.33mm ~ 2.50mm)
Grooving Depth	0.032" ~ 0.197" (0.80mm ~ 5.00mm)	0.032" ~ 0.098" (0.80mm ~ 2.50mm)
Ref. Page	<a href="#">G13</a>	<a href="#">G12</a>



## External Grooving (G14~G25)



Type	KGD
Width	0.079" ~ 0.236" (2.0mm ~ 6.0mm)
Grooving Depth	0.236" ~ 0.787" (6.0mm ~ 20.0mm)
Ref. Page	<a href="#">G19~</a> <a href="#">G21</a>



## Applicable Inserts

Part Number	A	T	Ød	Classification of Usage		Applicable Toolholders	Ref. Page for Toolholder					
				● : Light Interruption / 1st Choice	⊙ : Light Interruption / 2nd Choice							
TGF32_	0.375	0.125	0.177									
Insert Right-handed Insert Shown	Part Number	Unit	Dimensions			Cermet	MEGA COAT	PVD Coated Carbide	Carbide	PCD		
			W	B	rε	TC40	PR1215	PR930	PR1115	KW10		
	TGF32% 031N	inch	0.031	0.078	0.004	●	⊙				KTGF%...16F KTGF%...16 S...KTGFL16	G4 G5
	041N		0.041	0.078	0.004	●	⊙					
	047N		0.047	0.078	0.004	●	⊙					
	058N		0.058	0.078	0.004	●	⊙					
	062N		0.062	0.078	0.004	●	⊙					
	078N		0.078	0.098	0.004	●	⊙					
	094N	0.094	0.098	0.004	●	⊙						
	TGF32% 033-005	mm	0.33	0.8	0.05	●	⊙					
	050-005		0.50	1.2	0.05	Ⓡ	Ⓞ	Ⓞ	Ⓛ	Ⓡ		
	075-010		0.75	2.0	0.10	Ⓡ	Ⓞ	Ⓞ	Ⓛ	Ⓡ		
	095-010		0.95	2.0	0.10	Ⓡ	Ⓞ	Ⓞ	Ⓛ	Ⓡ		
	100-010		1.00	2.0	0.10	Ⓡ	Ⓞ	Ⓞ	Ⓛ	Ⓡ		
	120-010		1.20	2.0	0.10	Ⓡ	Ⓞ	Ⓞ				
	125-010		1.25	2.0	0.10	Ⓡ	Ⓞ	Ⓞ	Ⓛ	Ⓡ		
	140-010		1.40	2.0	0.10	Ⓡ	Ⓞ	Ⓞ				
145-010	1.45		2.0	0.10	Ⓡ	Ⓞ	Ⓞ	Ⓛ	Ⓡ			
150-010	1.50		2.0	0.10	Ⓡ	Ⓞ	Ⓞ	Ⓛ	Ⓡ			
175-010	1.75	2.0	0.10	Ⓡ	Ⓞ	Ⓞ	Ⓛ	Ⓡ				
200-010	2.00	2.5	0.10	Ⓡ	Ⓞ	Ⓞ	Ⓛ	Ⓡ				
250-010	2.50	2.5	0.10	Ⓡ	Ⓞ	Ⓞ	Ⓛ	Ⓡ				
TGF32% 125-010	inch	1.25	2.0	0.10	Ⓡ	Ⓞ	Ⓞ	Ⓛ	Ⓡ			
150-010		1.50	2.0	0.10	Ⓡ	Ⓞ	Ⓞ	Ⓛ	Ⓡ			
200-010		2.00	2.5	0.10	Ⓡ	Ⓞ	Ⓞ	Ⓛ	Ⓡ			

• Dimension B shows available grooving depth

## Recommended Cutting Conditions

### TGF Insert (Ground Chipbreaker)

Workpiece Material	Recommended Insert Grade (Vc sfm)								Remarks			
	Cermet			MEGA COAT	PVD Coated Carbide		Carbide	PCD	① f (feed) during Grooving (ipr) ② f (feed) during Turning (ipr) ③ D.O.C. during Turning (in)			
	TN90	TC40	TC60	PR1215	PR930	PR1115	KW10	KPD001 (KPD010)	TGF32% 033 ~ 050	TGF32% 075 ~ 095	TGF32% 100 ~ 145	TGF32% 150 ~ 250
Carbon Steel	☆ 500-725	☆ 500-725	☆ 325-500	★ 250-600	☆ 250-600	☆ 250-600	-	-	① 0.0004-0.0020 ② Turning N/A ③ Turning N/A	① 0.0008-0.0028 ② Turning N/A ③ Turning N/A	① 0.0012-0.0031 ② 0.0012-0.0024 ③ MAX 0.008	① 0.0012-0.0031 ② 0.0012-0.0024 ③ MAX 0.008
Alloy Steel	☆ 425-650	☆ 425-650	☆ 250-425	★ 250-525	☆ 250-525	☆ 250-525	-	-	① 0.0004-0.0016 ② Turning N/A ③ Turning N/A	① 0.0008-0.0024 ② Turning N/A ③ Turning N/A	① 0.0012-0.0028 ② 0.0008-0.0020 ③ MAX 0.008	① 0.0012-0.0028 ② 0.0008-0.0020 ③ MAX 0.008
Stainless Steel	☆ 225-500	-	☆ 200-325	☆ 200-425	☆ 200-425	★ 200-425	-	-	① 0.0004-0.0016 ② Turning N/A ③ Turning N/A	① 0.0008-0.0024 ② Turning N/A ③ Turning N/A	① 0.0012-0.0028 ② 0.0008-0.0020 ③ MAX 0.008	① 0.0012-0.0028 ② 0.0008-0.0020 ③ MAX 0.008
Cast Iron	-	-	-	-	-	-	★ 200-650	-	① 0.0004-0.0020 ② Turning N/A ③ Turning N/A	① 0.0008-0.0028 ② Turning N/A ③ Turning N/A	① 0.0012-0.0031 ② 0.0012-0.0024 ③ MAX 0.008	① 0.0012-0.0031 ② 0.0012-0.0024 ③ MAX 0.008
Aluminum	-	-	-	-	-	-	★ 500-1300	★ 500-6550	① 0.0004-0.0020 ② Turning N/A ③ Turning N/A	① 0.0008-0.0028 ② Turning N/A ③ Turning N/A	① 0.0012-0.0031 ② 0.0012-0.0024 ③ MAX 0.008	① 0.0012-0.0031 ② 0.0012-0.0024 ③ MAX 0.008
Brass	-	-	-	-	-	-	★ 500-975	★ 650-2625	① 0.0004-0.0016 ② Turning N/A ③ Turning N/A	① 0.0008-0.0024 ② Turning N/A ③ Turning N/A	① 0.0012-0.0028 ② 0.0008-0.0020 ③ MAX 0.008	① 0.0012-0.0028 ② 0.0008-0.0020 ③ MAX 0.008

★ : 1st Recommendation ☆ : 2nd Recommendation

Inserts are sold in 10 piece boxes.

CBN & PCD Tools are sold in 1 piece boxes.

## KTGF-F (Without Offset)

$\alpha$	Insert Grades
20°	PR1115, PR930, KW10
11°	KPD001
6°	TC40N

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

## KTGF (With Offset)

$\alpha$	Insert Grades
20°	PR1115, PR930, KW10
11°	KPD001
6°	TC40N

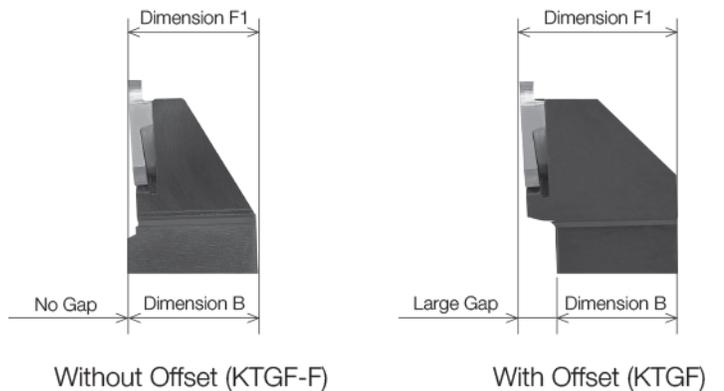
- Right-hand shown
- Right-hand Insert for Right-hand Toolholder, Left-hand Insert for Left-hand Toolholder

### Toolholder Dimensions

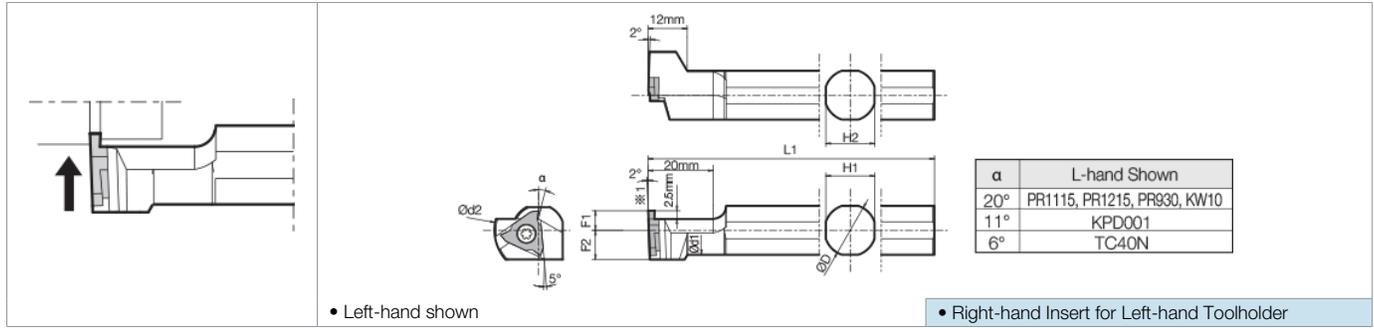
Part Number	Stock		Unit	Dimensions							Spare Parts		Applicable Inserts
	R	L		H1=h	H2	H3	B	L1	L2	F1	Clamp Screw	Wrench	
KTGF <sup>®</sup> 6-3JXF	●	●	inch	0.375	0.079	0.098	0.375	4.750	0.728	0.383	SB-4070TRW	FT-8	TGF32 <sup>®</sup>
8-3JXF	●	●		0.500	-	0.098	0.098	4.750	0.728	0.500			
10-3JXF	●	●		0.625	-	0.098	-	4.750	0.728	0.098			
KTGF <sup>®</sup> 1010JX-16F	○	○	mm	10	2	2.5	10	120	18.5	10	SB-4070TRW	FT-8	
1212JX-16F	○	○		12	-	2.5	12	120	18.5	12			
1616JX-16F	○	○		16	-	2.5	16	120	18.5	16			
KTGF <sup>®</sup> 1212F-16F	○	○		12	-	2.5	12	85	18.5	12	SB-4070TRS	FT-10	
KTGF <sup>®</sup> 1010F-16	○	○		10	4	2.5	10	80	18.5	12			
1212H-16	○	○		12	2	2.5	12	100	18.5	16			
1616H-16	○	○	16	-	2.5	16	100	18.5	20				
2020K-16	○	○	20	-	2.5	20	125	20.0	25				

### Usage Difference Between KTGF-F and KTGF Toolholders

It is necessary to use "Without Offset" in operating the automatic lathe.



**S-KTGF** (Sleeve Holder)



※1 : Dimension B shows available grooving depth

**Toolholder Dimensions**

Part Number	Stock	Unit	Dimensions							Spare Parts		Applicable Inserts G3
			ØD	L1	F1	F2	Ød1	Ød2	H1=H2	Clamp Screw	Wrench	
S12F-KTGFL16	○	mm	12.0	80	6	9.0	11.0	27	11	SB-4070TRS	FT-10	TGF32 $\frac{1}{4}$
S14H-KTGFL16	○		14.0	100	6	9.0	13.0	27	13			
S15F-KTGFL16	●	inch	0.625	3.35	0.236	0.354	0.575	1.063	0.591			
S16F-KTGFL16	○	mm	16.0	85	6	9.0	14.6	27	15			
S19G-KTGFL16	●	inch	0.750	3.54	0.236	0.413	0.693	1.063	0.669			
S19K-KTGFL16	●		0.750	4.73	0.236	0.413	0.693	1.063	0.669			
S20G-KTGFL16	○	mm	20.0	90	6	11.0	18.6	27	18			
S20K-KTGFL16	○		20.0	120	6	11.0	18.6	27	18			
S25.0H-KTGFL16	○		25.0	100	10	14.0	23.6	32	23			
S25K-KTGFL16	●	inch	1.000	4.73	3.940	0.551	0.929	1.260	0.906			

GRADES **A**

INSERTS **B**

CBN & PCD **C**

TURNING **E**

BORING **F**

GROOVING **G**

CUT-OFF **H**

THREADING **J**

SOLID END MILLS **L**

MILLING **M**

SPARE PARTS **P**

TECHNICAL **R**

INDEX **T**

GBA Inserts (Inch)

Part Number	A	T	Ød	Material		MEGACOAT Cermet	MEGA COAT	Applicable Toolholders	Ref. Page for Toolholder
				P	M				
GBA32_	0.375	0.125	0.173	Carbon Steel / Alloy Steel		●	●	Classification of Usage ● : Light Interruption / 1st Choice ⊙ : Light Interruption / 2nd Choice ● : Continuous / 1st Choice ○ : Continuous / 2nd Choice	
GBA43_	0.500	0.187	0.217	Stainless Steel			●		
GBA43%480	0.500	0.197	0.217	Cast Iron					
				N	Non-ferrous Metals				
				S	Titanium Alloy				
				H	Hard materials (≤40HRC)				
				H	Hard materials (≥40HRC)				

Insert	Part Number	Previous Part Number	Unit	Dimensions (in)			MEGACOAT Cermet	MEGA COAT	Applicable Toolholders	Ref. Page for Toolholder
				W	B	rε	PV7040	PR1215		
	GBA32% 031N	-	inch	0.031	0.079	0.002	●	●	KGBA%...3 KGBA%...16 KGBAS%...16	
	041N	-		0.041	0.079	0.002	●	●		
	047N	-		0.047	0.079	0.008	●	●		
	058N	-		0.058	0.079	0.008	●	●		
	062N	-		0.062	0.079	0.008	●	●		
	078N	-		0.078	0.098	0.008	●	●		
	094N	-		0.094	0.098	0.008	●	●		
	GBA43% 031N	-	inch	0.031	0.079	0.008	●	●	KGBA%...4-15 KGBA%...22-15 KGBAS%...22-15	
	047N	-		0.047	0.079	0.008	●	●		
	062N	-		0.062	0.138	0.008	●	●		
	072N	-		0.072	0.138	0.008	●	●		
	078N	-		0.078	0.138	0.008	●	●		
	088N	-		0.088	0.138	0.008	●	●		
	094N	-		0.094	0.157	0.012	●	●		
	097N	-		0.097	0.157	0.012	●	●		
	105N	-		0.105	0.157	0.012	●	●		
	109N	-		0.109	0.157	0.012	●	●		
	110N	-		0.110	0.157	0.012	●	●		
	125N	-		0.125	0.157	0.012	●	●		
	141N	-		0.141	0.197	0.012	●	●		
142N	-	0.142	0.197	0.012	●	●				
156N	-	0.156	0.197	0.016	●	●				
172N	-	0.172	0.197	0.016	●	●				
178N	-	0.178	0.197	0.016	●	●				
188N	-	0.188	0.197	0.016	●	●				

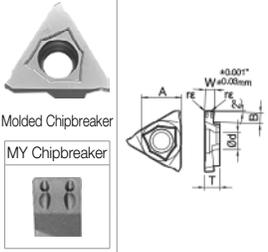
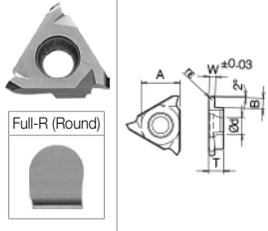
• Dimension B shows available grooving depth

Inserts are sold in 5 piece boxes.

GBA Inserts (Inch)

Part Number	A	T	Ød	(in)			MEGACOAT Cermet	MEGA COAT	Applicable Toolholders	Ref. Page for Toolholder
				P	M	K				
GBA32_	0.375	0.125	0.173	P	Carbon Steel / Alloy Steel	●	●	<b>Classification of Usage</b> ● : Light Interruption / 1st Choice ○ : Light Interruption / 2nd Choice ● : Continuous / 1st Choice ○ : Continuous / 2nd Choice		
GBA43_	0.500	0.187	0.217	M	Stainless Steel		●			
GBA43% 480	0.500	0.197	0.217	K	Cast Iron					
				N	Non-ferrous Metals					
				S	Titanium Alloy		●			
				H	Hard materials (≤40HRC)		●			
					Hard materials (≥40HRC)					

Insert Right-handed Insert Shown	Part Number	Previous Part Number	Unit	Dimensions (in)			MEGACOAT Cermet	MEGA COAT	Applicable Toolholders	Ref. Page for Toolholder
				W	B	rε				
 <p>Molded Chipbreaker MY Chipbreaker</p>	GBA43% 078MYN	-	inch	0.078	0.138	0.008		●	KGBA%...4-15 KGBA%...22-15 KGBAS%...22-15	
	094MYN	-		0.094	0.157	0.012		●	KGBA%...4-25 KGBA%...22-25 KGBAS%...22-25 KGBA%...22-25T5 KGBAS%...22-25T5	
	125MYN	-		0.125	0.157	0.012		●		
	156MYN	-		0.156	0.197	0.016		●	KGBA%...4-35 KGBA%...22-35 KGBAS%...22-35	
 <p>Full-R (Round)</p>	GBA32R 031R	-	inch	0.062	0.079	0.031		●	KGBA%...3 KGBA%...16 KGBAS%...16	● G12 ● G13
	047R	-		0.094	0.098	0.047		●		
	062R	-		0.125	0.098	0.062		●		
	GBA43% 031R	-	inch	0.062	0.138	0.031		●	KGBA%...4-15 KGBA%...22-15 KGBAS%...22-15	
	047R	-		0.094	0.157	0.047		●	KGBA%...4-25 KGBA%...22-25 KGBAS%...22-25 KGBA%...22-25T5 KGBAS%...22-25T5	
	062R	-		0.125	0.157	0.062		●		
	078R	-		0.156	0.197	0.078		●	KGBA%...4-35 KGBA%...22-35 KGBAS%...22-35	
	094R	-		0.188	0.197	0.094		●		

• Dimension B shows available grooving depth

GRADES	<b>A</b>
INSERTS	<b>B</b>
CBN & POD	<b>C</b>
TURNING	<b>E</b>
BORING	<b>F</b>
GROOVING	<b>G</b>
CUT-OFF	<b>H</b>
THREADING	<b>J</b>
SOLID END MILLS	<b>L</b>
MILLING	<b>M</b>
SPARE PARTS	<b>P</b>
TECHNICAL	<b>R</b>
INDEX	<b>T</b>

Inserts are sold in 5 piece boxes.

● : U.S. Stock Standard  
○ : World Express (Shipping: 7-10 Business Days)

(Customer Service) 800.823.7284 - Option 1  
(Technical Support) 800.823.7284 - Option 2  
Visit us online at [KyoceraPrecisionTools.com](http://KyoceraPrecisionTools.com)









# RECOMMENDED CUTTING CONDITIONS

## Recommended Cutting Conditions

### GBA Type Insert (Ground Chipbreaker)

Workpiece Material	Recommended Insert Grade (Vc sfm)									① f (feed) during Grooving (ipr) ② f (feed) during Traversing (ipr) ③ D.O.C. during Traversing (in)					Remarks	
	MC ※1	Cermet			MEGA COAT	PVD Coated Carbide	Carbide	CBN	PCD	GBA○○% 033 ~ 100	GBA○○% 125 ~ 200	GBA○○% 230 ~ 300	GBA○○% 330 ~ 400	GBA○○% 400 ~ 480		
	PV7040	TC40	TN90	PR1215	PR930	PR1115	PR905	KW10	KBN510 KBN525	KPD001 (KPD010)	GBA○○% 031N ~ 041N	GBA○○% 047N ~ 078N	GBA○○% 094N ~ 109N	GBA○○% 125N ~ 156N		GBA○○% 172N ~ 188N
Carbon Steel (SxxC, etc.)	★	☆	☆	★	☆	☆	-	-	-	-	① 0.0012-0.0031 ② Traversing N/A ③ Traversing N/A	① 0.0016-0.0035 ② 0.0016-0.0035 ③ MAX 0.012	① 0.0020-0.0039 ② 0.0020-0.0039 ③ MAX 0.020	① 0.0020-0.0047 ② 0.0020-0.0039 ③ MAX 0.020	① 0.0020-0.0047 ② 0.0020-0.0039 ③ MAX 0.032	
Alloy Steel (SCM, etc.)	★	☆	☆	★	☆	☆	-	-	-	-	① 0.0012-0.0028 ② Traversing N/A ③ Traversing N/A	① 0.0016-0.0031 ② 0.0016-0.0031 ③ MAX 0.012	① 0.0020-0.0035 ② 0.0020-0.0039 ③ MAX 0.020	① 0.0020-0.0039 ② 0.0020-0.0039 ③ MAX 0.020	① 0.0020-0.0039 ② 0.0020-0.0039 ③ MAX 0.032	
Stainless Steel (SUS304, etc.)	-	-	☆	☆	☆	★	-	-	-	-	① 0.0012-0.0028 ② Traversing N/A ③ Traversing N/A	① 0.0016-0.0031 ② 0.0016-0.0031 ③ MAX 0.012	① 0.0020-0.0035 ② 0.0020-0.0035 ③ MAX 0.020	① 0.0020-0.0039 ② 0.0020-0.0039 ③ MAX 0.020	① 0.0020-0.0039 ② 0.0020-0.0039 ③ MAX 0.032	
Cast Iron (FC/FCD, etc.)	-	-	-	-	-	-	★	☆	★	-	① 0.0012-0.0031 ② Traversing N/A ③ Traversing N/A	① 0.0016-0.0035 ② 0.0016-0.0035 ③ MAX 0.012	① 0.0020-0.0039 ② 0.0020-0.0039 ③ MAX 0.020	① 0.0020-0.0047 ② 0.0020-0.0039 ③ MAX 0.020	① 0.0020-0.0047 ② 0.0020-0.0039 ③ MAX 0.032	
Aluminum	-	-	-	-	-	-	-	★	-	★	① 0.0020-0.0047 ② Traversing N/A ③ Traversing N/A	① 0.0020-0.0059 ② 0.0020-0.0059 ③ MAX 0.020	① 0.0020-0.0059 ② 0.0020-0.0059 ③ MAX 0.032	① 0.0031-0.0059 ② 0.0031-0.0059 ③ MAX 0.032	① 0.0031-0.0059 ② 0.0031-0.0059 ③ MAX 0.032	
Brass	-	-	-	-	-	-	-	★	-	★	① 0.0020-0.0047 ② Traversing N/A ③ Traversing N/A	① 0.0020-0.0059 ② 0.0020-0.0059 ③ MAX 0.020	① 0.0020-0.0059 ② 0.0020-0.0059 ③ MAX 0.032	① 0.0031-0.0059 ② 0.0031-0.0059 ③ MAX 0.032	① 0.0031-0.0059 ② 0.0031-0.0059 ③ MAX 0.032	
Hard Materials	-	-	-	-	-	-	-	-	★	-	-	-	① 0.0008-0.0500 ② Traversing N/A ③ Traversing N/A	① 0.0012-0.0028 ② 0.0100-0.0400 ③ MAX 0.004	-	-

• Above cutting condition is for external grooving. Set both cutting speed and feed 10% higher for internal grooving. ★ : 1st Recommendation ☆ : 2nd Recommendation  
※1 : MC stands for MEGACOAT Cermet

### GBA Type Insert (GM Chipbreaker)

Workpiece Material	Recommended Insert Grade (Vc sfm)		① f (feed) during Grooving (ipr) ② f (feed) during Traversing (ipr) ③ D.O.C. during Traversing (in)				Remarks
	MEGACOAT		GBA43% 150- 020GM	GBA43% 175-020GM~ 230-020GM	GBA43% 250-030GM~ 350-030GM	GBA43% 400-040GM	
	PR1215						
Carbon Steel (SxxC, etc.)	250-725		① 0.0012-0.0047 ② 0.0012-0.0031 ③ MAX 0.012	① 0.0012-0.0047 ② 0.0012-0.0035 ③ MAX 0.012	① 0.0016-0.0059 ② 0.0020-0.0039 ③ MAX 0.020	① 0.0020-0.0059 ② 0.0020-0.0039 ③ MAX 0.032	
Alloy Steel (SCM, etc.)	250-650		① 0.0012-0.0047 ② 0.0012-0.0031 ③ MAX 0.012	① 0.0012-0.0047 ② 0.0012-0.0035 ③ MAX 0.012	① 0.0016-0.0059 ② 0.0020-0.0039 ③ MAX 0.020	① 0.0020-0.0059 ② 0.0020-0.0039 ③ MAX 0.032	
Stainless Steel (SUS304, etc.)	200-500		① 0.0012-0.0039 ② 0.0012-0.0031 ③ MAX 0.012	① 0.0012-0.0039 ② 0.0012-0.0035 ③ MAX 0.012	① 0.0016-0.0047 ② 0.0020-0.0039 ③ MAX 0.020	① 0.0016-0.0047 ② 0.0020-0.0039 ③ MAX 0.032	

• Above cutting condition is for external grooving. Set both cutting speed and feed 20% higher for internal grooving. ★ : 1st Recommendation ☆ : 2nd Recommendation

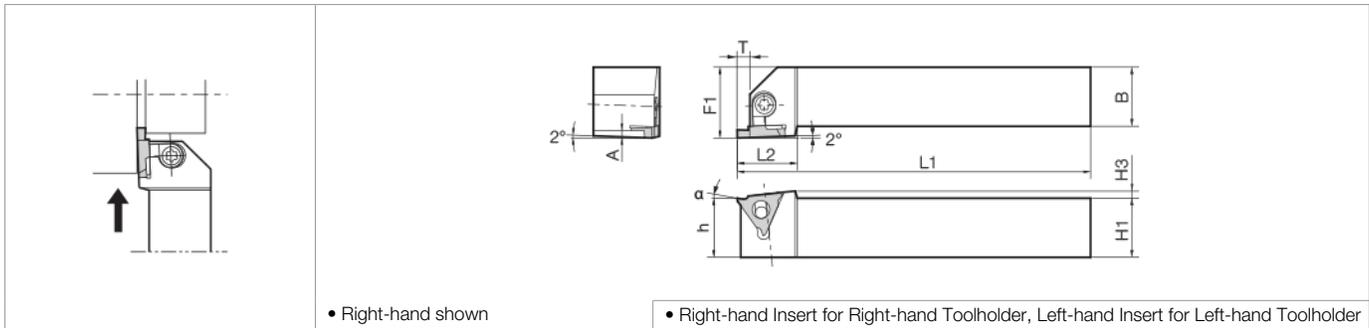
### GBA Type Insert (MY Chipbreaker)

Workpiece Material	Recommended Insert Grade (Vc sfm)								① f (feed) during Grooving (ipr) ② f (feed) during Traversing (ipr) ③ D.O.C. during Traversing (in)					Remarks			
	Cermet		MEGA COAT	PVD Coated Carbide	Carbide	CBN	PCD	GBA43% 175MY~ 200MY	GBA43% 230MY~ 265MY	GBA43% 300MY	GBA43% 330MY~ 350MY	GBA43% 400MY					
	TN6020	TC40	PR1215	PR930	PR1115	KW10	KBN510						KPD001 (KPD010)				
Carbon Steel (SxxC, etc.)	☆	-	★	☆	☆	-	-	-	-	-	-	-	① 0.0012-0.0031 ② 0.0012-0.0031 ③ MAX 0.012	① 0.0016-0.0035 ② 0.0016-0.0035 ③ MAX 0.012	① 0.0020-0.0039 ② 0.0020-0.0039 ③ MAX 0.020	① 0.0020-0.0047 ② 0.0020-0.0039 ③ MAX 0.020	① 0.0020-0.0047 ② 0.0020-0.0039 ③ MAX 0.032
Alloy Steel (SCM, etc.)	☆	-	★	☆	☆	-	-	-	-	-	-	-	① 0.0012-0.0028 ② 0.0012-0.0039 ③ MAX 0.012	① 0.0016-0.0031 ② 0.0016-0.0031 ③ MAX 0.012	① 0.0020-0.0035 ② 0.0020-0.0039 ③ MAX 0.020	① 0.0020-0.0039 ② 0.0020-0.0039 ③ MAX 0.020	① 0.0020-0.0039 ② 0.0020-0.0039 ③ MAX 0.032
Stainless Steel (SUS304, etc.)	☆	-	☆	☆	★	-	-	-	-	-	-	-	① 0.0012-0.0028 ② 0.0012-0.0039 ③ MAX 0.012	① 0.0016-0.0031 ② 0.0016-0.0031 ③ MAX 0.012	① 0.0020-0.0035 ② 0.0020-0.0035 ③ MAX 0.020	① 0.0020-0.0039 ② 0.0020-0.0039 ③ MAX 0.020	① 0.0020-0.0039 ② 0.0020-0.0039 ③ MAX 0.032

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

CBN & PCD Inserts are sold in 1 piece boxes.

■ KGBA

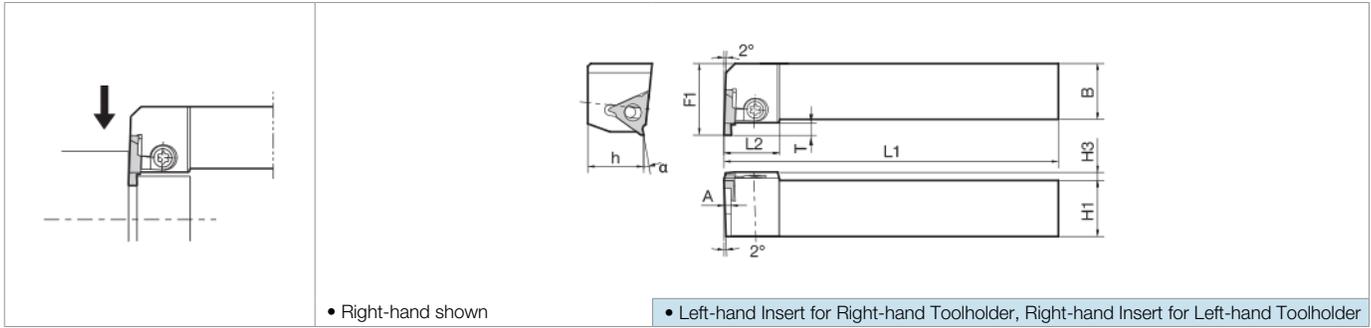


● Toolholder Dimensions

Part Number	Stock		Unit	Dimensions								Spare Parts		Applicable Insert ● G6~ ● G10
	R	L		H1=h	H3	B	L1	L2	F1	A	T	Clamp Set	Wrench	
KGBA% 12-3 12-4-15 12-4-25 12-4-25T 12-4-35	●	●	inch	0.750	0.160	0.750	5.00	0.945	1.000	-	0.098	LGBA-16% S	FT-15	GBA32% Type
	●	●		0.750	0.160	0.750	5.00	1.004	1.000	0.039	0.157			
	●	●		0.750	0.160	0.750	5.00	1.004	1.000	0.079	0.177	LGBA-22% S	FT-15	GBA43% Type
	●	●		0.750	0.160	0.750	5.00	1.004	1.000	0.079	0.217			
	●	●		0.750	0.160	0.750	5.00	1.004	1.000	0.118	0.217			
KGBA% 2020K-16 2020K22-15 2020K22-25 2020K22-25T5 2020K22-35 2020H22-15 2020H22-25 2020H22-35	○	○	mm	20	4.0	20	125	24	25	-	2.5	LGBA-16% S	FT-15	GBA32% Type
	○	○		20	4.0	20	125	25.5	25	1.0	4.0			
	○	○		20	4.0	20	125	25.5	25	2.0	4.5	LGBA-22% S	FT-15	GBA43% Type
	○	○		20	4.0	20	125	25.5	25	3.0	5.5			
	○	○		20	4.0	20	100	25.5	25	1.0	4.0			
	○	○		20	4.0	20	100	25.5	25	2.0	4.5			
	○	○		20	4.0	20	100	25.5	25	3.0	5.5			
	○	○		20	4.0	20	100	25.5	25	3.0	5.5			

- Dimension T shows the distance from the Toolholder to the cutting edge Dimension B shows available grooving depth.
- Clamp Set : KGBA%...LGBA-ORS for Right-hand Toolholder, and LGBA-OLS for Left-hand Toolholder
- KGBAS%...LGBA-OLS for Right-hand Toolholder, and LGBA-ORS for Left-hand Toolholder

**KGBAS**



• Right-hand shown

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

**Toolholder Dimensions**

Part Number	Stock		Unit	Dimensions								Spare Parts		Applicable Insert G6- G10
	R	L		H1=h	H3	B	L1	L2	F1	A	T			
<b>KGBAS%</b> 12-3	●		inch	0.750	0.152	0.750	5.000	0.984	0.984	-	0.098	LGBA-16LS	FT-15	GBA32L Type
12-4-15	●			0.750	0.160	0.750	5.000	0.984	1.062	0.039	0.157	LGBA-22LS	FT-15	GBA43L Type
12-4-25	●			0.750	0.160	0.750	5.000	0.984	1.062	0.079	0.177			
12-4-35	●			0.750	0.160	0.750	5.000	0.984	1.062	0.118	0.217			
<b>KGBAS%</b> 2020K-16	○	○	mm	20	4.0	20	125	25	25	-	2.5	LGBA-16%LS	FT-15	GBA32%L Type
2020K22-15	○	○		20	4.5	20	125	25	27	1.0	4.0	LGBA-22%LS	FT-15	GBA43%L Type
2020K22-25	○	○		20	4.5	20	125	25	27	2.0	4.5			
2020K22-25T5	○	○		20	4.5	20	125	25	27	2.0	5.5			
2020K22-35	○	○		20	4.5	20	125	25	27	3.0	5.5			

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

• Clamp Set : KGBA%...LGBA-ORS for Right-hand Toolholder. and LGBA-OLS for Left-hand Toolholder  
KGBAS%...LGBA-OLS for Right-hand Toolholder. and LGBA-ORS for Left-hand Toolholder

External Grooving Toolholders KGBA Short Shank types are available

For NC lathe and HSK tooling, KGBAR2020K-○○ (Overall length 125mm) short shank type KGBAR2020H22-○○ (Overall length 100mm) is available., meaning it is no longer necessary for users to cut-down the shank.

GRADES **A**  
INSERTS **B**  
CBN & PCD **C**  
TURNING **E**  
BORING **F**  
GROOVING **G**  
CUT-OFF **H**  
THREADING **J**  
SOLID END MILLS **L**  
MILLING **M**  
SPARE PARTS **P**  
TECHNICAL **R**  
INDEX **T**

## KGD Insert Lineup

### Smooth Chip Control

Introducing new chipbreakers designed to cover a variety of workpiece materials.

### High Precision Edge Preparation

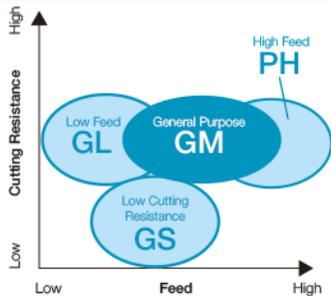
High precision molding technology with tolerance  $\pm 0.03\text{mm}$  (2, 3, 4mm types).

### MEGACOAT Technology

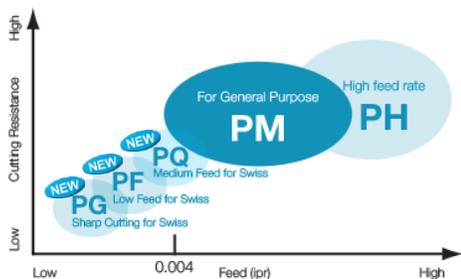
Long tool life and high efficiency machining achieved by superior oxidation and wear resistance.

#### Application Map

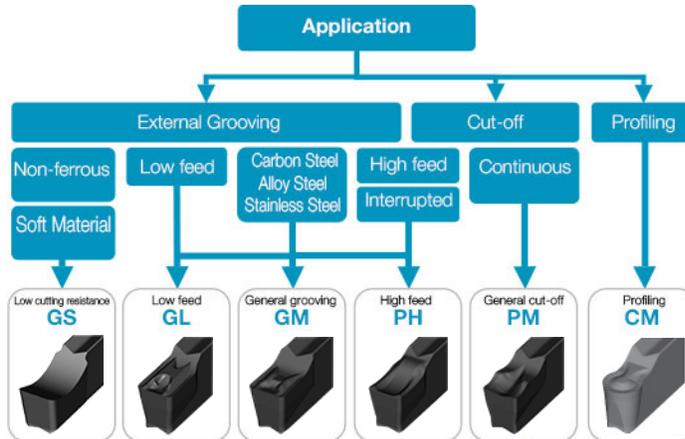
##### External Grooving & Traversing



##### Cut-off



#### Chipbreaker Selection

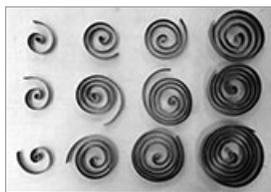


##### Small Parts Machining



PF / PQ / PG / PM / PH Cut-Off Inserts and Applicable Toolholders H12- H13

#### Cutting Conditions - SCM415 $V_c=500\text{sfm}$ , $f=0.006\text{ipr}$



GM Chipbreaker



Competitor A



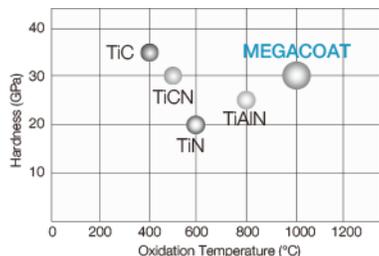
Competitor B

Better chip control than competitors

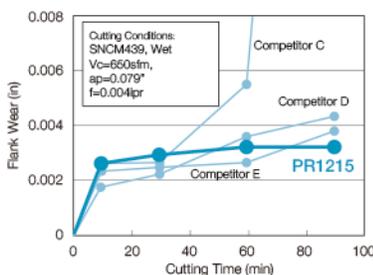


Reduces damage of cutting edge caused by crushing chips

#### MEGACOAT Features



#### Wear Resistance Comparison



#### PR1225

1st recommendation for cut-off, grooving, and traversing

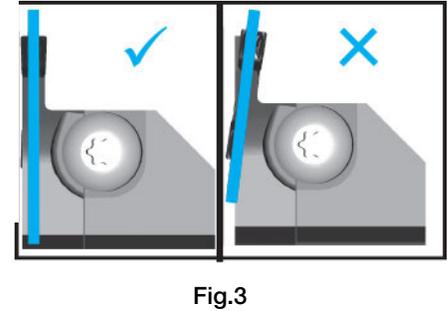
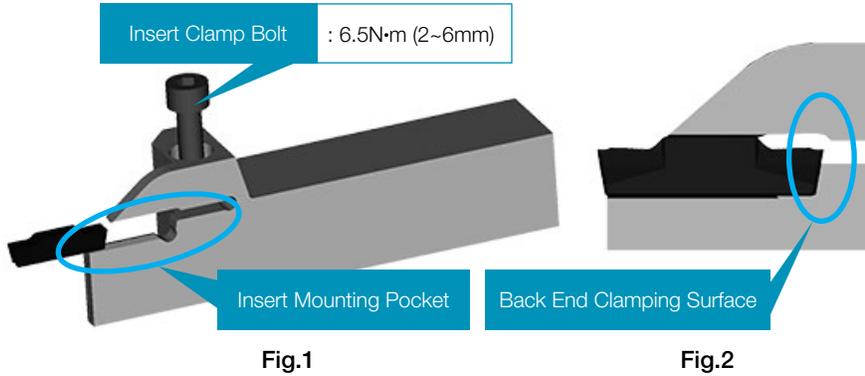
#### PR1215

Superior wear resistance, recommended for grooving and cut-off under stable conditions.

1st recommendation for machining of cast iron

## 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.2, Fig.3)
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)



## Guide for External Machining

### Point ( I )

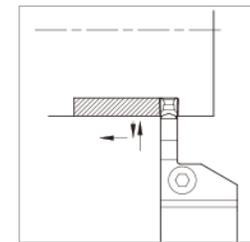
1. Grooving Depths Over 0.5mm : At Roughing (Fig.1)  
Before traversing, pull the tool back about 0.1mm after grooving, instead of traversing subsequent to grooving.  
(Failure to pull the tool back before traverse cutting will result in an unbalanced load applied on only one side of the cutting edge.)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

### Point ( II )

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

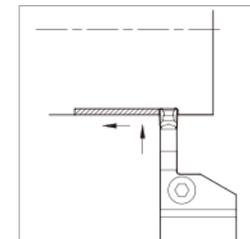
The widened groove and side walls should be finished last.  
(For better chip control, D.O.C. over 0.5mm is recommended.)

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



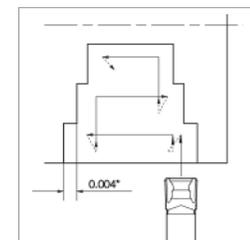
Before traversing, pull the tool back about 0.1mm after grooving.  
(Grooving depth over 0.5mm : At roughing)

Fig.1



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

Fig.2



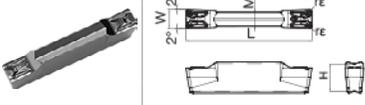
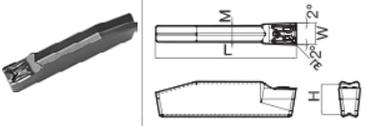
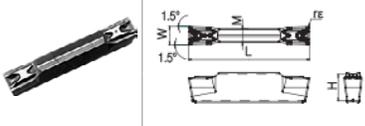
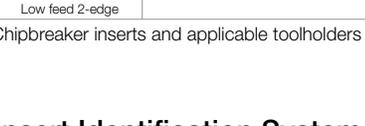
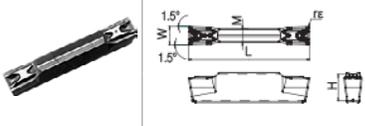
GRADES	A
INSERTS	B
CBN & PCD	C
TURNING	E
BORING	F
GROOVING	G
CUT-OFF	H
THREADING	J
SOLID END MILLS	L
MILLING	M
SPARE PARTS	P
TECHNICAL	R
INDEX	T

# GROOVING & CUT-OFF INSERTS

## GDM / GDMS / GDG

**Classification of Usage**  
 ● : Light Interruption / 1st Choice  
 ○ : Light Interruption / 2nd Choice  
 ● : Continuous / 1st Choice  
 ○ : Continuous / 2nd Choice

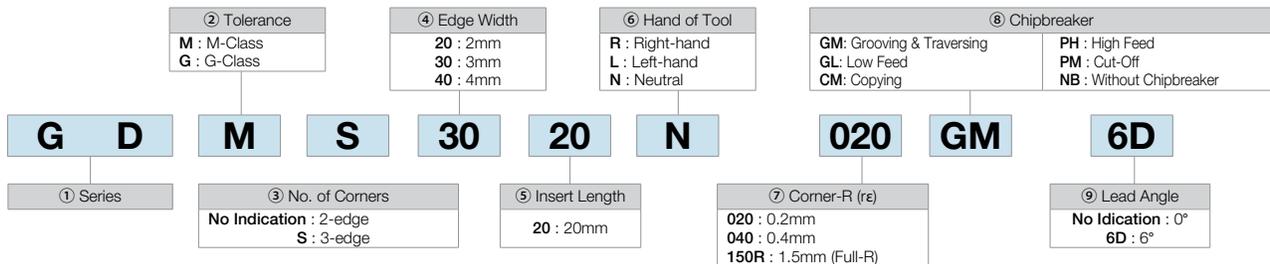
P	Carbon Steel / Alloy Steel	●	○	○	○
M	Stainless Steel		●	○	
K	Cast Iron			●	
N	Non-ferrous Metals				●
S	Titanium Alloy				●
H	Hard materials (≤40HRC)		○		
	Hard materials (≥40HRC)				

Insert Right-handed Insert Shown	Part Number	Dimensions (inch)								Cermet	MAGA COAT NANO	MEGACOAT	Carbide	Ref. Page for Toolholder				
		W			rε	M	L	H	TN90						PR1535	PR1225	PR1215	GW15
		inch	mm	Tolerance														
 General Purpose 2-edge	GDM 2420N-020GM	0.094	2.4	±0.0012	0.008	0.077	0.787	0.169	○		●	●		G19 G20 G21				
	3020N-020GM	0.118	3.0		0.008	0.091	0.787	0.169	○		●	●						
	3020N-040GM	0.118	3.0		0.016	0.091	0.787	0.169	○		●	●						
	4020N-020GM	0.157	4.0		0.008	0.130	0.787	0.169	○		●	●						
	4020N-040GM	0.157	4.0		0.016	0.130	0.787	0.169	○		●	●						
	4020N-080GM	0.157	4.0		0.032	0.130	0.787	0.169	○		●	●						
 General Purpose 1-edge	5020N-040GM	0.197	5.0	±0.0016	0.016	0.165	0.787	0.169	○		●	●						
	5020N-080GM	0.197	5.0		0.032	0.165	0.787	0.169	○		●	●						
	6020N-040GM	0.236	6.0		0.016	0.205	0.787	0.169	○		●	●						
	6020N-080GM	0.236	6.0		0.032	0.205	0.787	0.169	○		●	●						
 Low feed 2-edge	GDMS 2220N-020GM	0.087	2.2	±0.0012	0.008	0.069	0.787	0.169	○		●	●						
	3020N-040GM	0.118	3.0		0.016	0.091	0.787	0.169	○		●	●						
	4020N-040GM	0.157	4.0		0.016	0.130	0.787	0.169	○		●	●						
	 Low feed 1-edge	5020N-080GM	0.197	5.0	±0.0016	0.032	0.165	0.787	0.169	○		●	●					
		6020N-080GM	0.236	6.0		0.032	0.205	0.787	0.169	○		●	●					
		GDM 2420N-020GL	0.094	2.4		±0.0012	0.008	0.077	0.787	0.169	○		●		●			
3020N-020GL	0.118	3.0	0.008	0.091	0.787		0.169	○		●	●							
3020N-040GL	0.118	3.0	0.016	0.091	0.787		0.169	○		●	●							
 Low feed 1-edge	4020N-020GL	0.157	4.0	±0.0012	0.008	0.130	0.787	0.169	○		●	●						
	4020N-040GL	0.157	4.0		0.016	0.130	0.787	0.169	○		●	●						
	5020N-040GL	0.197	5.0		±0.0016	0.016	0.165	0.787	0.169	○		●	●					
6020N-040GL	0.236	6.0	0.016	0.205		0.787	0.169	○		●	●							

PH Chipbreaker inserts and applicable toolholders for cut-off **H13**

Recommended Cutting Conditions **G22**

## Insert Identification System



Inserts are sold in 10 piece boxes.

## GDM / GDMS / GDG

**Classification of Usage**  
 ● : Light Interruption / 1st Choice  
 ○ : 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 (≤40HRC)		○		
	Hard materials (≥40HRC)				

Insert Right-handed Insert Shown	Part Number	Dimensions (inch)							Cermet	MAGA COAT NANO	MEGACOAT	Carbide	Ref. Page for Toolholder
		W			rε	M	L	H					
		inch	mm	Tolerance									
Grooving  Low cutting force 2-edge	GDG 2520N-020GS	0.098	2.5	±0.0008	0.008	0.079	0.787	0.169	○		●	●	
	3020N-020GS	0.118	3.0		0.008	0.091	0.787	0.169	○		●	●	
	3520N-020GS	0.138	3.5		0.008	0.110	0.787	0.169	○		●	●	
	4020N-040GS	0.157	4.0		0.016	0.130	0.787	0.169	○		●	●	
	5020N-040GS	0.197	5.0		0.016	0.165	0.787	0.169	○		●	●	
	6020N-040GS	0.236	6.0		0.016	0.205	0.787	0.169	○		●	●	
Full-R / Copying  2-edge	GDM 3020N-150R-CM	0.118	3.0	±0.0012	0.059	0.091	0.787	0.169	○		●	●	G19 G20 G21
	4020N-200R-CM	0.157	4.0		0.079	0.130	0.787	0.169	○		●	●	
	5020N-250R-CM	0.197	5.0	±0.0016	0.098	0.165	0.787	0.169	○		●	●	
	6020N-300R-CM	0.236	6.0		0.120	0.205	0.787	0.169	○		●	●	
Grooving & Traversing  High feed 2-edge  High feed 1-edge	GDM 2020N-020PH	0.079	2.0	±0.0012	0.008	0.059	0.787	0.169		○	●	●	
	3020N-030PH	0.118	3.0		0.012	0.091	0.787	0.169		○	●	●	
	4020N-030PH	0.157	4.0		0.012	0.130	0.787	0.169		○	●	●	
	GDMS 2020N-020PH	0.079	2.0	±0.0012	0.008	0.059	0.787	0.169		○	●	●	
	3020N-030PH	0.118	3.0		0.012	0.091	0.787	0.169		○	●	●	
	4020N-030PH	0.157	4.0		0.012	0.130	0.787	0.169		○	●	●	

PH Chipbreaker inserts and applicable toolholders for cut-off **H13**

Recommended Cutting Conditions **G22**

## GDGS (CBN • PCD)

NEW

**Classification of Usage**  
 ● : Light Interruption / 1st Choice  
 ○ : Light Interruption / 2nd Choice  
 ● : Continuous / 1st Choice  
 ○ : Continuous / 2nd Choice

K	Cast Iron				
N	Non-ferrous Metals				●
S	Titanium Alloy				●
H	Hard materials (≤40HRC)				
	Hard materials (≥40HRC)				
	Powdered Steel				●

Insert Right-handed Insert Shown	Part Number	Dimensions (mm)							Angle	MEGA CBN	CBN	PCD	Ref. Page for Toolholder		
		W			rε	M	L	H						S	θ
		inch	mm	Tolerance											
Grooving  1-Edge	GDGS 2020N-020NB	0.079	2.0	±0.02	0.2	1.8	20	4.3	2.9	-		○	○	G19 G20 G21	
	3020N-020NB	0.118	3.0		0.2	2.3	20	4.3	2.9	-		○	○		
	3020N-040NB	0.118	3.0		0.4	2.3	20	4.3	2.9	-	●		○		
	4020N-020NB	0.158	4.0		0.2	3.3	20	4.3	2.9	-			○		
	4020N-040NB	0.158	4.0		0.4	3.3	20	4.3	2.9	-	○	○			
	5020N-020NB	0.197	5.0		0.2	4.2	20	4.3	2.9	-			○		
	5020N-040NB	0.197	5.0		0.4	4.2	20	4.3	2.9	-	○	○			
	6020N-020NB	0.236	6.0		0.2	5.2	20	4.3	2.9	-			○		
	6020N-040NB	0.236	6.0		0.4	5.2	20	4.3	2.9	-	○	○			

Recommended Cutting Conditions **G22**

Inserts are sold in 10 piece boxes.

◆ KGD • KGM Combinations

● Insert Setting Angle of KGD / KGM Toolholders



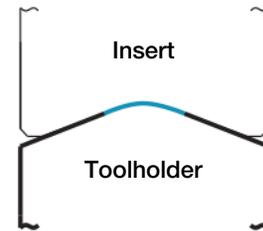
Features of KGD Series for Small Diameter

1 New Slit Design

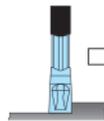


The insert clamping force is improved by firmly fastening the front side (insert side) of the toolholder.

2 Radial-Shaped Surface on Toolholder



The insert clamping force and installation are improved by increasing the contact area between the insert and toolholder.



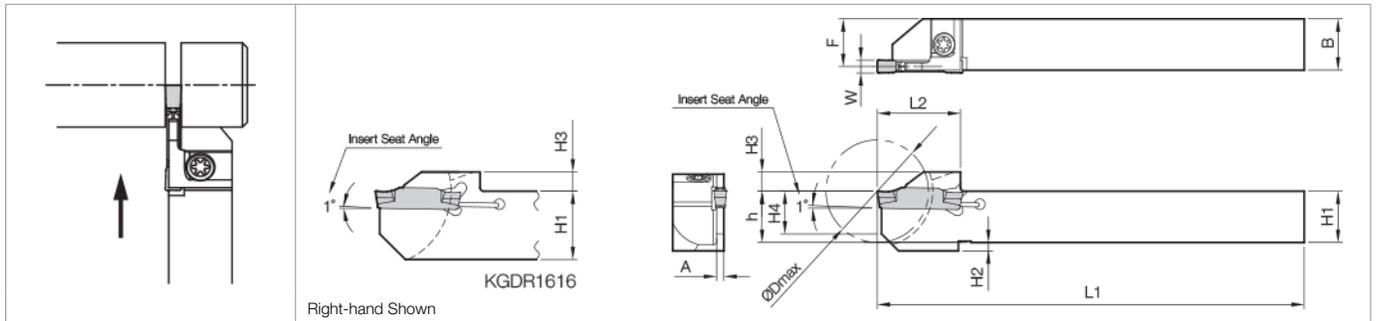
[Cutting Conditions]  
 n=2,550min<sup>-1</sup>, f=0.008-0.012ipr, D.O.C.=0.039"-0.118"  
 Workpiece: W1-9 (Ø10mm) WET (Oil base)

**KGD**  
 Excellent Clamping Force

● Clamping Test (Traversing)

D.O.C.	0.039"		0.059"		0.079"		0.098"		0.118"	
Feed Rate	0.010ipr	0.012ipr								
<b>KGD Series</b> for Swiss Tools	○									
Conventional	×									
Competitor 1	×									
Competitor 2	×									

**KGD** (Swiss)



**Toolholder Dimensions (Inch Size)**

Part Number	Stock		Cut-Off Dia.	Dimensions (inch)									Insert Width W (mm)		Spare Parts	
	R	L		ØDmax	H1=h	H2	H3	H4	B	L1	L2	F	A	MIN	MAX	Clamp Screw
KGD% 6-1.5JX	●	●	0.787	0.375	0.098	0.177	0.315	0.375	4.75	0.709	0.351	0.047	-	0.059	SB-40120TR	LTW-15S
8-1.5JX	●	●	0.944	0.500	0.051	0.177	0.394	0.500	4.75	0.768	0.476	0.047	-	0.059		
KGD% 6-2JX	●	●	0.787	0.375	0.098	0.177	0.315	0.375	4.75	0.709	0.342	0.067	0.078	0.118	SB-40120TR	LTW-15S
8-2JX	●	●	0.944	0.500	0.051	0.177	0.394	0.500	4.75	0.768	0.467	0.067	0.078	0.118		
10-2JX	●	●	1.259	0.625	-	0.177	0.394	0.625	4.75	0.965	0.592	0.067	0.078	0.118		
KGD% 6-2.4JX	●	●	0.787	0.375	0.098	0.177	0.315	0.375	4.75	0.709	0.336	0.079	0.094	0.118	SB-40120TR	LTW-15S
8-2.4JX	●	●	0.944	0.500	0.051	0.177	0.394	0.500	4.75	0.768	0.461	0.079	0.094	0.118		
10-2.4JX	●	●	1.259	0.625	-	0.177	0.394	0.625	4.75	0.965	0.586	0.079	0.094	0.118		
KGD% 8-3JX	●	●	0.944	0.500	0.051	0.177	0.394	0.500	4.75	0.768	0.453	0.094	0.118	0.118	SB-40120TR	LTW-15S
10-3JX	●	●	1.259	0.625	-	0.177	0.394	0.625	4.75	0.965	0.578	0.094	0.118	0.157		
KGD% 10-3D38JX	●	●	1.496	0.625	-	0.236	0.394	0.625	4.75	1.142	0.578	0.094	0.118	0.157	SE-50125TR	LTW-20
12-3D42JX	●	●	1.653	0.750	-	0.236	0.551	0.750	4.75	1.220	0.703	0.094	0.118	0.157		
43-3D42JX	●	●	1.653	0.750	-	0.236	0.551	0.500	4.75	1.220	0.453	0.094	0.118	0.157		

Choose insert with width that falls within **MIN** and **MAX** parameters shown in table above. Insert table **G16~G17**

**Toolholder Dimensions (Metric Size)**

Part Number	Stock		Cut-Off Dia.	Dimensions (mm)									Insert Width W (mm)		Spare Parts	
	R	L		ØDmax	H1=h	H2	H3	H4	B	L1	L2	F	A	MIN	MAX	Clamp Screw
KGD% 1010JX-1.3	○	○	20	10	2	4.5	8	10	120	18.0	9.50	1.0	1.3	1.5	SB-40120TR	LTW-15S
1212JX-1.3	○	○	24	12	2	4.5	10	12	120	19.5	11.50	1.0	1.3	1.5		
KGD% 1010JX-1.5	○	○	20	10	2	4.5	8	10	120	18.0	9.40	1.2	-	1.5	SB-40120TR	LTW-15S
1212JX-1.5	○	○	24	12	2	4.5	10	12	120	19.5	11.40	1.2	-	1.5		
KGD% 1010JX-2	○	○	20	10	2	4.5	8	10	120	18.0	9.15	1.7	2.0	3.0	SB-40120TR	LTW-15S
1212JX-2	○	○	24	12	2	4.5	10	12	120	19.5	11.15	1.7	2.0	3.0		
1616JX-2	○	●	32	16	-	4.5	10	16	120	24.5	15.15	1.7	2.0	3.0		
KGD% 1010JX-2.4	○	○	20	10	2	4.5	8	10	120	18.0	9.00	2.0	2.4	3.0	SB-40120TR	LTW-15S
1212JX-2.4	○	○	24	12	2	4.5	10	12	120	19.5	11.00	2.0	2.4	3.0		
1616JX-2.4	○	○	32	16	-	4.5	10	16	120	24.5	15.00	2.0	2.4	3.0		
KGD% 1212JX-3	○	○	24	12	2	4.5	10	12	120	19.5	10.80	2.4	3.0	3.0	SB-40120TR	LTW-15S
1616JX-3	○	○	32	16	-	4.5	10	16	120	24.5	14.80	2.4	3.0	4.0		
KGD% 1616JX-3D38	○	○	38	16	-	6.0	10	16	120	29.0	14.80	2.4	3.0	4.0	SE-50125TR	LTW-20
2020JX-3D42	○	○	42	20	-	6.0	14	20	120	31.0	18.80	2.4	3.0	4.0		
2012JX-3D42	○	○	42	20	-	6.0	14	12	120	31.0	10.80	2.4	3.0	4.0		
KGD% 1212F-1.3	○	○	24	12	2	4.5	10	12	85	19.5	11.50	1.0	1.3	1.5	SB-40120TR	LTW-15S
1212F-1.5	○	○	24	12	2	4.5	10	12	85	19.5	11.40	1.2	-	1.5	SB-40120TR	LTW-15S
1212F-2	○	○	24	12	2	4.5	10	12	85	19.5	11.15	1.7	2.0	3.0	SB-40120TR	LTW-15S
1212F-2.4	○	○	24	12	2	4.5	10	12	85	19.5	11.00	2.0	2.4	3.0	SB-40120TR	LTW-15S

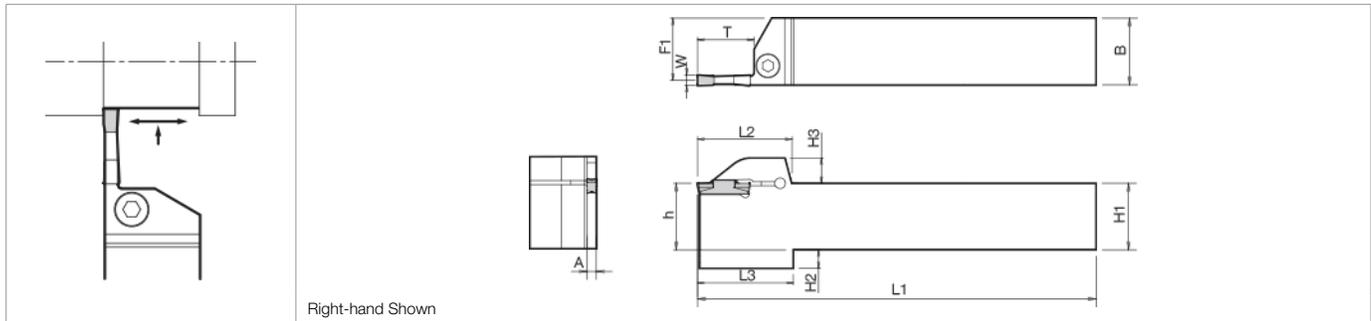
Choose insert with width that falls within **MIN** and **MAX** parameters shown in table above. Insert table **G16~G17**

● : U.S. Stock Standard  
○ : World Express (Shipping: 7-10 Business Days)

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A  
B  
C  
E  
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H  
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M  
P  
R  
T

**KGD** (Integral-Style)



Right-hand Shown

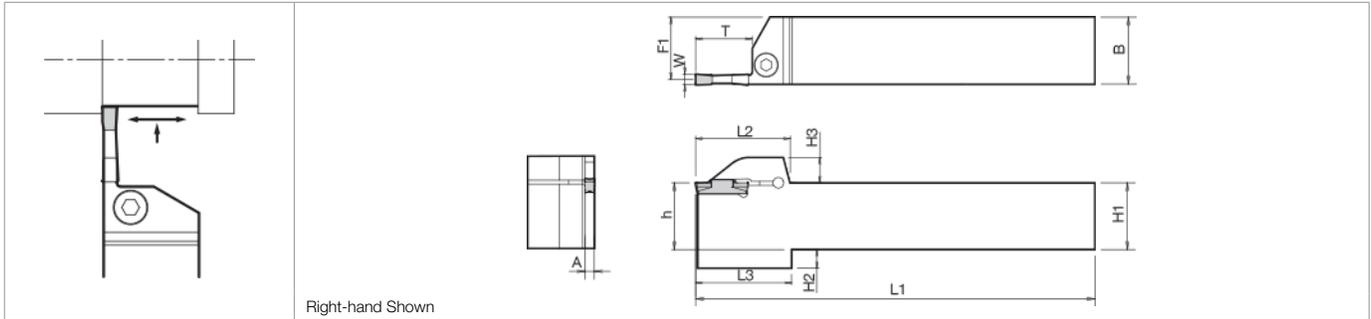
**Toolholder Dimensions (Inch Size)**

Width (mm)	Max Grooving Depth (mm)	Part Number	Stock		Dimensions (inch)										Insert Width W (mm)		Spare Parts	
			R	L	H1=h	H2	H3	B	L1	L2	L3	F1	A	T*	MIN	MAX	Clamp Bolt	Wrench
2	0.669 (17mm)	KGD <sup>®</sup> 12-2T17	●	●	0.75	-	0.374	0.75	4.92	1.28	-	0.71	0.067	0.669 (17mm)	2.0	3.0	HH5X16	LW-4
		16-2T17	●	●	1.00	-	0.374	1.00	5.90	1.28	-	0.96	0.067		2.0	3.0	HH5X25	
3	0.393 (10mm)	KGD <sup>®</sup> 12-3T10	●	●	0.75	-	0.374	0.75	4.92	1.20	-	0.70	0.094	0.393 (10mm)	3.0	4.0	HH5X16	
		16-3T10	●	●	1.00	-	0.374	1.00	5.90	1.20	-	0.95	0.094		3.0	4.0	HH5X25	
3	0.787 (20mm)	KGD <sup>®</sup> 12-3T20	●	●	0.75	-	0.374	0.75	4.92	1.35	-	0.70	0.094	0.787 (20mm)	3.0	4.0	HH5X16	
		16-3T20	●	●	1.00	-	0.374	1.00	5.90	1.39	-	0.95	0.094		3.0	4.0	HH5X25	
4	0.393 (10mm)	KGD <sup>®</sup> 12-4T10	●	●	0.75	-	0.374	0.75	4.92	1.20	-	0.68	0.133	0.393 (10mm)	4.0	5.0	HH5X16	
		16-4T10	●	●	1.00	-	0.374	1.00	5.90	1.20	-	0.93	0.133		4.0	5.0	HH5X25	
4	0.787 (20mm)	KGD <sup>®</sup> 12-4T20	●	●	0.75	-	0.374	0.75	4.92	1.35	-	0.68	0.133	0.787 (20mm)	4.0	5.0	HH5X16	
		16-4T20	●	●	1.00	-	0.374	1.00	5.90	1.39	-	0.93	0.133		4.0	5.0	HH5X25	
5	0.393 (10mm)	KGD <sup>®</sup> 12-5T10	●	●	0.75	-	0.374	0.75	4.92	1.20	-	0.66	0.173	0.393 (10mm)	5.0	6.0	HH5X16	
		16-5T10	●	●	1.00	-	0.374	1.00	5.90	1.20	-	0.91	0.173		5.0	6.0	HH5X25	
5	0.669 (17mm)	KGD <sup>®</sup> 12-5T17	●	●	0.75	-	0.374	0.75	4.92	1.47	-	0.66	0.173	0.669 (17mm)	5.0	6.0	HH5X16	
		16-5T17	●	●	1.00	-	0.374	1.00	5.90	1.47	-	0.91	0.173		5.0	6.0	HH5X25	

\* T dimension shows the distance from the toolholder to the cutting edge. (When using 2-edge insert, the maximum grooving depth is 18mm.)

Choose insert with width that falls within **MIN** and **MAX** parameters shown in table above. Insert table [G16-](#) [G17](#)

**KGD** (Integral-Style)



**Toolholder Dimensions (Metric Size)**

Width (mm)	Max. Grooving Depth (mm)	Part Number	Stock		Dimensions (inch)										Insert Width W (mm)		Spare Parts	
			R	L	H1=h	H2	H3	B	L1	L2	L3	F1	A	T*	MIN	MAX	Clamp Bolt	Wrench
2.0	6	KGD% 1616H-2T06	○	○	16	4.0	9.5	16	100	27.7	28.0	15.2	1.7	6	2.0	3.0	HH5X16	LW-4
		2020K-2T06	○	○	20	-	9.5	20	125	28.0	-	19.2	1.7	6	2.0	3.0		
	10	KGD% 1616H-2T10	○	○	16	4.0	9.5	16	100	30.2	30.5	15.2	1.7	10	2.0	3.0		
		2020K-2T10	○	○	20	-	9.5	20	125	30.5	-	19.2	1.7	10	2.0	3.0		
	17	KGD% 1616H-2T17	○	●	16	4.0	9.5	16	100	31.2	31.5	15.2	1.7	17	2.0	3.0		
		2012K-2T17	○	○	20	-	9.5	12	125	32.5	-	11.2	1.7	17	2.0	3.0		
2020K-2T17		○	○	20	-	9.5	20	125	32.5	-	19.2	1.7	17	2.0	3.0			
2.4	17	KGD% 2012K-2.4T17	○	○	20	-	9.5	12	125	32.5	-	11.0	2.0	17	2.4	3.0	HH5X16	LW-4
		2020K-2.4T17	○	○	20	-	9.5	20	125	32.5	-	19.0	2.0	17	2.4	3.0		
3.0	6	KGD% 1616H-3T06	○	○	16	4.0	9.5	16	100	27.7	28.0	14.8	2.4	6	3.0	4.0	HH5X16	LW-4
		2020K-3T06	○	○	20	-	9.5	20	125	28.0	-	18.8	2.4	6	3.0	4.0		
	10	KGD% 1616H-3T10	○	○	16	4.0	9.5	16	100	30.2	30.5	14.8	2.4	10	3.0	4.0		
		2020K-3T10	○	○	20	-	9.5	20	125	30.5	-	18.8	2.4	10	3.0	4.0		
	20	KGD% 1616H-3T20	○	○	16	4.0	9.5	16	100	34.2	34.5	14.8	2.4	20	3.0	4.0		
		2012K-3T20	○	○	20	-	9.5	12	125	34.5	-	10.8	2.4	20	3.0	4.0		
4.0	20	2020K-3T20	○	○	20	-	9.5	20	125	34.5	-	18.8	2.4	20	3.0	4.0		
		KGD% 2020K-4T10	○	○	20	-	9.5	20	125	30.5	-	18.3	3.4	10	4.0	5.0	HH5X16	LW-4
5.0	10	KGD% 2020K-4T20	○	○	20	-	9.5	20	125	34.5	-	18.3	3.4	20	4.0	5.0		
		17	KGD% 2020K-5T10	○	○	20	-	9.5	20	125	30.5	-	17.8	4.4	10	5.0	6.0	HH5X16
KGD% 2020K-5T17	○		○	20	-	9.5	20	125	37.5	-	17.8	4.4	17	5.0	6.0	HH5X25		

\* T dimension shows the distance from the toolholder to the cutting edge. (When using 2-edge insert, the maximum grooving depth is 18mm.)

Choose insert with width that falls within **MIN** and **MAX** parameters shown in table above. Insert table **G16~G17**

GRADES **A**

INSERTS **B**

CBN & POD **C**

TURNING **E**

BORING **F**

GROOVING **G**

CUT-OFF **H**

THREADING **J**

SOLID END MILLS **L**

MILLING **M**

SPARE PARTS **P**

TECHNICAL **R**

INDEX **T**

# RECOMMENDED CUTTING CONDITIONS

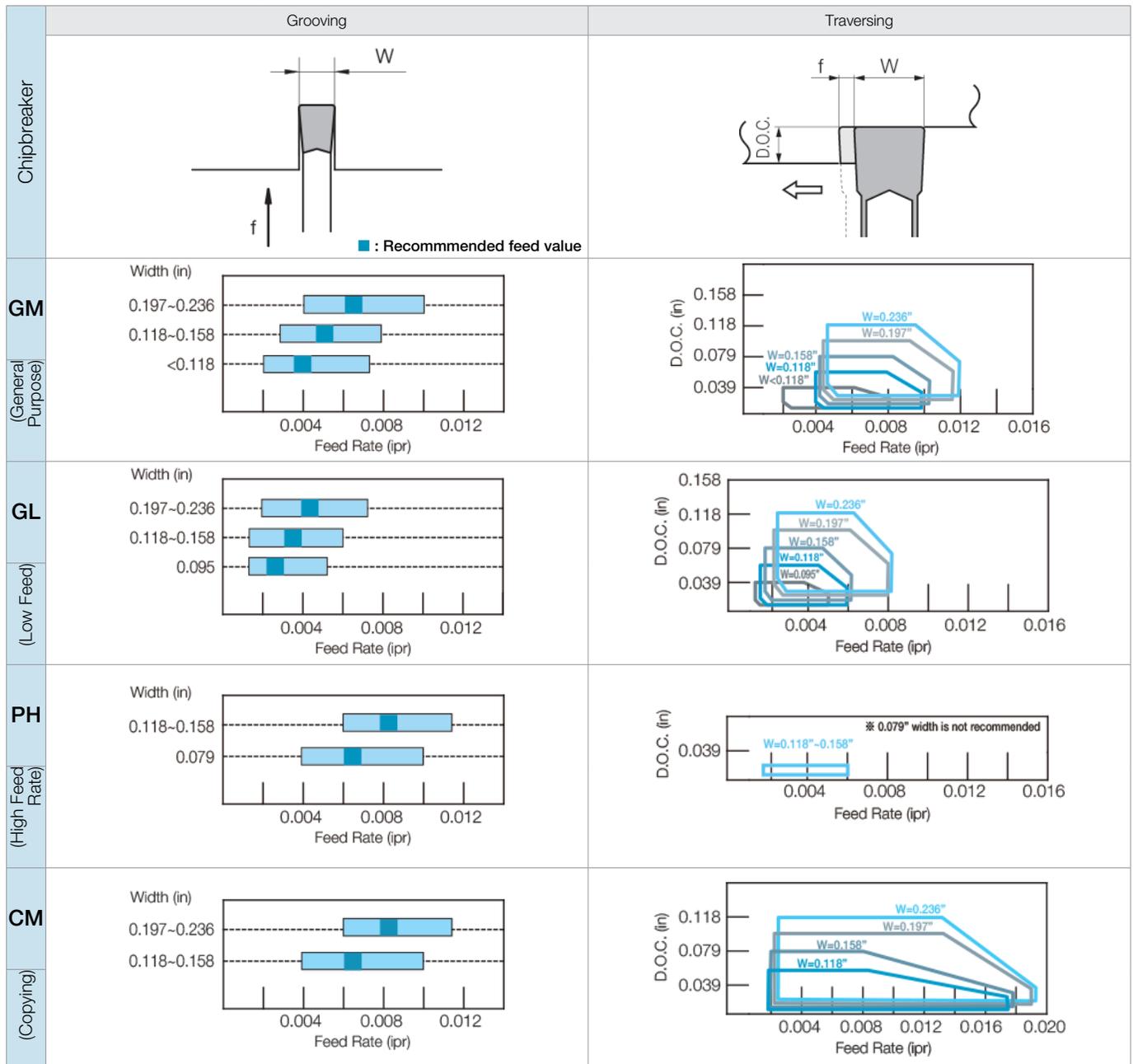
## ◆ Recommended Cutting Conditions (Vc)

A GRADES	Workpiece Material	Chipbreaker	Recommended Insert Grade (Vc : sfm)						Remarks	
			Cermet	MEGACOAT		Carbide	MEGACOAT CBN	CBN		PCD
			TN90	PR1225	PR1215	GW15	KBN05M	KBN570		KPD001
B INSERTS	Carbon Steel	GM GL CM PH GS PM	☆ 325-725	★ 250-650	☆ 325-650	-	-	-	-	Wet
	Alloy Steel		☆ 250-650	★ 225-600	☆ 250-600	-	-	-	-	
	Stainless Steel		☆ 225-600	★ 200-500	☆ 200-500	-	-	-	-	
	Cast Iron		-	-	★ 325-650	-	-	-	-	
C CBN & PCD	Aluminum	GS NB	-	-	-	☆ 650-1650	-	-	★ 500-6550	
	Brass		-	-	-	☆ 325-650	-	-	★ 650-2625	
	Hardened Material	NB	-	-	-	-	★ 250-500	-	-	
Powdered Steel	-		-	-	-	-	★ 325-825	-		

★ : 1st Recommendation ☆ : 2nd Recommendation

## ◆ Recommended Cutting Conditions (Feed Rate • D.O.C.)

(Workpiece Material : 1049)



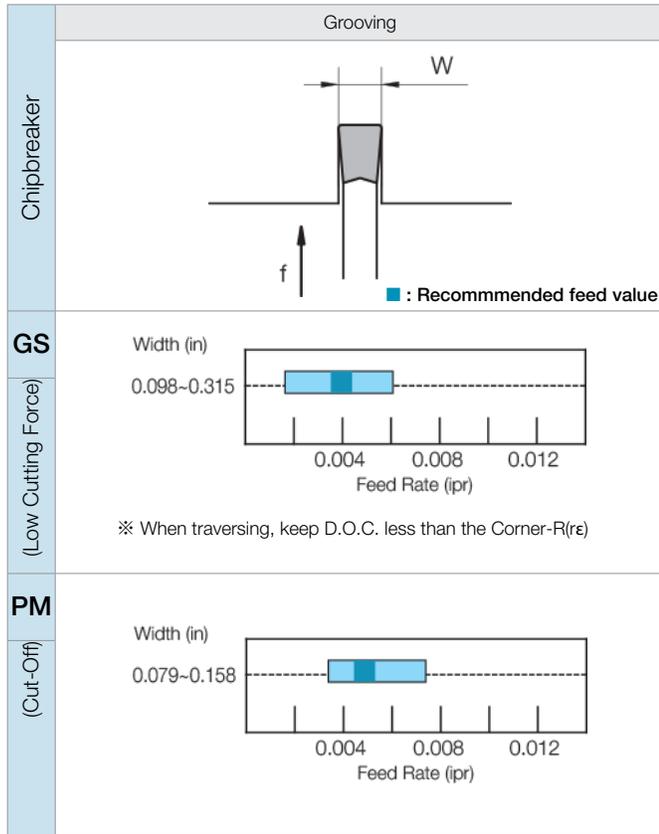
1) The above values reflect a T dimension that is 0.669" (17mm) or less.

2) If the toolholder is not for the 8mm width insert and its T dimension is over 0.669" (17mm), set the values for longitudinal turning to less than 90% of those above.

# RECOMMENDED CUTTING CONDITIONS

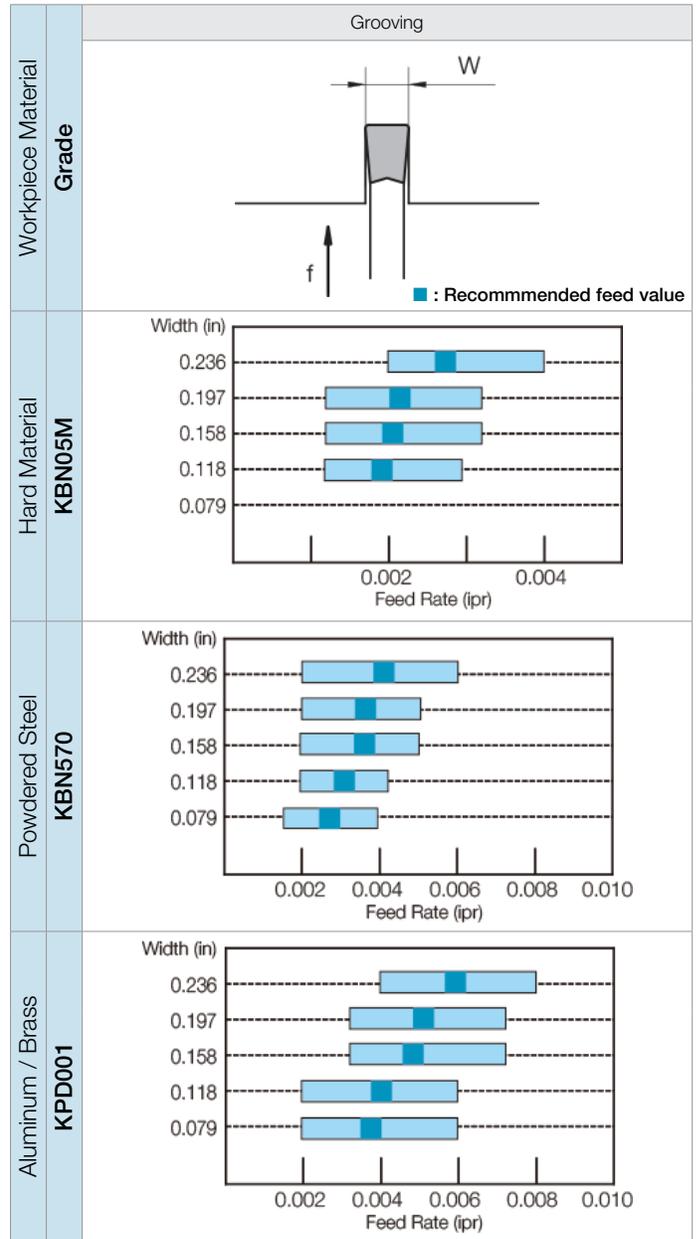
## ◆ Recommended Cutting Conditions (Feed Rate • D.O.C.)

(Workpiece Material : 1049)



1) The above values reflect a T dimension that is 0.669" (17mm) or less.

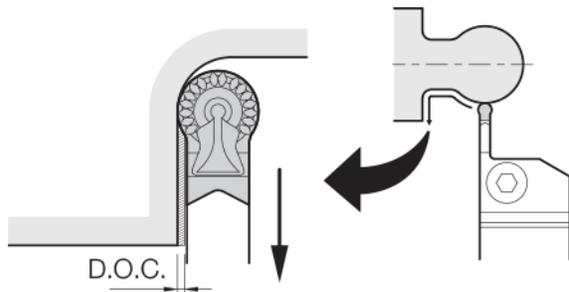
## ◆ Recommended Cutting Conditions (Feed Rate)



## ◆ CM Chipbreakers (Back Turning)

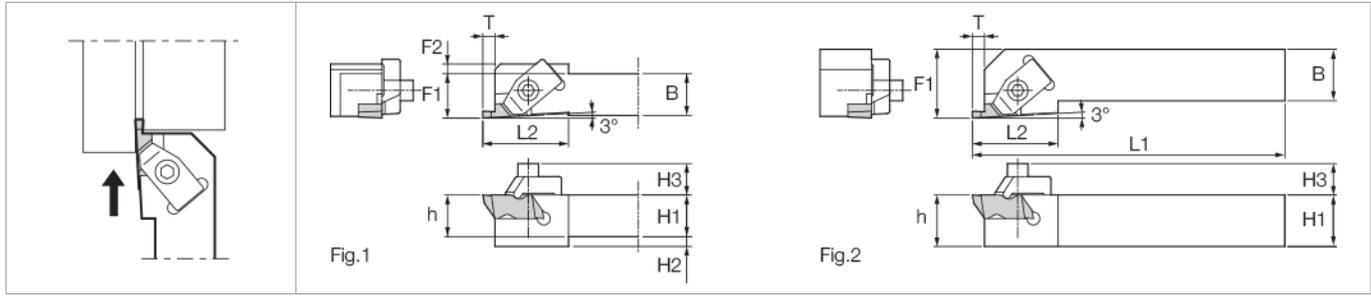
- Estimated maximum cutting amount (D.O.C.) for back copying

Part Number	Max. D.O.C. (in)				
	Toolholder Part No.				
	KGD...2T...	KGD...3T...	KGD...4T...	KGD...5T...	KGD...6T...
GDM 3020N-150R-CM	0.009	0.008			
4020N-200R-CM		0.009	0.008		
5020N-250R-CM			0.012	0.008	
6020N-300R-CM				0.012	0.010



GRADES	A
INSERTS	B
CBN & PCD	C
TURNING	E
BORING	F
GROOVING	G
CUT-OFF	H
THREADING	J
SOLID END MILLS	L
MILLING	M
SPARE PARTS	P
TECHNICAL	R
INDEX	T

**KKC**



**Toolholder Dimensions (Inch Size)**

Part Number	Stock		Unit	Dimensions									Fig	Spare Parts		
	R	L		H1=h	H2	H3	B	L1	L2	F1	F2	T*		Clamp	Clamp Bolt	Wrench
KKC% 1212M-2-150F	●		mm	12	-	9.2	12	150	19.05	12.25	-	3.5	1	CKC-2 %	SKC-2	(7/64 hex)
KKC% 6-2X	●	●	inch	0.375	-	0.362	0.375	2.500	0.750	0.562	-	0.138	2	CKC-2 %	SKC-2	(7/64 hex)
6-2CF	●	●		0.375	0.125	0.362	0.375	5.000	0.750	0.385	0.125	0.138	1			
8-2X	●	●		0.500	-	0.362	0.500	3.500	0.750	0.750	-	0.138	2			
8-2DF	●	●		0.500	-	0.362	0.500	6.000	0.750	0.510	-	0.138	1			
10-2DF	●	●		0.625	-	0.362	0.625	6.000	0.750	0.635	-	0.138	1			

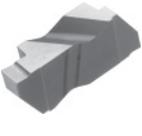
\* T dimension shows the distance from the toolholder to the cutting edge.

Applicable Inserts **G25**

- Note: Right hand bars require right hand inserts and clamps
- Left hand bars require left hand inserts and clamps

- A GRADES
- B INSERTS
- C CBN & PCD
- E TURNING
- F BORING
- G GROOVING
- H CUT-OFF
- J THREADING
- L SOLID END MILLS
- M MILLING
- P SPARE PARTS
- R TECHNICAL
- T INDEX

**KCG / KCGP / KCRP**

Insert	Part Number	Dimensions (in)							Cermet		MEGA COAT CVD	Carbide			Ceramic
		W±0.001*	B	R	A	L	H	E	TC40	TC60	PR1215	PR660	PR930	KW10	A65
	<b>KCG 2062%</b>	0.062	0.110	0.008	0.150	0.350	0.219	0.270							●
	<b>2125%</b>	0.125	0.110	0.008	0.150	0.350	0.219	0.270							●
	<b>KCGP 2031%</b>	0.031	0.050	0.003	0.150	0.350	0.219	0.270	●	●	●	●	●	●	
	<b>2041%</b>	0.041	0.050	0.003	0.150	0.350	0.219	0.270	●	●	●		●		
	<b>2047%</b>	0.047	0.050	0.003	0.150	0.350	0.219	0.270	●	●	●	●	●	●	
	<b>KCGP 2058%</b>	0.058	0.110	0.008	0.150	0.350	0.219	0.270	●		●		●		
	<b>2062%</b>	0.062	0.110	0.008	0.150	0.350	0.219	0.270	●	●	●	●	●	●	
	<b>KCGP 2094%</b>	0.094	0.110	0.008	0.150	0.350	0.219	0.270	●		●	●	●	●	
	<b>KCRP 2031%</b>	0.062	0.094	0.031	0.150	0.350	0.219	0.270		Ⓡ	●	Ⓡ	Ⓡ		
	<b>2039%</b>	0.078	0.110	0.039	0.150	0.350	0.219	0.270					●		
	<b>2047%</b>	0.094	0.150	0.047	0.150	0.350	0.219	0.270			●				
	<b>2062%</b>	0.125	0.150	0.062	0.150	0.350	0.219	0.270		Ⓡ	●				

Applicable Toolholders **G24**

**Recommended Cutting Conditions** Cera-Notch

Workpiece Material	Cermet Feeds (ipr)	Carbide Feeds (ipr)	Recommended Insert Grade (Vc : sfm)						
			Cermet		MEGACOAT	Carbide			Ceramic
			TC40	TC60	PR1215	PR660	PR930	KW10	A65
Carbon Steel	0.002~0.005	0.002~0.010	300~900	250~900	300~800	200~550	250~650	-	-
Alloy Steel	0.002~0.005	0.002~0.010	250~800	250~800	300~750	100~500	150~550	-	-
Stainless Steel	0.002~0.005	0.002~0.010	-	200~600	300~600	100~550	100~550	-	-
Tool Steel	0.002~0.005	0.002~0.010	200~650	200~650	300~600	-	100~550	-	-
Hardened Steel (>45Rc)	-	-	-	-	-	-	-	-	250~500*
Gray Cast Iron	0.003~0.006	0.002~0.012	200~700	-	300~700	-	-	-	500~1000
Ductile Iron	0.003~0.006	0.002~0.012	-	150~600	300~600	-	-	-	500~1000
Aluminum	0.002~0.008	0.002~0.012	150~1600	-	-	-	-	500~1600	-

Speeds & Feeds listed are for external grooving. Reduce parameters by 10% for internal grooving.  
 \*Feeds = 0.003~0.008ipr

GRADES **A**  
 INSERTS **B**  
 CBN & PCD **C**  
 TURNING **E**  
 BORING **F**  
 GROOVING **G**  
 CUT-OFF **H**  
 THREADING **J**  
 SOLID END MILLS **L**  
 MILLING **M**  
 SPARE PARTS **P**  
 TECHNICAL **R**  
 INDEX **T**

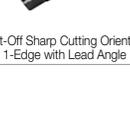


# MULTI-FUNCTION / GROOVING (CUT-OFF)

## GMM / GMN / GM<sup>RL</sup>

**Classification of Usage**  
 ● : Light Interruption / 1st Choice  
 ○ : 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 (≤40HRC)
	Hard materials (≥40HRC)

Insert Right-handed Insert Shown	Part Number	Dimensions (mm)						Angle (°)	Cermet	CVD Coated Carbide	PVD Coated Carbide		Carbide	Ref. Page for Toolholder				
		W		rε	M	L	H				θ	TN90			CR9025	PR915	PR930	KW10
		inch	mm															
 Deep Grooving / Cut-Off Sharp Cutting Oriented	<b>GMM 1520-MT</b>	0.059	1.5	0.00	1.2	20	4.3	-				●	●					
	<b>2020-MT</b>	0.059	1.5	0.05	1.2	20	4.3	-			●							
	<b>2520-MT</b>	0.079	2.0	0.00	1.5	20	4.3	-			●	●	○					
	<b>3020-MT</b>	0.098	2.5	0.00	1.9	20	4.3	-			○	○						
	<b>3020-MT</b>	0.098	2.5	0.05	1.9	20	4.3	-		○								
 Cut-Off Sharp Cutting Oriented with Lead Angle	<b>GMM 1520<sup>RL</sup>-MT-15D</b>	0.059	1.5	0.00	1.2	20	4.3	15°				●	●	●				
	<b>2020<sup>RL</sup>-MT-15D</b>	0.059	1.5	0.05	1.2	20	4.3	15°			●							
	<b>2520<sup>RL</sup>-MT-15D</b>	0.079	2.0	0.00	1.5	20	4.3	15°			○	○						
	<b>3020<sup>RL</sup>-MT-15D</b>	0.098	2.5	0.00	1.9	20	4.3	15°			○	○						
	<b>3020<sup>RL</sup>-MT-15D</b>	0.098	2.5	0.05	1.9	20	4.3	15°		○	○	○						
 Deep Grooving / Cut-Off Sharp Cutting Oriented Without Chipbreaker	<b>GMM 1520-NB</b>	0.059	1.5	0.00	1.2	20	4.3	-				○	○					
	<b>2020-NB</b>	0.059	1.5	0.05	1.2	20	4.3	-										
	<b>2520-NB</b>	0.079	2.0	0.00	1.5	20	4.3	-			○	○	○					
	<b>3020-NB</b>	0.098	2.5	0.00	1.9	20	4.3	-			○	○						
	<b>3020-NB</b>	0.098	2.5	0.05	1.9	20	4.3	-		○								
 Deep Grooving / Cut-Off Stability Oriented	<b>GMM 2020-TK</b>	0.079	2.0	0.20	1.5	20	4.3	-			○	●	○					
	<b>2520-TK</b>	0.098	2.5	0.20	1.9	20	4.3	-			○	○	○					
	<b>3020-TK</b>	0.118	3.0	0.25	2.3	20	4.3	-			○	●	○					
 Cut-Off Stability Oriented with Lead Angle	<b>GMM 2020<sup>RL</sup>-TK-8D</b>	0.079	2.0	0.20	1.5	20	4.3	8°			○	●	○					
	<b>2520<sup>RL</sup>-TK-8D</b>	0.098	2.5	0.20	1.9	20	4.3	8°			○	○	○					
	<b>3020<sup>RL</sup>-TK-8D</b>	0.118	3.0	0.25	2.3	20	4.3	8°			○	○	○					
 Cut-Off Stability Oriented 1-Edge	<b>GMN 2-TK</b>	0.079	2.0	0.20	1.5	20	4.3	-			○	○	○					
	<b>3-TK</b>	0.118	3.0	0.25	2.3	20	4.3	-			○	○	○					
	<b>4-TK</b>	0.158	4.0	0.30	3.3	20	4.3	-			○	○	○					
 Cut-Off Stability Oriented 1-Edge with Lead Angle	<b>GM<sup>RL</sup> 2-TK-8D</b>	0.079	2.0	0.20	1.5	20	4.3	8°			○	○	○					
	<b>3-TK-8D</b>	0.118	3.0	0.25	2.3	20	4.3	8°			○	○	○					
	<b>4-TK-8D</b>	0.158	4.0	0.30	3.3	20	4.3	8°			○	○	○					
 Deep Grooving / Cut-Off 1-Edge	<b>GMN 2.2</b>	0.087	2.2	0.17	1.8	20	4.3	-	○	●		○	●					
	<b>3</b>	0.118	3.0	0.20	2.3	20	4.3	-	○	●		●	●					
	<b>4</b>	0.158	4.0	0.25	3.3	20	4.3	-	○			●	●					
	<b>5</b>	0.197	5.0	0.80	4.2	20	4.3	-	○	○		○	○					
	<b>6</b>	0.236	6.0	0.80	5.2	20	4.3	-	○	○		○	○					
 Cut-Off Sharp Cutting Oriented 1-Edge with Lead Angle	<b>GM<sup>RL</sup> 2.2-8D</b>	0.087	2.2	0.17	1.8	20	4.3	8°	○	○		○	●					
	<b>2.2-15D</b>	0.087	2.2	0.00	1.8	20	4.3	15°	○	○		○	○					
	<b>3-4D</b>	0.118	3.0	0.20	2.3	20	4.3	4°	○	○		○	○					
	<b>4-4D</b>	0.158	4.0	0.25	3.3	20	4.3	4°	○	○		○	○					

GRADES	<b>A</b>
INSERTS	<b>B</b>
CBN & POD	<b>C</b>
TURNING	<b>E</b>
BORING	<b>F</b>
<b>GROOVING</b>	<b>G</b>
CUT-OFF	<b>H</b>
THREADING	<b>J</b>
SOLID END MILLS	<b>L</b>
MILLING	<b>M</b>
SPARE PARTS	<b>P</b>
TECHNICAL	<b>R</b>
INDEX	<b>T</b>

➔ G31

Recommended Cutting Conditions ➔ G29

Inserts are sold in 10 piece boxes.

● : U.S. Stock Standard  
 ○ : World Express (Shipping: 7-10 Business Days)

(Customer Service) 800.823.7284 - Option 1  
 (Technical Support) 800.823.7284 - Option 2  
 Visit us online at [KyoceraPrecisionTools.com](http://KyoceraPrecisionTools.com)



## Multi-Function CERACUT Plunge & Turn Chipbreakers

Name	Shape	Advantages
GMM...MW		Excellent chip evacuation during grooving, traversing, and cut-off
GMG...MG		Low cutting forces with ground chipbreaker
GMG...MS GMM...MS		Grooving, traversing and cut-off operations are minimum cutting forces with positive edge
GMM...MT		Small corner-R(re) minimizes the core which remains in the center of the face
GMM...TK		Large corner-R(re) with stable performance during cut-off
GMM...NB		Flat rake face without chipbreaker. Good performance for brass.

## Edge Preparation

Edge Preparation	Chamfered + Honed Cutting Edge	Chamfered + Honed Cutting Edge
	Corner-R(re) 0.05	Sharp Edge
Chipbreaker		
	<b>CR9025 / PR915</b>	<b>PR930 / KW10</b>
Edge Preparation	Chamfered + Honed Cutting Edge	Sharp Edge
	Corner-R(re) 0.20-0.30	Corner-R(re) 0.20-0.30
Chipbreaker		
	<b>CR9025 / PR915</b>	<b>PR930 / KW10</b>
Edge Preparation	Honed Cutting Edge	Sharp Edge
	Corner-R(re)	Sharp Corner
Without Chipbreaker		
	<b>CR9025</b>	<b>PR930 / KW10</b>

• Sharp edge spec. can reduce cutting resistance 40% less than that of chamfer edge

## GMM / GMG

**Classification of Usage**  
 ● : Light Interruption / 1st Choice  
 ○ : Light Interruption / 2nd Choice  
 ● : Continuous / 1st Choice  
 ○ : Continuous / 2nd Choice

Insert	Part Number	Dimensions (mm)						Angle (°)	CBN		PCD		Ref. Page for Toolholder
		W		rε	M	L	H		S	KBN510	KBN525	KPD001	
		inch	mm										
 Deep Grooving 1-Edge S=2.9mm W=0.05	<b>GMN 2</b>	0.079	2.0	0.2	1.8	20	4.3	2.9					G31
	<b>3</b>	0.079	2.0	0.4	1.8	20	4.3	2.9	○	○	○	○	
	<b>4</b>	0.118	3.0	0.2	2.3	20	4.3	2.9	○	○	○	○	
	<b>5</b>	0.118	3.0	0.4	2.3	20	4.3	2.9	○	○	○	○	
	<b>6</b>	0.158	4.0	0.2	3.3	20	4.3	2.9	○	○	○	○	
	<b>6</b>	0.158	4.0	0.4	3.3	20	4.3	2.9	○	○	○	○	

## GMN Cutting Conditions (CBN / PCD)

Workpiece Material	Recommended Insert Grade (Vc fpm)		① f (feed) during Grooving (ipr) ② f (feed) during Turning (ipr) ③ D.O.C. during Turning (in)				Remarks
	PCD		GMN2	GMN3	GMN4 GMN5	GMN6	
	KBN510 KBN525	KPD001 (KPD010)					
Aluminum	-	★ 500-6550	① 0.0020-0.0059 ② 0.0020-0.0059 ③ Max. 0.0197	① 0.0020-0.0059 ② 0.0020-0.0059 ③ Max. 0.0315	① 0.0031-0.0071 ② 0.0031-0.0071 ③ Max. 0.0315	① 0.0039-0.0079 ② 0.0039-0.0079 ③ Max. 0.0315	Wet
Brass	-	★ 650-2625	① 0.0020-0.0059 ② 0.0020-0.0059 ③ Max. 0.0197	① 0.0020-0.0059 ② 0.0020-0.0059 ③ Max. 0.0315	① 0.0031-0.0071 ② 0.0031-0.0071 ③ Max. 0.0315	① 0.0039-0.0079 ② 0.0039-0.0079 ③ Max. 0.0315	
Cast Iron	★ 500-1300	-	① 0.0016-0.0035 ② 0.0016-0.0035 ③ Max. 0.0118	① 0.0020-0.0039 ② 0.0020-0.0039 ③ Max. 0.0197	① 0.0020-0.0047 ② 0.0020-0.0047 ③ Max. 0.0197	① 0.0020-0.0059 ② 0.0020-0.0059 ③ Max. 0.0315	
Hard Materials	★ 250-400	-	① 0.0008-0.0020 ② 0.0004-0.0012 ③ Max. 0.0039	① 0.0012-0.0028 ② 0.0004-0.0020 ③ Max. 0.0079	① 0.0012-0.0031 ② 0.0012-0.0031 ③ Max. 0.0118	① 0.0020-0.0039 ② 0.0020-0.0039 ③ Max. 0.0157	

★ : 1st Recommendation ☆ : 2nd Recommendation

Inserts are sold in 1 piece boxes.

### CERACUT Plunge & Turn Recommended Cutting Conditions

#### GMG / GMM / GMN Recommended Cutting Conditions

Workpiece Material	Recommended Insert Grade (Vc sfm)						Grooving				Turning				Remarks
	Cermet TN90	CVD Coated Carbide CR9025	PVD Coated Carbide		Carbide KW10	Width				Width					
			PR915	PR930		PR905	0.079"~0.118" (2.0mm~3.0mm)	0.158" (4.0mm)	0.197" (5.0mm)	0.236" (6.0mm)	0.079"~0.118" (2.0mm~3.0mm)	0.158" (4.0mm)	0.197" (5.0mm)	0.236" (6.0mm)	
Carbon Steel	☆ 325-725	☆ 250-650	☆ 250-650	★ 250-650	-	-	0.002-0.006	0.004-0.010	0.006-0.014	0.008-0.014	0.004-0.008	0.006-0.012	0.008-0.016	0.010-0.016	Wet
Alloy Steel	☆ 250-650	☆ 225-600	☆ 225-600	★ 225-600	-	-	0.002-0.006	0.004-0.010	0.006-0.014	0.008-0.014	0.004-0.008	0.006-0.012	0.008-0.016	0.010-0.016	
Stainless Steel	☆ 225-525	☆ 200-500	★ 200-500	☆ 200-500	-	-	0.002-0.006	0.004-0.008	0.006-0.014	0.008-0.014	0.004-0.008	0.006-0.010	0.008-0.016	0.010-0.016	
Cast Iron	-	-	-	-	★ 325-650	☆ 225-500	0.002-0.008	0.004-0.012	0.006-0.016	0.008-0.016	0.004-0.010	0.006-0.014	0.008-0.018	0.010-0.018	
Aluminum	-	-	-	-	-	★ 650-1650	0.002-0.008	0.003-0.010	0.004-0.010	0.005-0.012	0.004-0.008	0.004-0.010	0.004-0.010	0.006-0.012	
Brass	-	-	-	-	-	★ 325-650	0.002-0.006	0.003-0.008	0.004-0.010	0.005-0.012	0.004-0.008	0.004-0.010	0.004-0.010	0.006-0.012	

★ : 1st Recommendation ☆ : 2nd Recommendation

#### Turning Conditions

##### ① KGM Toolholder

Recommended Cutting Conditions		
D.O.C.(MAX) (in)	Under 80% of Edge Width	D.O.C. ≤ 0.0315w
f(MAX) (ipr)	Under 10% of Edge Width	f ≤ 0.0039w

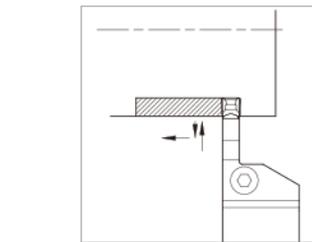
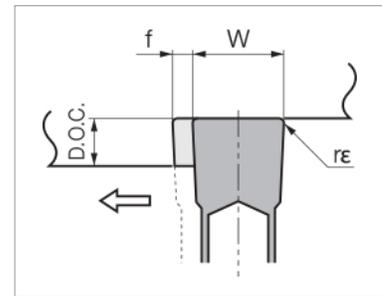
• (D.O.C.) x (f) should not exceed 1/2 of D.O.C.(MAX) x f(MAX)

Edge Width (in)	0.079"~0.098" (2.0~2.5mm)	0.118" (3.0mm)	0.158" (4.0mm)	0.197" (5.0mm)	0.236" (6.0mm)
Load (in <sup>2</sup> )					
D.O.C. x Feed Rate (f)	Under 0.008"	Under 0.014"	Under 0.025"	Under 0.039"	Under 0.057"

• D.O.C. x f ≤ 1/2 x 0.0315w x 0.0039w = 0.0016w<sup>2</sup>

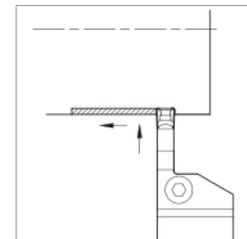
##### ② KGM-T Toolholder (Deep Grooving)

Use KGM-T toolholder under 90% lower cutting conditions than the KGM Toolholder



Before traversing, pull the tool back about 0.004" after grooving. (Grooving depth over 0.020" : At roughing)

Fig.1



Traversing subsequent to grooving. (Grooving depth under 0.020" : At Finishing)

Fig.2

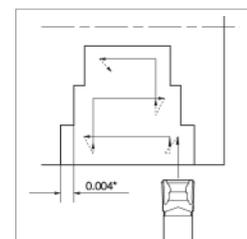


Fig.3

### Guide for External Machining

#### ● Point ( I ) (Turning After Grooving)

- Grooving Depths Over 0.020" : At Roughing (Fig.1)  
Before traversing, pull the tool back about 0.004" after grooving, instead of traversing subsequent to grooving. (Failure to pull the tool back before traverse cutting will result in an unbalanced load applied on only one side of the cutting edge.)

- Grooving Depths Under 0.020" : At Finishing (Fig.2)  
Traversing subsequent to grooving is possible because shallow groove depths relate a small load on the cutting edge. (Dwell-motion is not necessary)

#### ● Point ( II )

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

The widened groove and side walls should be finished last. (For better chip control, D.O.C. over 0.020" is recommended.)

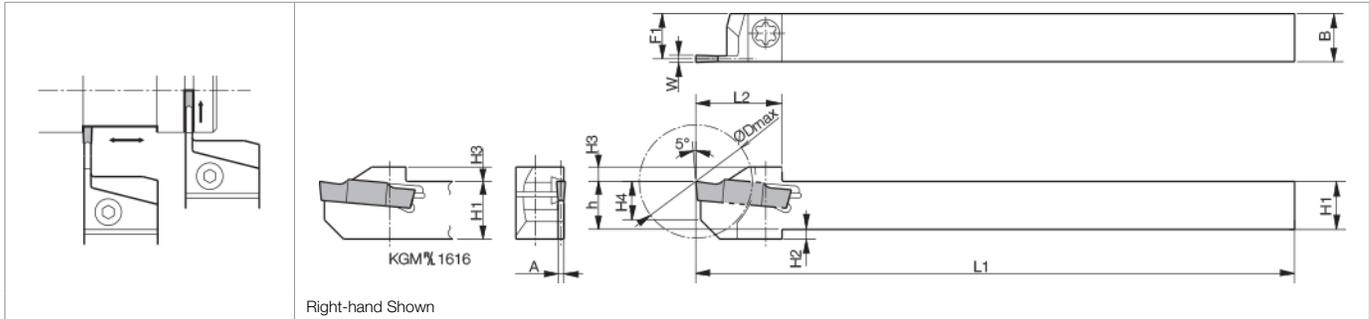
**Note:** If the workpiece is not supported at the center, reduce the feed rate when grooving towards center

GRADES  
A  
INSERTS  
B  
CBN & PCD  
C  
TURNING  
E  
BORING  
F  
GROOVING  
G  
CUT-OFF  
H  
THREADING  
J  
SOLID END MILLS  
L  
MILLING  
M  
SPARE PARTS  
P  
TECHNICAL  
R  
INDEX  
T

# MULTI-FUNCTION / GROOVING TOOLHOLDER

## KGM (Swiss)

Width : 1.5mm ~ 4.0mm



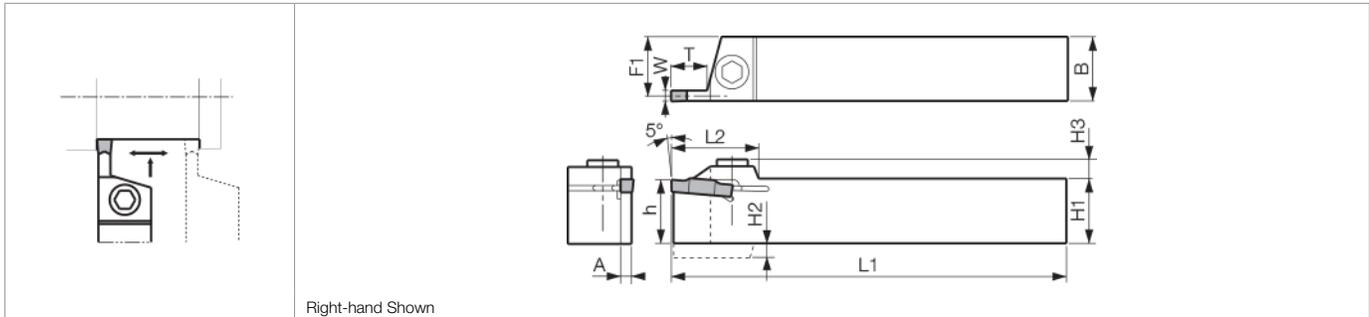
### Toolholder Dimensions

Part Number	Stock		Cutting Dia. ØDmax	Dimensions (mm)								Insert Width W (mm)		Spare Parts		
	R	L		H1=h	H2	H3	H4	B	L1	L2	F1	A	MIN	MAX	Clamp Bolt	Wrench
KGM% 1010JX-1.5	○	○	20	10	2	3	8	10	120	18.0	9.40	1.2	1.5	2.0	SE-40120TR	LTW-15S
1212JX-1.5	○	○	25	12	2	4	10	12	120	19.0	11.40	1.2	1.5	2.0		
KGM% 1010JX-2	○	○	20	10	2	3	8	10	120	18.0	9.15	1.7	2.0	3.0	SE-40120TR	LTW-15S
1212JX-2	○	○	25	12	2	4	10	12	120	19.0	11.15	1.7	2.0	3.0		
1616JX-2	●	●	32	16	-	4	9	16	120	24.5	15.15	1.7	2.0	3.0	SE-50125TR	LTW-20
KGM% 1010JX-2.5	○	○	20	10	2	3	8	10	120	18.0	9.00	2.0	2.4	3.0	SE-40120TR	LTW-15S
1212JX-2.5	○	○	25	12	2	4	10	12	120	19.0	11.00	2.0	2.4	3.0		
1616JX-2.5		●	32	16	-	4	9	16	120	24.5	15.00	2.0	2.4	3.0	SE-50125TR	LTW-20
KGM% 1616JX-3	○	○	32	16	-	4	9	16	120	24.5	14.80	2.4	3.0	4.0	SE-50125TR	LTW-20
KGM% 1212F-1.5-85	○		25	12	2	4	10	12	85	19.0	11.40	1.2	1.5	2.0	SE-40120TR	LTW-15S
KGM% 1212F-2-85	○		25	12	2	4	10	12	85	19.0	11.15	1.7	2.0	3.0	SE-40120TR	LTW-15S
KGM% 1212F-2.5-85	○		25	12	2	4	10	12	85	19.0	11.00	2.0	2.4	3.0	SE-40120TR	LTW-15S

Choose insert with width that falls within **MIN** and **MAX** parameters shown in table above. Insert table [G26-](#) [G28](#)

## KGM

Width : 3.0mm ~ 6.0mm



### Toolholder Dimensions

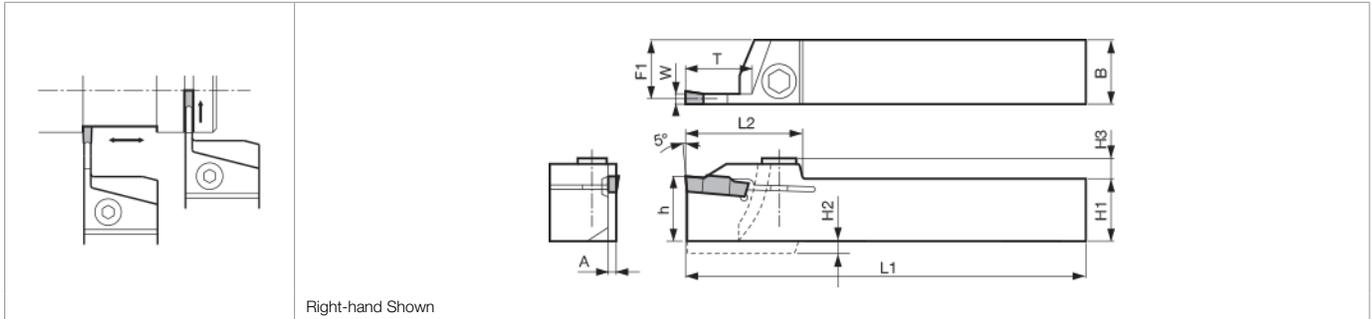
Part Number	Stock		Unit	Dimensions								Insert Width W (mm)		Spare Parts				
	R	L		H1=h	H2	H3	B	L1	L2	F1	A	T	MIN	MAX	Screw	Wrench		
KGM% 12-3	●		inch	0.75	-	0.217	0.75	5.0	1.07	0.702	0.094	0.354	3.0	4.0	-	HH5X16	-	LW-4
16-3	●			1.00	-	0.217	1.00	6.0	1.07	0.953	0.094	0.354	3.0	4.0	-	HH5X25	-	LW-4
KGM% 1212H-3	○	○	mm	12	4	6	12	100	27	10.8	2.4	9	3.0	3.0	SB-5TR	-	LTW-20	-
1616H-3	●	○		16	4	7	16	100	27	14.8	2.4	9	3.0	4.0	-	HH5X16	-	LW-4
2020K-3	○	○		20	-	7	20	125	27	18.8	2.4	9	3.0	4.0	-	HH5X16	-	LW-4
KGM% 2020K-4	○	○		20	-	7	20	125	27	18.3	3.4	10	4.0	5.0	-	HH5X16	-	LW-4
KGM% 2020K-5	○	○		20	-	7	20	125	27	17.8	4.4	10	5.0	6.0	-	HH5X16	-	LW-4

- Dimension T shows available grooving depth
- 4.0mm width insert can be installed in KGM% 1212H-3, but is not recommended due to the toolholder's rigidity

Choose insert with width that falls within **MIN** and **MAX** parameters shown in table above. Insert table [G26-](#) [G28](#)

**KGM-T** (Deep Grooving)

Width : 2.0mm ~ 5.0mm



**Toolholder Dimensions**

Part Number	Stock		Unit	Dimensions									Insert Width W (mm)		Spare Parts			
	R	L		H1=h	H2	H3	B	L1	L2	F1	A	T	MIN	MAX	Screw		Wrench	
<b>KGM%</b> 12-2T	●	●	inch	0.75	-	0.24	0.75	5.0	1.30	0.717	0.067	0.669	2.0	3.0	-	HH5X16	-	LW-4
16-2T	●			1.00	-	0.24	1.00	6.0	1.30	0.967	0.067	0.669	2.0	3.0	-	HH5X25	-	LW-4
12-3T	●	●		0.75	-	0.24	0.75	5.0	1.42	0.702	0.094	0.790	3.0	4.0	-	HH5X16	-	LW-4
16-3T	●	●		1.00	-	0.24	1.00	6.0	1.42	0.953	0.094	0.790	3.0	4.0	-	HH5X25	-	LW-4
12-4T	●	●		0.75	-	0.24	0.75	5.0	1.42	0.683	0.134	0.790	4.0	5.0	-	HH5X16	-	LW-4
16-4T	●			1.00	-	0.24	1.00	6.0	1.22	0.933	0.134	0.990	4.0	5.0	-	HH5X25	-	LW-4
16-5T	●	●		1.00	-	0.24	1.00	6.0	1.22	0.913	0.173	0.990	5.0	6.0	-	HH5X25	-	LW-4
<b>KGM%</b> 2012K-2T17	○	○	mm	20	-	7.0	12	125	33	11.15	1.7	17	2.0	3.0	SB-5TR	-	LTW-20	-
2020K-2T17	○	○		20	-	7.0	20	125	33	19.15	1.7	17	2.0	3.0	-	HH5X16	-	LW-4
<b>KGM%</b> 1616H-3T20	●	●		16	4	7.0	16	100	36	14.80	2.4	20	3.0	4.0	-	HH5X16	-	LW-4
2012K-3T20	○	○		20	-	7.0	12	125	36	10.80	2.4	20	3.0	4.0	SB-5TR	-	LTW-20	-
2020K-3T20	○	○		20	-	7.0	20	125	36	18.80	2.4	20	3.0	4.0	-	HH5X16	-	LW-4
<b>KGM%</b> 2020K-4T20	○	○	20	-	7.5	20	125	36	18.30	3.4	20	4.0	5.0	-	HH5X16	-	LW-4	

- Dimension T shows the distance from the toolholder to the cutting edge. Refer to table on **G32** for relationship between available grooving depth and cutting diameter
- When using GMG / GMM type 2-edge insert, set groove depth under 15mm

Choose insert with width that falls within **MIN** and **MAX** parameters shown in table above. Insert table **G26~ G28**

**Applicable Inserts**

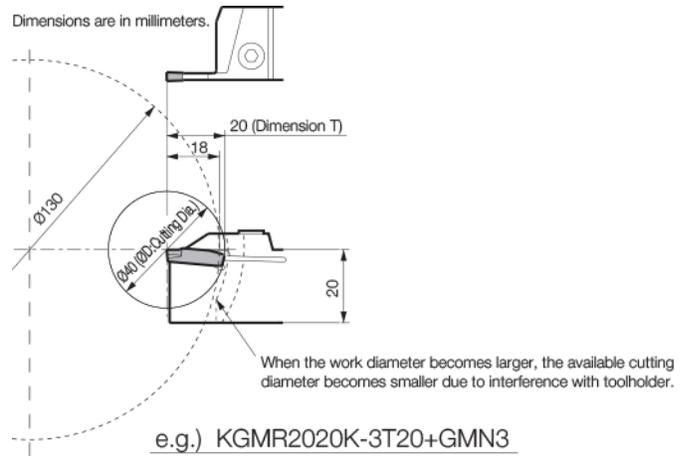
Application	Grooving / Traversing	Grooving / Traversing	Grooving	Full-R / Copying	Deep Grooving / Cut-Off	Deep Grooving / Cut-Off	Deep Grooving / Cut-Off	Deep Grooving / Cut-Off	Deep Grooving / Cut-Off	Deep Grooving
Ref. Page	<b>G26</b>	<b>G26</b>	<b>G26</b>	<b>G26</b>	<b>G27</b>	<b>G27</b>	<b>G27</b>	<b>G27</b>	<b>G27</b>	<b>G28</b>
Shape	<b>MW</b>	<b>MS</b>	<b>MG</b>		<b>MT</b>	<b>NB</b>	<b>TK</b>	<b>TK</b>		<b>CBN • PCD</b>
Toolholder										
<b>KGM%...1.5</b>	-	-	-	-	GMM1520...MT GMM2020...MT GMM1520%...MT GMM2020%...MT	GMM1520...NB GMM2020...NB	GMM2020...TK GMM2020%...TK	GMN2...TK GM%2...TK	-	-
<b>KGM%...2(T)</b>	GMM2420...MW GMM3020...MW	GMG3020...MS GMM3020...MS	GMG2520...MG GMG3020...MG	GMG3020...R GMM3020...R	GMM2020...MT GMM2520...MT GMM3020...MT GMM2020%...MT GMM2520%...MT GMM3020%...MT	GMM2020...NB GMM2520...NB GMM3020...NB	GMM2020...TK GMM2520...TK GMM3020...TK GMM2020%...TK GMM2520%...TK GMM3020%...TK	GMN2...TK GMN3...TK GM%2...TK GM%3...TK	GMN2 GMN2.2 GMN3 GM%2.2 GM%3	GMN2 GMN3
<b>KGM%...2.5</b>	GMM2420...MW GMM3020...MW	GMG3020...MS GMM3020...MS	GMG2520...MG GMG3020...MG	GMG3020...R GMM3020...R	GMM2520...MT GMM3020...MT GMM2520%...MT GMM3020%...MT	GMM2520...NB GMM3020...NB	GMM2520...TK GMM3020...TK GMM2520%...TK GMM3020%...TK	GMN3...TK GM%3...TK	GMN3 GM%3	GMN3
<b>KGM%...3(T)</b>	GMM3020...MW GMM4020...MW	GMG3020...MS GMM3020...MS GMG4020...MS GMM4020...MS	GMG3020...MG GMG3520...MG GMG4020...MG	GMG3020...R GMM3020...R GMG4020...R GMM4020...R	GMM3020...MT GMM3020%...MT	GMM3020...NB	GMM3020...TK GMM3020%...TK	GMN3...TK GMN4...TK GM%3...TK GM%4...TK	GMN3 GMN4 GM%3 GM%4	GMN3 GMN4
<b>KGM%...4</b>	GMM4020...MW GMM5020...MW	GMG4020...MS GMM4020...MS GMG5020...MS GMM5020...MS	GMG4020...MG GMG5020...MG	GMG4020...R GMM4020...R GMG5020...R GMM5020...R	-	-	-	GMN4...TK GM%4...TK	GMN4 GMN5 GM%4	GMN4 GMN5
<b>KGM%...5</b>	GMM5020...MW GMM6020...MW	GMG5020...MS GMM5020...MS GMG6020...MS GMM6020...MS	GMG5020...MG GMG6020...MG	GMG5020...R GMM5020...R GMG6020...R GMM6020...R	-	-	-	-	GMN5 GMN6	GMN5 GMN6

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

Recommended Cutting Conditions **G29**  
Recommended Cutting Conditions (CBN / PCD) **G28**

**KGM • KGM-T Available Cutting Diameter**

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



**KGM Available Cutting Diameter Table**

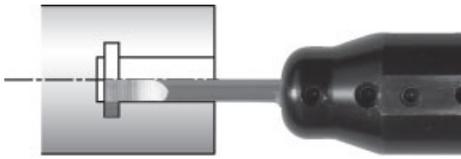
Toolholders		ØD (Cutting Diameter)																	
KGM %	0810K-1.5-125	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	14	16	32
	1010○-1.5...	-	-	-	-	-	-	-	20	25	32	40	60	∞	∞	∞	∞		
	1212○-1.5...	-	-	-	-	25	26	28	32	36	40	60	100	∞	∞	∞	∞		
	0810K-2-125	-	-	-	-	-	-	-	-	-	-	-	-	10	14	16	32		
	1010○-2...	-	-	-	-	-	-	-	20	25	32	40	60	∞	∞	∞	∞		
	1212○-2...	-	-	-	-	25	26	28	50	∞	∞	∞	∞	∞	∞	∞	∞		
	1616○-2...	32	40	50	60	80	100	∞	∞	∞	∞	∞	∞	∞	∞	∞	∞		
	1010○-2.5...	-	-	-	-	-	-	-	20	25	32	40	60	∞	∞	∞	∞		
	1212○-2.5...	-	-	-	-	25	26	28	32	36	40	60	100	∞	∞	∞	∞		
	1616○-2.5...	32	40	50	60	80	100	∞	∞	∞	∞	∞	∞	∞	∞	∞	∞		
	1616○-3...	32	40	50	60	80	100	∞	∞	∞	∞	∞	∞	∞	∞	∞	∞		
	Available Grooving Depth T (mm)		16	15	14	13	12.5	12	11	10	9	8	7	6	5	4	3	2	1

**KGM-T Available Cutting Diameter Table (GMN, GM % When Using 1-edge Insert)**

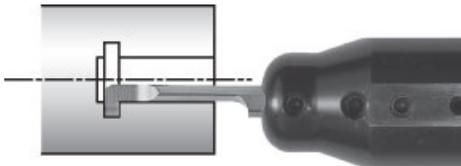
Toolholders		ØD (Cutting Diameter)												
KGM %	2012K-2T17	-	-	-	-	-	-	-	-	66	80	130	260	∞
	2020K-2T17	-	-	-	-	-	-	-	-	66	80	130	260	∞
	1616H-3T20	-	-	-	-	-	40	54	70	100	180	∞	∞	∞
	2012K-3T20	-	-	-	-	-	40	54	70	100	180	∞	∞	∞
	2020K-3T20	-	-	-	-	-	40	90	130	240	∞	∞	∞	∞
	2020K-4T20	-	-	-	-	-	40	90	130	240	∞	∞	∞	∞
Available Grooving Depth T (mm)		30	27	25	23	22	20	19	18	17	16	15	14	13

## Small Diameter Internal Grooving (➔ G34~ ➔ G37)

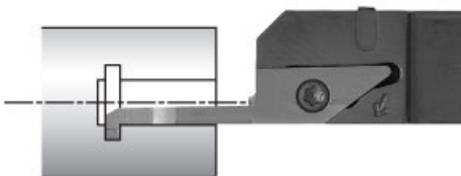
EZ Bar / Double-Sided Micro Bar / Swiss IQ Bar



Type	EZG
Min. Bore Dia.	0.197"~0.315" (5.0mm~8.0mm)
Width (mm)	0.039"~0.079" (1.0mm ~ 2.0mm)
Grooving Depth (mm)	0.059"~0.079" (1.5mm ~ 2.0mm)
Ref. Page	➔ G34



Type	HPG
Min. Bore Dia.	0.158"~0.276" (4.0mm~7.0mm)
Width (mm)	0.039"~0.079" (1.0mm ~ 2.0mm)
Grooving Depth (mm)	0.039"~0.079" (1.0mm ~ 2.0mm)
Ref. Page	➔ G36

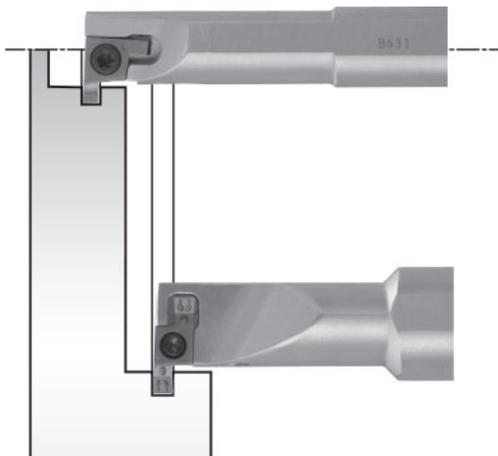


Type	VNG
Min. Bore Dia.	0.158"~0.276" (4.0mm~7.0mm)
Width (mm)	0.039"~0.079" (1.0mm ~ 2.0mm)
Grooving Depth (mm)	0.032"~0.079" (0.8mm ~ 2.0mm)
Ref. Page	➔ G37

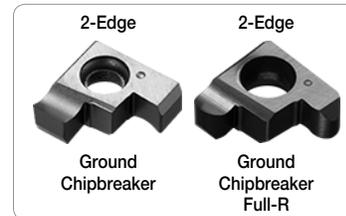


## Internal Grooving (➔ G38~ ➔ G43)

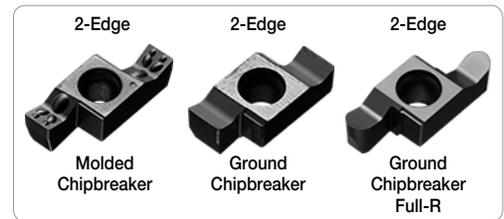
### Shallow Grooving



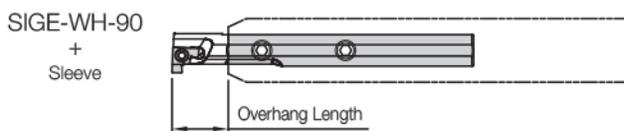
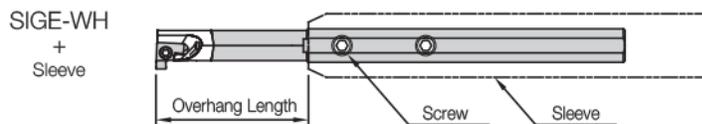
Type	SIGE
Min. Bore Dia.	0.315"~0.472" (8.0mm~12.0mm)
Width	0.039"~0.118" (1.0mm ~ 3.0mm)
Grooving Depth	0.059"~0.087" (1.5mm ~ 2.2mm)
Ref. Page	➔ G40



Type	SIGE
Min. Bore Dia.	0.551"~0.630" (14.0mm~16.0mm)
Width	0.039"~0.138" (1.0mm~3.5mm)
Grooving Depth	0.098" (2.5mm)
Ref. Page	➔ G41



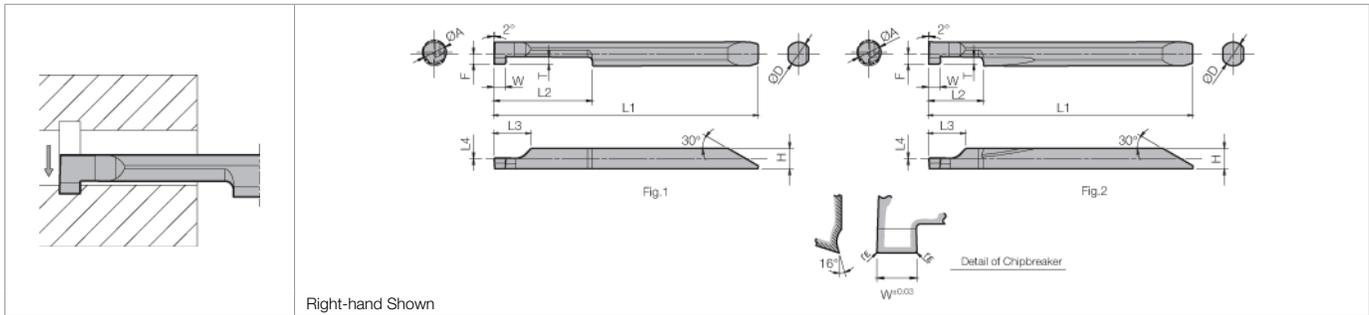
### How to Select SIGE-WH and SIGE-WH-90 ➔ G41~ ➔ G42



The SIGE-WH-90 type is recommended for automatic lathe cutting, because the overhang length can be shorter.

# EZ BAR

## EZG (Internal Grooving) NEW



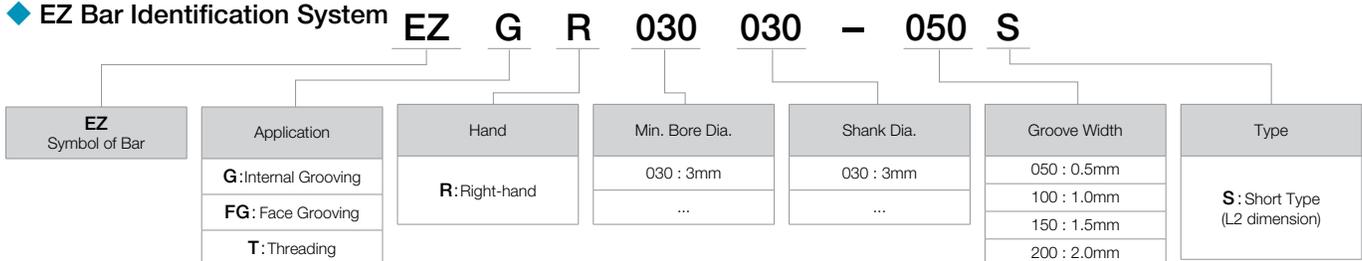
### Micro Bar Dimensions

Part Number	Min. Bore Dia.		Dimensions (mm)									Drawing	MEGACOAT PR1225	Applicable Sleeves	
	ØA	W <sup>+0.03*</sup>	rε	ØD	H	L1	L2	L3	L4	F	T				
<b>EZGR</b> 040040-050	4	0.5	±0.013 0.05	4	3.45	44.7	12	6.2	0	1.70	1.0	Fig.2	●	EZH040.. PSH04..	
040040-100	4	1.0		4	3.45	44.7	12	6.2	0	1.70	1.0	Fig.2	●		
040040-150	4	1.5		4	3.45	44.7	12	6.2	0	1.70	1.0	Fig.2	●		
040040-200	4	2.0		4	3.45	44.7	12	6.2	0	1.70	1.0	Fig.2	●		
050050-100	5	1.0		5	4.30	52.8	20	6.7	0	2.15	1.5	Fig.1	●	EZH050.. PSH05..	
050050-150	5	1.5		5	4.30	52.8	20	6.7	0	2.15	1.5	Fig.1	●		
050050-200	5	2.0		5	4.30	52.8	20	6.7	0	2.15	1.5	Fig.1	●		
060060-100	6	1.0		±0.013 0.05	6	5.15	60.7	20	7.6	0	2.65	2.0	Fig.2	●	EZH060.. PSH06..
060060-150	6	1.5			6	5.15	60.7	20	7.6	0	2.65	2.0	Fig.2	●	
060060-200	6	2.0			6	5.15	60.7	20	7.6	0	2.65	2.0	Fig.2	●	
070070-100	7	1.0	7		6.20	63.7	25	7.6	0	3.05	2.0	Fig.2	●		
070070-150	7	1.5	±0.013 0.05	7	6.20	63.7	25	7.6	0	3.05	2.0	Fig.2	●	EZH070.. PSH07..	
070070-200	7	2.0		7	6.20	63.7	25	7.6	0	3.05	2.0	Fig.2	●		
080070-100	8	1.0		7	6.20	63.7	25	7.6	0	3.45	2.0	Fig.2	●		
080070-150	8	1.5		7	6.20	63.7	25	7.6	0	3.45	2.0	Fig.2	●		
080070-200	8	2.0		7	6.20	63.7	25	7.6	0	3.45	2.0	Fig.2	●		
<b>EZGR</b> 030030-050S	3	0.5		3	2.50	38.7	5	4.8	0	1.25	0.8	Fig.2	●		EZH030.. PSH03..
030030-100S	3	1.0		3	2.50	38.7	5	4.8	0	1.25	0.8	Fig.2	●		
040040-050S	4	0.5		±0.013 0.05	4	3.45	44.7	8	6.2	0	1.70	1.0	Fig.2		●
040040-100S	4	1.0	4		3.45	44.7	8	6.2	0	1.70	1.0	Fig.2	●		
040040-150S	4	1.5	4		3.45	44.7	8	6.2	0	1.70	1.0	Fig.2	●		
040040-200S	4	2.0	4		3.45	44.7	8	6.2	0	1.70	1.0	Fig.2	●		
050050-100S	5	1.0	5		4.30	52.8	10	6.7	0	2.15	1.5	Fig.2	●	EZH050.. PSH05..	
050050-150S	5	1.5	5		4.30	52.8	10	6.7	0	2.15	1.5	Fig.2	●		
050050-200S	5	2.0	5		4.30	52.8	10	6.7	0	2.15	1.5	Fig.2	●		
060060-100S	6	1.0	±0.013 0.05		6	5.15	60.7	10	7.6	0	2.65	2.0	Fig.2	●	EZH060.. PSH06..
060060-150S	6	1.5			6	5.15	60.7	10	7.6	0	2.65	2.0	Fig.2	●	
060060-200S	6	2.0			6	5.15	60.7	10	7.6	0	2.65	2.0	Fig.2	●	
070070-100S	7	1.0		7	6.20	63.7	10	7.6	0	3.05	2.0	Fig.2	●		
070070-150S	7	1.5	±0.013 0.05	7	6.20	63.7	10	7.6	0	3.05	2.0	Fig.2	●	EZH070.. PSH07..	
070070-200S	7	2.0		7	6.20	63.7	10	7.6	0	3.05	2.0	Fig.2	●		
080070-100S	8	1.0		7	6.20	63.7	10	7.6	0	3.45	2.0	Fig.2	●		
080070-150S	8	1.5		7	6.20	63.7	10	7.6	0	3.45	2.0	Fig.2	●		
080070-200S	8	2.0		7	6.20	63.7	10	7.6	0	3.45	2.0	Fig.2	●		

Dimension T: Available grooving depth  
\*S\* in description denotes stub length

Applicable Sleeves G35

### EZ Bar Identification System



EZ Bars are sold in 1 piece boxes.

## ● Applicable Sleeves

Sleeve Part Number			EZ Bar Part Number				Applicable Machine Manufacturer	
EZH-CT (Adjustable with Coolant Hole) ● F21	EZH-HP (Adjustable) ● F22~ ● F23	EZH-ST ● F24~ ● F25	Sleeve Shank Dia. ØD1 (mm)	EZG	HPG	Shank Dia		
						ØD (mm)		
-	-	EZH 03012ST-80	12.00	EZGR ...030-...	-	3	General Machines	
		04012ST-80		...040-...	HPG%	0404-...		4
		05012ST-80		...050-...		0505-...		5
		06012ST-80		...060-...		0606-...		6
		07012ST-80		...070-...		0707-...		7
-	EZH 03016HP-100	EZH 03016ST-100	16.00	EZGR ...030-...	-	3	General Machines	
	04016HP-100	04016ST-100		...040-...	HPG%	0404-...		4
	05016HP-100	05016ST-100		...050-...		0505-...		5
	06016HP-100	06016ST-100		...060-...		0606-...		6
	07016HP-100	07016ST-100		...070-...		0707-...		7
EZH 03019CT-120	EZH 03019HP-120	EZH 03019ST-120	19.05	EZGR ...030-...	-	3	CITIZEN MACHINERY MIYANO CO., LTD.	
04019CT-120	04019HP-120	04019ST-120		...040-...	HPG%	0404-...		4
05019CT-120	05019HP-120	05019ST-120		...050-...		0505-...		5
06019CT-120	06019HP-120	06019ST-120		...060-...		0606-...		6
07019CT-120	07019HP-120	07019ST-120		...070-...		0707-...		7
EZH 03020CT-120	EZH 03020HP-120	EZH 03020ST-120	20.00	EZGR ...030-...	-	3	AMADA MACHINE TOOLS CO.,LTD. EGURO.LTD TSUGAMI CORPORATION CITIZEN MACHINERY MIYANO CO., LTD. General Machines	
04020CT-120	04020HP-120	04020ST-120		...040-...	HPG%	0404-...		4
05020CT-120	05020HP-120	05020ST-120		...050-...		0505-...		5
06020CT-120	06020HP-120	06020ST-120		...060-...		0606-...		6
07020CT-120	07020HP-120	07020ST-120		...070-...		0707-...		7
EZH 03022CT-135	EZH 03022HP-135	EZH 03022ST-135	22.00	EZGR ...030-...	-	3	STAR MICRONICS CO., LTD. Nomura VTC Automatic Lathe Co., Ltd.	
04022CT-135	04022HP-135	04022ST-135		...040-...	HPG%	0404-...		4
05022CT-135	05022HP-135	05022ST-135		...050-...		0505-...		5
06022CT-135	06022HP-135	06022ST-135		...060-...		0606-...		6
07022CT-135	07022HP-135	07022ST-135		...070-...		0707-...		7
EZH 03025.0CT-135	EZH 03025.0HP-135	EZH 03025.0ST-135	25.00	EZGR ...030-...	-	3	AMADA MACHINE TOOLS CO.,LTD. EGURO.LTD TSUGAMI CORPORATION CITIZEN MACHINERY MIYANO CO., LTD. General Machines	
04025.0CT-135	04025.0HP-135	04025.0ST-135		...040-...	HPG%	0404-...		4
05025.0CT-135	05025.0HP-135	05025.0ST-135		...050-...		0505-...		5
06025.0CT-135	06025.0HP-135	06025.0ST-135		...060-...		0606-...		6
07025.0CT-135	07025.0HP-135	07025.0ST-135		...070-...		0707-...		7
EZH 03025.4CT-120	EZH 03025.4HP-120	EZH 03025.4ST-120	25.40	EZGR ...030-...	-	3	CITIZEN MACHINERY MIYANO CO., LTD.	
04025.4CT-120	04025.4HP-120	04025.4ST-120		...040-...	HPG%	0404-...		4
05025.4CT-120	05025.4HP-120	05025.4ST-120		...050-...		0505-...		5
06025.4CT-120	06025.4HP-120	06025.4ST-120		...060-...		0606-...		6
07025.4CT-120	07025.4HP-120	07025.4ST-120		...070-...		0707-...		7

- Choose sleeves (Ød1) to meet with ØD dimension of EZG bars.
- Adjustment pin cannot be installed in EZH-ST sleeves. To adjust overhang of EZB insert, please use EZH-HP sleeves.
- Machine manufacturers in random order.

Applicable EZBars ● G34

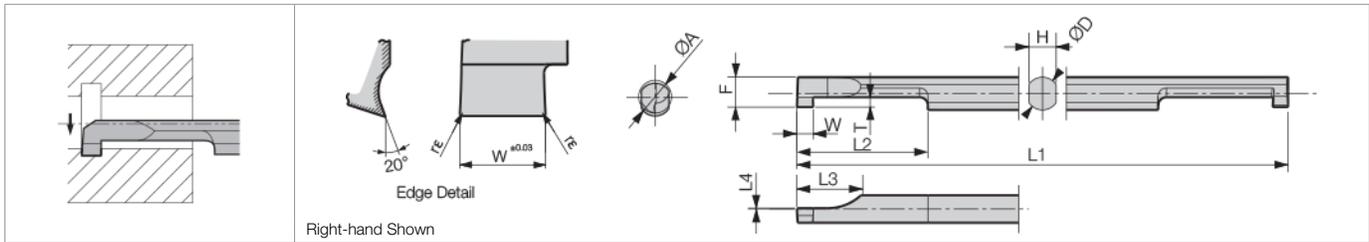
## ◆ Recommended Cutting Conditions

Workpiece Material	Recommended Insert Grade (Vc sfm)	EZGR030030-S	EZGR040040 EZGR050050 EZGR040040-S EZGR050050-S	EZGR060060 EZGR070070 EZGR080070 EZGR060060-S EZGR070070-S EZGR080070-S	Remarks
	MEGACOAT				
	PR1225				
Carbon Steel / Alloy Steel	★ 100~330	~0.0008	~0.0012	~0.0020	Wet
Stainless Steel	★ 100~260	~0.0004	~0.0008	~0.0012	

★ : 1st Recommendation ☆ : 2nd Recommendation

GRADES  
A  
INSERTS  
B  
CBN & POD  
C  
TURNING  
E  
BORING  
F  
GRINDING  
G  
CUT-OFF  
H  
THREADING  
J  
SOLID END MILLS  
L  
MILLING  
M  
SPARE PARTS  
P  
TECHNICAL  
R  
INDEX  
T

## HPG (Small Diameter Internal Grooving)



### Micro Bar Dimensions

Part Number	Min. Bore Dia.	Dimensions (mm)											PVD Coated Carbide	Carbide	
		ØA	W=0.0012"	W=0.03mm	rε	ØD	H	L1	L2	L3	L4	F	T	PR930	KW10
			inch	mm										PR930	KW10
HPG% 0404-10	4	0.039	1	0.05	4	3.35	60	15	8	0	3.65	1.0	○	Ⓡ	
0404-20	4	0.079	2		4	3.35	60	15	8	0	3.65	1.0	○	Ⓡ	
0505-10	5	0.039	1		5	4.30	70	20	8	0	4.55	1.5	○	Ⓡ	
0505-20	5	0.079	2		5	4.30	70	20	8	0	4.55	1.5	○	Ⓡ	
0606-10	6	0.039	1		6	5.20	70	20	10	0	5.50	2.0	○	Ⓡ	
0606-20	6	0.079	2		6	5.20	70	20	10	0	5.50	2.0	○	Ⓡ	
0707-10	7	0.039	1		7	6.20	80	25	10	0	6.45	2.0	○	Ⓡ	
0707-20	7	0.079	2		7	6.20	80	25	10	0	6.45	2.0	○	Ⓡ	

Dimension T: Available grooving depth

### Description of Micro Bar and Applicable Sleeve

Micro Bar Part Number	Applicable Sleeves
HPG% 0404-...	EZH 04...-
0505-...	05...-
0606-...	06...-
0707-...	07...-

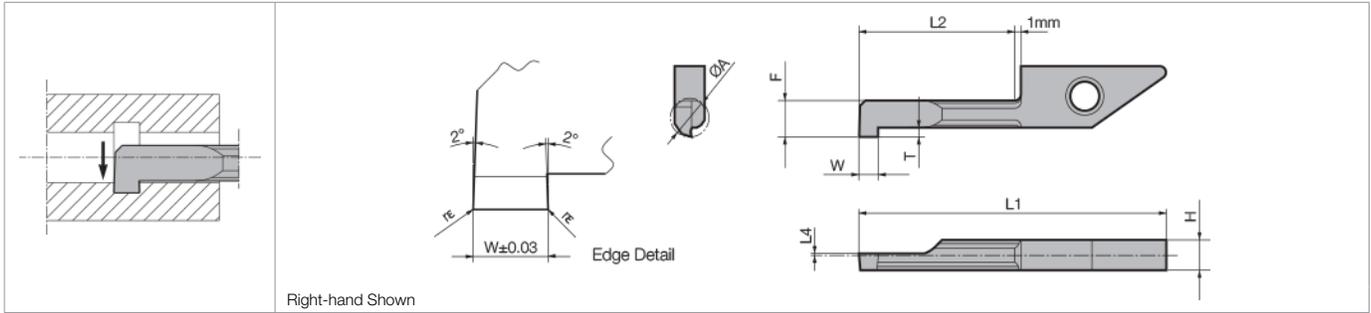
### Recommended Cutting Conditions

Workpiece Material	Recommended Insert Grade (Vc sfrm)		HPG% 04 HPG% 05	HPG% 06 HPG% 07	Remarks
	PVD Coated Carbide	Carbide			
	PR1225	PR1225	Feed Rate (ipr)		
Carbon Steel / Alloy Steel	★ 100~325	-	~0.0012	~0.0020	Wet
Stainless Steel	★ 100~250	-	~0.0008	~0.0012	
Non-ferrous Metals	-	★ ~975	~0.0020	~0.0031	

★ : 1st Recommendation ☆ : 2nd Recommendation

Micro Bars are sold in 1 piece boxes.

VNG



Right-hand Shown

Insert Dimensions

Part Number	Min. Bore Dia.	Dimensions (mm)											Cermet	PVD Coated Carbide	Carbide	Ref. Page for Toolholder	
		ØA	W		r <sub>e</sub>	ØD	H	L1	L2	L3	L4	F	T	TC60	PR930		KW10
			inch	mm													
VNGR 0410-11	4	0.039	1.0	0.05	-	3.9	30.8	11	-	0.1	3.5	0.8		●	●	F32 F33	
0420-11	4	0.079	2.0	0.10	-	3.9	30.8	11	-	0.1	3.5	0.8		●	●		
0510-11	5	0.039	1.0	0.05	-	3.9	30.8	11	-	0.1	4.4	1.0	○	●	●		
0520-11	5	0.079	2.0	0.10	-	3.9	30.8	11	-	0.1	4.4	1.0	○	●	●		
0610-20	6	0.039	1.0	0.05	-	3.9	39.8	20	-	0.3	5.2	1.8	○	●	●		
0620-20	6	0.079	2.0	0.10	-	3.9	39.8	20	-	0.3	5.2	1.8	○	●	●		
0710-20	7	0.039	1.0	0.05	-	3.9	39.8	20	-	0.3	6.2	2.0	●	●	●		
0720-20	7	0.079	2.0	0.10	-	3.9	39.8	20	-	0.3	6.2	2.0	○	●	●		

Dimension T : Available grooving depth

• Dimension L4 indicates the cutting edge is above the tool's center position

Recommended Cutting Conditions

Workpiece Material	Recommended Insert Grade (Vc sfm)				VNG04 VNG05	VNG06 VNG07	Remarks
	Cermet	MEGACOAT	PVD	Carbide			
	TC60	PR1225	PR930	KW10	Feed Rate (ipr)		
Carbon Steel / Alloy Steel	☆ 200~400	★ 100~325	☆ 100~100	-	~0.0012	~0.0020	Wet
Stainless Steel	☆ 150~325	★ 100~250	☆ 100~250	-	~0.0008	~0.0012	
Non-ferrous Metals	-	-	-	★ ~975	~0.0020	~0.0031	

★ : 1st Recommendation ☆ : 2nd Recommendation

Swiss IQ Bars are sold in 5 piece boxes.

CBN & PCD Inserts are sold in 1 piece boxes.

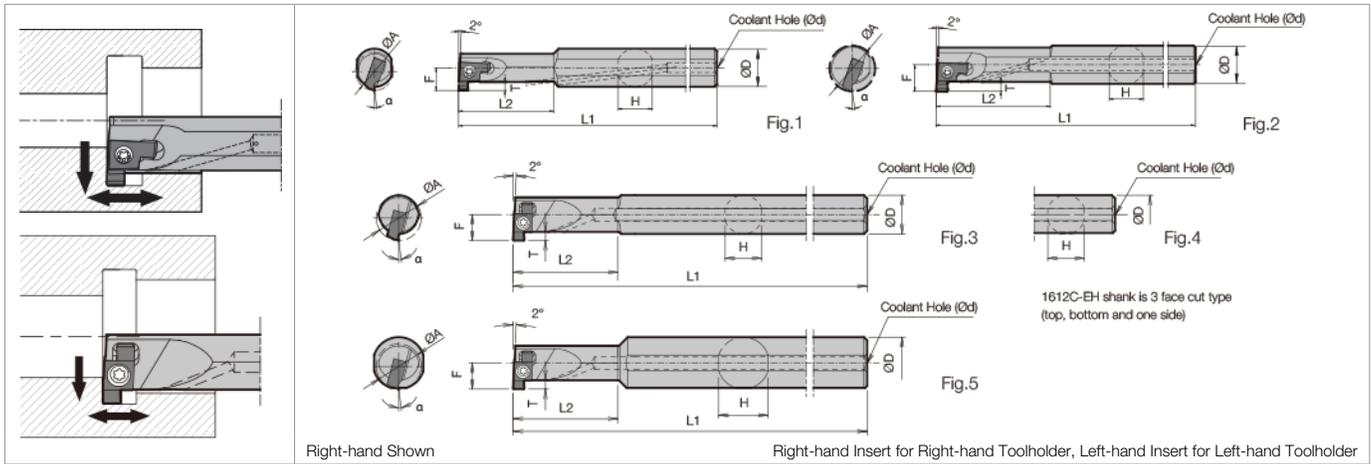
GRADES A  
INSERTS B  
CBN & PCD C  
TURNING E  
BORING F  
GROOVING G  
CUT-OFF H  
THREADING J  
SOLID END MILLS L  
MILLING M  
SPARE PARTS P  
TECHNICAL R  
INDEX T





# SIGE INTERNAL GROOVING

## SIGE-EH Excellent Bar (With Coolant Hole)



### Toolholder Dimensions

Part Number	Stock		Min. Bore Dia.	Dimensions							Shape	Spare Parts			Applicable Inserts ● G38~ ● G39	
	R	L		Unit	ØA	ØD	H	L1	L2	F		T	Ød	Clamp Screw		Wrench
SIGE% 05EH	●	●	inch	0.313	0.315	0.283	3.940	0.787	0.177	0.059	0.158	Fig.1	SB-2045TRN	FT-6	-	GE% 100-005A-GE% 200-010A GER100-050AR-GER200-100AR
	●	●		0.375	0.394	0.354	4.920	0.984	0.232	0.087	0.158	Fig.1	SB-2255TR	-	DT-7	GE% 100-005B-GE% 300-020B GER100-050BR-GER200-100BR
	●	●		0.551	0.500	0.460	5.900	1.300	0.315	0.098	0.158	Fig.2	SB-2570TR	FT-8	-	GE% 100-005C-GE% 350-020C GER150-010CM-GER350-020CM GER200-100CR-GER300-150CR
	●	●		0.630	0.500	0.460	5.900	0.788	0.335	0.098	0.158	Fig.3				
SIGE% 0808A-EH	○	○	mm	8	8	7.2	100	20	4.8	1.5	3	Fig.1	SB-2045TRN	FT-6	-	GE% 100-005A-GE% 200-010A GER100-050AR-GER200-100AR
	○	○		10	10	9.0	125	25	6.2	2.2	3	Fig.1	SB-2255TR	-	DT-7	GE% 100-005B-GE% 300-020B GER100-050BR-GER200-100BR
	○	○		12	10	9.0	125	30	7.0	2.2	3	Fig.2				
	○	○		14	12	11.4	150	33	8.0	2.5	4	Fig.3	SB-2570TR	FT-8	-	GE% 100-005C-GE% 350-020C GER150-010CM-GER350-020CM GER200-100CR-GER300-150CR
	○	○		16	12	11.4	150	20	8.5	2.5	4	Fig.4				
	○	○		16	16	15.0	160	36	9.0	2.5	5	Fig.5				

Dimension T: Available grooving depth

- Traditional top clamp has been replaced with a screw clamp only. This design creates a large chip pocket that provides excellent chip evacuation



- Cutting Edge is Protected in the Pocket



- 8mm Minimum Cutting Diameter with 2-Edge Design

- Cost effective chip control from a 3-D molded chipbreaker (GER...M)



- Chip Evacuation Comparison (Molded Chipbreaker)

Toolholder	Shape	SCM415 (Min. Bore Dia.)			Evaluation
		0.002"	0.003"	0.004"	
SIGER1612C-EH GER300-020CM (PR1025)					Good Chip Control
Competitor A (Width 0.118")				Insert Cracks	Unstable Chip Control and Biting
Competitor B (Width 0.118")					Unstable Chip Control and Biting

(Vc=325sfm, D.O.C.=0.079", Wet)

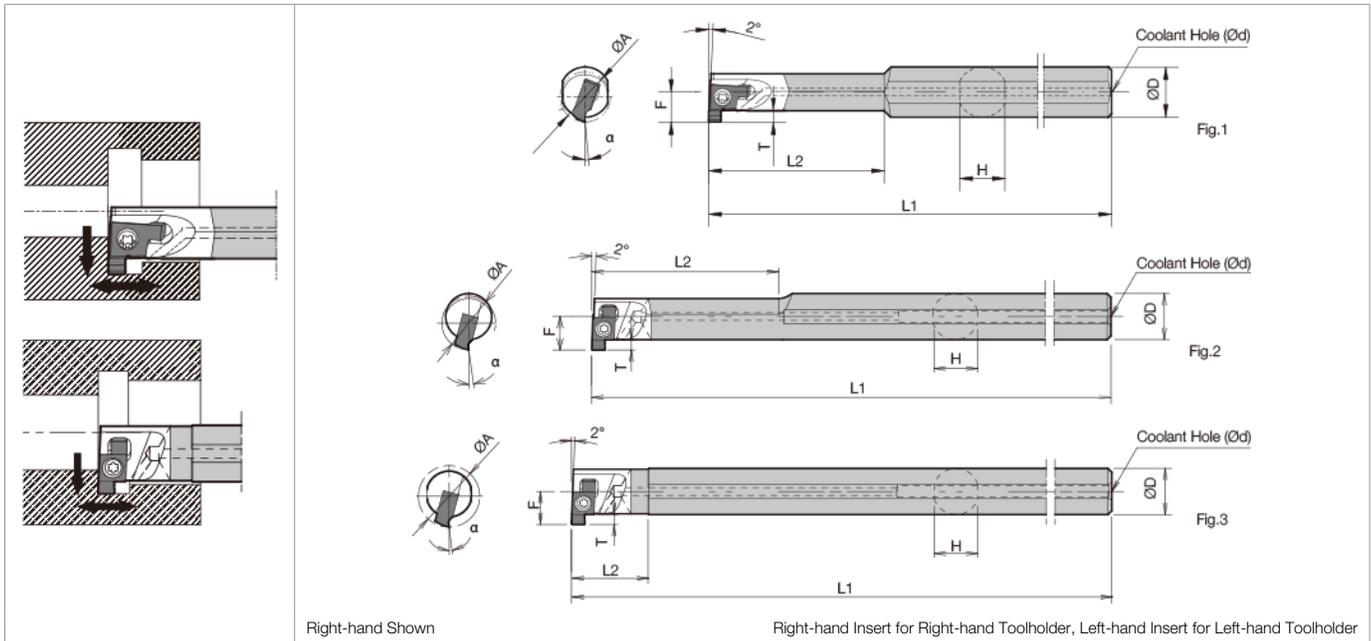
- Chip Evacuation Comparison (Min. Cutting Dia. Ø0.315")

Toolholder	Shape	SCM415	Evaluation
		0.0008	
SIGER0808A-EH GER200-010A (PR1025)			Good Chip Control
Competitor C (Width 0.079")			Unstable Chip Control and Biting

(Vc=175sfm, D.O.C.=0.049", Wet)

(Internal Evaluation)

## ■ SIGE-WH Carbide Anti-Vibration Bar (With Coolant Hole)



### ● Toolholder Dimensions

Part Number	Stock		Min. Bore Dia.	Dimensions (mm)							Shape	Spare Parts			Applicable Inserts ➔ G38- ➔ G39	
	R	L		ØA	ØD	H	L1	L2	F	T		Ød	Clamp Screw	Wrench		
														FT		DT
<b>SIGE</b> 0808A-WH	○	○	8	8	7.2	125	28	4.8	1.5	3	Fig.1	SB-2045TRN	FT-6	-	GE% 100-005A-GE% 200-010A GER100-050AR-GER200-100AR	
1010B-WH	●	○	10	10	9.0	125	35	6.2	2.2	3	Fig.1	SB-2255TR	-	DT-7	GE% 100-005B-GE% 300-020B GER100-050BR-GER200-100BR	
1210B-WH	○	○	12	10	9.0	140	45	7.0	2.2	3	Fig.1					
1412C-WH	○	○	14	12	11.4	150	50	8.7	2.5	4	Fig.2	SB-2570TR	FT-8	-	GE% 100-005C-GE% 350-020C GER150-010CM-GER350-020CM GER200-100CR-GER300-150CR	
1612C-WH	○	○	16	12	11.4	180	20	8.5	2.5	4	Fig.3					

Dimension T: Available grooving depth

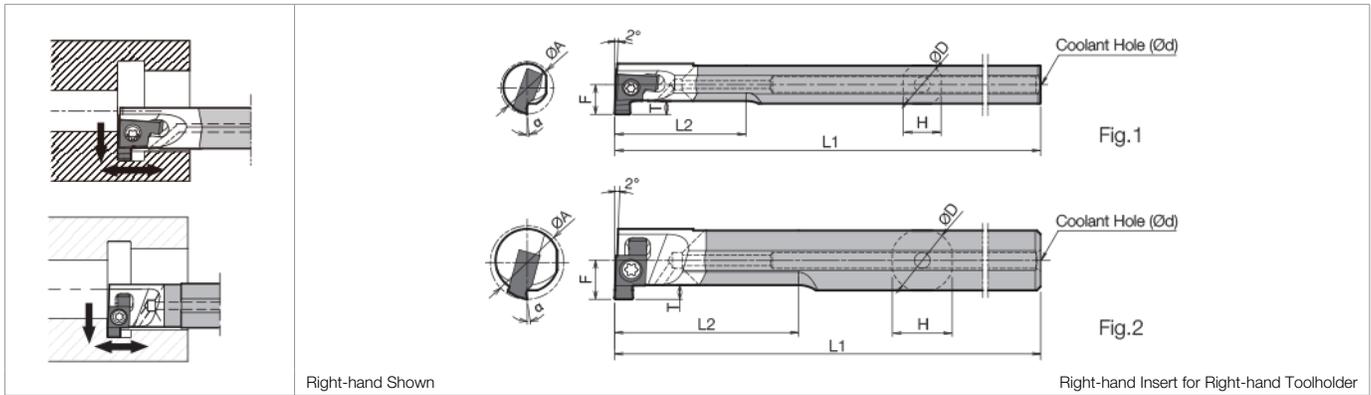
### ● Applicable Inserts and Rake Angle (α) After Installment of Insert

Toolholder	Ground Chipbreaker		α (°)	Molded Chipbreaker		α (°)
	Insert	Insert		Insert	Insert	
<b>SIGE</b> 0808A-EH	GE% 100-005A-GE% 200-010A GER100-050AR-GER200-100AR		5°	-	-	-
	GE% 100-005A-GE% 300-020B GER100-050BR-GER200-100BR		5°	-	-	-
	GE% 100-005C-GE% 350-020C GER200-100CR-GER300-150CR	GER150-010CM-GER350-020CM		8°		10°
<b>SIGE</b> 1010B-WH	GE% 100-005A-GE% 200-010A GER100-050AR-GER200-100AR		5°	-	-	-
	GE% 100-005A-GE% 300-020B GER100-050BR-GER200-100BR		5°	-	-	-
	GE% 100-005C-GE% 350-020C GER200-100CR-GER300-150CR	GER150-010CM-GER350-020CM		8°		10°
	GE% 100-005A-GE% 200-010A GER100-050AR-GER200-100AR		5°	-	-	-
	GE% 100-005A-GE% 300-020B GER100-050BR-GER200-100BR		5°	-	-	-
	GE% 100-005C-GE% 350-020C GER200-100CR-GER300-150CR	GER150-010CM-GER350-020CM		8°		10°
	GE% 100-005C-GE% 350-020C GER200-100CR-GER300-150CR	GER150-010CM-GER350-020CM		8°		10°

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

GRADES **A**  
INSERTS **B**  
CBN & POD **C**  
TURNING **E**  
BORING **F**  
GROOVING **G**  
CUT-OFF **H**  
THREADING **J**  
SOLID END MILLS **L**  
MILLING **M**  
SPARE PARTS **P**  
TECHNICAL **R**  
INDEX **T**

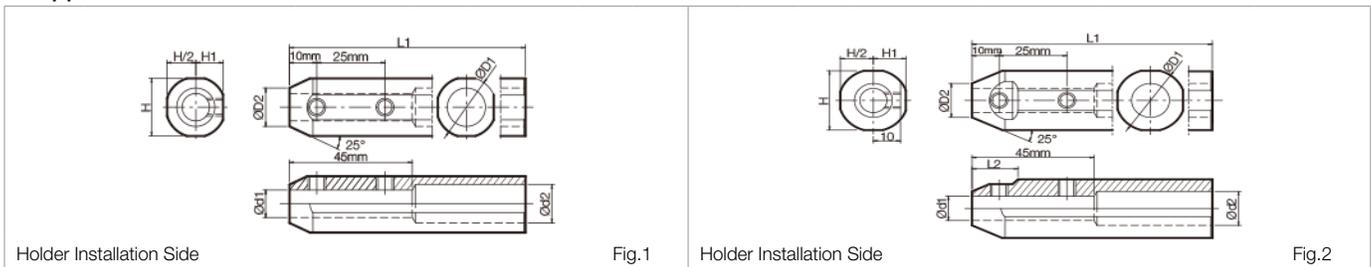
## ■ SIGE-WH Carbide Anti-Vibration Bar (With Coolant Hole)



### ● Toolholder Dimensions

Part Number	Stock	Min. Bore Dia.	Dimensions (mm)							Shape	Spare Parts		Applicable Inserts ● G38~ ● G39
			ØA	ØD	H	L1	L2	F	T		Ød	Clamp Screw	
<b>SIGER 1008B-WH-90</b>	○	10	8	7.2	90	25	5.6	2.2	3	Fig.1	SB-2255TR	FT-7	GER100-005B~GE%300-020B GER100-050BR~GER200-100BR
<b>1210B-WH-90</b>	○	12	10	9.4	90	30	6.6	2.2	3	Fig.1			
<b>1412C-WH-90</b>	○	14	12	11.4	90	35	7.4	2.5	3	Fig.2	SB-2570TR	FT-8	GER100-005C~GE%350-020C GER150-010CM~GER350-020CM GER200-100CR~GER300-150CR

### ● Applicable Sleeves



Part Number	Stock	Dimensions								Shape	Spare Parts		Applicable Machine Manufacturer
		Ød1	ØD1	ØD2	Ød2	H	H1	L1	L2		Screw	Wrench	
<b>SHA 0820-120</b>	○	8	20.00	14	12	19.0	9.25	120	-	Fig.1	HS6x4P	LW-3	AMADA MACHINE TOOLS CO.,LTD. EGURO.LTD CITIZEN MACHINERY MIYANO CO., LTD. TSUGAMI CORPORATION
<b>1020-120</b>	○	10	20.00	14	12	19.0	9.25	120	-	Fig.1			
<b>SHA 0825.0-135</b>	○	8	25.00	14	14	24.0	11.5	135	17	Fig.2			
<b>1025.0-135</b>	○	10	25.00	14	14	24.0	11.5	135	17	Fig.2	HS6x4P	LW-3	CITIZEN MACHINERY MIYANO CO., LTD.
<b>1225.0-135</b>	○	12	25.00	16	14	24.0	11.5	135	17	Fig.2			
<b>SHA 0819-120</b>	○	8	19.05	14	12	18.0	8.75	120	-	Fig.1			
<b>1019-120</b>	○	10	19.05	14	12	18.0	8.75	120	-	Fig.1	HS6x4P	LW-3	CITIZEN MACHINERY MIYANO CO., LTD.
<b>SHA 0820-120</b>	○	8	20.00	14	12	19.0	9.25	120	-	Fig.1			
<b>1020-120</b>	○	10	20.00	14	12	19.0	9.25	120	-	Fig.1			
<b>SHA 0825.4-120</b>	○	8	25.40	14	14	24.4	12.00	120	17	Fig.2	HS6x4P	LW-3	STAR MICRONICS CO., LTD.
<b>1025.4-120</b>	○	10	25.40	14	14	24.4	12.00	120	17	Fig.2			
<b>1225.4-120</b>	○	12	25.40	16	14	24.4	12.00	120	17	Fig.2			
<b>SHA 0822-125</b>	○	8	22.00	14	14	21.0	10.00	125	-	Fig.1	HS6x4P	LW-3	Nomura VTC Automatic Lathe Co., Ltd.
<b>1022-125</b>	○	10	22.00	14	14	21.0	10.00	125	-	Fig.1			
<b>1222-125</b>	○	12	22.00	16	14	21.0	10.00	125	-	Fig.1			
<b>SHA 0823-120</b>	○	8	23.00	14	14	22.0	10.50	120	16	Fig.2	HS6x4P	LW-3	Nomura VTC Automatic Lathe Co., Ltd.
<b>1023-120</b>	○	10	23.00	14	14	22.0	10.50	120	16	Fig.2			
<b>1223-120</b>	○	12	23.00	16	14	22.0	10.50	120	16	Fig.2			

※ : Length of Ød1...45mm (All types)

- Choose sleeves (Ød1) to meet with ØD dimension of Double-Sided Micro-Bar.
- Machine manufacturers are in random order.

# RECOMMENDED CUTTING CONDITIONS

## Recommended Cutting Conditions (Ground Chipbreaker : GE%...A(R), GE%...B(R))

Workpiece Material	Recommended Insert Grade (Vc sfm)				① f (feed) during Grooving (ipr)			Remarks
	Cermet	MEGACOAT	PVD Coated Carbide	Carbide	② f (feed) during Traversing (ipr)			
					③ D.O.C. during Traversing (in)			
TN6020	PR1225	PR1025	KW10	GE% 100-200-010A 100-200-100AR	GE% 100-200-010B 100-200-100BR	GE% 250-300-020B		
Carbon Steel	☆ 175-250	★ 175-250	☆ 175-250	-	① 0.0004-0.0012	① 0.0008-0.0016	① 0.0008-0.0016	
					② 0.0004-0.0012	② 0.0008-0.0016	② 0.0008-0.0016	
					③ Max. 0.0020	③ Max. 0.0020	③ Max. 0.0039	
Alloy Steel	☆ 175-250	★ 175-250	☆ 175-250	-	① 0.0004-0.0012	① 0.0008-0.0016	① 0.0008-0.0016	
					② 0.0004-0.0012	② 0.0008-0.0016	② 0.0008-0.0016	
					③ Max. 0.0020	③ Max. 0.0020	③ Max. 0.0039	
Stainless Steel	-	★ 175-250	☆ 175-250	-	① 0.0004-0.0012	① 0.0004-0.0012	① 0.0004-0.0012	
					② 0.0004-0.0012	② 0.0004-0.0012	② 0.0004-0.0012	
					③ Max. 0.0020	③ Max. 0.0020	③ Max. 0.0039	
Cast Iron	-	-	-	★ 175-250	① 0.0004-0.0012	① 0.0008-0.0016	① 0.0008-0.0016	
					② 0.0004-0.0012	② 0.0008-0.0016	② 0.0008-0.0016	
					③ Max. 0.0020	③ Max. 0.0020	③ Max. 0.0039	
Aluminum	-	-	-	★ 175-325	① 0.0004-0.0012	① 0.0008-0.0016	① 0.0008-0.0016	
					② 0.0004-0.0012	② 0.0008-0.0016	② 0.0008-0.0016	
					③ Max. 0.0039	③ Max. 0.0039	③ Max. 0.0079	
Brass	-	-	-	★ 175-325	① 0.0004-0.0012	① 0.0008-0.0016	① 0.0008-0.0016	
					② 0.0004-0.0012	② 0.0008-0.0016	② 0.0008-0.0016	
					③ Max. 0.0039	③ Max. 0.0039	③ Max. 0.0079	

• Use PVD coated grade or uncoated carbide for traversing with edge width 1mm. (GE% 100-005A/100-005B) ★ : 1st Recommendation ☆ : 2nd Recommendation

## Recommended Cutting Conditions (Ground Chipbreaker : GE%...C(R))

Workpiece Material	Recommended Insert Grade (Vc sfm)				① f (feed) during Grooving (ipr)		Remarks
	Cermet	MEGACOAT	PVD Coated Carbide	Carbide	② f (feed) during Traversing (ipr)		
					③ D.O.C. during Traversing (in)		
TN6020	PR1225	PR1025	GW15	GE% 100-200-010C 200-100CR	GE% 250-350-020C 250-300-150CR		
Carbon Steel	☆ 400-600	★ 200-425	☆ 200-425	-	① 0.03-0.08	① 0.03-0.08	
					② 0.03-0.08	② 0.03-0.08	
					③ Max. 0.30	③ Max. 0.30	
Alloy Steel	☆ 325-525	★ 200-400	☆ 200-400	-	① 0.03-0.07	① 0.03-0.07	
					② 0.03-0.10	② 0.03-0.10	
					③ Max. 0.30	③ Max. 0.30	
Stainless Steel	☆ 225-425	★ 200-350	☆ 200-350	-	① 0.03-0.07	① 0.03-0.07	
					② 0.03-0.10	② 0.03-0.10	
					③ Max. 0.30	③ Max. 0.30	
Cast Iron	-	-	-	★ 200-350	① 0.03-0.08	① 0.03-0.08	
					② 0.03-0.08	② 0.03-0.08	
					③ Max. 0.30	③ Max. 0.30	
Aluminum	-	-	-	★ 500-975	① 0.05-0.12	① 0.05-0.12	
					② 0.05-0.12	② 0.05-0.12	
					③ Max. 0.50	③ Max. 0.50	
Brass	-	-	-	★ 325-825	① 0.05-0.12	① 0.05-0.12	
					② 0.05-0.12	② 0.05-0.12	
					③ Max. 0.50	③ Max. 0.50	

• Use PVD coated grade or uncoated carbide for traversing with edge width 1mm. (GE% 100-010C) ★ : 1st Recommendation ☆ : 2nd Recommendation

## Recommended Cutting Conditions (Molded Chipbreaker : GER...CM)

Workpiece Material	Recommended Insert Grade (Vc sfm)				① f (feed) during Grooving (ipr)		Remarks
	Cermet	MEGACOAT	PVD Coated Carbide	Carbide	② f (feed) during Traversing (ipr)		
					③ D.O.C. during Traversing (in)		
TN6020	PR1225	PR1025	GW15	GE% 100-200-010C 200-100CR	GE% 250-350-020C 250-300-150CR		
Carbon Steel	-	★ 200-525	☆ 200-525	-	① 0.0012-0.0031	① 0.0012-0.0031	
					② 0.0012-0.0031	② 0.0012-0.0031	
					③ Max. 0.0118	③ Max. 0.0118	
Alloy Steel	-	★ 200-450	☆ 200-450	-	① 0.0012-0.0028	① 0.0012-0.0028	
					② 0.0012-0.0039	② 0.0012-0.0039	
					③ Max. 0.0118	③ Max. 0.0118	
Stainless Steel	-	★ 200-350	☆ 200-350	-	① 0.0012-0.0028	① 0.0012-0.0028	
					② 0.0012-0.0039	② 0.0012-0.0039	
					③ Max. 0.0118	③ Max. 0.0118	

★ : 1st Recommendation ☆ : 2nd Recommendation

GRADES  
A

INSERTS  
B

CBN & PCD  
C

TURNING  
E

BORING  
F

GROOVING  
G

CUT-OFF  
H

THREADING  
J

SOLID END MILLS  
L

MILLING  
M

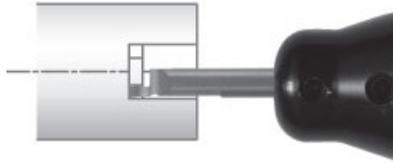
SPARE PARTS  
P

TECHNICAL  
R

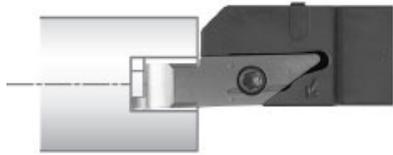
INDEX  
T

## Small Diameter Face Grooving

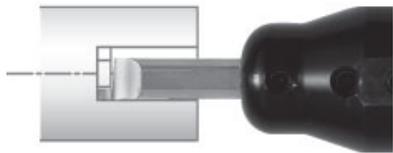
A	GRADES
B	INSERTS
C	CBN & PCD
E	TURNING
F	BORING
G	GROOVING
H	CUT-OFF
J	THREADING
L	SOLID END MILLS
M	MILLING
P	SPARE PARTS
R	TECHNICAL
T	INDEX



Type	EZFG
Min. Face Groove Dia.	0.197", 0.236", 0.315" (5mm, 6mm, 8mm)
Width	0.039"-0.118" (1.0mm ~ 3.0mm)
Grooving Depth	0.079"-0.118" (2.0mm ~ 3.0mm)
Ref. Page	<a href="#">G45</a>



Type	VNFG
Min. Face Groove Dia.	0.315" (8mm)
Width	0.039"-0.118" (1.0mm ~ 3.0mm)
Grooving Depth	0.079"-0.118" (2.0mm ~ 3.0mm)
Ref. Page	<a href="#">G47</a>



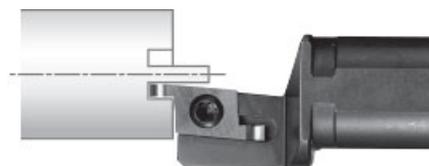
Type	HPFG
Min. Face Groove Dia.	0.315" (8mm)
Width	0.039"-0.118" (1.0mm ~ 3.0mm)
Grooving Depth	0.079"-0.118" (2.0mm ~ 3.0mm)
Ref. Page	<a href="#">G47</a>



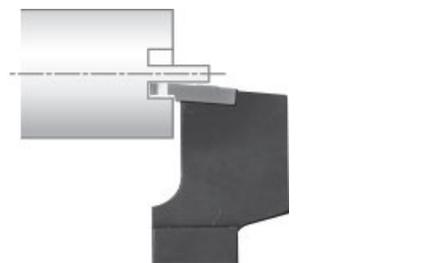
## Minimum Face Groove Diameter Ø6~



Type	STW
Min. Face Groove Dia.	0.236" (6mm)
Width	0.020"-0.079" (0.5mm ~ 2.0mm)
Grooving Depth	0.039"-0.118" (1.0mm ~ 3.0mm)
Ref. Page	<a href="#">G48</a>

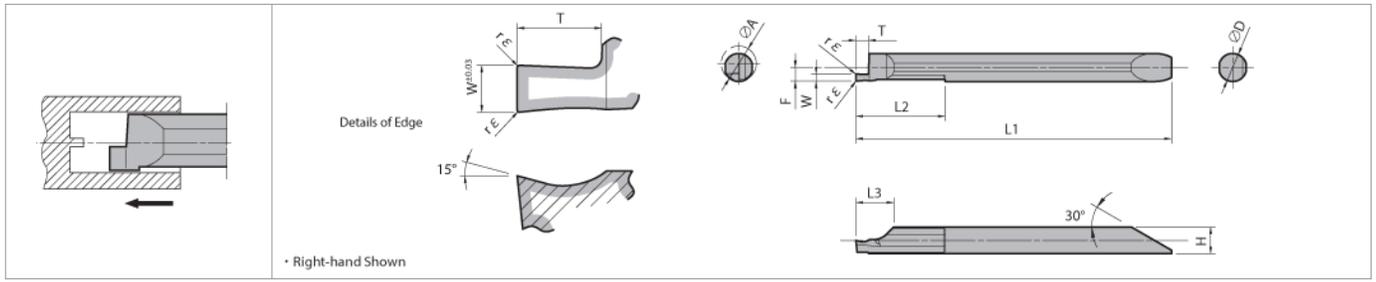


Type	S...-STW
Min. Face Groove Dia.	0.236" (6mm)
Width	0.020"-0.079" (0.5mm ~ 2.0mm)
Grooving Depth	0.039"-0.118" (1.0mm ~ 3.0mm)
Ref. Page	<a href="#">G48</a>



Type	STWS
Min. Face Groove Dia.	0.236" (6mm)
Width	0.020"-0.079" (0.5mm ~ 2.0mm)
Grooving Depth	0.039"-0.118" (1.0mm ~ 3.0mm)
Ref. Page	<a href="#">G49</a>

## EZFG (Face Grooving)



Part Number	Min. Bore Dia.										MEGACOAT	Applicable Sleeve ➔ G46
	ØA	W <sup>+0.03</sup>	r <sub>ε</sub>	ØD	H	L1	L2	L3	F	T	PR1225	
EZFGR 050040-100	5	1.0	±0.013 0.05	4	3.8	45.0	12	5.4	1.9	1.5	○	EZHG040..
050040-150	5	1.5		4	3.8	45.0	12	5.4	1.9	2.0	○	
EZFGR 060050-100	6	1.0	±0.013 0.05	5	4.8	53.2	25	6.9	2.4	1.5	○	EZHG050..
060050-150	6	1.5		5	4.8	53.2	25	6.9	2.4	2.5	○	
060050-200	6	2.0		5	4.8	53.2	25	6.9	2.4	3.0	○	
EZFGR 080070-100	8	1.0	±0.013 0.05	7	6.8	64.2	25	7.9	3.4	2.0	○	EZHG070..
080070-150	8	1.5		7	6.8	64.2	25	7.9	3.4	2.5	○	
080070-200	8	2.0		7	6.8	64.2	25	7.9	3.4	3.0	○	
080070-300	8	3.0		7	6.8	64.2	25	7.9	3.4	3.0	○	

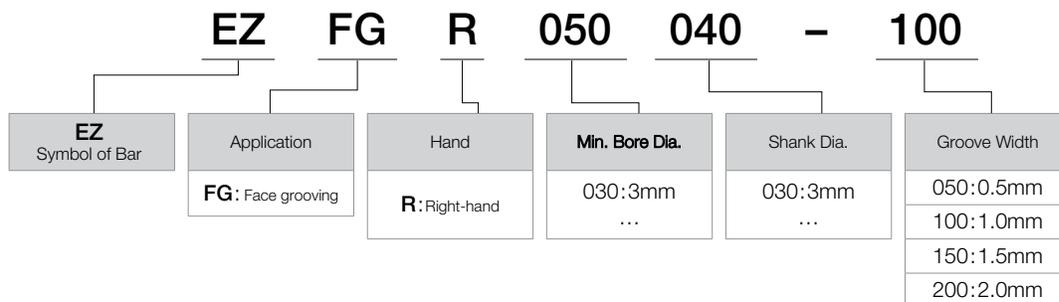
Dimension T : Available grooving depth

### Recommended Cutting Conditions

Workpiece Material	Insert Grade (Vc:sfm)	EZFG050040-100 EZFG060050-100 EZFG080070-100	EZFG050040-150 EZFG060050-150 EZFG080070-150	EZFG060050-200 EZFG080070-200	EZFG080070-300	Notes
	MEGACOAT	Feed Rate (ipr)				
	PR1225					
Carbon Steel / Alloy Steel	★ 100~325	~0.0008	~0.0012	~0.0016	~0.0020	Wet
Stainless Steel	★ 100~250	~0.0004	~0.0008	~0.0008	~0.0012	

★ : First Recommendation

### EZ-Bar Sleeve Identification System (Face Grooving)



Micro Bars are sold in 1 piece boxes.

GRADES A  
INSERTS B  
CBN & POD C  
TURNING E  
BORING F  
GROOVING G  
CUT-OFF H  
THREADING J  
SOLID END MILLS L  
MILLING M  
SPARE PARTS P  
TECHNICAL R  
INDEX T

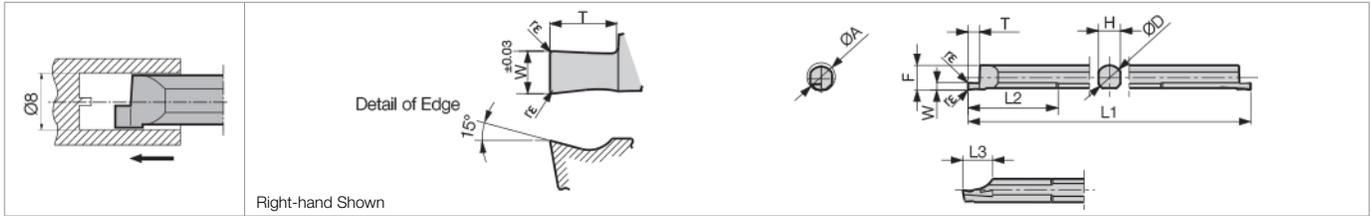
# FACE GROOVING EZ-BAR SLEEVES

## ● Applicable Sleeves

A	GRADES	Sleeve Part Number			EZ Bar Part Number			Applicable Machine Manufacturer					
		EZH-CT (Adjustable with Coolant Hole) ● F21	EZH-HP (Adjustable) ● F23	EZH-ST ● F24~ ● F25	Sleeve Shank Dia. ØD1 (mm)	EZFG	HPFG		Shank Dia ØD (mm)				
B	INSERTS	-	-	EZH 04012ST-80 05012ST-80 07012ST-80	12.00	EZFGR ...040-... ...050-... ...070-...	- - HPFG 0807-...	4 5 7	General Machines				
		C	CBN & PCD	-		EZH 04016HP-100 05016HP-100 07016HP-100	EZH 04016ST-100 05016ST-100 07016ST-100	16.00		EZFGR ...040-... ...050-... ...070-...	- - HPFG 0807-...	4 5 7	General Machines
				E		TURNING	EZH 04019CT-120 05019CT-120 07019CT-120			EZH 04019HP-120 05019HP-120 07019HP-120	EZH 04019ST-120 05019ST-120 07019ST-120	19.05	
F	BORING				EZH 04020CT-120 05020CT-120 07020CT-120		EZH 04020HP-120 05020HP-120 07020HP-120		EZH 04020ST-120 05020ST-120 07020ST-120	20.00	EZFGR ...040-... ...050-... ...070-...		
		G	GROOVING		EZH 04022CT-135 05022CT-135 07022CT-135		EZH 04022HP-135 05022HP-135 07022HP-135	EZH 04022ST-135 05022ST-135 07022ST-135	22.00		EZFGR ...040-... ...050-... ...070-...		- - HPFG 0807-...
				H	CUT-OFF	EZH 04025.0CT-135 05025.0CT-135 07025.0CT-135	EZH 04025.0HP-135 05025.0HP-135 07025.0HP-135	EZH 04025.0ST-135 05025.0ST-135 07025.0ST-135			25.00	EZFGR ...040-... ...050-... ...070-...	- - HPFG 0807-...
J	THREADING					EZH 04025.4CT-120 05025.4CT-120 07025.4CT-120	EZH 04025.4HP-120 05025.4HP-120 07025.4HP-120	EZH 04025.4ST-120 05025.4ST-120 07025.4ST-120		25.40		EZFGR ...040-... ...050-... ...070-...	- - HPFG 0807-...

- Adjustment pin cannot be installed in EZH-ST sleeves. To adjust overhang of EZB insert, please use EZH-HP sleeves.
- Machine manufacturers in random order.

**HPFG** (Face Grooving (Small Dia.))



Part Number	Face Grooving Dia. ØA		Dimensions (mm)										Insert Grade			
	MIN	MAX	W#0.001	W#0.03	rε	ØD	H	L1	L2	L3	F	T	PVD Coated Carbide		Carbide	
			inch	mm									PR930		KW10	
HPFG% 0807-10	8 (0)	∞	0.039	1	+0 -0.02 0.05	7	6.2	80	25	8.5	6.9	2	○	○	○	
0807-20			0.079	2		7	6.2	80	25	8.5	6.9	3	○	○	○	
0807-30			0.118	3		7	6.2	80	25	8.5	6.9	3	○	○	○	

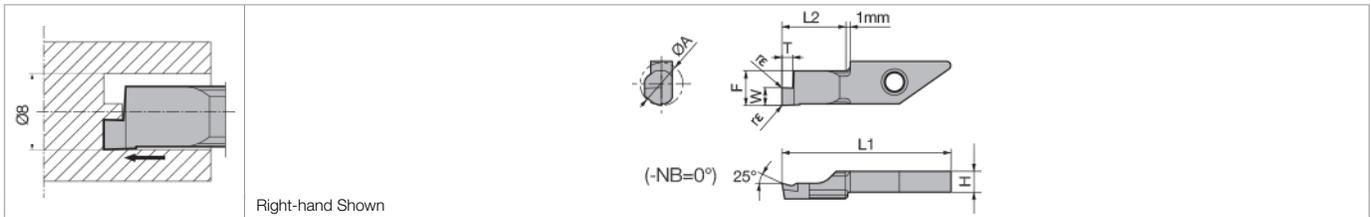
Dimension T : Available grooving depth • Face grooving diameter ØD MIN (0) means that you can make the initial groove within MIN - MAX and then widen it to the center.  
 Applicable Sleeves **G46** Micro Bars are sold in 10 piece boxes.

**Recommended Cutting Conditions**

Workpiece Material	Recommended Insert Grade (Vc sfm)		HPFG% 0807-10	HPFG% 0807-20	HPFG% 0807-30	Remarks
	PVD Coated Carbide	Carbide				
	PR930	KW10				
Carbon Steel	★ 100~325	-	~0.0008	~0.0016	~0.0020	Wet
Alloy Steel	★ 100~250	-	~0.0004	~0.0008	~0.0012	
Non-ferrous Metals (Aluminum / Brass)	-	★ ~975	~0.0016	~0.0024	~0.0031	

★ : 1st Recommendation ☆ : 2nd Recommendation

**VNFG** (Swiss IQ Bar)



Part Number	Face Grooving Dia. ØA		Dimensions (mm)										Cermet	MEGACOAT	PVD Coated Carbide	Carbide	PCD		Ref. Page for Toolholder
	MIN	MAX	W#0.001	W#0.03	rε	H	L1	L2	F	T	TC60	PR1225	PR930	KW10	KPD001	KPD010			
			inch	mm															
VNFR 0810-10	8 (0)	∞	0.039	1	0.05	3.9	29.6	10	7.3	2.0	○		○	○					
0820-10			0.079	2	0.05	3.9	29.6	10	7.3	2.0			○	○					
0830-10			0.118	3	0.05	3.9	29.6	10	7.3	3.0			○	○					

Dimension T : Available grooving depth • Face grooving diameter ØD MIN (0) means that you can make the initial groove within MIN - MAX and then widen it to the center.

**Recommended Cutting Conditions**

Workpiece Material	Recommended Insert Grade (Vc sfm)				VNFG0810	VNFG0820	VNFG0830	Remarks
	Cermet	MEGACOAT	PVD Coated Carbide	Carbide				
	TC60	PR1225	PR930	KW10				
Carbon Steel	☆ 200~400	★ 100~325	☆ 100~325	-	~0.0008	~0.00016	~0.0020	Wet
Alloy Steel	☆ 175~325	★ 100~250	☆ 100~250	-	~0.0004	~0.0008	~0.0012	
Non-ferrous Metals (Aluminum / Brass)	-	-	-	★ ~975	~0.0016	~0.0024	~0.0031	

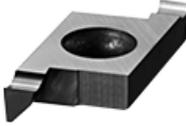
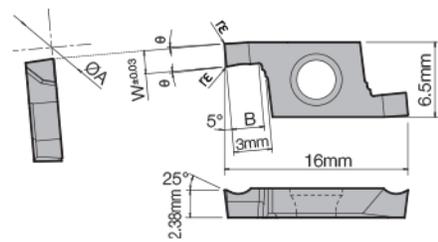
★ : 1st Recommendation ☆ : 2nd Recommendation

Swiss IQ Bars are sold in 5 piece boxes. CBN & PCD Inserts are sold in 1 piece boxes.

GRADES **A**  
 INSERTS **B**  
 CBN & PCD **C**  
 TURNING **E**  
 BORING **F**  
 GROOVING **G**  
 CUT-OFF **H**  
 THREADING **J**  
 SOLID END MILLS **L**  
 MILLING **M**  
 SPARE PARTS **P**  
 TECHNICAL **R**  
 INDEX **T**

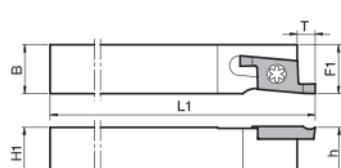
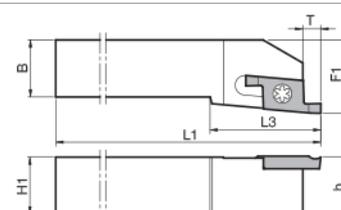
# MICRO DIA. FACE GROOVING (TWIN BARS)

## TWFG (Horizontal Type : Insert Specification)

A GRADES			Part Number	Face Grooving Dia. ØA	Dimensions (mm)				Angle (°)	Insert Grade				
					MIN	MAX	W			rε	B	θ	PVD Coated Carbide	Carbide
							inch	mm					PR1025	KW10

Dimension T : Available grooving depth • Face grooving diameter ØD MIN (0) means that you can make the initial groove within MIN - MAX and then widen it to the center.

## STW (Square Shank for Horizontal Type)

E TURNING			Fig.1		Fig.2

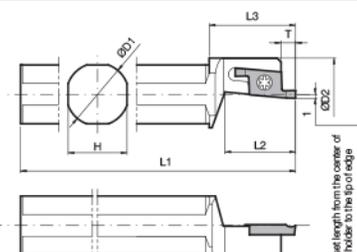
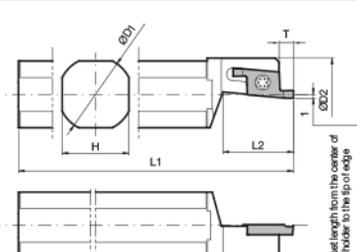
### Toolholder Dimensions

Part Number	Stock	Dimensions (mm)										Shape	Spare Parts		Applicable Inserts Above
		H1=h	B	L1	L2	L3	F1	F2	T	F3	Clamp Screw		Wrench		
STWL 1010F-15	○	10	10	85	-	-	10	-	3	-	Fig.1	SB-3080TR	LTW-10S	TWFGLOO	
1212F-15	○	12	12	85	-	-	12	-	3	-	Fig.1				
1212K-15	○	12	12	125	-	-	12	-	3	-	Fig.1				
1616K-15	○	16	16	125	-	-	16	-	3	-	Fig.1				
2020K-15	○	20	20	125	-	25	25	-	3	-	Fig.2				
2525M-15	○	25	25	150	-	25	32	-	3	-	Fig.2				

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

## S...-STW (Round Shank for Horizontal Type)

Right-hand toolholder for boring, see Page [F36](#)

L SOLID END MILLS			Fig.1		Fig.2

### Toolholder Dimensions

Part Number	Stock	Dimensions (mm)								Shape	Spare Parts		Applicable Inserts Above
		ØD1	ØD2	H	L1	L2	L3	T	Clamp Screw		Wrench		
S12F- STWL15	○	12.000	20.0	11	80	18	22	3	Fig.1	SB-3080TR	LTW-10S	TWFGLOO	
S14H- STWL15	○	14.000	20.0	13	100	18	22	3	Fig.1				
S15F- STWL15	○	15.875	20.0	15	85	18	22	3	Fig.1				
S16F- STWL15	○	16.000	20.0	15	85	18	22	3	Fig.1				
S19G- STWL15	○	19.050	18.5	17	90	18	-	3	Fig.2				
S19K- STWL15	○	19.050	18.5	17	120	18	-	3	Fig.2				
S20G- STWL15	○	20.000	19.5	18	90	18	-	3	Fig.2				
S20K- STWL15	○	20.000	19.5	18	120	18	-	3	Fig.2				
S22K- STWL15	○	22.000	21.5	20	125	22	-	3	Fig.2				
S25.0J- STWL15	○	25.000	24.5	23	110	22	-	3	Fig.2				
S25K- STWL15	○	25.400	25.0	23	120	22	-	3	Fig.2				

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

Micro Bars are sold in 5 piece boxes

# MICRO DIA. FACE GROOVING (TWIN BARS)

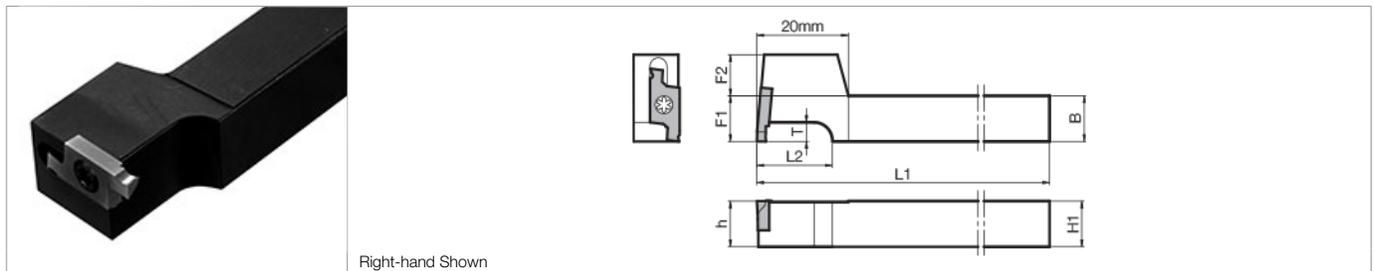
## TWFGT (Vertical Type : Insert Specification)

Part Number	Face Grooving Dia. ØA	Dimensions (mm)				Angle (°)	Insert Grade		
		W		rε	B		PVD Coated Carbide	Carbide	
		inch	mm						
TWFGTR 050	6 (0)	8 (∞)	0.020	0.50	0.05	1.0	1.5°	○	○
080			0.031	0.80	0.05	1.5	1.5°	○	○
100			0.039	1.00	0.05	2.2	2.0°	○	○
125			0.049	1.25	0.05	2.2	2.0°	○	○
150			0.059	1.50	0.05	2.2	2.0°	○	○
180			0.071	1.80	0.05	3.0	2.0°	○	○
200	0.079	2.00	0.05	3.0	2.0°	○	○		

Dimension T : Available grooving depth

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

## STWS (Square Shank for Vertical Type : L-Shape)



### Toolholder Dimensions

Part Number	Stock	Dimensions (mm)										Shape	Spare Parts		Applicable Inserts Above
		H1=h	B	L1	L2	L3	F1	F2	T	F3	Clamp Screw		Wrench		
STWSR 1010JX-15T	○	10	10	120	16	-	10	9	3	-	-	SB-3080TR	LTW-10S	TWFGTR ○○○	
1212JX-15T	○	12	12	120	16	-	12	7	3	-	-				
1616JX-15T	○	16	16	120	20	-	16	3	3	-	-				
STWSR 1010F-15T	○	10	10	85	16	-	10	9	3	-	-	SB-3080TR	LTW-10S	TWFGTR ○○○	
1212F-15T	○	12	12	85	16	-	12	7	3	-	-				

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

## Recommended Cutting Conditions (TWFG / TWFGT)

Workpiece Material	Recommended Insert Grade (Vc sfm)		TWFGLO50 TWFGLO80 TWFGLO100 TWFGTR050 TWFGTR080 TWFGTR100	TWFGTL125 TWFGTL150 TWFGTR125 TWFGTR150	TWFGTL180 TWFGTL200 TWFGTR180 TWFGTR200	Remarks
	PVD Coated Carbide	Carbide				
	PR1025	KW10				
Carbon Steel	★ 100~325	-	~-0.0008	~-0.0012	~-0.0016	Wet
Alloy Steel	★ 100~250	-	~-0.0004	~-0.0008	~-0.0008	
Non-ferrous Metals (Aluminum / Brass)	-	★ ~975	~-0.0012	~-0.0016	~-0.0024	

★ : 1st Recommendation ☆ : 2nd Recommendation

Twin Bars are sold in 5 piece boxes

<b>A</b>	GRADES
<b>B</b>	INSERTS
<b>C</b>	CBN & PCD
<b>E</b>	TURNING
<b>F</b>	BORING
<b>G</b>	GROOVING
<b>H</b>	CUT-OFF
<b>J</b>	THREADING
<b>L</b>	SOLID END MILLS
<b>M</b>	MILLING
<b>P</b>	SPARE PARTS
<b>R</b>	TECHNICAL
<b>T</b>	INDEX