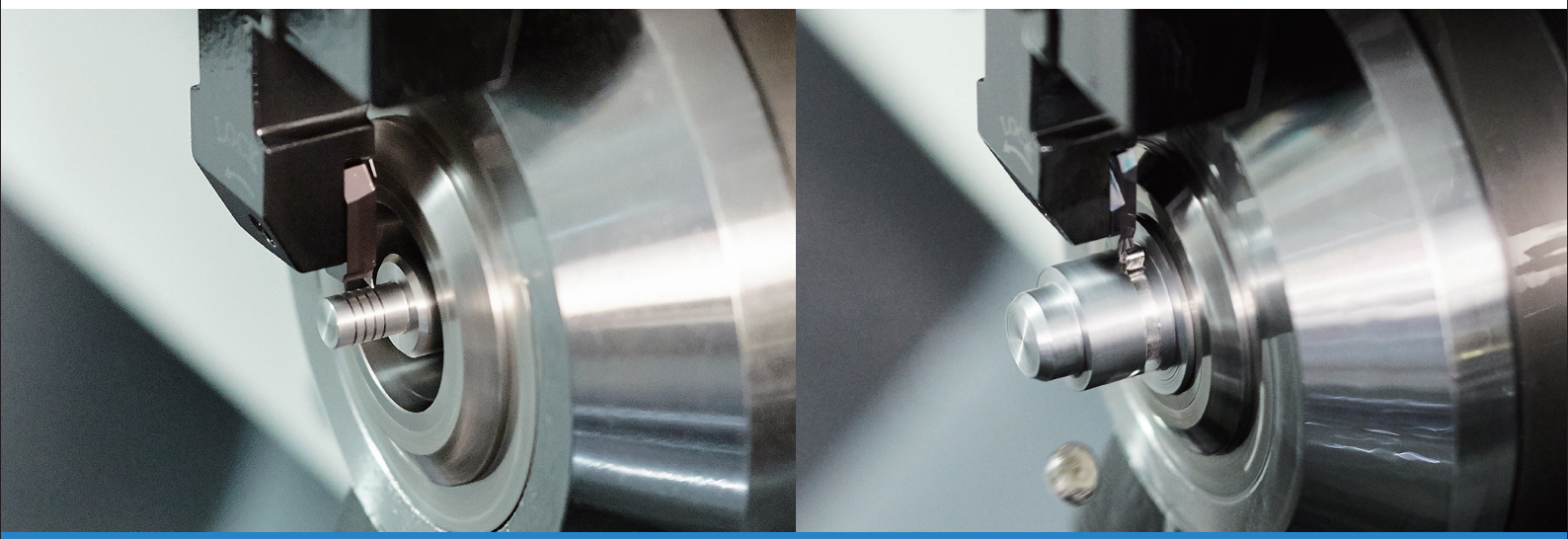
Grooving Tools for Small Parts Machining

GBF

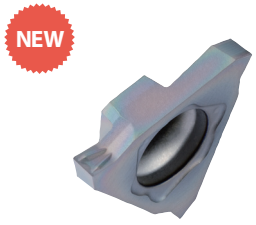


Reduced Chip Biting Issues when Grooving Small Parts

Stable Chip Control, GL Chipbreaker Added to Lineup

Wide Application Lineup, Groove Widths from 0.25 mm to 3.00 mm and Maximum Groove Depths up to 3 mm

External Sleeve Holder Added to Lineup



GL Chipbreaker

Grooving Tools for Small Parts Machining

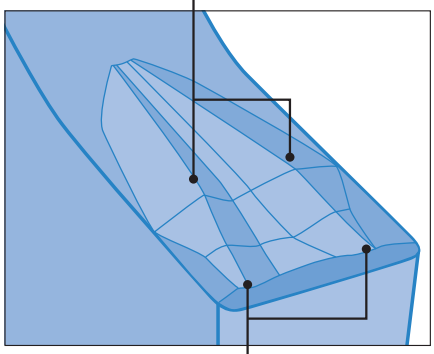
GBF

High Precision With Edge Width Tolerance of ±0.02mm
High Efficiency MEGACOAT Coating Technology for Long Tool Life

1 Stable Chip Control with GL Chipbreaker

GL Chipbreaker for stable chip control in both grooving and traversing applications (Traversing is not recommended for GBF32R075-005GL)

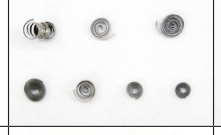
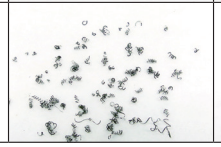
Twin Dots Stable Chip Control



Front Edge Dots Chips are short, curled and break evenly in low feed maching operations.

Prevents chip crunching.

Comparison of Chip Control (In-house Evaluation)

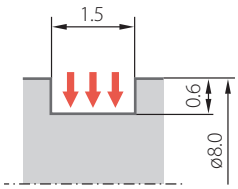
	GL Chipbreaker	Competitor A
Grooving f = 0.05 mm/rev d = 1.5 mm		
Traversing f = 0.04 mm/rev ap = 0.2 mm		

Cutting Conditions: Vc = 80 m/min, Insert width 1 mm
Workpiece: SUS304

Case Studies

Nozzle Parts Stainless Steel

Vc = 45 m/min
f = 0.05 mm/rev
Groove depth 0.6 mm, Wet
KGBFR1212JX-16F
GBF32R100-005GL PR1535



GL Chipbreaker PR1535

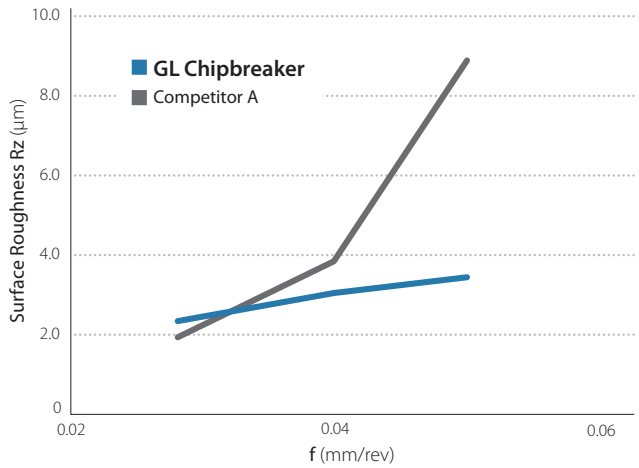
Competitor A

Competitor A's chips became entangled with workpiece due to unstable chip control.
GL Chipbreaker maintained stable chip control without entanglement.
(User evaluation)

2 Good Surface Finish

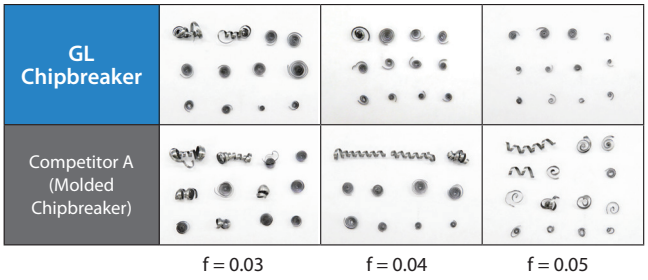
**GL Chipbreaker stable chip control at high feed rates,
Good surface finish of side wall.**

Surface Roughness Comparison (In-house Evaluation)



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

Comparison of Chip Control (In-house Evaluation)



3 Wide Lineup

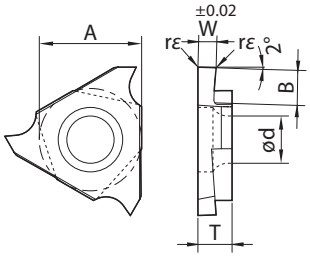
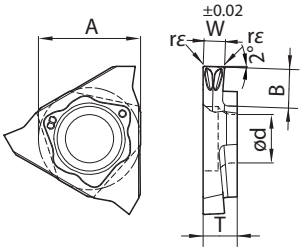
	Lineup	Features
Ground Chipbreaker	Groove Widths: 0.25mm~3.00mm Both Right and Left-hand inserts are stocked in all groove widths.	· Sharp cutting · Wide Lineup
GL Chipbreaker	Groove Widths: 0.75mm~3.00mm R-hand Only	· Good chip control · Stable machining

1st. Recommendation
Steel: MEGACOAT PR1215
Stainless Steel: MEGACOAT NANO PR1535
Non-ferrous Metals / Cast Iron GW15

4 External Sleeve Holder Added to Lineup

Applicable Insert

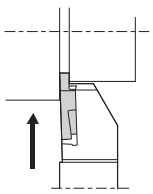
Description	A	T	ød
GBF32	9.525	3.18	4.4

Shape	Description		Dimensions (mm)			MEGACOAT	MEGACOAT NANO	Carbide
			W	B	rε	PR1215	PR1535	GW15
	GBF32 R/L	025-005	0.25	0.6	0.05	●	●	●
		030-005	0.30	0.8		●	●	●
		033-005	0.33			●	●	●
		043-005	0.43	1.0		●	●	●
		050-005	0.50	1.2		●	●	●
		053-005	0.53			●	●	●
		065-005	0.65			●	●	●
		075-005	0.75	2.0		●	●	●
		080-005	0.80			●	●	●
		095-005	0.95			●	●	●
		100-005	1.00			●	●	●
		110-005	1.10			●	●	●
		120-005	1.20			●	●	●
		125-010	1.25		0.1	●	●	●
		130-010	1.30			●	●	●
		140-010	1.40	2.7		●	●	●
		145-010	1.45			●	●	●
		150-010	1.50			●	●	●
		165-010	1.65			●	●	●
		170-010	1.70	3.0		●	●	●
		175-010	1.75			●	●	●
		200-010	2.00			●	●	●
		225-010	2.25			●	●	●
		250-010	2.50			●	●	●
		300-010	3.00			●	●	●
	GBF32R	075-005GL	0.75	2.0	0.05	R	R	
		095-005GL	0.95			R	R	
		100-005GL	1.00			R	R	
		150-010GL	1.50	2.7	0.10	R	R	
		200-010GL	2.00	3.0		R	R	
		300-010GL	3.00			R	R	

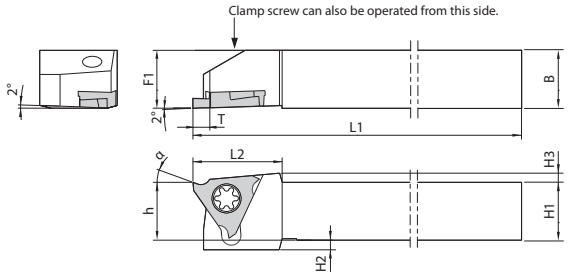
The maximum machining diameter is ø51 mm (Please check cautions on back cover)

● : Standard Stock
R : R-hand Only

KGBF-F (Without offset)



Right-hand shown



Right-hand (R) Insert for Right-hand (R) Toolholder. Left-hand (L) Insert for Left-hand (L) Toolholder

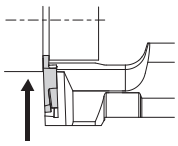
Toolholder Dimensions

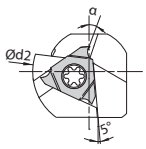
Description		Stock		Dimensions (mm)							Rake Angle	Spare Parts	
												Clamp Screw	Wrench
		R	L	H1 = h	H2	H3	B	L1	L2	T *1	α		
KGBF R/L	1010JX-16F	●	●	10	4	2.1	10	120	18.5	3	20°	SB-4070TRW	FT-8
	1212JX-16F	●	●	12	2		12						
	1616JX-16F	●	●	16	—		16						
	2020JX-16F	●	●	20	—		20						

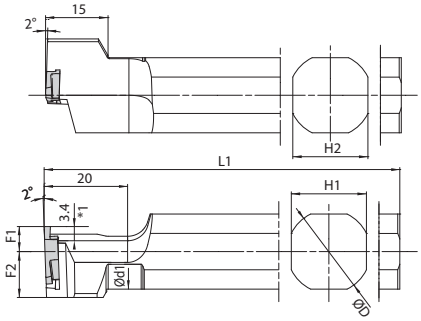
*1 Dimension T shows the distance from the toolholder to the cutting edge. Dimension B shows available grooving depth.
The maximum machining diameter is ø51 mm. (Please see cautions on back cover)

● : Standard Stock

S-KGBF (Sleeve Holder)







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

*1 Dimension B shows available grooving depth.

Toolholder Dimensions

Description	Stock	Dimensions (mm)							Rake Angle	Spare Parts	
										Clamp Screw	Wrench
		øD	L1	F1	F2	ød1	ød2	H1=H2	α		
S16F-KGBFL16	●	16	85	6	9	15	27	15	20°	SB-4070TRW	FT-8
S19G-KGBFL16	●	19.05	90		10.5	18		17			
S19K-KGBFL16	●		120								
S20G-KGBFL16	●	20	90		11	19		18			
S20K-KGBFL16	●		120								
S22K-KGBFL16	●	22				21		20			
S25.0H-KGBFL16	●	25	100	10	14	24	32	23			
S25K-KGBFL16	●	25.4	120								

● : Standard Stock

Recommended Cutting Conditions ★1st Recommendation ☆2nd Recommendation

GBF

Workpiece	Recommended Insert Grade (Cutting Speed Vc: m/min)			[1] Grooving Feed Rate (mm/rev) [2] Traversing Feed Rate (mm/rev) [3] Max DOC for Traversing (mm)			
	MEGACOAT	MEGACOAT NANO	Carbide				
	PR1215	PR1535	GW15	GBF32 R/L 025 – 053	GBF32 R/L 065 – 095	GBF32 R/L 100 – 145	GBF32 R/L 150 – 300
Carbon Steel	★ 80 – 180	☆ 70 – 160	—	[1] 0.01 – 0.05 [2] Not Recommended [3] Not Recommended	[1] 0.02 – 0.07 [2] Not Recommended [3] Not Recommended	[1] 0.03 – 0.08 [2] 0.03 – 0.06 [3] MAX. 0.2	[1] 0.03 – 0.08 [2] 0.03 – 0.06 [3] MAX. 0.2
Alloy Steel	★ 80 – 180	☆ 70 – 160	—	[1] 0.01 – 0.04 [2] Not Recommended [3] Not Recommended	[1] 0.02 – 0.06 [2] Not Recommended [3] Not Recommended	[1] 0.03 – 0.07 [2] 0.02 – 0.05 [3] MAX. 0.2	[1] 0.03 – 0.07 [2] 0.02 – 0.05 [3] MAX. 0.2
Stainless Steel	☆ 60 – 130	★ 50 – 120	—	[1] 0.01 – 0.04 [2] Not Recommended [3] Not Recommended	[1] 0.02 – 0.06 [2] Not Recommended [3] Not Recommended	[1] 0.03 – 0.07 [2] 0.02 – 0.05 [3] MAX. 0.2	[1] 0.03 – 0.07 [2] 0.02 – 0.05 [3] MAX. 0.2
Cast Iron	—	—	★ 60 – 100	[1] 0.01 – 0.05 [2] Not Recommended [3] Not Recommended	[1] 0.02 – 0.07 [2] Not Recommended [3] Not Recommended	[1] 0.03 – 0.08 [2] 0.03 – 0.06 [3] MAX. 0.2	[1] 0.03 – 0.08 [2] 0.03 – 0.06 [3] MAX. 0.2
Aluminum Alloy	—	—	★ 150 – 400	[1] 0.01 – 0.05 [2] Not Recommended [3] Not Recommended	[1] 0.02 – 0.07 [2] Not Recommended [3] Not Recommended	[1] 0.03 – 0.08 [2] 0.03 – 0.06 [3] MAX. 0.2	[1] 0.03 – 0.08 [2] 0.03 – 0.06 [3] MAX. 0.2
Brass	—	—	★ 150 – 300	[1] 0.01 – 0.04 [2] Not Recommended [3] Not Recommended	[1] 0.02 – 0.06 [2] Not Recommended [3] Not Recommended	[1] 0.03 – 0.07 [2] 0.02 – 0.05 [3] MAX. 0.2	[1] 0.03 – 0.07 [2] 0.02 – 0.05 [3] MAX. 0.2

GBF-GL

Workpiece	Recommended Insert Grade (Cutting Speed Vc: m/min)		[1] Grooving Feed Rate (mm/rev) [2] Traversing Feed Rate (mm/rev) [3] Max DOC for Traversing (mm)			
	MEGACOAT	MEGACOAT NANO				
	PR1215	PR1535	GBF32R 075 – 005GL	GBF32R 095 – 100-005GL	GBF32R 150 – 200-010GL	GBF32R 300 – 010GL
Carbon Steel	★ 80 – 180	☆ 70 – 160	[1] 0.02 – 0.07 [2] Not Recommended [3] Not Recommended	[1] 0.03 – 0.08 [2] 0.03 – 0.06 [3] MAX.0.2	[1] 0.03 – 0.08 [2] 0.03 – 0.06 [3] MAX.0.3	[1] 0.04 – 0.1 [2] 0.04 – 0.08 [3] MAX.0.5
Alloy Steel	★ 80 – 180	☆ 70 – 160	[1] 0.02 – 0.06 [2] Not Recommended [3] Not Recommended	[1] 0.03 – 0.07 [2] 0.03 – 0.06 [3] MAX.0.2	[1] 0.03 – 0.07 [2] 0.03 – 0.06 [3] MAX.0.3	[1] 0.04 – 0.09 [2] 0.04 – 0.08 [3] MAX.0.5
Stainless Steel	☆ 60 – 130	★ 50 – 120	[1] 0.02 – 0.06 [2] Not Recommended [3] Not Recommended	[1] 0.03 – 0.07 [2] 0.03 – 0.06 [3] MAX.0.2	[1] 0.03 – 0.07 [2] 0.03 – 0.06 [3] MAX.0.3	[1] 0.04 – 0.09 [2] 0.04 – 0.08 [3] MAX.0.5

Precautions

GBF and GBA Compatibility

1 GBF will fit KGBA/KGBAS holders
Caution: The maximum groove depth for KGBA/KGBAS holders is 2.5 mm

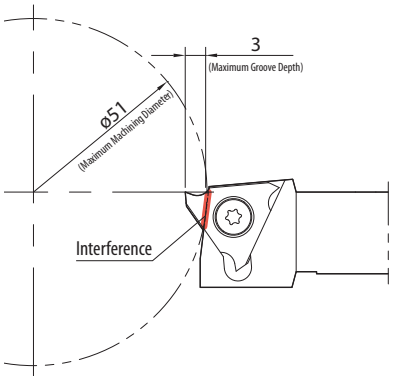
2 GBA inserts will also fit KGBF-F holders
Caution: The rake angle after installation in the toolholder is 11°

KGBF-F Holder with GBF Insert Maximum Machining Diameter

3 mm groove depth is available on workpiece diameters up to ø51mm

2.7 mm groove depth is available on workpiece diameters up to ø100mm,
2.5 mm groove depth is available on workpiece diameters up to ø200mm

The workpiece will interfere with the holder at maximum cutting diameters or larger.



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