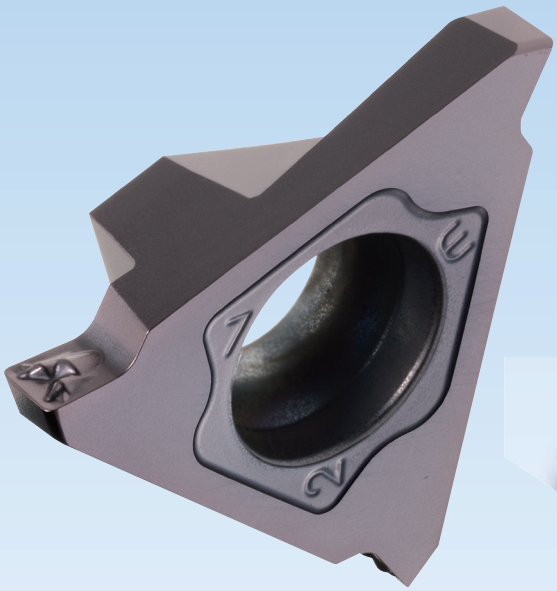
THE NEW VALUE FRONTIER

KYOCERA

Molded Chipbreaker for Grooving

GBA GM Chipbreaker

Improved chip control and excellent surface finish when grooving



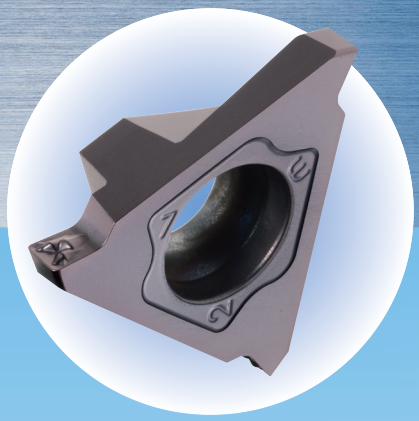
Stable machining

Prevents frequent machine stops in automated / unmanned production lines

ADVANCING PRODUCTIVITY

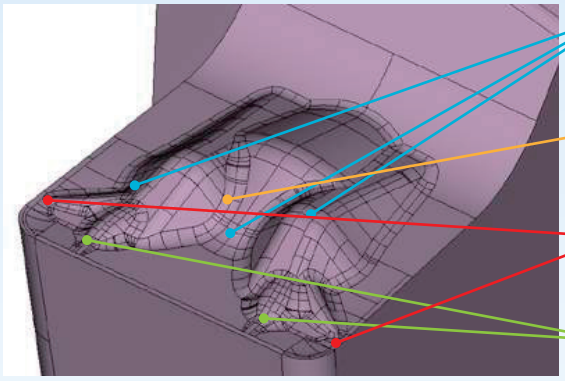
Molded Chipbreaker for Grooving

GBA GM Chipbreaker



- Good chip control for a wide range of applications
- Sharp cutting edge and MEGACOAT PR1215 provides excellent surface finish
- Stable machining on automated production lines (prevents frequent machine alarms)

Multi Bump Design



- Center bump and dent squeezes to better control the chips
- Helps modify chip shape
- Stable chip control during shouldering and chamfering
- Front bump: Stabilizes chip control at low feed rate

Smooth chip control due to optimum bump placement on the chipbreaker

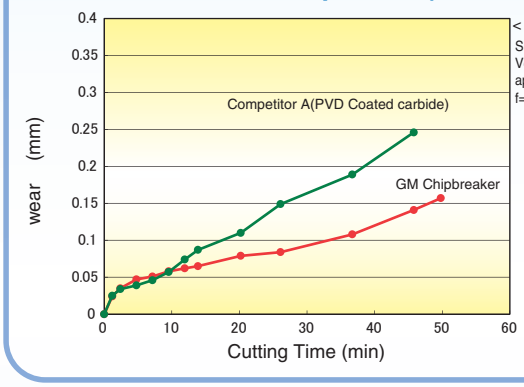
PVD Coated Carbide (MEGACOAT)

PR1215

MEGACOAT

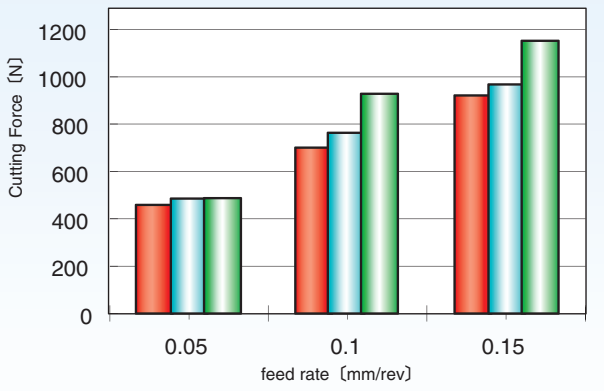
- Reliable, longer tool life grooving with micrograin carbide substrate and MEGACOAT technology
- Lower cutting costs during high-speed cutting with MEGACOAT's high hardness and oxidation resistance
- Good for shallow grooving of steel and stainless steel

Wear resistance comparison (External shouldering)



< Cutting Conditions>
SNCM439 ϕ198→ϕ48
Vc=150m/min,
ap=1.5mm(External shouldering),
f=0.1mm/rev, Wet

Cutting Force Comparison



GM chipbreaker
Conventional Molded Chipbreaker B
Conventional Ground Chipbreaker C

< Cutting Conditions>
SCr4200(ϕ400) Vc = 200m/min, ap = 3mm, f = 0.05~0.15mm/rev
Edge width2.5mm

Chip Control Comparison

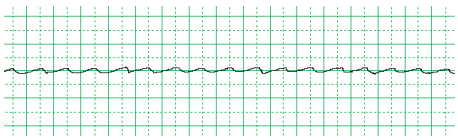
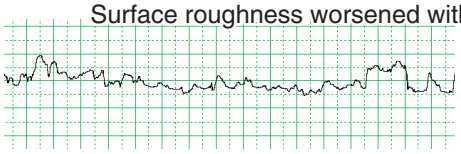
SCr420（ϕ40） Vc=200m/min Edge width 2.0mm Grooving

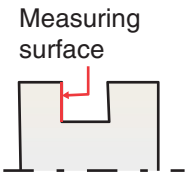
feed rate（mm/rev）	0.07	0.1	0.12
GM chipbreaker			
Conventional Molded Chipbreaker D			
Conventional Ground Chipbreaker E			

GM chipbreaker produced stable chip control from a low feed to high feed range.

Surface Roughness Comparison

SCr420（ϕ40） Vc=200m/min ap=3mm f=0.1mm/rev

Chipbreaker	Chip	Groove surface roughness (scale:2000×10)
GM chipbreaker		 0.51μm Ra 2.42μm Rz
Conventional Ground Chipbreaker F		Surface roughness worsened with chip contact  2.24μm Ra 14.09μm Rz

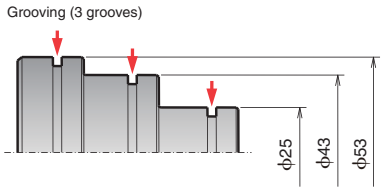


GM chipbreaker improved surface roughness compared with Conventional Ground Chipbreaker F.

Case Studies

SCM

- Automotive part
- Vc=120m／min
- f=0.08mm／rev
- Groove depth1～2.5mm
- wet
- GBA43R200-020GM (PR1215)



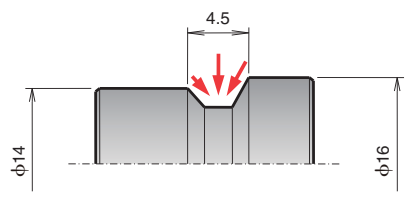
GM chipbreaker breaks up finer chips compared with competitors ground chipbreaker G.


GM chipbreaker


Competitor (ground chipbreaker) G

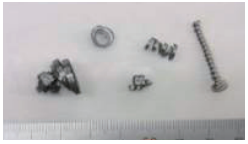
SCM415

- Automotive part
- Vc=90m／min
- f=0.11mm／rev
- Groove depth1.75mm
- wet
- GBA43R200-020GM (PR1215)

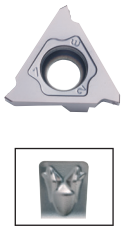


GM chipbreaker produced more stable chip control during grooving and taper process compared with conventional Moled chipbreaker H.


GM chipbreaker

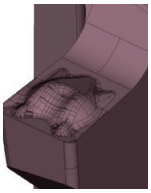
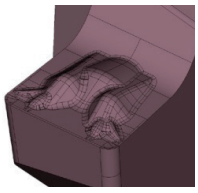

Conventional (Molded chipbreaker) H

Standard Stock Items

Shape (Right-hand Shown)	Description	Dimension (mm) A	T	ϕd	W	B	rε	MEGA COAT PR1215	Applicable Toolholder
	GBA43R/L 150-020GM	12.70	4.76	5.5	1.50	3.5	0.2	●	KGBAR/L…22-15 KGBASR/L…22-15
	175-020GM				1.75			●	
	185-020GM				1.85			●	
	200-020GM				2.00			●	
	230-020GM				2.30			●	
	250-030GM				2.50	5.0	0.3	●	KGBAR/L...22-25 KGBASR/L...22-25
	265-030GM				2.65			●	
	300-030GM				3.00			●	KGBAR/L...22-25T5 KGBASR/L...22-25T5
	330-030GM				3.30			●	
	350-030GM				3.50			●	KGBA R/L…22-35 KGBASR/L…22-35
	400-040GM				4.00		0.4	●	

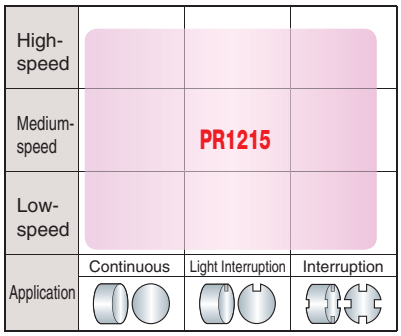
●:Standard Stock

Chipbreaker geometry

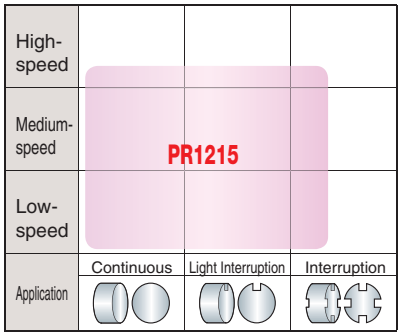
GBA43R/L150-020GM	GBA43R/L175-020GM ≀ GBA43R/L230-020GM	GBA43R/L250-030GM ≀ GBA43R/L400-040GM
		

Material Application Map

● Steel machining



● Stainless Steel machining

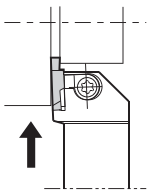


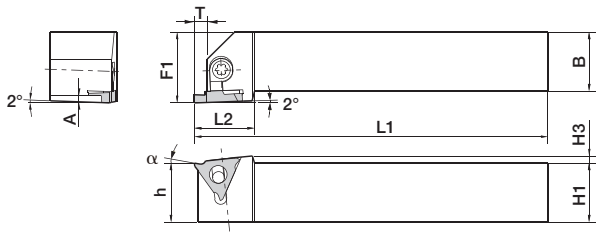
Recommended Cutting Conditions

Workpiece Material	Insert Grade (Cutting Speed: m/min) MEGACOAT PR1215	① Grooving f (mm/rev) ② Turning f (mm/rev) ③ Turning ap (mm) GBAR/L150-020GM	GBA43R/L175-020GM ≀ GBA43R/L230-020GM	GBA43R/L250-030GM ≀ GBA43R/L350-030GM	GBA43R/L400-040GM	Notes
Carbon Steel (SxxC etc)	80～220	①0.03～0.12 ②0.03～0.08 ③Max0.3	①0.03～0.12 ②0.03～0.09 ③Max0.3	①0.04～0.15 ②0.05～0.1 ③Max0.5	①0.05～0.15 ②0.05～0.1 ③Max0.8	Wet
Alloy Steel (SMC etc)	80～200	①0.03～0.12 ②0.03～0.08 ③Max0.3	①0.03～0.12 ②0.03～0.09 ③Max0.3	①0.04～0.15 ②0.05～0.1 ③Max0.5	①0.05～0.15 ②0.05～0.1 ③Max0.8	
Stainless Steel (SUS304 etc)	60～150	①0.03～0.1 ②0.03～0.08 ③Max0.3	①0.03～0.1 ②0.03～0.09 ③Max0.3	①0.04～0.12 ②0.05～0.1 ③Max0.5	①0.04～0.12 ②0.05～0.1 ③Max0.8	

※ Above cutting condition is for external grooving. For internal grooving, set both cutting speed and feed 20% lower .

KGBA Type

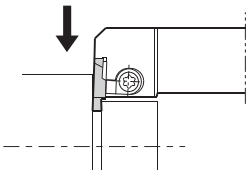


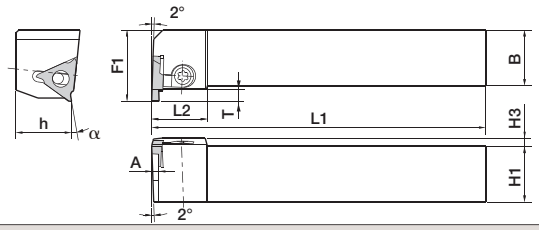


• Right-hand Shown

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

KGBAS Type





• Right-hand Shown

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

● Toolholder Dimensions

Description		Stock R	Stock L	Dimension(mm) H1=h	H3	B	L1	L2	F1	A	T			Spare Parts: Clamp Set	Spare Parts: Wrench	Applicable Insert
KGBA$^{R}_{L}$	2020K22-15	●	●	20	4.0	20	125	25.5	25	1.0	4.0			LGBA-22$^{R}_{L}$S	FT-15	GBA43$^{R}_{L}$
	2525M22-15	●	●	25		25	150		30							
	2020K22-25	●	●	20	4.0	20	125	25.5	25	2.0	4.5					
	2525M22-25	●	●	25		25	150		30							
	2020K22-25T5	●	●	20	4.0	20	125	25.5	25	2.0	5.5					
	2525M22-25T5	●	●	25		25	150		30							
	2020K22-35	●	●	20	4.0	20	125	25.5	25	3.0						
	2525M22-35	●	●	25		25	150		30							
	2020H22-15*	●		20	4.0	20	100	25.5	25	1.0	4.0					
	2020H22-25*	●								2.0	4.5					
	2020H22-35*	●								3.0	5.5					
KGBAS$^{R}_{L}$	2020K22-15	●	●	20	4.5	20	125	25	27	1.0	4.0			LGBA-22$^{L}_{R}$S	FT-15	GBA43$^{L}_{R}$
	2525M22-15	●	●	25	5.0	25	150		32							
	2020K22-25	●	●	20	4.5	20	125	25	27	2.0	4.5					
	2525M22-25	●	●	25	5.0	25	150		32							
	2020K22-25T5	●	●	20	4.5	20	125	25	27	2.0	5.5					
	2525M22-25T5	●	●	25	5.0	25	150		32							
	2020K22-35	●	●	20	4.5	20	125	25	27	3.0						
	2525M22-35	●	●	25	5.0	25	150		32							

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

●:Standard Stock

＊represents short shank type

・Clamp Set : KGBAR/L…LGBA-○RS for Right-hand Toolholder and LGBA-○LS for Left-hand Toolholder
KGBASR/L…LGBA-○LS for Right-hand Toolholder and LGBA-○RS for Left-hand Toolholder

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

α	Insert
10°	GBA43$^{R}_{L}$150-020GM
15°	GBA43$^{R}_{L}$175-020GM ⟨ GBA43$^{R}_{L}$265-030GM
12°	GBA43$^{R}_{L}$300-030GM ⟨ GBA43$^{R}_{L}$400-040GM

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

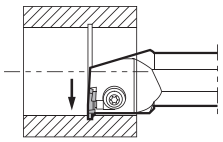
● Actual Groove Depth after Installment of GM Chipbreaker

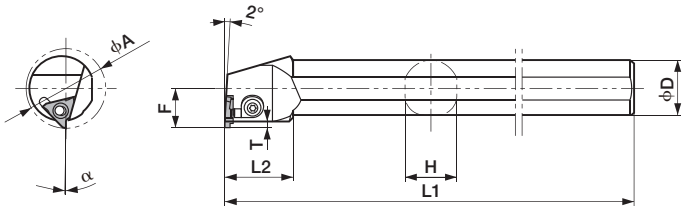
Toolholder Dimensions	Max. Groove Depth
KGBA$^{R}_{L}$＊＊＊＊＊22-15 KGBAS$^{R}_{L}$＊＊＊＊＊22-15	3.5
KGBA$^{R}_{L}$＊＊＊＊＊22-25 KGBAS$^{R}_{L}$＊＊＊＊＊22-25	4.0
KGBA$^{R}_{L}$＊＊＊＊＊22-25T5 KGBAS$^{R}_{L}$＊＊＊＊＊22-25T5	5.0
KGBA$^{R}_{L}$＊＊＊＊＊22-35 KGBAS$^{R}_{L}$＊＊＊＊＊22-35	5.0

■External Grooving Toolholders KGBA Short Shank is available

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

KIGBA Type

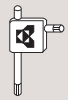




● Right-hand Shown

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

● Toolholder Dimensions

Description	Stock		Min.Cutting Dia.	Dimension(mm)									Spare Parts		Applicable Insert
													Clamp Set	Wrench	
	R	L	ϕA	ϕD	H	L1	L2	F	T						
KIGBA$^{R}_{L}$ 4032-22	●	●	40	32	30	250	30	23.0	3.0				**LGBA-22$^{L}_{R}$S**	**FT-15**	**GBA43$^{L}_{R}$**

●:Standard Stock

1) Dimension T Shows the distance from the Toolholder to the cutting edge.
Available Groove Depth for KIGBAR/L4032-22 with GBA43R/L○○○-○○○GM is 2.8mm.
2) Clamp Set : LGBA-□ LS for Right-hand Toolholder and LGBA-□RS for Left-hand Toolholder.

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

α	Insert
+1°	GBA43$^{R}_{L}$150-020GM
+6°	GBA43$^{R}_{L}$175-020GM ≀ GBA43$^{R}_{L}$265-030GM
+3°	GBA43$^{R}_{L}$300-030GM ≀ GBA43$^{R}_{L}$400-040GM

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