

External & Internal Shallow Grooving Tools

# GBA

New Insert Grades PR20 Series



New insert grades provide smooth chip control and excellent surface finish

New Insert grades PR20 series  
provide longer tool life

PR2015 : for Steel and Cast iron

PR2025 : for Steel and Stainless steel

Excellent chip control with GM chipbreaker

**NEW** PR20 series  
For Steel, Stainless steel and Cast iron



External & Internal Shallow Grooving Tools

# GBA

New generation insert grades for Steel,  
Stainless steel and Cast iron  
Excellent chip control and superior surface finish



**1** New grades PR20 series for general purpose  
MEGACOAT NANO EX coating technology provides long tool life

New grades for Grooving and Cut-off solutions



## PR20 series

The newly developed "MEGACOAT NANO EX" is a PVD coating specialized for Grooving and Cut-off machining

Multi-layering of high content aluminum nano layers

Stable high-temperature hardness with excellent wear and oxidation resistance

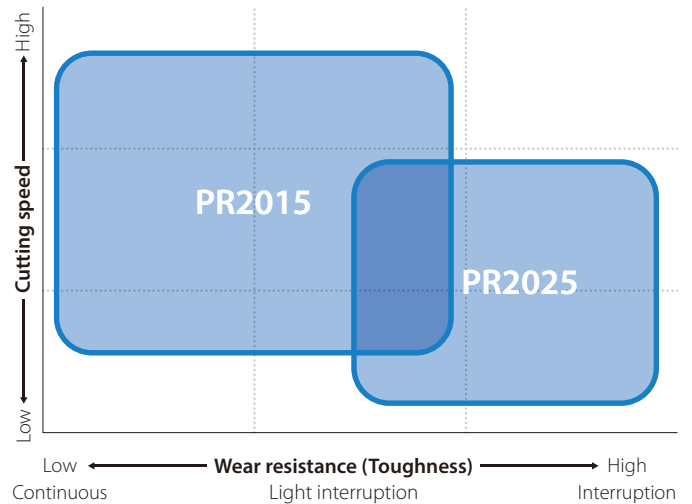


### PR2015

1st recommendation for steel and cast iron  
Excellent balance of hardness, toughness and versatility

### PR2025

Stability oriented for steel  
1st recommendation for stainless steel  
Excellent fracture resistance and high stability for interrupted machining



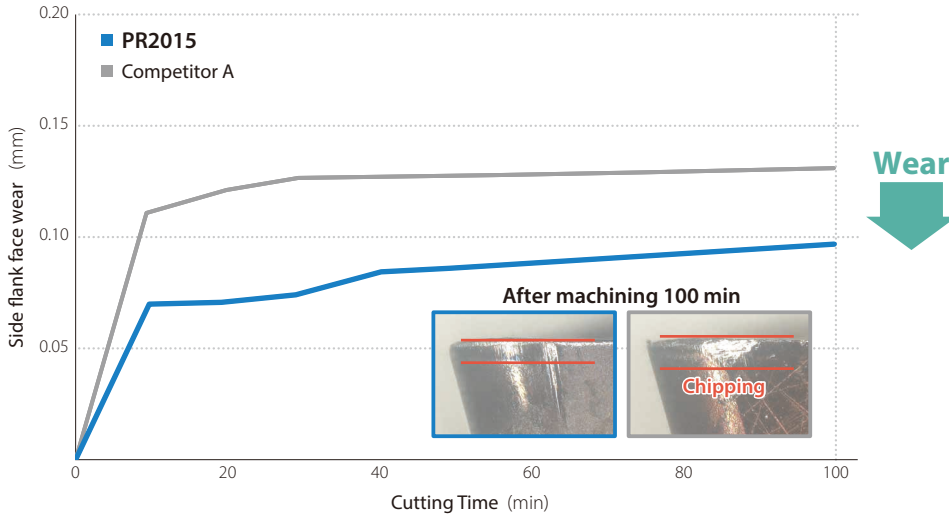
Workpiece	P Steel					M Stainless steel					K Cast iron				
	01	10	20	30	40	01	10	20	30	40	01	10	20	30	40
ISO															
Lineup	General purpose/1st recommendation <b>PR2015</b>					1st recommendation <b>PR2025</b>					1st recommendation <b>PR2015</b>				
	Stability oriented <b>PR2025</b>														

# Excellent wear and fracture resistance for long tool life and good surface finish

Delivers superior wear resistance and fracture resistance

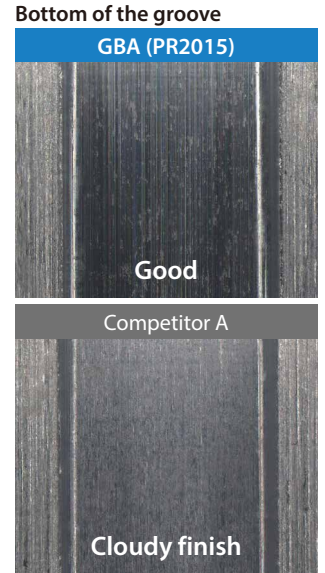
Good surface finish

**Wear resistance comparison** (Internal evaluation)



Cutting conditions : Vc = 200 m/min, ae = 1.5 mm (shouldering), f = 0.1 mm/rev, GBA43R300-030GM, Workpiece : S45C

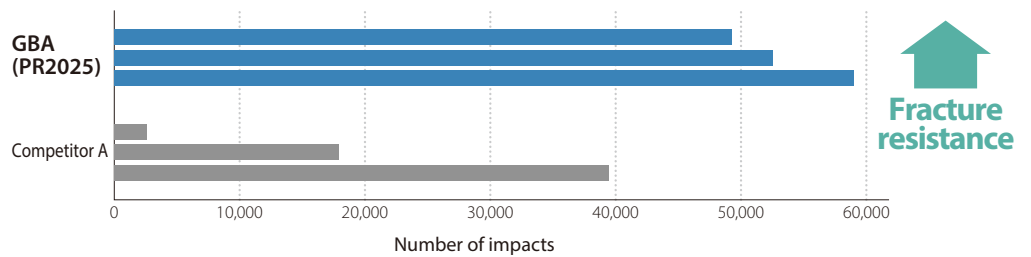
**Surface finish comparison** (Internal evaluation)



Cutting conditions : Vc = 200 m/min  
ae = 1.5 mm (grooving), f = 0.1 mm/rev  
GBA43R300-030GM, Workpiece : SCM420

Excellent fracture resistance and high stability for interrupted machining

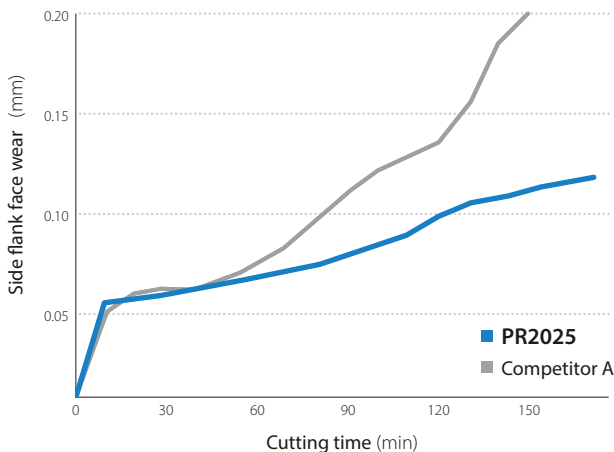
**Fracture resistance comparison** (Internal evaluation)



Cutting conditions : Vc = 150 m/min, ae = 1.5 mm (shouldering), f = 0.15 mm/rev, GBA43R300-030GM, Workpiece : SCM440 (4 Grooves in Workpiece)

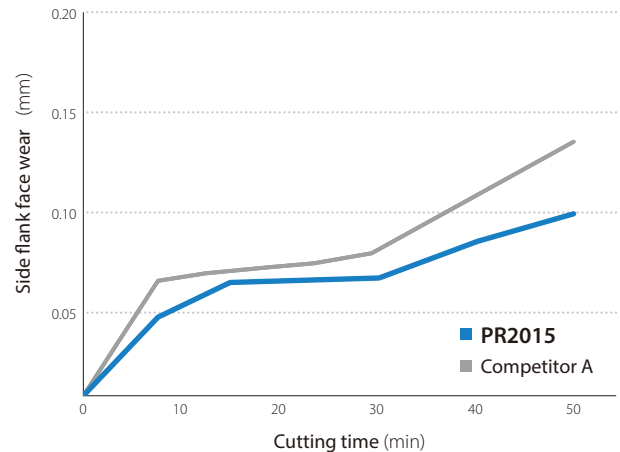
## Long tool life for stainless steel and cast iron

**SUS304** Wear resistance comparison (Internal evaluation)



Cutting conditions : Vc = 150 m/min, ae = 1.5 mm (shouldering), f = 0.1 mm/rev, GBA43R300-030GM

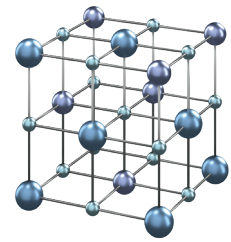
**FCD450** Wear resistance comparison (Internal evaluation)



Cutting conditions : Vc = 200 m/min, ae = 1.5 mm (shouldering), f = 0.1 mm/rev, GBA43R300-030GM

2

## New coating MEGACOAT NANO EX for grooving and cut-off machining Long tool life and high stability with excellent high-temperature hardness



Achieve long tool life and high stability with the combination of

**High content aluminum nano coating layer**

### -New coating for grooving launched-

#### Challenges

Since most of the grooving is continuous machining, the wear progress of the insert is rapid.

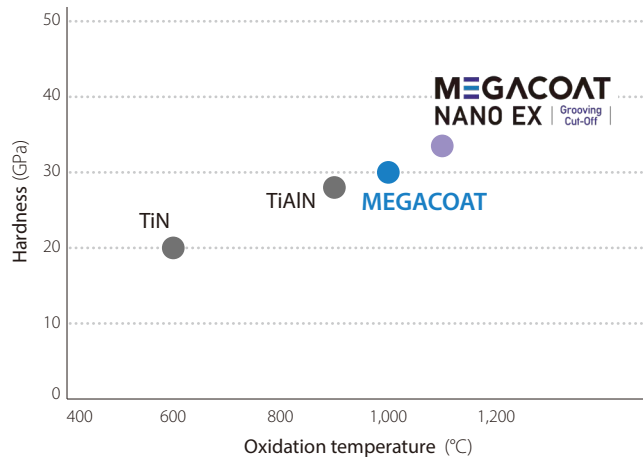
Tool life is shortened due to deterioration of surface finish, machining accuracy, burr, etc.

#### SOLUTION

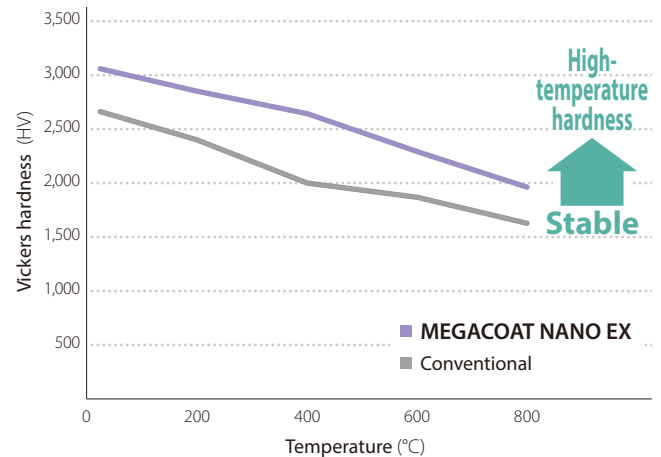
MEGACOAT NANO EX is a special nano coating layer with a high aluminum content developed by Kyocera's unique technology

Solve the machining challenges with excellent wear resistance, high-temperature hardness and plastic deformation resistance

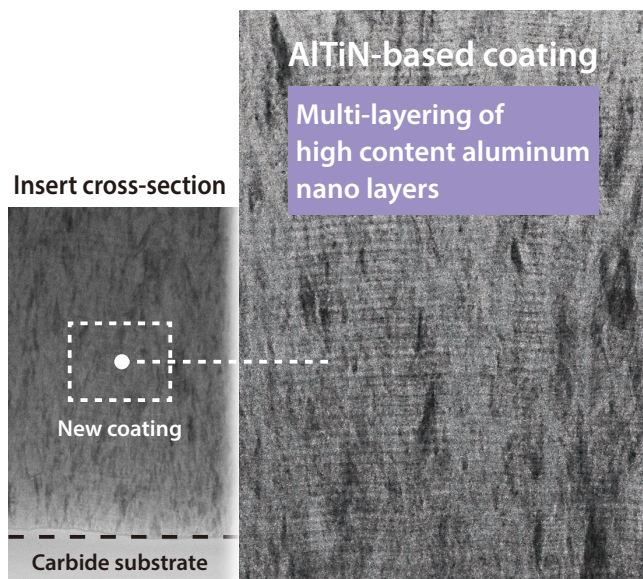
Coating characteristics (Internal evaluation)



Comparison of vickers hardness transition with temperature (Internal evaluation)



### Special nano coating layer



**Long tool life** Excellent wear and fracture resistance

Multi-layering of high content aluminum nano layers added with high melting point material having different concentration

Patent applied  
Unique Technology

Suppresses hexagonal crystal precipitation and achieves excellent oxidation resistance

**Stable machining** High coating toughness

Crystal grain refinement

Optimized internal stress suppresses crack growth

## Unique Technology

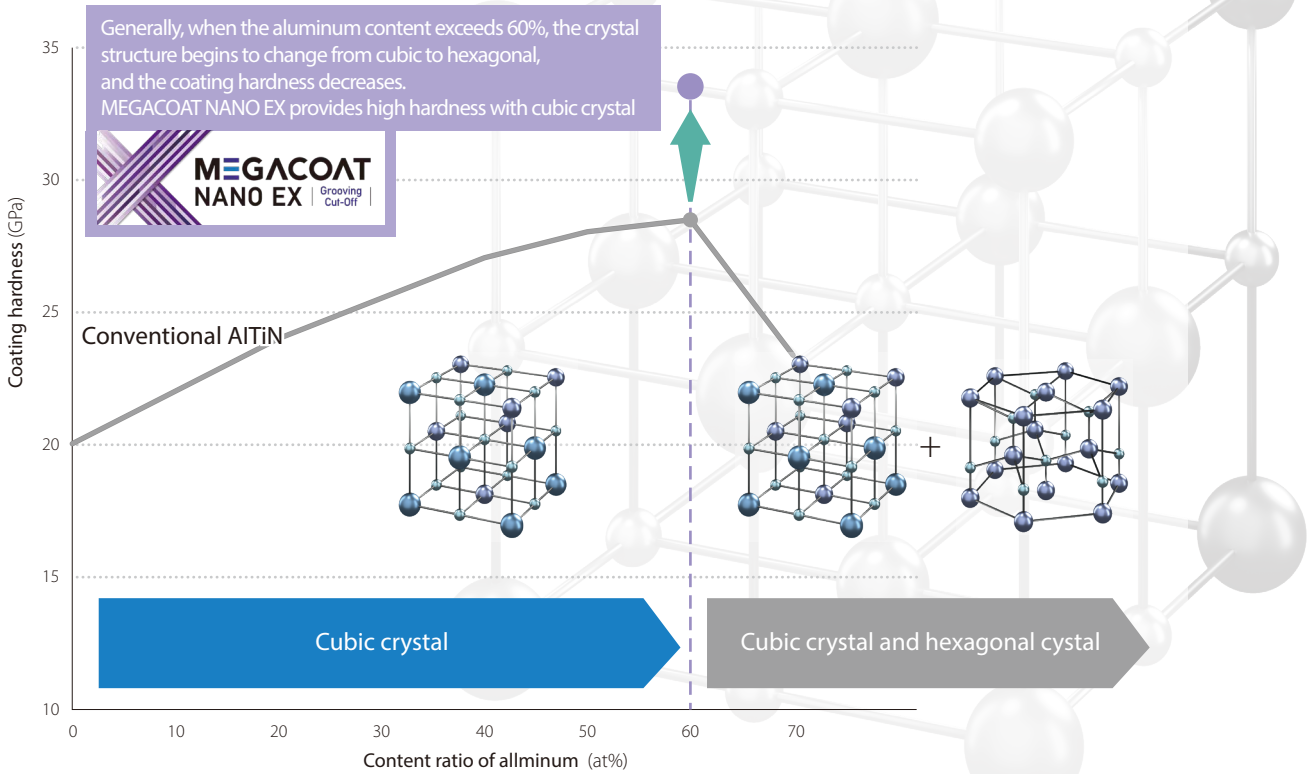
Proprietary coating process

Improve high aluminum-containing nano layers performance

Established a proprietary coating process with the addition of high melting point materials **Patent applied**

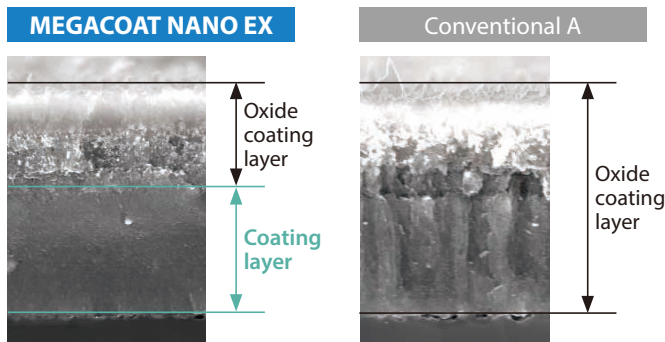
Maintains a cubic crystal structure to maximize the properties of aluminum (Al)

### Correlation between aluminum content and coating hardness (Internal research)



### Oxidation progression comparison (Internal evaluation)

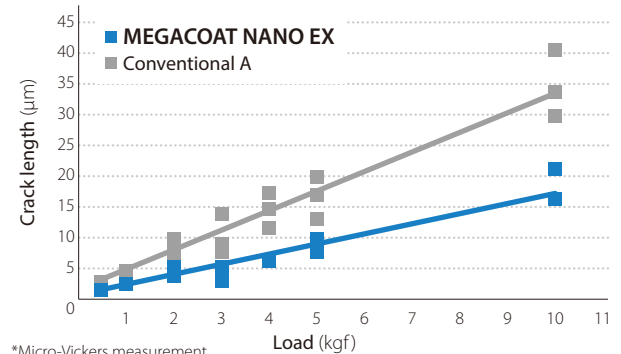
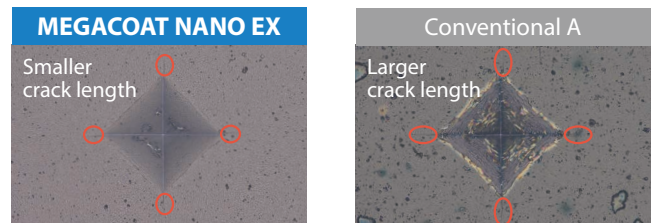
Suppresses oxidation progression with excellent oxidation resistance



\*Section after holding at 1,100 degrees for 5 minutes in air

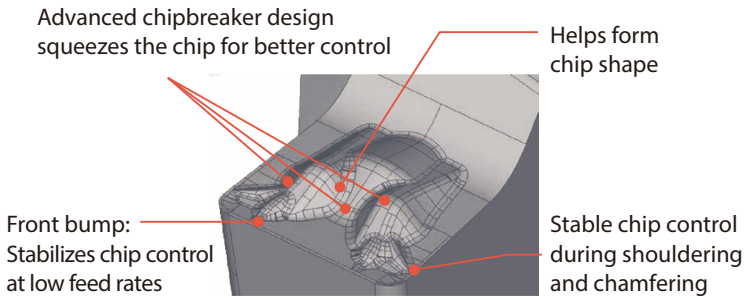
### Coating layer toughness evaluation (Internal evaluation)

Excellent coating toughness with small crack length



### 3 Smooth chip control with GM chipbreaker

#### Multi-bump design



Chip control comparison (Internal evaluation)

GM chipbreaker				
Conventional molded chipbreaker				
	f (mm/rev)	0.07	0.1	0.12

Cutting conditions : Vc = 200 m/min, Edge width 2.0 mm, Grooving  
Workpiece : SCr420 (ø40)

### 4 Great for high pressure coolant Provides excellent chip control and long tool life

Great for high pressure coolant, toolholder for shallow grooving

# KGBA-JCT

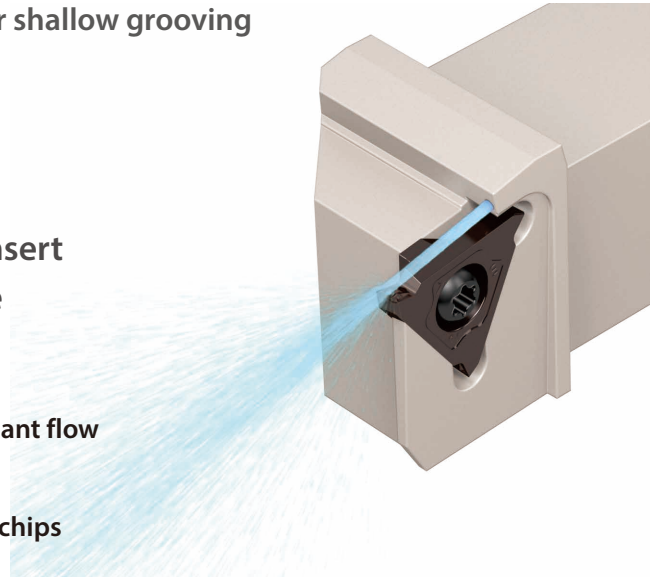
KGBA-JCT can direct coolant closer to the cutting edge from the top of the insert  
Excellent chip control and longer tool life

#### Coolant hole

Coolant is discharged to the cutting edge  
Prevents coolant stream spreading and slowing coolant flow

#### Coolant direction

Sufficient coolant between the chipbreaker and the chips  
Stable chip curls and sufficient cooling of the insert



Chip control comparison (Internal evaluation)

Alloy steel (SCr420)

Internal coolant	7.0MPa			
	2.0MPa			
	0.5MPa (Normal pressure)			
External coolant	0.5MPa (Normal pressure)			
	f (mm/rev)	0.05	0.07	0.10

Stainless steel (SUS304)

Internal coolant	7.0MPa			
	2.0MPa			
	0.5MPa (Normal pressure)			
External coolant	0.5MPa (Normal pressure)			
	f (mm/rev)	0.05	0.07	0.10

Cutting conditions : Vc = 150 m/min (Alloy steel) / 100 m/min (Stainless steel), f = 0.05~0.1 mm/rev, Groove depth = 2 mm, Wet  
KGBAR2525K22-15JCT, GBA43R200-020 (PR1215)

# Standard stock description

## Ground chipbreaker



### Classification of usage

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

Ground chipbreaker	Material		MEGACOAT							Cermets		Applicable toolholders	
	P	M	PR2015	PR2025	PR1215	PR1625	PV7040	TC40N	TN90	KW10			
	Carbon steel / Alloy steel	Stainless steel	Cast iron	Non-ferrous material	Titanium alloy	Hardened material							
	P	Carbon steel / Alloy steel	●	●	○	○	○	○					
	M	Stainless steel	●	●	○	○	○	○					
	K	Cast iron	●		○	○					○		
	N	Non-ferrous material									●		
	S	Titanium alloy									●		
	H	Hardened material									●		
Description	Dimension (mm)			MEGACOAT NANO EX		MEGACOAT	MEGACOAT NANO	MEGACOAT Cermet	Cermets		Carbide	Applicable toolholders	
	CW	CDX	RE	PR2015	PR2025	PR1215	PR1625	PV7040	TC40N	TN90	KW10		
	Edge width (W)	Available grooving depth	Corner-R										
GBA32 <sup>R/L</sup>	033-005 <sup>*1</sup>	0.33	0.8	●	●							1	
	050-005 <sup>*2</sup>	0.50	1.0						R		●		
	050-005		1.2	●	●								
	075-005	0.75		●	●	●	●	●		R	●		
	095-005	0.95		●	●	●	●	●		R	●		
	100-005	1.00		●	●	●	●	●			●		
	110-005	1.10	2.0	●	●	●	●	●					
	120-005	1.20		●	●	●	●	●					
	125-020	1.25		●	●	●	●	●			●		
	130-020	1.30		●	●	●	●	●					
	140-020	1.40	2.5	●	●	●	●	●					
	145-020	1.45	2.0							R	●		
			2.5	●	●	●	●	●					
	150-020	1.50	2.0					●			●		
			2.5	●	●	●	●	●					
	160-020	1.60	2.5	●	●	●	●	●					
	170-020	1.70		●	●	●	●	●					
	175-020	1.75	2.0								●		
	200-020	2.00		●	●	●	●	●			●		
	225-020	2.25	2.5	●	●	●	●	●					
250-020	2.50		●	●	●	●	●			●			
300-020	3.00		●	●	●	●	●						
GBA43 <sup>R/L</sup>	125-010	1.25	2.0	●	●	●	●	●				2	
	125-020			●	●	●	●	●					
	140-020	1.40	3.5	●	●	●	●	●					
	145-020	1.45	2.0								●		
				●	●	●	●	●					
	150-010	1.50	0.1	●	●	●	●	●					
	150-020			●	●	●	●	●					
	170-020	1.70		●	●	●	●	●					
	175-020	1.75		●	●	●	●	●		R	●		
	185-020	1.85	3.5	●	●	●	●	●			R		
	195-020	1.95		●	●	●	●	●					
	200-010	2.00	0.1	●	●	●	●	●					
	200-020			●	●	●	●	●			●		
	225-020	2.25	0.2	●	●	●	●	●					
	230-020	2.30		●	●	●	●	●			●		
	250-010	2.50	0.1	●	●	●	●	●					
				●	●	●	●	●					
	250-030	2.50	0.3					●			●		
				●	●	●	●	●					
	265-030	2.65	0.3							R	●		
			●	●	●	●	●						
280-030	2.80	0.3							R	●			
			●	●	●	●	●						
300-010	3.00	0.1	●	●	●	●	●						
			●	●	●	●	●						
300-030	3.00	0.3					●			●			
			●	●	●	●	●						
325-030	3.25	0.3	R	R		R							
			●	●	●	●	●						
330-030	3.30	0.3							R	●			
			●	●	●	●	●						
350-010	3.50	0.1	●	●	●	●	●						
350-030	3.50	0.3	●	●	●	●	●			●			
400-010	4.00	0.1	●	●	●	●	●						
400-040	4.00	0.4	●	●	●	●	●			●			
430-040	4.30		●	●	●	●	●		R	R			
450-040	4.50		●	●	●	●	●		R	R			
480-040	4.80		●	●	●	●	●		R	R			

Edge width tolerance : ±0.025 (\*1 and \*2 are as follows) ● : Standard stock R : R-hand only in stock  
 \*1. Edge width tolerance for GBA32 <sup>R/L</sup> 033-005 : 0.33±0.025 \*2. Edge width tolerance for GBA32 <sup>R/L</sup> 050-005 : 0.50±0.025

Ground chipbreaker (Sharp cutting edge)	Material		Dimension (mm)			Cermets	Applicable toolholders
	P	M	CW	CDX	RE		
	Carbon steel / Alloy steel	Stainless steel	Edge width (W)	Available grooving depth	Corner-R		
	P	Carbon steel / Alloy steel	●				
	M	Stainless steel	●				
	K	Cast iron					
	N	Non-ferrous material					
	S	Titanium alloy					
	H	Hardened material					
Description	Dimension (mm)			Cermets	Applicable toolholders		
	CW	CDX	RE				
	Edge width (W)	Available grooving depth	Corner-R				
GBA32 <sup>R/L</sup>	050-005F <sup>*1</sup>	0.50	1.0	●	1		
	075-005F	0.75		●			
	095-005F	0.95		0.05		●	
	100-005F	1.00		●			
	125-020F	1.25		2.0		●	
	145-020F	1.45		●			
	150-020F	1.50		0.2		●	
	175-020F	1.75		●			
	200-020F	2.00	2.5	●			
	250-020F	2.50		●			
GBA43 <sup>R/L</sup>	125-020F	1.25	2.0	●	2		
	145-020F	1.45		●			
	150-020F	1.50		0.2		●	
	175-020F	1.75		●			
	185-020F	1.85	3.5	●			
	200-020F	2.00		4.0		0.3	
	230-020F	2.30		●			
	250-030F	2.50		4.0		0.3	
	265-030F	2.65		●			
	280-030F	2.80		4.0		0.3	
300-030F	3.00		5.0	0.4			
330-030F	3.30		●				
350-030F	3.50		●				
400-040F	4.00		●				
430-040F	4.30		R				
450-040F	4.50		R				
480-040F	4.80		R				

Edge width tolerance : ±0.025 (\*1 is as follows)  
 \*1. Edge width tolerance for GBA32 <sup>R/L</sup> 050-005F : 0.50±0.025  
 ● : Standard stock R : R-hand only in stock

### Insert design

Shape (Right-hand)	Type	IC	S	D1
Ground chipbreaker (Sharp cutting edge)	GBA32...	9.525	3.18	4.4
	GBA43...	12.70	4.76	5.5
	GBA43 <sup>R/L</sup> 480	12.70	5.00	5.5

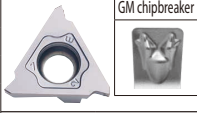
CDX shows available grooving depth.

### Applicable toolholder description

- 1 : KGBA <sup>R/L</sup>...16 (JCT), KGBAS <sup>L/R</sup>...16  
 KIGBA <sup>L/R</sup>...16 (Internal)
- 2 : KGBA <sup>R/L</sup>...22-15 (JCT), KGBAS <sup>L/R</sup>...22-15  
 KIGBA <sup>L/R</sup>...22 (Internal)
- 3 : KGBA <sup>R/L</sup>...22-25T5/ 22-25JCT  
 KGBAS <sup>L/R</sup>...22-25T5, KIGBA <sup>L/R</sup>...22 (Internal)
- 4 : KGBA <sup>R/L</sup>...22-25(T5)/ 22-25JCT  
 KGBAS <sup>L/R</sup>...22-25(T5), KIGBA <sup>L/R</sup>...22 (Internal)
- 5 : KGBA <sup>R/L</sup>...22-35 (JCT), KGBAS <sup>L/R</sup>...22-35  
 KIGBA <sup>L/R</sup>...22 (Internal)

# Standard stock

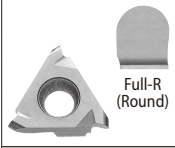
## Molded chipbreaker

	P	Carbon steel / Alloy steel	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	M	Stainless steel	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	K	Cast iron	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	N	Non-ferrous material																		
	S	Titanium alloy																		
	H	Hardened material																		
Description	Dimension (mm)			MEGACOAT NANO EX		MEGACOAT NANO		Cermet		Applicable toolholders										
	CW	CDX	RE	PR2015	PR2025	PR1215	PR1625	TN620												
	Edge width (W)	Available grooving depth	Corner-R																	
GBA43 <sup>R/L</sup>	140-010GM	1.40	3.5	0.1	●	●	●	●	●											
	150-020GM	1.50			●	●	●	●	●											
	175-020GM	1.75			●	●	●	●	●											
	185-020GM	1.85			●	●	●	●	●											
	200-020GM	2.00			●	●	●	●	●											
	230-020GM	2.30			●	●	●	●	●											
	250-030GM	2.50	5.0	0.3	●	●	●	●	●											
	265-030GM	2.65			●	●	●	●	●											
	300-030GM	3.00			●	●	●	●	●											
	330-030GM	3.30			●	●	●	●	●											
	350-030GM	3.50			●	●	●	●	●											
	400-040GM	4.00			●	●	●	●	●											
			0.4	●	●	●	●	●												

Edge width tolerance : ±0.025

● : Standard stock

## Full-R

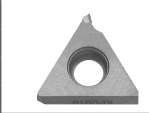
	P	Carbon steel / Alloy steel	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○			
	M	Stainless steel	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○			
	K	Cast iron	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○			
	N	Non-ferrous material																					
	S	Titanium alloy																					
	H	Hardened material																					
Description	Dimension (mm)			MEGACOAT NANO EX		MEGACOAT NANO		Cermet		Applicable toolholders													
	CW	CDX	RE	PR2015	PR2025	PR1215	PR1625	PV7040	TN620	TN90	KW10												
	Edge width (W)	Available grooving depth	Corner-R																				
GBA32R	200-100R	2.00	2.5	1.00	R	R	R	R															
	300-150R	3.00			R	R	R	R															
	GBA43 <sup>R/L</sup>	100-050R	1.00	3.5	2.0	0.50	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
		150-075R	1.50				●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
		200-100R	2.00				●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
		250-125R	2.50				●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
		300-150R	3.00				●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
		400-200R	4.00				●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	GBA43 <sup>R/L</sup>	100-050RF	1.00	4.0	2.0	0.50																	
		150-075RF	1.50																				
		200-100RF	2.00																				
		250-125RF	2.50																				
300-150RF		3.00																					
400-200RF	4.00																						

GBA43 <sup>R/L</sup> ... RF : Sharp edge type

● : Standard stock R : R-hand only in stock

Edge width tolerance : ±0.025

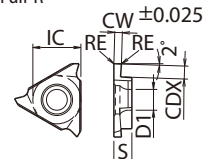
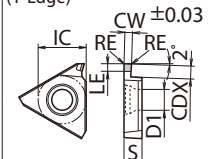
## CBN / PCD

	P	Carbon steel / Alloy steel																			
	M	Stainless steel																			
	K	Cast iron																			
	N	Non-ferrous material																			
	S	Titanium alloy																			
	H	Hardened material	○	●																	
Description	Dimension (mm)			CBN		PCD		Applicable toolholders													
	CW	CDX	RE	KBN510	KBN525	KPD001	KPD010														
	Edge width (W)	Available grooving depth	Corner-R																		
GBA32R	125-010	1.25	2.0	0.1				R	R												
	150-010	1.50						R	R												
	200-010	2.00						R													
GBA43 <sup>R/L</sup>	125-010	1.25	2.0	0.1						●											
	125-020					R	●														
	150-010	1.50		0.1						●	●										
	150-020					●	●														
	200-010	2.00		0.1							●										
	200-020					●	●														
250-010	2.50	0.1							●	●											
250-020				R	●																
300-010	3.00	0.1								●	R										
300-020				R	●																

Edge width tolerance : ±0.03

● : Standard stock R : R-hand only in stock

## Insert design

Shape (Right-hand)	Type	IC	S	D1
 GM chipbreaker Full-R CW ±0.025	GBA32...	9.525	3.18	4.4
 CBN / PCD (1-Edge) CW ±0.03				
GBA32 LE = 1.7 GBA43 LE = 1.9	GBA43...	12.70	4.76	5.5

CDX shows available grooving depth.

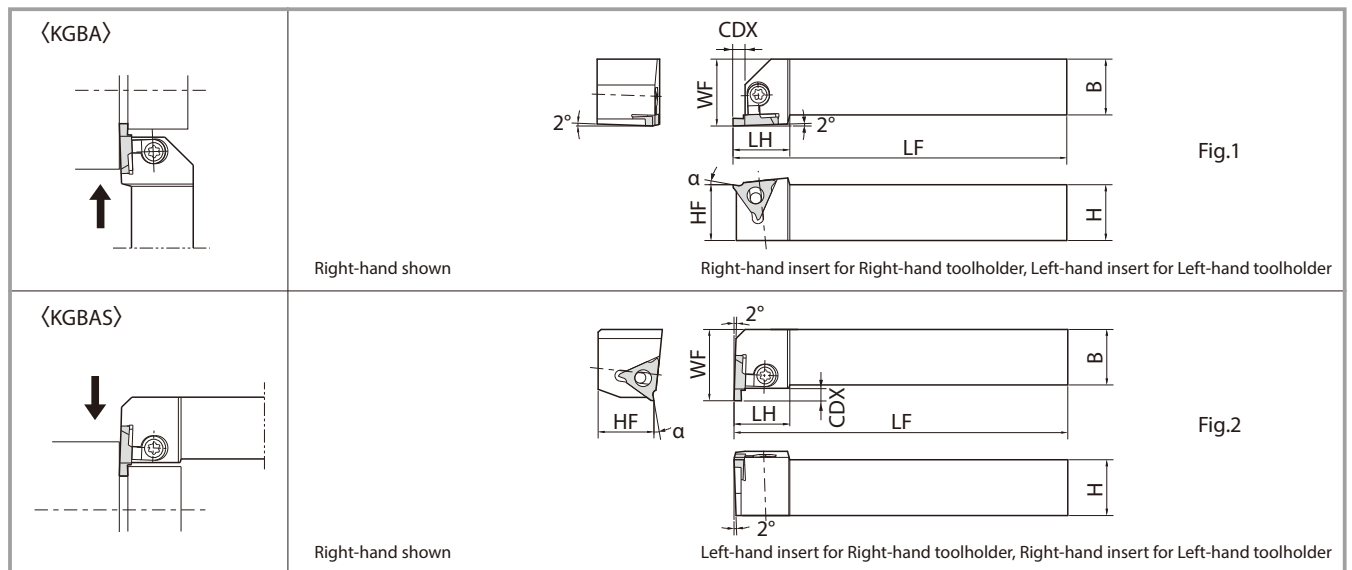
- Applicable toolholder description**
- 1 : KGBA <sup>R/L</sup>...16 (JCT), KGBAS <sup>L/R</sup>...16  
KIGBA <sup>L/R</sup>...16 (Internal)
  - 2 : KGBA <sup>R/L</sup>...22-15 (JCT), KGBAS <sup>L/R</sup>...22-15  
KIGBA <sup>L/R</sup>...22 (Internal)
  - 3 : KGBA <sup>R/L</sup>...22-25T5/ 22-25JCT  
KGBAS <sup>L/R</sup>...22-25T5, KIGBA <sup>L/R</sup>...22 (Internal)
  - 4 : KGBA <sup>R/L</sup>...22-25(T5)/ 22-25JCT  
KGBAS <sup>L/R</sup>...22-25(T5), KIGBA <sup>L/R</sup>...22 (Internal)
  - 5 : KGBA <sup>R/L</sup>...22-35 (JCT), KGBAS <sup>L/R</sup>...22-35  
KIGBA <sup>L/R</sup>...22 (Internal)

### Classification of usage

- : Light Interruption /1st Choice
- : Continuous /1st Choice
- : Light Interruption /2nd Choice
- : Continuous /2nd Choice



## KGBA / KGBAS (External grooving)



### Toolholder dimensions

Description	Availability		Dimension (mm)								Shape	Spare parts		Applicable inserts
	R	L	CDX	H	B	LH	HF	LF	WF	Clamp set		Wrench		
KGBA <sup>R/L</sup> 2020K-16 2525M-16 2020K22-15 2525M22-15 2020K22-25 2525M22-25 2020K22-25T5 2525M22-25T5 2020K22-35 2525M22-35	●	●	2.5	20	20	24	20	125	25	Fig.1	LGBA-16 <sup>R/LS</sup>	FT-15	GBA32 <sup>R/L</sup> type	
	●	●	4.0	20	20	25.5	20	125	25					
	●	●	4.5	20	20	25.5	20	125	25					
	●	●	5.5	20	20	25.5	20	125	25					
	●	●	5.5	25	25	25	25	150	30					
	●	●	5.5	20	20	25.5	20	125	25					
	●	●	5.5	25	25	25	25	150	30					
	●	●	5.5	25	25	25	25	150	30					
KGBA <sup>R/L</sup> Short shank 2020H22-15* 2020H22-25* 2020H22-35*	●		4.0	20	20	25.5	20	100	25	Fig.1	LGBA-16 <sup>R/LS</sup>	FT-15	GBA32 <sup>R/L</sup> type	
	●		4.5											
	●		5.5											
KGBAS <sup>R/L</sup> 2020K-16 2525M-16 2020K22-15 2525M22-15 2020K22-25 2525M22-25 2020K22-25T5 2525M22-25T5 2020K22-35 2525M22-35	●	●	2.5	20	20	25	20	125	25	Fig.2	LGBA-16 <sup>L/RS</sup>	FT-15	GBA32 <sup>L/R</sup> type	
	●	●	4.0	20	20	25	20	125	27					
	●	●	4.5	20	20	25	20	125	27					
	●	●	5.5	20	20	25	20	125	27					
	●	●	5.5	25	25	25	25	150	32					
	●	●	5.5	20	20	25	20	125	27					
	●	●	5.5	25	25	25	25	150	32					
	●	●	5.5	20	20	25	20	125	27					
●	●	5.5	25	25	25	25	150	32						

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

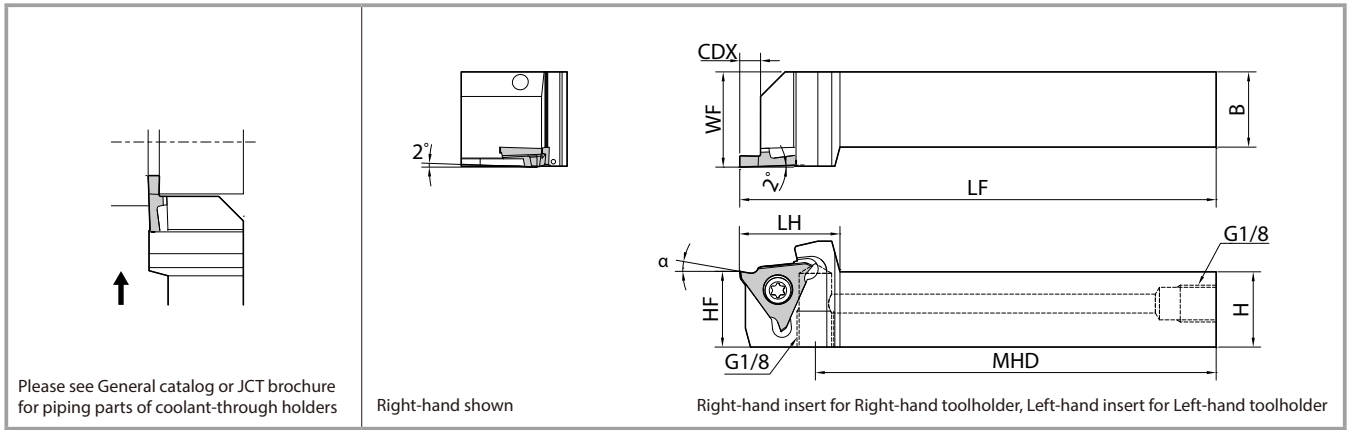
Clamp set: KGBA<sup>R/L</sup>...LGBA-○○RS for Right-hand toolholder and LGBA-○○LS for Left-hand toolholder.  
KGBAS<sup>R/L</sup>...LGBA-○○LS for Right-hand toolholder and LGBA-○○RS for Left-hand toolholder.

\* Short shank type  
●: Standard stock

### 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. No longer requires the user to cut the shank portion

# KGBA-JCT (External grooving / Coolant-through holder)



## Toolholder dimensions

Description	Availability		Dimension (mm)									Spare parts				Applicable inserts								
			R	L	CDX	H	B	LH	MHD	HF	LF	WF	Plug	Screw	Wrench									
KGBA R/L 2020K-16JCT	●	●	2.5	20	20	24.0	107.5	20	125	25	HSG1/8X8.0					-	GBA32 R/L type							
2525K-16JCT	●	●		25	25			25										30						
2020K22-15JCT	●	●	4	20	20	26.5	105	20	25															
2525K22-15JCT	●	●		25	25			25		30														
2020K22-25JCT	●	●	5.5	20	20	26.5	105	20	25	125								HSG1/8X8.0					-	GBA43 R/L type
2525K22-25JCT	●	●		25	25			25																
2020K22-35JCT	●	●	5.5	20	20	26.5	105	20	25	125								HSG1/8X8.0					-	GBA43 R/L type
2525K22-35JCT	●	●		25	25			25																

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

● : Standard stock

KGBA-JCT toolholder is screw clamp type.

Please see General catalog or JCT brochure for piping parts and connection method



## Rake angle (α) after installment of GBA insert (External grooving)

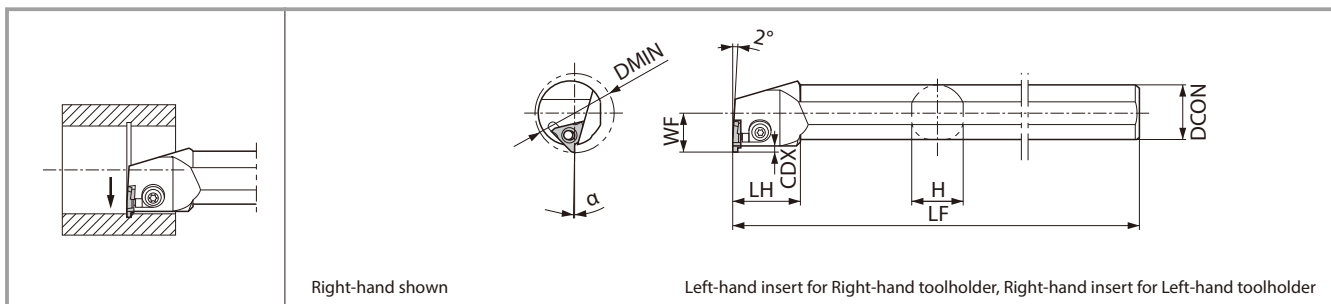
GBA32 R/L○○○ - ○○○		GBA43 R/L○○○ - ○○○		GBA43 R/L○○○ - ○○○R (Full-R)		
α	Insert grades	α	Insert grades	α	Insert grades	Full-R description
10°	TN620,TN90,PV7040 PR2015,PR2025,PR1215,PR1625 KPD001,KPD010	0°	KBN510, KBN525	10°	TN620,TN90,PV7040 PR2015,PR2025,PR1215,PR1625	050R ~ 150R
		10°	TN620,TC40N,TN90,PV7040 PR2015,PR2025,PR1215,PR1625 KPD001, KPD010		TN620,TN90,PV7040 PR2015,PR2025,PR1215,PR1625	200R
20°	KW10	20°	KW10	14°	KW10	050R ~ 200R

## Rake angle (α) after installment of GBA-GM insert (External grooving)

α	Insert description	α	Insert description	α	Insert description
10°	GBA43 R/L150-020GM	15°	GBA43 R/L175-020GM } GBA43 R/L265-030GM	12°	GBA43 R/L300-030GM } GBA43 R/L400-040GM

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



## KIGBA (Internal grooving)



Right-hand shown

Left-hand insert for Right-hand toolholder, Right-hand insert for Left-hand toolholder

### Toolholder dimensions

Description	Availability		Min. bore diameter	Dimension (mm)						Spare parts		Applicable inserts	
	R	L		DMIN	DCON	CDX	H	LF	LH	F	Clamp set		Wrench
													
KIGBA <sup>R/L</sup> 3525-16	●	●	35	25	2.8	23	220	30	17.5	LGBA-16 <sup>L/RS</sup>	FT-15	GBA32 <sup>L/R</sup> type	
4032-22	●	●	40	32	3.0	30	250	30	23.0	LGBA-22 <sup>L/RS</sup>	FT-15	GBA43 <sup>L/R</sup> type	

● : Standard stock

CDX shows the distance from the toolholder to the cutting edge.

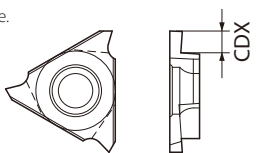
Available Grooving Depth depends on the insert.

KIGBA <sup>R/L</sup> 3525-16 : CDX of the applicable insert (GBA32)

4032-22 : CDX of the applicable insert (GBA43)

(1) 2.0 mm (CDX < 3.0 mm)

(2) 3.0 mm (CDX ≥ 3.0 mm)



Clamp set : LGBA-00LS for Right-hand toolholder, and LGBA-00RS for Left-hand toolholder.

### Rake angle (α) after installment of GBA insert (Internal grooving)

GBA32 <sup>R/L</sup> 0000 - 0000		GBA43 <sup>R/L</sup> 0000 - 0000		GBA43 <sup>R/L</sup> 0000 - 0000R (Full-R)		
α	Insert grades	α	Insert grades	α	Insert grades	Full-R description
+1°	TN620, TN90, PV7040 PR2015, PR2025, PR1215, PR1625 KPD001, KPD010	-9°	KBN510, KBN525	+1°	TN620, TN90, PV7040 PR2015, PR2025, PR1215, PR1625	050R ~ 150R
		+1°	TN620, TC40N, TN90, PV7040 PR2015, PR2025, PR1215, PR1625 KPD001, KPD010			200R
+11°	KW10	+11°	KW10	+5°	KW10	050R ~ 200R

### Rake angle (α) after installment of GBA-GM insert (Internal grooving)

α	Insert description
+1°	GBA43 <sup>R/L</sup> 150-020GM
+6°	GBA43 <sup>R/L</sup> 175-020GM
	GBA43 <sup>R/L</sup> 265-030GM
+3°	GBA43 <sup>R/L</sup> 300-030GM
	GBA43 <sup>R/L</sup> 400-040GM

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

# Recommended cutting conditions ★1st recommendation ☆2nd recommendation

## GBA Inserts (Ground chipbreaker)

(Wet)

Workpiece	Recommended insert grades (Vc : m/min)											(1) f for grooving (mm/rev) (2) f for turning (mm/rev) (3) ap for turning (mm)					
	MEGACOAT NANO EX <span style="color:red">NEW</span>		MEGA	MEGA NANO	MC	Cermet			Carbide	CBN		PCD	GBA <sup>○</sup> R/L 033 – 125-...	GBA <sup>○</sup> R/L 125 – 225-...	GBA <sup>○</sup> R/L 230 – 325-...	GBA <sup>○</sup> R/L 330 – 350-...	GBA <sup>○</sup> R/L 400 – 480-...
	PR2015	PR2025	PR1215	PR1625	PV7040	TN620	TC40N	TN90	KW10	KBN510 KBN525	KPD001 (KPD010)						
Carbon steel	★ 80 – 200	★ 80 – 180	☆ 80 – 200	☆ 80 – 180	☆ 150 – 240	★ 80 – 220	☆ 150 – 220	☆ 150 – 220	-	-	-	(1)0.03 – 0.08 (2)Not recom. (3)Not recom.	(1)0.04 – 0.09 (2)0.04 – 0.09 (3)Max. 0.3	(1)0.05 – 0.1 (2)0.05 – 0.1 (3)Max. 0.5	(1)0.05 – 0.12 (2)0.05 – 0.1 (3)Max. 0.5	(1)0.05 – 0.12 (2)0.05 – 0.1 (3)Max. 0.8	
Alloy steel	★ 80 – 180	☆ 80 – 160	☆ 80 – 180	☆ 80 – 160	☆ 130 – 220	★ 80 – 200	☆ 130 – 200	☆ 130 – 200	-	-	-	(1)0.03 – 0.07 (2)Not recom. (3)Not recom.	(1)0.04 – 0.08 (2)0.04 – 0.08 (3)Max. 0.3	(1)0.05 – 0.09 (2)0.05 – 0.09 (3)Max. 0.5	(1)0.05 – 0.1 (2)0.05 – 0.1 (3)Max. 0.5	(1)0.05 – 0.1 (2)0.05 – 0.1 (3)Max. 0.8	
Stainless steel	☆ 60 – 150	★ 60 – 130	☆ 60 – 150	☆ 60 – 130	-	-	-	☆ 70 – 150	-	-	-	(1)0.03 – 0.07 (2)Not recom. (3)Not recom.	(1)0.04 – 0.08 (2)0.04 – 0.08 (3)Max. 0.3	(1)0.05 – 0.09 (2)0.05 – 0.09 (3)Max. 0.5	(1)0.05 – 0.1 (2)0.05 – 0.1 (3)Max. 0.5	(1)0.05 – 0.1 (2)0.05 – 0.1 (3)Max. 0.8	
Cast iron	★ 80 – 180	-	-	-	-	-	-	-	☆ 60 – 120	★ 150 – 400	-	(1)0.03 – 0.08 (2)Not recom. (3)Not recom.	(1)0.04 – 0.09 (2)0.04 – 0.09 (3)Max. 0.3	(1)0.05 – 0.1 (2)0.05 – 0.1 (3)Max. 0.5	(1)0.05 – 0.12 (2)0.05 – 0.1 (3)Max. 0.5	(1)0.05 – 0.12 (2)0.05 – 0.1 (3)Max. 0.8	
Aluminum	-	-	-	-	-	-	-	-	★ 150 – 400	-	★ 150 – 2,000	(1)0.05 – 0.12 (2)Not recom. (3)Not recom.	(1)0.05 – 0.15 (2)0.05 – 0.15 (3)Max. 0.5	(1)0.05 – 0.15 (2)0.05 – 0.15 (3)Max. 0.8	(1)0.08 – 0.15 (2)0.08 – 0.15 (3)Max. 0.8	(1)0.08 – 0.15 (2)0.08 – 0.15 (3)Max. 0.8	
Brass	-	-	-	-	-	-	-	-	★ 150 – 300	-	★ 200 – 800	(1)0.05 – 0.12 (2)Not recom. (3)Not recom.	(1)0.05 – 0.15 (2)0.05 – 0.15 (3)Max. 0.5	(1)0.05 – 0.15 (2)0.05 – 0.15 (3)Max. 0.8	(1)0.08 – 0.15 (2)0.08 – 0.15 (3)Max. 0.8	(1)0.08 – 0.15 (2)0.08 – 0.15 (3)Max. 0.8	
Hardened material	-	-	-	-	-	-	-	-	-	★ 80 – 120	-	-	(1)0.02 – 0.05 (2)Not recom. (3)Not recom.	(1)0.03 – 0.07 (2)0.01 – 0.04 (3)Max. 0.1	-	-	

Above cutting condition is for external grooving. Set both cutting speed and feed 10% lower for internal grooving.  
MEGA indicates MEGACOAT, and MEGANANO indicates MEGACOAT NANO.  
MC indicates MEGACOAT Cermet.

## GBA Inserts (GM chipbreaker)

(Wet)

Workpiece	Recommended insert grades (Vc : m/min)					(1) f for grooving (mm/rev) (2) f for turning (mm/rev) (3) ap for turning (mm)				
	MEGACOAT NANO EX <span style="color:red">NEW</span>		MEGACOAT	MEGACOAT NANO	Cermet	GBA43 <sup>R/L</sup> 140-010GM	GBA43 <sup>R/L</sup> 150-020GM	GBA43 <sup>R/L</sup> 175-020GM – 230-020GM	GBA43 <sup>R/L</sup> 250-030GM – 350-030GM	GBA43 <sup>R/L</sup> 400-040GM
	PR2015	PR2025	PR1215	PR1625	TN620					
Carbon steel (SxxC etc)	★ 80 – 220	★ 80 – 220	☆ 80 – 220	☆ 80 – 220	★ 80 – 240	(1)0.03 – 0.1 (2)0.03 – 0.08 (3)Max. 0.2	(1)0.03 – 0.12 (2)0.03 – 0.08 (3)Max. 0.3	(1)0.03 – 0.12 (2)0.03 – 0.09 (3)Max. 0.3	(1)0.04 – 0.15 (2)0.05 – 0.1 (3)Max. 0.5	(1)0.05 – 0.15 (2)0.05 – 0.1 (3)Max. 0.8
Alloy steel (SCM etc)	★ 80 – 200	★ 80 – 200	☆ 80 – 200	☆ 80 – 200	★ 80 – 220	(1)0.03 – 0.1 (2)0.03 – 0.08 (3)Max. 0.2	(1)0.03 – 0.12 (2)0.03 – 0.08 (3)Max. 0.3	(1)0.03 – 0.12 (2)0.03 – 0.09 (3)Max. 0.3	(1)0.04 – 0.15 (2)0.05 – 0.1 (3)Max. 0.5	(1)0.05 – 0.15 (2)0.05 – 0.1 (3)Max. 0.8
Stainless steel (SUS304 etc)	☆ 60 – 150	★ 60 – 150	☆ 60 – 150	☆ 60 – 150	-	(1)0.03 – 0.1 (2)0.03 – 0.08 (3)Max. 0.2	(1)0.03 – 0.1 (2)0.03 – 0.08 (3)Max. 0.3	(1)0.03 – 0.1 (2)0.03 – 0.09 (3)Max. 0.3	(1)0.04 – 0.12 (2)0.05 – 0.1 (3)Max. 0.5	(1)0.04 – 0.12 (2)0.05 – 0.1 (3)Max. 0.8
Cast iron (FC/FCD etc)	★ 80 – 200	-	-	-	-	(1)0.03 – 0.1 (2)0.03 – 0.08 (3)Max. 0.2	(1)0.03 – 0.12 (2)0.03 – 0.08 (3)Max. 0.3	(1)0.03 – 0.12 (2)0.03 – 0.09 (3)Max. 0.3	(1)0.04 – 0.15 (2)0.05 – 0.1 (3)Max. 0.5	(1)0.05 – 0.15 (2)0.05 – 0.1 (3)Max. 0.8

Above cutting condition is for external grooving. Set both cutting speed and feed 20% lower for internal grooving.