

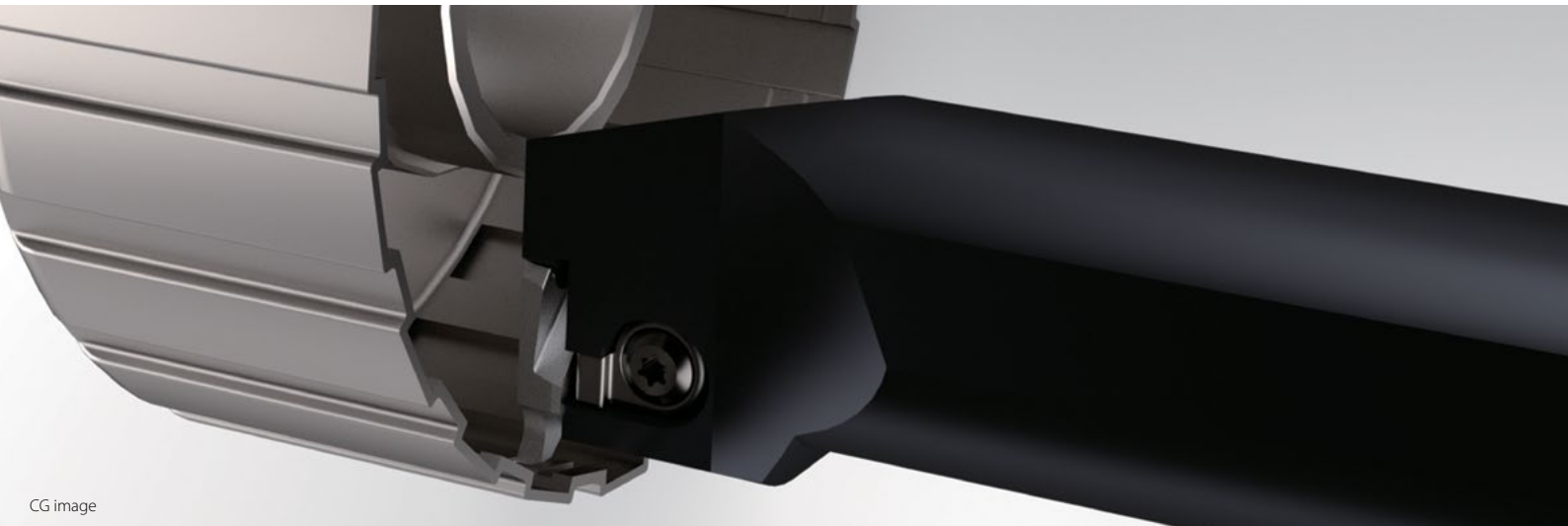
THE NEW VALUE FRONTIER



Shallow grooving tools  
PVD coated carbide

PR1625

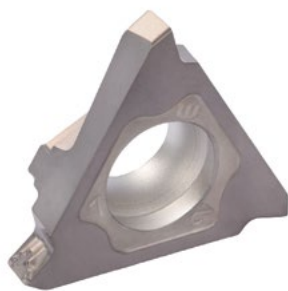
# MEGACOAT NANO PR1625



CG image

Long tool life and stable machining for shallow grooving

Groove widths from 0.33 mm to 4.8 mm  
Smooth chip control with GM chipbreaker



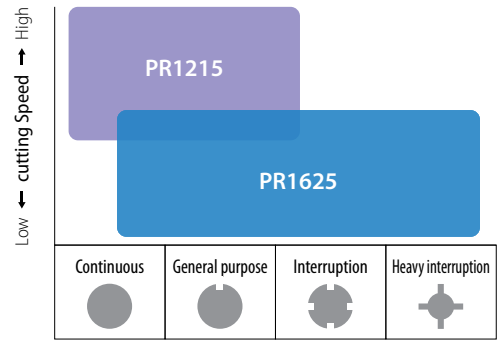
GM chipbreaker



Shallow grooving tools PVD coated carbide

# MEGACOAT NANO PR1625

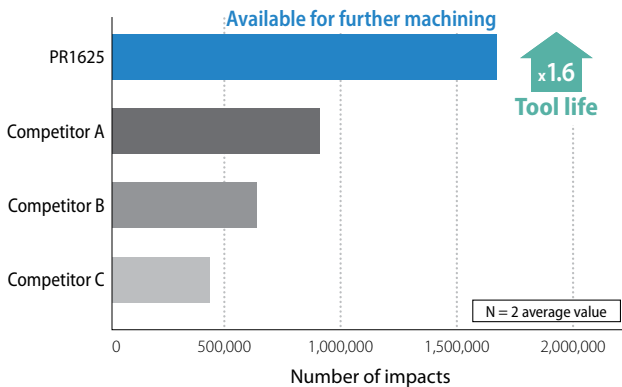
Long tool life and stable machining  
for shallow grooving



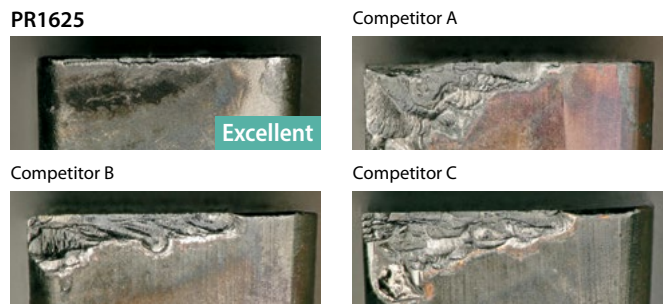
## 1 Excellent wear resistance and stable machining

Cemented carbide grade with high stability and MEGACOAT NANO with excellent adhesion resistance provides high toughness and high hardness. Long tool life is achieved in the interrupted grooving including drum and shaft of mission engine parts.

Fracture resistance comparison (Internal evaluation)



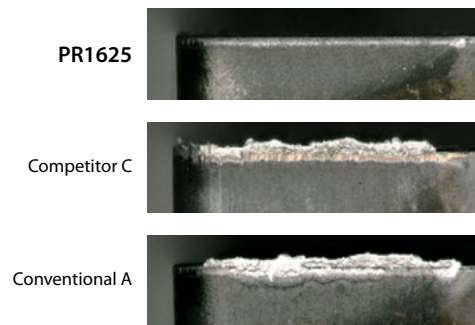
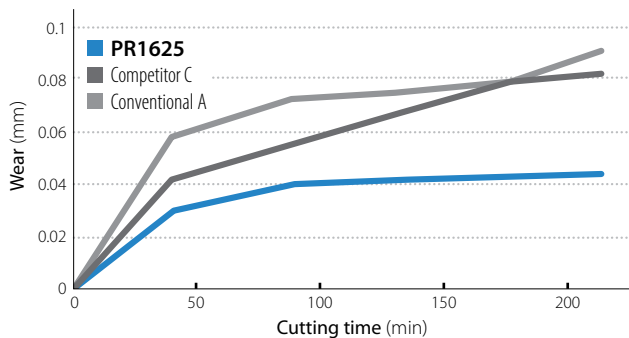
Cutting edge after machining



Cutting conditions:  $V_c = 140$  m/min,  $f = 0.12$  mm/rev, insert width 3 mm  
Workpiece: 42CrMo4 with 16 slots, external grooving (Heavy interruption)

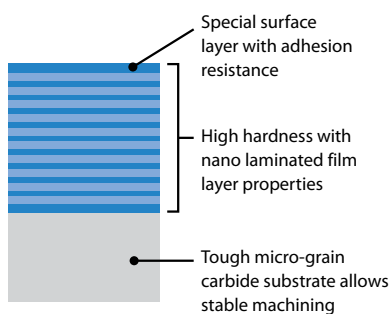
Wear resistance comparison - continuous (internal evaluation)

Shows better wear resistance in continuous machining

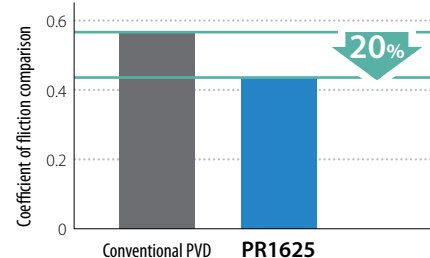


Cutting conditions:  $V_c = 120$  m/min,  $f = 0.1$  mm/rev,  $d = 1.5$  mm, insert width 3 mm  
Workpiece: 34CrMo4, continuous, wet

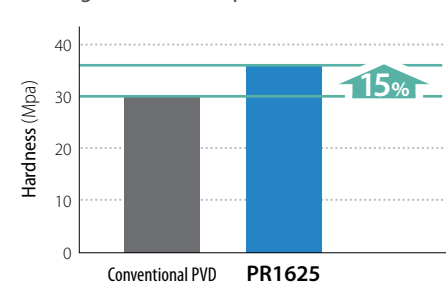
## MEGACOAT NANO PR1625 Special nano coating layer properties



Coefficient of friction comparison (Internal evaluation)



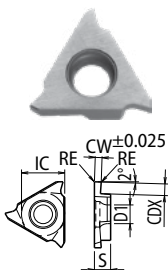
Coating hardness comparison (Internal evaluation)



# Insert description

(mm)						
Description	IC	S	D1	Usage Classification	●: Continuous-Light Interruption / 1st choice	
GBA32 _	9.525	3.18	4.4			
GBA43 _	12.70	4.76	5.5	P	Carbon steel / Alloy steel	●
GBA43 <sup>R/L</sup> 480	12.70	5.00	5.5	M	Stainless steel	●

Insert	Description	Dimension (mm)					MEGA COAT NANO
		CW	CDX	RE	PR1625		
					R	L	
Right-hand insert shown							
	GBA32 <sup>R/L</sup>	033-005 <sup>*1</sup>	0.33	0.8	0.05	●	●
		050-005 <sup>*2</sup>	0.50	1.2		●	●
		075-005	0.75			●	●
		095-005	0.95			●	●
		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			●	●
		145-020	1.45			●	●
		150-020	1.50			●	●
		160-020	1.60			●	●
		170-020	1.70	2.5		●	●
		175-020	1.75			●	●
		200-020	2.00			●	●
		225-020	2.25			●	●
		250-020	2.50			●	●
		300-020	3.00			●	●
		GBA43 <sup>R/L</sup>	125-010	1.25		2.0	0.1
	125-020				●	●	
	140-020		1.40		0.2	●	●
	145-020		1.45		●	●	
	150-010		1.50		0.1	●	●
	150-020				●	●	
	170-020		1.70		●	●	
	175-020		1.75	3.5	0.2	●	●
	185-020		1.85		●	●	
	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				●	●	
	265-030		2.65		0.3	●	●
	280-030		2.80		●	●	
	300-010		3.00		0.1	●	●
	300-030				●	●	
	325-030	3.25		0.3	●	●	
330-030	3.30	5.0	●	●			
350-010	3.50		0.1	●	●		
350-030			0.3	●	●		
400-010	4.00		0.1	●	●		
400-040			●	●			
430-040	4.30		0.4	●	●		
450-040	4.50		●	●			
480-040	4.80		●	●			

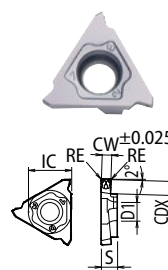
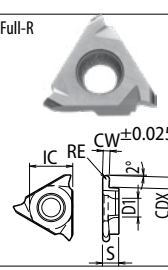
Dimension CDX shows available grooving depth.

●: Available

\*1. The edge width tolerance of GBA32 <sup>R/L</sup> 033-005: 0.33<sup>+0.03</sup><sub>-0.03</sub>  
 \*2. The edge width tolerance of GBA32 <sup>R/L</sup> 050-005: 0.50<sup>+0.05</sup><sub>-0.05</sub>

(mm)						
Description	IC	S	D1	Usage Classification	●: Continuous-Light Interruption / 1st choice	
GBA32 _	9.525	3.18	4.4	P	Carbon steel / Alloy steel	●
GBA43 _	12.70	4.76	5.5	M	Stainless steel	●

Insert	Description	Dimension (mm)					MEGA COAT NANO		
		CW	CDX	RE	PR1625				
					R	L			
Right-hand insert shown									
	Molded chipbreaker	GBA32 <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		5.0	0.2	●	●	
		230-020GM	2.30				●	●	
		250-030GM	2.50				●	●	
		265-030GM	2.65				●	●	
		300-030GM	3.00				●	●	
		330-030GM	3.30				●	●	
		350-030GM	3.50		0.4	●	●		
		400-040GM	4.00			●	●		
			Full-R		GBA32 <sup>R/L</sup> 200-100R	2.00	2.5	1.00	●
					300-150R	3.00		1.50	●
GBA32 <sup>R/L</sup> 100-050R	1.00			2.0	0.50	●	●		
150-075R	1.50			3.5	0.75	●	●		
200-100R	2.00				1.00	●	●		
250-125R	2.50			4.0	1.25	●	●		
300-150R	3.00				1.50	●	●		
400-020R	4.00			5.0	2.00	●	●		

Dimension CDX shows available grooving depth.

●: Available

## Applicable toolholders

Insert description	Holder description
GBA32 <sup>R/L</sup> _	KGBA <sup>R/L</sup> ... 16 (JCT)
	KGBAS <sup>L/R</sup> ... 16
	KIGBA <sup>L/R</sup> ... 16 (Internal)
GBA43 <sup>R/L</sup> 125~230...	KGBA <sup>R/L</sup> ... 22-15 (JCT)
	KGBAS <sup>L/R</sup> ... 22-15
	KIGBA <sup>L/R</sup> ... 22 (Internal)
GBA43 <sup>R/L</sup> 250~330...	KGBA <sup>R/L</sup> ... 22-25 (JCT)
	KGBAS <sup>L/R</sup> ... 22-25
	KIGBA <sup>L/R</sup> ... 22 (Internal)
	KIGBA <sup>L/R</sup> ... 22 (Internal)
GBA43 <sup>R/L</sup> 350~480...	KGBA <sup>R/L</sup> ... 22-35 (JCT)
	KGBAS <sup>L/R</sup> ... 22-35
	KIGBA <sup>L/R</sup> ... 22 (Internal)

## Rake angle after installment of GBA insert

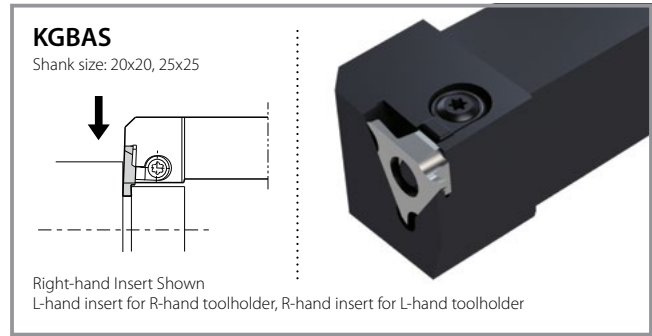
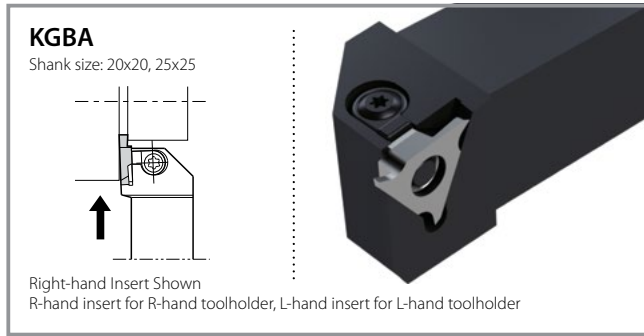
### External grooving toolholders

Insert description	Rake angle	
	External	Internal
For GBA32 <sup>R/L</sup> ○○○○	+10°	+1°
For GBA43 <sup>R/L</sup> ○○○○		
For GBA43 <sup>R/L</sup> 100-050R ~ 300-150R (Full-R)		
For GBA43 <sup>R/L</sup> 150-020GM*	+10°	+1°
For GBA43 <sup>R/L</sup> 175-020GM ~ 265-030GM*	+15°	+6°
For GBA43 <sup>R/L</sup> 300-030GM ~ 400-040GM*	+12°	+3°

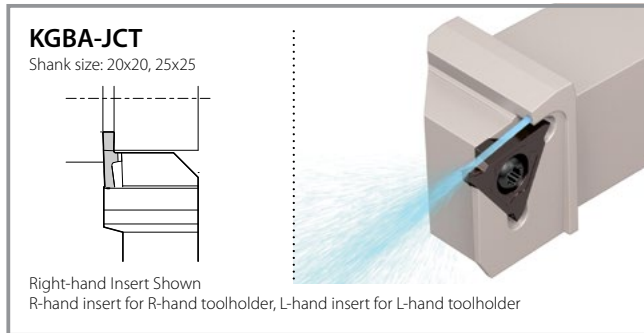
\* Rake angle at the center of the edge width after installing insert

# Applicable toolholders

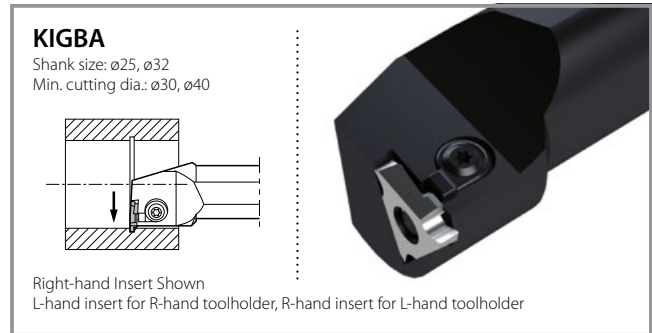
## External grooving toolholders



## External grooving toolholders (great for high pressure)



## Internal grooving toolholders



For more details on toolholders, please see the GBA for external & internal shallow grooving tools brochure and the Kyocera general product catalog

## Recommended cutting conditions ★: 1st recommendation

### GBA inserts (Ground chipbreaker)

Wet

Workpiece	Recommended cutting Speed (m/min)	(1) f for grooving (mm/rev) (2) f for turning (mm/rev) (3) ap for turning (mm)				
		GBA <sup>○</sup> <sub>R/L</sub> 033-120 - ...	GBA <sup>○</sup> <sub>R/L</sub> 125-225 - ...	GBA <sup>○</sup> <sub>R/L</sub> 230-325 - ...	GBA <sup>○</sup> <sub>R/L</sub> 330-350 - ...	GBA <sup>○</sup> <sub>R/L</sub> 400-480 - ...
Carbon steel	★ 80 – 180	(1) 0.03 – 0.08 (2) Not recommended (3) Not recommended	(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 – 160	(1) 0.03 – 0.07 (2) Not recommended (3) Not recommended	(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 – 130	(1) 0.03 – 0.07 (2) Not recommended (3) Not recommended	(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

Above cutting conditions are for external grooving. Set both cutting speed and feed rate 20% lower for internal grooving.

### GBA inserts (GM chipbreaker)

Wet

Workpiece	Recommended cutting Speed (m/min)	(1) f for grooving (mm/rev) (2) f for turning (mm/rev) (3) ap for turning (mm)				
		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
Carbon steel	★ 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
Alloy steel	★ 80 – 180	(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	★ 60 – 130	(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

Above cutting conditions are for external grooving. For internal grooving, set both cutting speed and feed rate 20% lower.

\*GBA has large insert grade lineup for various workpiece material and conditions other than PR1625.

\*For more details, please see the GBA for external & internal shallow grooving tools brochure and the Kyocera general product catalog