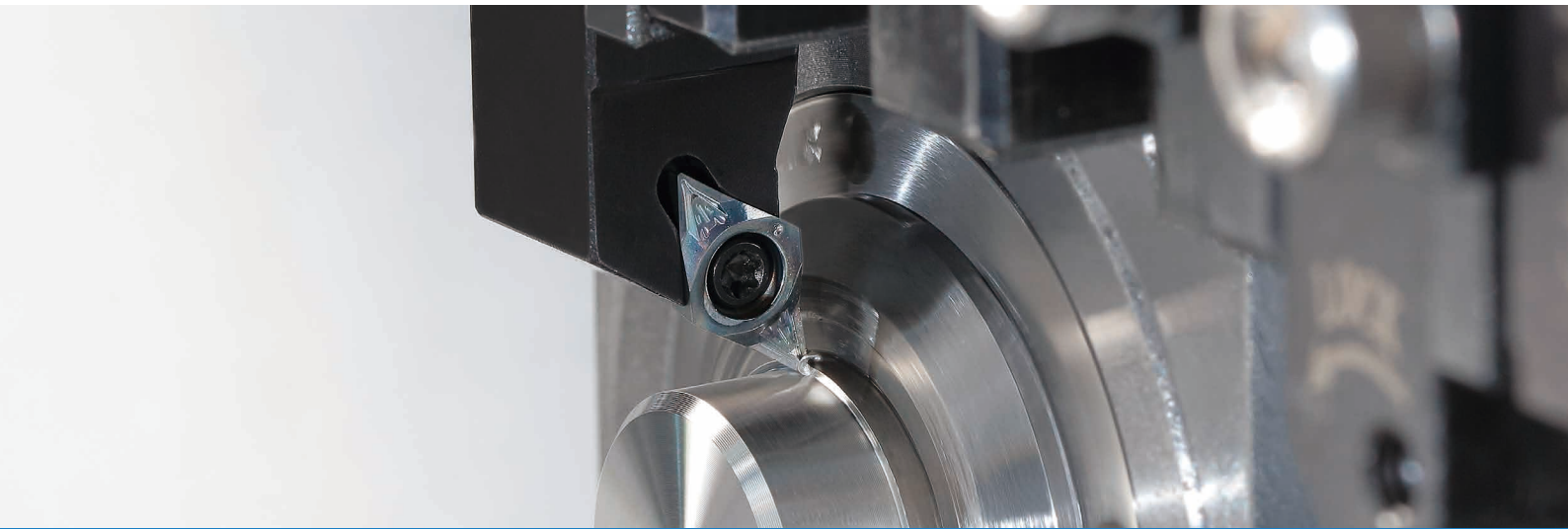


New PVD Coating

# PR1725/PR1705



Excellent Surface Finish and Long Tool Life. Great for Small Parts Machining

PR1725/PR1705

Unique PVD Coating MEGACOAT NANO PLUS Provides Longer Tool Life and Excellent Surface Finish

Molded Sharp Edge Chipbreaker for Small Parts Machining

## FEATURED INSERTS FOR VIBRATION MACHINING

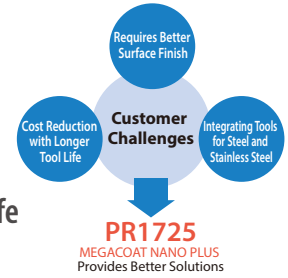
- Features and Benefits
- Recommended Inserts (Materials and Chipbreakers)



New PVD Coating

# PR1725

1st Recommendation for Steel Machining. Excellent Surface Finish and Long Tool Life  
Great Performance in Small Parts Machining Applications

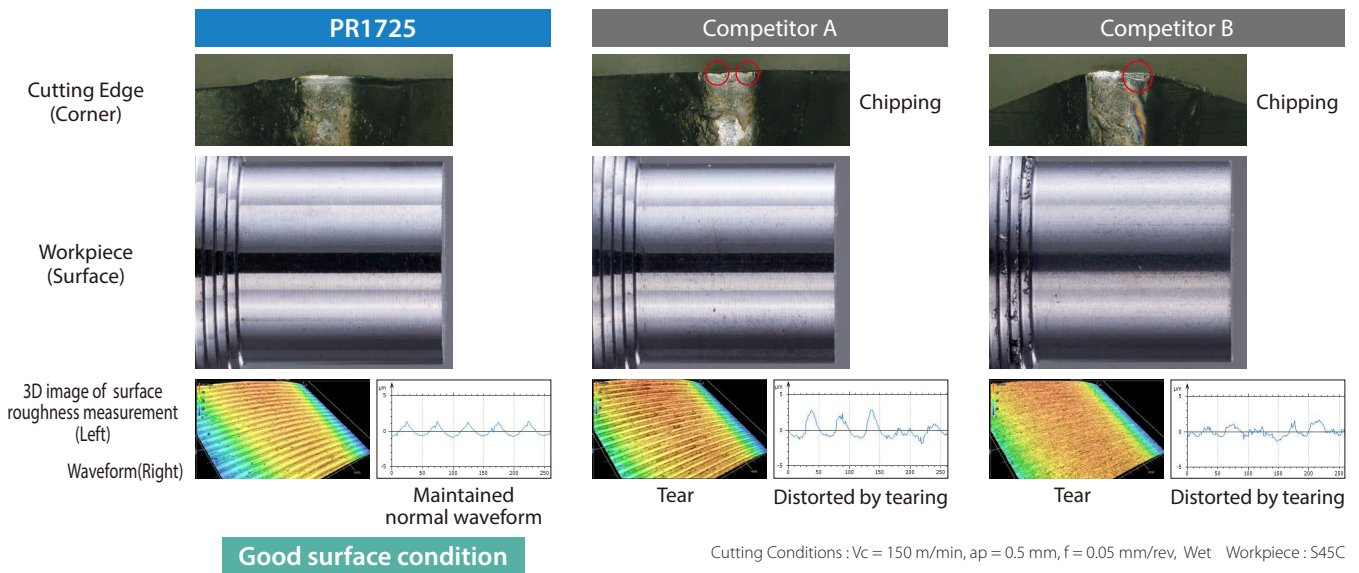


## 1 MEGACOAT NANO PLUS Maintains Long Tool Life and Excellent Surface Finish

Long tool life leads to improved cycle time

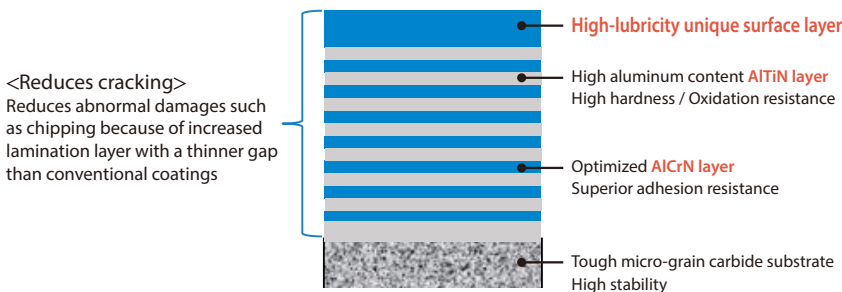
Excellent surface finish with no tearing lowers quality control costs

Insert cutting edge wear and quality of surface finish comparison (S45C) \* After 20 min of machining (Internal evaluation)

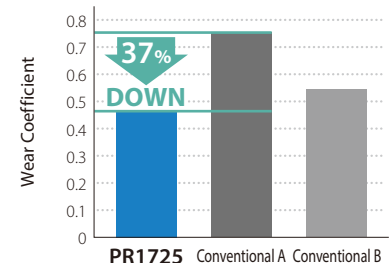


## MEGACOAT NANO PLUS

AlTiN/AlCrN Nano laminated film with superior wear resistance and adhesion resistance. Excellent surface finish and long tool life



Wear Coefficient Comparison (Internal evaluation)



### Superior Wear and Chipping Resistance

High hardness with nano laminated film layer properties  
Internal stress optimization reduces chipping

### Applicable to various workpiece materials

Excellent oxidation resistance. Superior high temperature properties maintains good performance in steel, stainless steel and free-cutting steel

### Excellent Surface Finish

Special surface layer with great lubricity reduces adhesion

### High machining stability

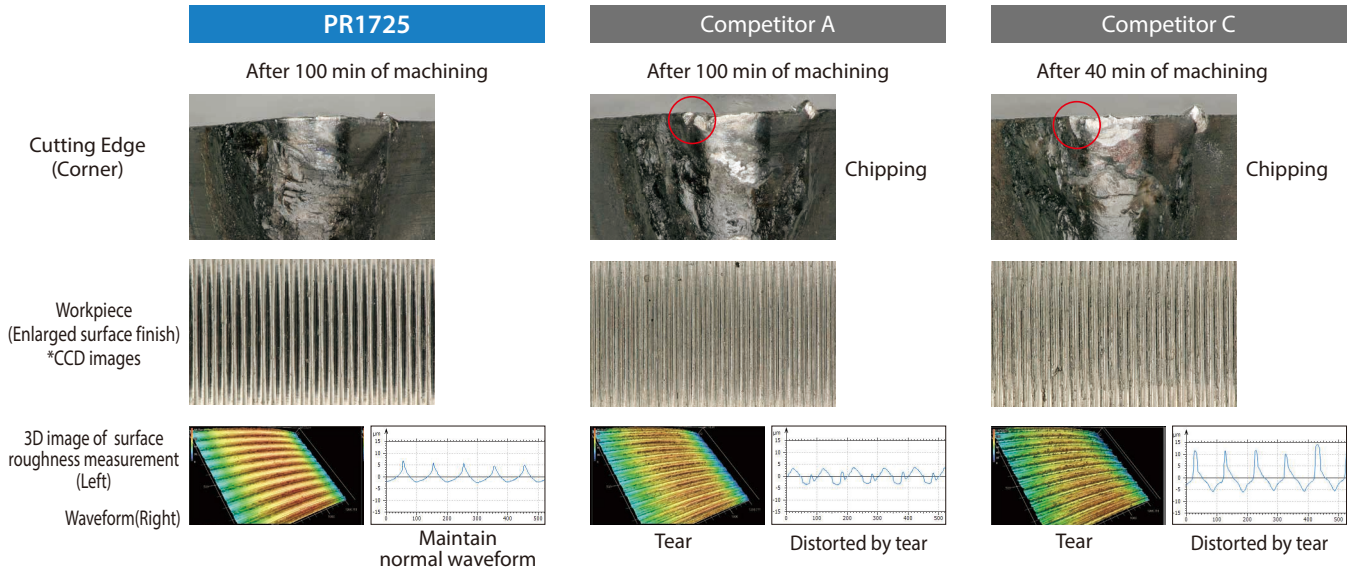
Tough micro-grain carbide substrate provides stable machining

## 2 One solution can be used in various workpiece materials

Long tool life for steel, stainless steel and free-cutting steel

Improved management of tools cut the cost

Wear on the cutting edge of insert and quality of the surface finish comparison (Stainless steel:SUS304)

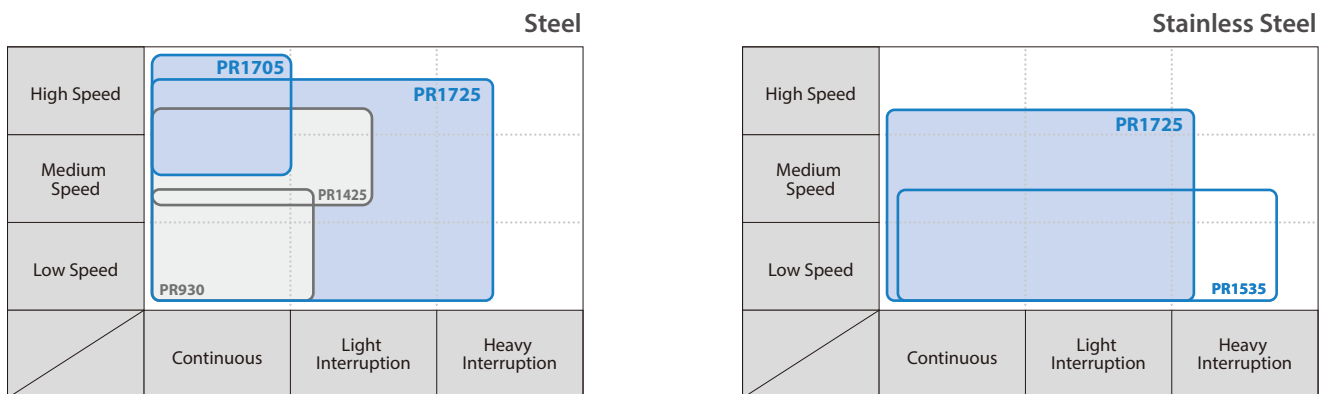


PR1725 shows less damage on the cutting edge and maintains stable tool mark on the workpiece surface



## 3 Applicable to a Wide Range of Machining Applications

Good performance in both steel and stainless steel from low to high speed machining



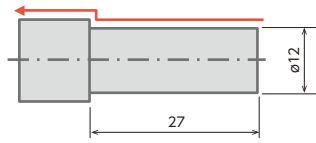
PR1725 : 1st Recommendation for steel machining  
PR1705 : 1st Recommendation free-cutting steel

PR1725 : For general purpose high-speed machining  
PR1535 : 1st Recommendation for stainless steel machining  
Long tool life and high quality machining

## Case Studies

### Shaft SCM435

Vc = 110 m/min  
 ap = ~1.5 mm  
 f = 0.06 mm/rev  
 Wet  
 DCGT11T302MFP-SK PR1725



Tool Life

**PR1725  
SK Chipbreaker**

**3,000 pcs/edge**

Tool Life



Competitor D  
(Molded Chipbreaker)

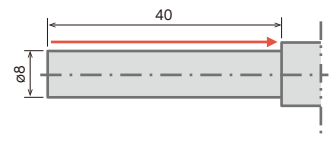
**1,500 pcs/edge**

PR1725 SK chipbreaker showed 2 times longer tool life when compared to competitor D

(User Evaluation)

### Shaft SCM440H

Vc = 70 m/min  
 ap = 1.0 mm  
 f = 0.05 mm/rev  
 Wet  
 DCGT11T302MFP-SK PR1725



Tool Life

**PR1725  
SK Chipbreaker**

**250 pcs/edge**

Tool Life



Competitor E  
(Molded Chipbreaker)

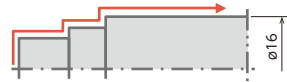
**150 pcs/edge**

PR1725 SK chipbreaker showed 1.6 times longer tool life when compared to competitor E

(User Evaluation)

### Shaft S35C

Vc = 90 m/min  
 ap = 0.3mm  
 f = 0.1 mm/rev  
 Wet  
 DCGT11T302MFP-SK PR1725



Tool Life

**PR1725  
SK Chipbreaker**

**300 pcs/edge**

Tool Life



Competitor F  
(Molded Chipbreaker)

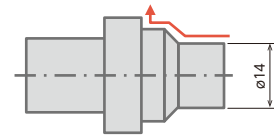
**200 pcs/edge**

PR1725 SK chipbreaker showed 1.5 times longer tool life when compared to competitor F

(User Evaluation)

### Pin SCM420

Vc = 110 m/min  
 ap = 0.2~0.7 mm  
 f = 0.07 mm/rev  
 Wet  
 DCGT11T302MFP-GQ PR1725



Tool Life

**PR1725  
GQ Chipbreaker**

**200 pcs/edge**

Tool Life



Competitor G  
(Molded Chipbreaker)

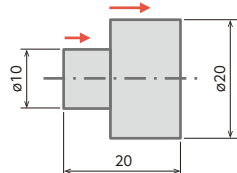
**150 pcs/edge**

PR1725 GQ chipbreaker showed 1.3 times longer tool life when compared to competitor G

(User Evaluation)

### Shaft SUS420J2

Vc = 50 m/min  
 ap = 0.1 mm  
 f = 0.05 mm/rev  
 Wet  
 DCGT11T302MFP-GQ PR1725



Tool Life

**PR1725  
GQ Chipbreaker**

**600 pcs/edge**

Tool Life



Competitor H  
(Molded Chipbreaker)

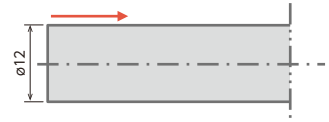
**300 pcs/edge**

PR1725 GQ chipbreaker showed 2 times longer tool life when compared to competitor H

(User Evaluation)

### Shaft SUM

Vc = 110 m/min  
 ap = ~2.0 mm  
 f = 0.05 mm/rev  
 Wet  
 CCET09T304MFR-J PR1725



Tool Life

**PR1725  
J Chipbreaker**

**3,000 pcs/edge**

Tool Life



Competitor I  
(Molded Chipbreaker)

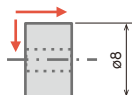
**1,000 pcs/edge**

PR1725 J chipbreaker showed 3 times longer tool life when compared to competitor I

(User Evaluation)

### Shaft S45C

Vc = 100 m/min  
 ap = 0.1 mm  
 f = 0.025 mm/rev  
 Wet  
 DCGT11T302MFP-GF PR1725



Tool Life

**PR1725  
GF Chipbreaker**

**3,000 pcs/edge**

Tool Life



Competitor J  
(Molded Chipbreaker)

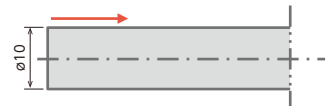
**1,500 pcs/edge**

PR1725 GF chipbreaker showed 2 times longer tool life when compared to competitor J

(User Evaluation)

### Pin SKS

Vc = 110 m/min  
 ap = 0.2 mm  
 f = 0.05 mm/rev  
 Wet  
 DCGT11T302MFP-SK PR1725



PR1725 SK chipbreaker showed good surface finish and accuracy after machining same number of workpieces as the conventional C

(User Evaluation)

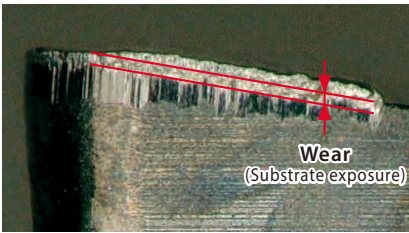

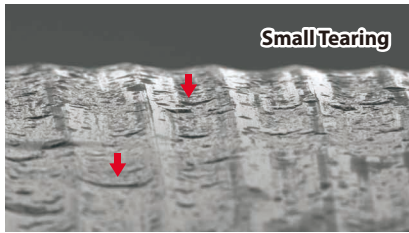
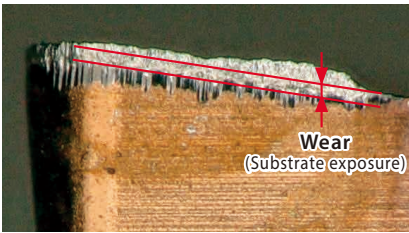
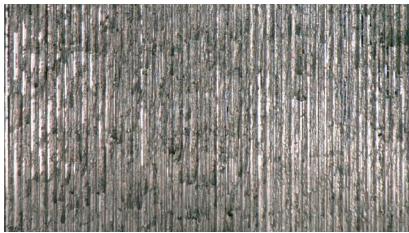
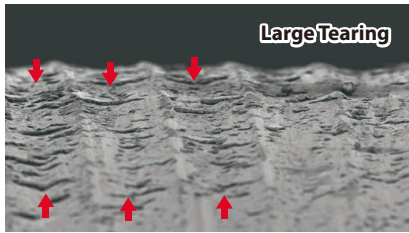


New PVD Coating

# PR1705

High-hardness ultrafine particle carbide substrates with MEGACOAT NANO PLUS offer excellent wear resistance and high precision machining

Insert Wear and Surface Finish Comparison (SUM23) \* After 40 min of machining (Internal evaluation)

PR1705		
<p>Cutting Edge (Flank Face)</p>  <p>Wear (Substrate exposure)</p>	<p>Workpiece *CCD image</p>  <p>Good surface finish</p>	<p>Tearing on Workpiece (Surface Finish Enlarged)</p>  <p>Small Tearing</p>
Competitor K		
<p>Cutting Edge (Flank Face)</p>  <p>Wear (Substrate exposure)</p>	<p>Workpiece *CCD image</p>  <p>Poor surface finish</p>	<p>Tearing on Workpiece (Surface Finish Enlarged)</p>  <p>Large Tearing</p>

PR1705 showed little adhesion to the cutting edge and good surface finish on the workpiece without tearing

Cutting Conditions : Vc = 150 m/min, ap = 0.5 mm, f = 0.05 mm/rev, Wet Workpiece : SUM23

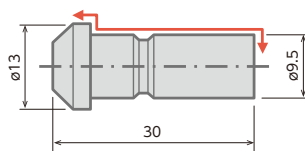
PR1705 improved tool life in continuous machining for steel and electromagnetic soft iron \*For more stable machining, use PR1725



## Case Studies

### Pin SUM24L

Vc = 200 m/min  
ap = 0.12 mm  
f = 0.04 mm/rev  
Wet  
CCGT09T301MF PR1705



Tool Life

**PR1705 MF Chipbreaker** 4,800 pcs/edge

Tool Life

x1.5

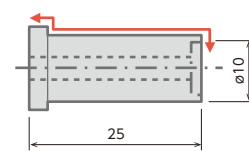
Competitor L (Ground chipbreaker) 3,200 pcs/edge

PR1705 MF chipbreaker showed 1.5 times longer tool life when compared to competitor L

(User Evaluation)

### Shaft SUM24L

Vc = 100 m/min  
ap = 1.4 mm  
f = 0.05 mm/rev  
Wet  
DCGT11T302MFR-J PR1705



Tool Life

**PR1705 J Chipbreaker** 5,800 pcs/edge

Tool Life

Approx. x1.4

Competitor M (Ground chipbreaker) 4,000 pcs/edge

PR1705 J chipbreaker showed 1.5 times longer tool life when compared to competitor M

(User Evaluation)

Molded Chipbreaker Series for Small Parts Machining

# Molded Sharp Edge Chipbreaker

Extensive lineup to solve various chip control issues

Utilizing PR1725 and PR1705 provides stable machining and extended tool life

- 1 Excellent Chip Control in a Wide Range of Machining Applications
- 2 High-Precision Sharp Edge with Periphery Grinding
- 3 Anti-welding Properties for Improved Mirror Surface Finish

## 1st Recommendation for Finishing

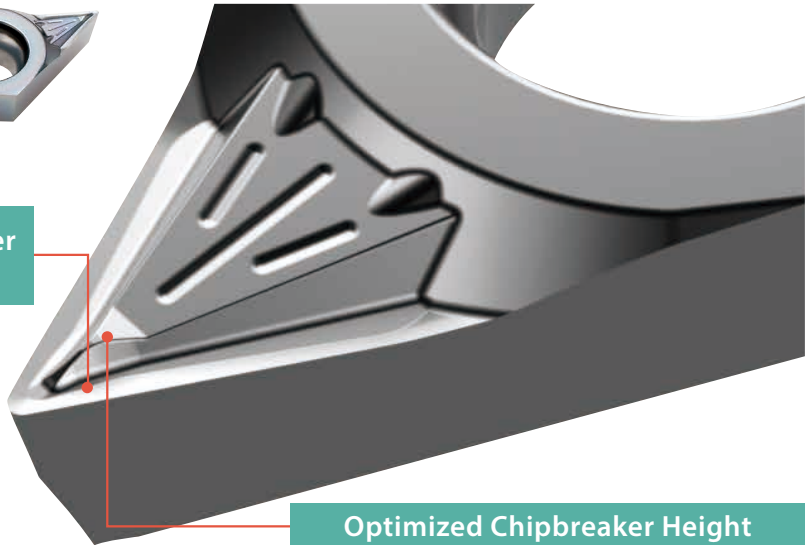
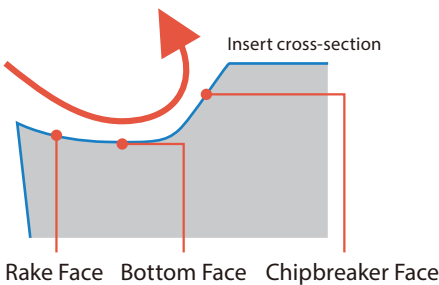
### SKS Chipbreaker



ap: 0.2 to 1.5 mm

Excellent Chip Control with Good Surface Finish

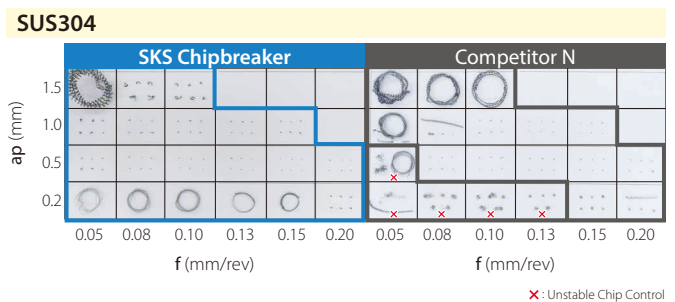
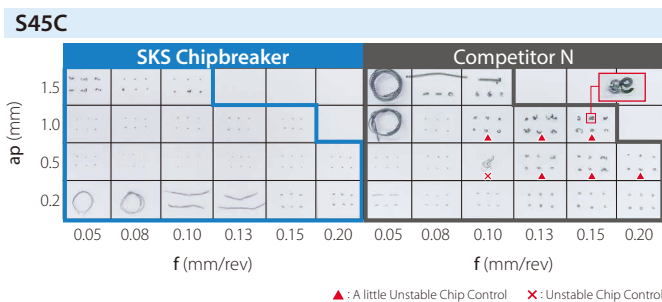
Rake face, bottom face, and chipbreaker face ensure properly curled chips



Optimized Chipbreaker Height

Stabilized chip control when machining at high feed rates  
Improved chip evacuation when machining at large D.O.C.

### Chip Control Comparison (Internal evaluation)



Cutting Conditions : Vc = 100 m/min, Wet, DCGT11T302 Type

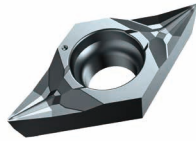
SKS chipbreaker showed greater chip control when compared to competitor N

# 1st Recommendation for Semi-finishing

## SK Chipbreaker

ap: 0.5 to 3.0 mm

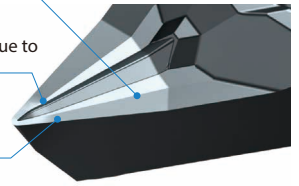
The molded chipbreaker maintains both sharpness and chip control



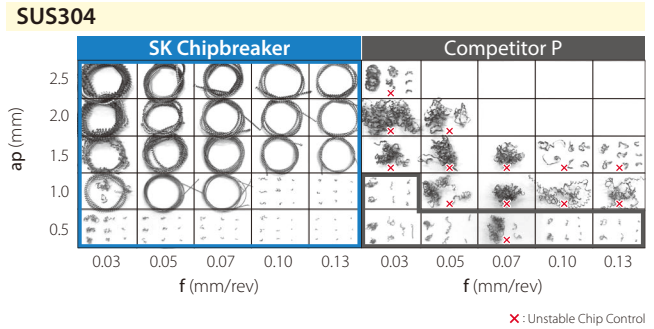
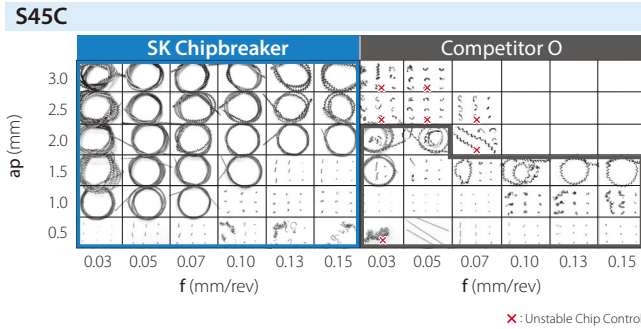
Stable chip evacuation in large D.O.C. due to large rake angle

Chip control is improved in small depths of cut due to chipbreaker projecting out to the corner tip

Cutting force is reduced as the cutting edge is lowered towards the center of the workpiece



Chip Control Comparison (Internal evaluation)



Cutting Conditions : Vc = 100 m/min, Wet, DCGT11T302 Type

## Complementary Chipbreakers (Chip Control Oriented)

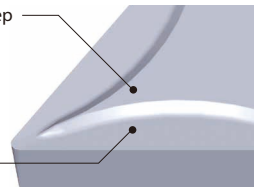
### GQ Chipbreaker for Small to Large ap

ap: 0.8 to 5.0 mm (Steel)  
0.8 to 3.0 mm (Stainless Steel)  
For a Wide Range of Applications



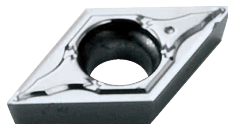
Low cutting force design with a small chipbreaker step  
Good chip control in small depths of cut with the breaker dot projecting out to the cutting edge

Wide range of acceptable chips is achieved by using an advanced chipbreaker design



### GF Chipbreaker for Finishing

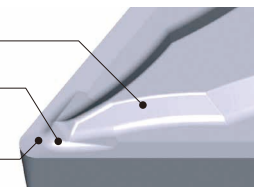
ap: 0.25 to 1.25 mm  
Controlled Chips during Finishing



High slope recedes away from the cutting edge  
⇒ Minimizes chip clogging in large D.O.C.

Improved sharpness with large rake angle

Chipbreaker dot extends out to the cutting edge  
⇒ Divides the chips into smaller pieces



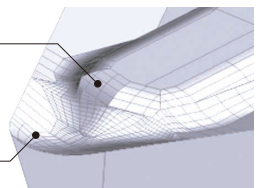
### CF Chipbreaker for Minute ap

ap: 0.02 to 0.2 mm  
Excellent Chip Formation in Minute ap



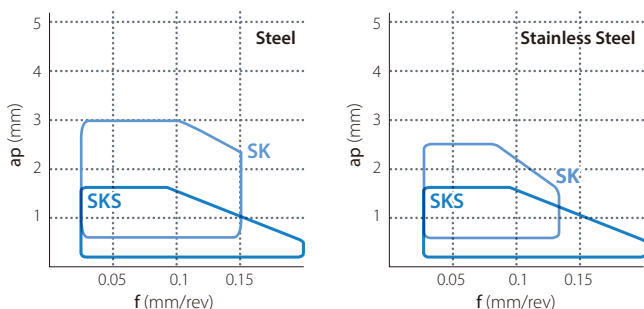
Properly curled chips with special dot design

Large rake angle improves sharpness  
Suppresses burr formation and clouding of the workpiece by preventing welding onto the insert

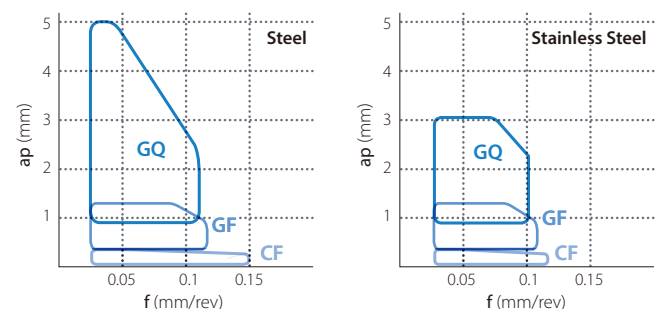


## Chipbreaker Map












1st Recommendation for Finishing (Low Cutting Force)














Complementary Chipbreakers (Chip Control Oriented)



# Stock Items (Positive)

Shape	Description	Dimensions (mm)					MEGACOAT NANO PLUS			MEGACOAT NANO
		I.C.	Thickness	Hole	Corner-R (RE)	Relief Angel	PR1725	PR1705	PR1535	
	CCGT 030101MP-CF	3.5	1.4	1.9	< 0.1	7°	●	●	●	
	030102MP-CF				< 0.2		●	●	●	
	CCGT 040101MP-CF	4.3	1.8	2.3	< 0.1	7°	●	●	●	
	040102MP-CF				< 0.2		●	●	●	
	CCGT 030101MFP-PF	3.5	1.4	1.9	< 0.1	7°	●	●	●	
	030102MFP-PF				< 0.2		●	●	●	
	CCGT 040101MFP-PF	4.3	1.8	2.3	< 0.1	7°	●	●	●	
	040102MFP-PF				< 0.2		●	●	●	
	CCGT 060201MFP-PF	6.35	2.38	2.8	< 0.1	7°	●	●	●	
	060202MFP-PF				< 0.2		●	●	●	
	060204MFP-PF				< 0.4		●	●	●	
	CCGT 060201MFP-GF	6.35	2.38	2.8	< 0.1	7°	●	●	●	
	060202MFP-GF				< 0.2		●	●	●	
	060204MFP-GF				< 0.4		●	●	●	
	CCGT 09T301MFP-GF	9.525	3.97	4.4	< 0.1	7°	●	●	●	
09T302MFP-GF	< 0.2				●		●	●		
09T304MFP-GF	< 0.4				●		●	●		
	CCGT 0602005MFP-SKS	6.35	2.38	2.8	< 0.05	7°	●	●	●	
	060201MFP-SKS				< 0.1		●	●	●	
	060202MFP-SKS				< 0.2		●	●	●	
	CCGT 09T3005MFP-SKS	9.525	3.97	4.4	< 0.05	7°	●	●	●	
09T301MFP-SKS	< 0.1				●		●	●		
09T302MFP-SKS	< 0.2				●		●	●		
	CCGT 060201MFP-SK	6.35	2.38	2.8	< 0.1	7°	●	●	●	
	060202MFP-SK				< 0.2		●	●	●	
	060204MFP-SK				< 0.4		●	●	●	
	CCGT 09T301MFP-SK	9.525	3.97	4.4	< 0.1	7°	●	●	●	
	09T302MFP-SK				< 0.2		●	●	●	
	09T304MFP-SK				< 0.4		●	●	●	
	CCGT 060201MP-CK	6.35	2.38	2.8	< 0.1	7°	●	●	●	
	060202MP-CK				< 0.2		●	●	●	
	CCGT 09T301MP-CK	9.525	3.97	4.4	< 0.1	7°	●	●	●	
09T302MP-CK	< 0.2				●		●	●		
	CCGT 060201MFP-GQ	6.35	2.38	2.8	< 0.1	7°	●	●	●	
	060202MFP-GQ				< 0.2		●	●	●	
	060204MFP-GQ				< 0.4		●	●	●	
	CCGT 09T301MFP-GQ	9.525	3.97	4.4	< 0.1	7°	●	●	●	
09T302MFP-GQ	< 0.2				●		●	●		
09T304MFP-GQ	< 0.4				●		●	●		
	CCMT 060202WP	6.35	2.38	2.8	0.2	7°	●	●	●	
	060204WP				0.4		●	●	●	
	060208WP				0.8		●	●	●	
	CCMT 09T302WP	9.525	3.97	4.4	0.2	7°	●	●	●	
	09T304WP				0.4		●	●	●	
09T308WP	0.8	●	●	●						
	CCMT 060202PP	6.35	2.38	2.8	0.2	7°	●	●	●	
	060204PP				0.4		●	●	●	
	CCMT 09T302PP	9.525	3.97	4.4	0.2	7°	●	●	●	
	09T304PP				0.4		●	●	●	
09T308PP	0.8	●	●	●						
	CCMT 060202GK	6.35	2.38	2.8	0.2	7°	●	●	●	
	060204GK				0.4		●	●	●	
	CCMT 09T302GK	9.525	3.97	4.4	0.2	7°	●	●	●	
	09T304GK				0.4		●	●	●	
CCMT 120404GK	12.7	4.76	5.5	0.4	7°	●	●	●		
120408GK				0.8		●	●	●		
120412GK	1.2	●	●	●						

Shape	Description	Dimensions (mm)					MEGACOAT NANO PLUS			MEGACOAT NANO
		I.C.	Thickness	Hole	Corner-R (RE)	Relief Angel	PR1725	PR1705	PR1535	
	CCMT 060202HQ	6.35	2.38	2.8	0.2	7°	●	●	●	
	060204HQ				0.4		●	●	●	
	CCMT 09T302HQ	9.525	3.97	4.4	0.2	7°	●	●	●	
	09T304HQ				0.4		●	●	●	
09T308HQ	0.8	●	●	●						
	CCMT 09T308	9.525	3.97	4.4	0.8	7°	●	●	●	
	CCGT 0602005MF	6.35	2.38	2.8	< 0.05	7°	●	●	●	
060201MF	< 0.1				●		●	●		
060202MF	< 0.2				●		●	●		
060204MF	< 0.4	●	●	●						
	CCGT 09T3005MF	9.525	3.97	4.4	< 0.05	7°	●	●	●	
	09T301MF				< 0.1		●	●	●	
	09T302MF				< 0.2		●	●	●	
	09T304MF	< 0.4	●	●	●					
	CCET 0301005M <sup>R/L</sup> -F	3.5	1.4	1.9	< 0.05	7°	●	●	●	
	030101M <sup>R/L</sup> -F				< 0.1		●	●	●	
	030102M <sup>R/L</sup> -F				< 0.2		●	L	●	
	030104M <sup>R/L</sup> -F	< 0.4	●	L	●					
CCET 040101M <sup>R/L</sup> -F	4.3	1.8	2.3	< 0.1	7°	●	●	●		
040102M <sup>R/L</sup> -F				< 0.2		●	●	●		
040104M <sup>R/L</sup> -F				< 0.4		●	L	●		
	CCET 09T301M <sup>R/L</sup> -P	9.525	3.97	4.4	< 0.1	7°	●	●	●	
	09T302M <sup>R/L</sup> -P				< 0.2		●	●	●	
	09T304M <sup>R/L</sup> -P				< 0.4		●	●	●	
	CCET 0602005MF <sup>R/L</sup> -U	6.35	2.38	2.8	< 0.05	7°	●	R	●	
	060201MF <sup>R/L</sup> -U				< 0.1		●	R	●	
	060202MF <sup>R/L</sup> -U				< 0.2		●	●	●	
	CCET 09T3005MF <sup>R/L</sup> -U	9.525	3.97	4.4	< 0.05	7°	●	R	●	
09T301MF <sup>R/L</sup> -U	< 0.1				●		●	●		
09T302MF <sup>R/L</sup> -U	< 0.2				●		●	●		
09T304MF <sup>R/L</sup> -U	< 0.4	●	●	●						
	CCGT 060202ME <sup>R/L</sup> -U	6.35	2.38	2.8	< 0.2	7°	●	●	●	
	060204ME <sup>R/L</sup> -U				< 0.4		●	●	●	
	CCGT 09T301MER-U	9.525	3.97	4.4	< 0.1	7°	●	R	●	
09T302ME <sup>R/L</sup> -U	< 0.2				●		●	●		
09T304ME <sup>R/L</sup> -U	< 0.4				●		●	●		
	CCET 0602005MFR-J	6.35	2.38	2.8	< 0.05	7°	●	●	●	
	060201MF <sup>R/L</sup> -J				< 0.1		●	●	●	
	060202MF <sup>R/L</sup> -J	< 0.2	●	●	●					
	CCET 09T301MF <sup>R/L</sup> -J	9.525	3.97	4.4	< 0.1	7°	●	●	●	
09T302MF <sup>R/L</sup> -J	< 0.2				●		●	●		
09T304MF <sup>R/L</sup> -J	< 0.4	●	●	●						
	CPMT 080202PP	7.94	2.38	3.3	0.2	11°	●	●	●	
	080204PP				0.4		●	●	●	
	CPMT 090302PP	9.525	3.18	4.4	0.2	11°	●	●	●	
	090304PP				0.4		●	●	●	
090308PP	0.8	●	●	●						
	CPMT 080204GP	7.94	2.38	3.3	0.4	11°	●	●	●	
	CPMT 090304GP	9.525	3.18	4.4	0.4	11°	●	●	●	
	090308GP				0.8		●	●	●	
	CPMH 080204HQ	7.94	2.38	3.5	0.4	11°	●	●	●	
	080208HQ				0.8		●	●	●	
	CPMH 090304HQ	9.525	3.18	4.5	0.4	11°	●	●	●	
090308HQ	0.8				●		●	●		

\* Insert with corner R (RE) dimension expressed with less than sign (e.g. <0.1, <0.2 etc.) indicates models with minus tolerance for corner R (RE)

● : Standard Stock R : R-hand Only L : L-hand Only





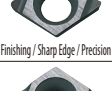











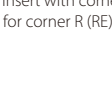


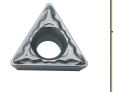

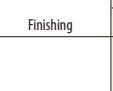









# Stock Items (Positive)

Shape	Handed Insert shows Left-hand	Description	Dimensions (mm)					MEGACOAT NANO PLUS			MEGACOAT NANO		
			I.C.	Thickness	Hole	Corner-R (RE)	Relief Angel	PR1725	PR1705	PR1535			
	Medium	CPMH 080204	7.94	2.38	3.5	0.4	11°	●		●			
		080208				0.8		●	●				
		CPMH 090304	9.525	3.18	4.5	0.4	11°	●		●			
		090308				0.8		●	●				
	Low Carbon Steel / Finishing	CPMT 080204XP	7.94	2.38	3.3	0.4	11°	●		●			
		CPMT 090304XP				0.4		●	●				
		090308XP	9.525	3.18	4.4	0.8	11°	●		●			
	Finishing-Medium	CPMH 080204 R <sub>L</sub> -Y	7.94	2.38	3.5	0.4	11°	●					
		CPMH 090304 R <sub>L</sub> -Y				9.525		3.18	4.5	0.4	11°	●	
	Minute DOC / Sharp Edge / Polished	DCGT 070201MP-CF	6.35	2.38	2.8	<0.1	7°	●		●			
		070202MP-CF				<0.2		●	●				
		DCGT 11T301MP-CF	9.525	3.97	4.4	<0.1	7°	●	●	●			
11T302MP-CF	<0.2	●				●		●					
	Finishing / Sharp Edge / Polished	DCGT 070201MFP-GF	6.35	2.38	2.8	<0.1	7°	●	●	●			
		070202MFP-GF				<0.2		●	●	●			
		070204MFP-GF				<0.4		●	●	●			
		DCGT 11T301MFP-GF	9.525	3.97	4.4	<0.1	7°	●	●	●			
		11T302MFP-GF				<0.2		●	●	●			
11T304MFP-GF	<0.4	●				●		●					
	Finishing / Sharp Edge / Polished	DCGT 0702005MFP-SKS	6.35	2.38	2.8	<0.05	7°	●	●	●			
		070201MFP-SKS				<0.1		●	●	●			
		070202MFP-SKS				<0.2		●	●	●			
	Finishing / Sharp Edge / Polished	DCGT 11T3005MFP-SKS	9.525	3.97	4.4	<0.05	7°	●	●	●			
		11T301MFP-SKS				<0.1		●	●	●			
		11T302MFP-SKS				<0.2		●	●	●			
		11T304MFP-SKS				<0.4		●	●	●			
	Semi-finishing / Sharp Edge / Polished	DCGT 070201MFP-SK	6.35	2.38	2.8	<0.1	7°	●	●	●			
		070202MFP-SK				<0.2		●	●	●			
		070204MFP-SK				<0.4		●	●	●			
	Semi-finishing / Sharp Edge / Polished	DCGT 11T301MFP-SK	9.525	3.97	4.4	<0.1	7°	●	●	●			
		11T302MFP-SK				<0.2		●	●	●			
		11T304MFP-SK				<0.4		●	●	●			
	Finishing / Sharp Edge / Polished	DCGT 070201MP-CK	6.35	2.38	2.8	<0.1	7°	●	●	●			
		070202MP-CK				<0.2		●	●	●			
	Finishing / Sharp Edge / Polished	DCGT 11T301MP-CK	9.525	3.97	4.4	<0.1	7°	●	●	●			
		11T302MP-CK				<0.2		●	●	●			
		11T304MP-CK				<0.4		●	●	●			
	Finishing-Medium / Sharp Edge / Polished	DCGT 070201MFP-GQ	6.35	2.38	2.8	<0.1	7°	●	●	●			
		070202MFP-GQ				<0.2		●	●	●			
		070204MFP-GQ				<0.4		●	●	●			
		DCGT 11T301MFP-GQ	9.525	3.97	4.4	<0.1	7°	●	●	●			
11T302MFP-GQ	<0.2	●				●		●					
11T304MFP-GQ	<0.4	●	●	●									
	Wiper Edge / Finishing	DCMX 070202WP	6.35	2.38	2.8	0.2	7°	●					
		070204WP				0.4		●					
		070208WP				0.8		●					
		DCMX 11T302WP	9.525	3.97	4.4	0.2	7°	●					
		11T304WP				0.4		●					
11T308WP	0.8	●											
	Wiper Edge / Finishing	DCMX 070204 R <sub>L</sub> -WP	6.35	2.38	2.8	0.4	7°	●					
		DCMX 11T304 R <sub>L</sub> -WP				9.525		3.97	4.4	0.4	7°	●	
	Finishing	DCMT 070202PP	6.35	2.38	2.8	0.2	7°	●		●			
		070204PP				0.4		●	●				
		DCMT 11T302PP	9.525	3.97	4.4	0.2	7°	●		●			
		11T304PP				0.4		●	●				
11T308PP	0.8	●	●										
	Finishing	DCMT 070202GP	6.35	2.38	2.8	0.2	7°	●		●			
		070204GP				0.4		●	●				
		DCMT 11T304GP	9.525	3.97	4.4	0.4	7°	●		●			
11T308GP	0.8	●				●							
Shape	Handed Insert shows Left-hand	Description	Dimensions (mm)					MEGACOAT NANO PLUS			MEGACOAT NANO		
			I.C.	Thickness	Hole	Corner-R (RE)	Relief Angel	PR1725	PR1705	PR1535			
	Medium	DCMT 070202GK	6.35	2.38	2.8	0.2	7°	●		●			
		070204GK				0.4		●	●				
		070208GK				0.8		●	●				
	Finishing-Medium	DCMT 11T302GK	9.525	3.97	4.4	0.2	7°	●		●			
		11T304GK				0.4		●	●				
		11T308GK				0.8		●	●				
	Finishing-Medium	DCMT 070202HQ	6.35	2.38	2.8	0.2	7°	●		●			
		070204HQ				0.4		●	●				
		070208HQ				0.8		●	●				
	Finishing-Medium	DCMT 11T302HQ	9.525	3.97	4.4	0.2	7°	●		●			
		11T304HQ				0.4		●	●				
		11T308HQ				0.8		●	●				
	Medium	DCMT 11T308	9.525	3.97	4.4	0.8	7°	●		●			
	Medium	DCGT 0702005M	6.35	2.38	2.8	<0.05	7°	●					
		070201M				<0.1		●					
		070202M				<0.2		●					
		070204M				<0.4		●					
		DCGT 11T3005M				9.525		3.97	4.4	<0.05	7°	●	
11T301M	<0.1	●											
11T302M	<0.2	●											
11T304M	<0.4	●											
	Medium / Sharp Edge	DCGT 0702005MF	6.35	2.38	2.8	<0.05	7°	●	●	●			
		070201MF				<0.1		●	●	●			
		070202MF				<0.2		●	●	●			
		070204MF				<0.4		●	●	●			
DCGT 11T3005MF	9.525	3.97	4.4	<0.05	7°	●	●	●					
11T301MF				<0.1		●	●	●					
11T302MF				<0.2		●	●	●					
11T304MF				<0.4		●	●	●					
	Low Carbon Steel / Finishing	DCMT 070204XP	6.35	2.38	2.8	0.4	7°	●		●			
		DCMT 11T302XP				9.525		3.97	4.4	0.2	●		●
		11T304XP								0.4	●		●
11T308XP	0.8	●		●									
	Finishing / Sharp Edge	DCET 0702005M R <sub>L</sub> -F	6.35	2.38	2.8	<0.05	7°		R	●			
		070201M R <sub>L</sub> -F				<0.1		●		●			
		070202M R <sub>L</sub> -F				<0.2		●		●			
		070204M R <sub>L</sub> -F				<0.4		●		●			
DCET 11T3005MR-F	9.525	3.97	4.4	<0.05	7°		R	●					
11T301M R <sub>L</sub> -F				<0.1		●		●					
11T302M R <sub>L</sub> -F				<0.2		●		●					
11T304M R <sub>L</sub> -F				<0.4		●		●					
	Low Feed / Sharp Edge	DCET 0702005MFR-U	6.35	2.38	2.8	<0.05	7°		R	●			
		070201MF R <sub>L</sub> -U				<0.1		●	R	●			
		070202MF R <sub>L</sub> -U				<0.2		●	R	●			
DCET 11T3005MFR-U	9.525	3.97	4.4	<0.05	7°		R	●					
11T301MF R <sub>L</sub> -U				<0.1		●	R	●					
11T302MF R <sub>L</sub> -U				<0.2		●	R	●					
11T304MFR-U				<0.4		●	R	●					
	Low Feed / Honed Edge	DCGT 070201MER-U	6.35	2.38	2.8	<0.1	7°		R				
		070202ME R <sub>L</sub> -U				<0.2		●					
		070204ME R <sub>L</sub> -U				<0.4		●					
DCGT 11T301ME R <sub>L</sub> -U	9.525	3.97	4.4	<0.1	7°		R						
11T302ME R <sub>L</sub> -U				<0.2		●							
11T304ME R <sub>L</sub> -U				<0.4		●							
	Low Feed / Sharp Edge	DCET 0702005MFR-J	6.35	2.38	2.8	<0.05	7°		R	●			
		070201MF R <sub>L</sub> -J				<0.1		●		●			
		070202MF R <sub>L</sub> -J				<0.2		●		●			
DCET 11T3005MFR-J	9.525	3.97	4.4	<0.05	7°		R	●					
11T301MF R <sub>L</sub> -J				<0.1		●	R	●					
11T302MF R <sub>L</sub> -J				<0.2		●	R	●					
11T304MFR-J				<0.4		●	R	●					

• Insert with corner R (RE) dimension expressed with less than sign (e.g. <0.1, <0.2 etc.) indicates models with minus tolerance for corner R (RE) ● : Standard Stock R : R-hand Only

# Stock Items (Positive)

Shape	Description	Dimensions (mm)					MEGACOAT		
		I.C.	Thickness	Hole	Corner-R (RE)	Relief Angel	NANO PLUS	PR1705	PR1535
	DCGT 11T3005MER-J	9.525	3.97	4.4	< 0.05	7°	R		
	11T301MER-J				< 0.1		R		
	11T302MER-J				< 0.2		R		
	11T304ME R/L-J				< 0.4		●		
	DPET 070202M R/L-FSF	9.525	3.97	4.4	< 0.2	11°	R		
	11T3005MR-FSF				< 0.05		R		
	11T301MR-FSF				< 0.1		R		
	DPET 11T302MR-FSF	6.35	2.38	2.8	< 0.2	11°	R		
	070201MFR-USF				< 0.1		R		
	070202MFR-USF				< 0.2		R		
	DPET 11T3005MFR-USF	9.525	3.97	4.4	< 0.05	11°	R		
	11T301MFR-USF				< 0.1		R		
	11T302MFR-USF				< 0.1		R		
	11T302MFR-USF				< 0.2		R		
	JCET 030101M R/L-FSF	3.5	1.4	1.9	< 0.1	7°	●		
	030102M R/L-F				< 0.2		●		●
	JCET 030102M R/L-F	3.5	1.4	1.9	< 0.2	7°	●		●
	030104M R/L-F				< 0.4		●		●
	TBGT 060101MP-CF	3.97	1.59	2.3	< 0.1	5°	●		●
	060102MP-CF				< 0.2		●	●	●
	TBGT 060101MFP-PF	3.97	1.59	2.3	< 0.1	5°	●		●
	060102MFP-PF				< 0.2		●		●
	060104MFP-PF				< 0.4		●		●
	TBET 0601005M R/L	3.97	1.59	2.3	< 0.05	5°	●		●
	060101M R/L				< 0.1		●		●
	060102M R/L				< 0.2		●	L	●
	060104M R/L				< 0.4		●	●	●
	TCMX 090204WP	5.56	2.38	2.5	0.4	7°	●		
	TCMX 110204WP	6.35	2.38	2.8	0.4	7°	●		
	TCET 1103005MFR-USF	6.35	3.18	2.8	< 0.05	7°	R		
	110301MFR-USF				< 0.1		R		
	110302MFR-USF				< 0.2		R		
	TCGT 080202MER-U	4.76	2.38	2.3	< 0.2	7°	R		
	110302ME R/L-U				< 0.2		●		
	110304MER-U				< 0.4		R		
	TPGT 080201MP-CF	4.76	2.38	2.3	< 0.1	11°	●		●
	080202MP-CF				< 0.2		●	●	●
	090201MP-CF				< 0.1		●		●
	TPGT 090202MP-CF	5.56	2.38	3.0	< 0.2	11°	●	●	●
	090201MFP-PF				< 0.1		●		●
	090202MFP-PF				< 0.2		●		●
	TPMX 090204MFP-PF	5.56	2.38	3.0	< 0.4	11°	●		●
	TPMX 090202WP				0.2		●		
	090204WP				0.4		●		
	TPMX 090208WP	6.35	3.18	3.3	0.8	11°	●		
	TPMX 110302WP				0.2		●		
	110304WP				0.4		●		
	110308WP				0.8		●		
	TPMX 110304 R/L-WP	6.35	3.18	3.3	0.4	11°	●		

Shape	Description	Dimensions (mm)					MEGACOAT						
		I.C.	Thickness	Hole	Corner-R (RE)	Relief Angel	NANO PLUS	PR1705	PR1535				
	TPMT 090202PP	5.56	2.38	2.8	0.2	11°	●		●				
	090204PP				0.4		●		●				
	TPMT 110302PP				6.35		3.18	3.3	0.2	11°	●		●
	110304PP								0.4		●		●
	110308PP								0.8		●		●
	TPMT 090202GP	5.56	2.38	2.8	0.2	11°	●		●				
	090204GP				0.4		●		●				
	TPMT 110304GP				6.35		3.18	3.3	0.4	11°	●		●
	110308GP								0.8		●		●
	TPMT 160304GP								9.525		3.18	4.4	0.4
	TPMT 090202HQ	5.56	2.38	2.8	0.2	11°	●		●				
	090204HQ				0.4		●		●				
	TPMT 110302HQ				6.35		3.18	3.3	0.2	11°	●		●
	110304HQ								0.4		●		●
	110308HQ								0.8		●		●
	TPMT 160302HQ	9.525	3.18	4.4	0.2	11°	●		●				
	160304HQ				0.4		●		●				
	160308HQ				0.8		●		●				
	TPMT 090204XP				5.56		2.38	2.8	0.4	11°	●		●
	TPMT 110304XP	6.35	3.18	3.3	0.4	11°	●		●				
	110308XP				0.8		●		●				
	TPMT 160304XP				9.525		3.18	4.4	0.4	11°	●		●
	160308XP								0.8		●		●
	TPGH 080201 R/L								4.76		2.38	2.3	0.1
080202 R/L	0.2	●	●	●									
080204 R/L	0.4	●	●	●									
	TPGH 090201 R/L	5.56	2.38	3.0	0.1	11°	●		●				
	090202 R/L				0.2		●	●	●				
	090204 R/L				0.4		●	●	●				
	TPGH 110202 R/L	6.35	2.38	3.5	0.2	11°	●	L	●				
	110204 R/L				0.4		●	L	●				
	TPGH 110302 R/L	6.35	3.18	3.3	0.2	11°	●	●	●				
	110304 R/L				0.4		●	●	●				
110308 R/L	0.8				●		L	●					
	TPGH 160302 R/L	9.525	3.18	4.5	0.2	11°	●		●				
	160304 R/L				0.4		●	L	●				
	160308 R/L				0.8		●		●				
	TPGH 090201L-H				5.56		2.38	3.0	0.1	11°	L	L	
090202L-H	0.2	L	L										
090204L-H	0.4	L	L										
	TPGH 110302 R/L-H	6.35	3.18	3.3	0.2	11°	●		●				
	110304 R/L-H				0.4		●		●				
	110308 R/L-H				0.8		●		●				
	TPGH 160304 R/L-H	9.525	3.18	4.5	0.4	11°	●		●				
160308 R/L-H	0.8				●			●					
	TPET 080202L-FSF	4.76	2.38	2.3	0.2	11°	L						
	TPET 1103005L-FSF				0.05		L						
	TPET 110301 R/L-FSF				0.1		●		●				
	TPET 110302 R/L-FSF	6.35	3.18	3.3	0.2	11°	●						
	TPEH 080201M R/L-P				4.76		2.38	2.3	< 0.1	11°	●		●
	080202M R/L-P								< 0.2		●		●
080204M R/L-P	< 0.4	●		●									
	TPEH 090201M R/L-P	5.56	2.38	3.0	< 0.1	11°	●		●				
	090202M R/L-P				< 0.2		●		●				
	090204M R/L-P				< 0.4		●		●				
	TPEH 110301M R/L-P				6.35		3.18	3.3	< 0.1	11°	●		●
110302M R/L-P	< 0.2	●		●									
110304M R/L-P	< 0.4	●		●									
	TPET 080202F R/L-USF	4.76	2.38	2.3	0.2	11°	●						
	TPET 110301FL-USF				6.35		3.18	3.3	0.1	11°	L		
	110302F R/L-USF								0.2		●		

\* Insert with corner R (RE) dimension expressed with less than sign (e.g. <0.1, <0.2 etc.) indicates models with minus tolerance for corner R (RE)

● : Standard Stock R : R-hand Only L : L-hand Only

# Stock Items (Positive)











Shape Handed Insert shows Left-hand	Description	Dimensions (mm)				MEGACOAT NANO PLUS			MEGA COAT NANO
		I.C.	Thickness	Hole	Corner-R (RE)	Relief Angel	PR1725	PR1705	
	VBMT 110302PP	6.35	3.18	2.8	0.2	5°	●	●	●
	110304PP				0.4		●	●	●
	110308PP				0.8		●	●	●
	VBMT 160404PP	9.525	4.76	4.4	0.4	5°	●	●	●
	160408PP				0.8		●	●	●
	160412PP				1.2		●	●	●
	VBMT 110304GP	6.35	3.18	2.8	0.4	5°	●	●	●
	160404GP				0.4		●	●	●
	160408GP				0.8		●	●	●
	VBMT 110302VF	6.35	3.18	2.8	0.2	5°	●	●	●
	110304VF				0.4		●	●	●
	110308VF				0.8		●	●	●
	160402VF				0.2		5°	●	●
160404VF	0.4	●	●	●					
160408VF	0.8	●	●	●					
	VBMT 160412VF	9.525	4.76	4.4	1.2	5°	●	●	●
	160404HQ				0.4		●	●	●
	160408HQ				0.8		●	●	●
	160412HQ				1.2		●	●	●
	VBET 1103005M <sup>R/L-F</sup>	6.35	3.18	2.8	<0.05	5°	●	●	●
	110301M <sup>R/L-F</sup>				<0.1		●	R	●
	110302M <sup>R/L-F</sup>				<0.2		●	●	●
	VBET 1103005M <sup>R/L-Y</sup>	6.35	3.18	2.8	<0.05	5°	●	●	●
	110301M <sup>R/L-Y</sup>				<0.1		●	●	●
	110302M <sup>R/L-Y</sup>				<0.2		●	●	●
	VBGT 160402MR-Y	9.525	4.76	4.4	<0.2	5°		R	
	160404MR-Y				<0.4			R	
	VCGT 110301MP-CF	6.35	3.18	2.8	<0.1	7°	●	●	●
	110302MP-CF				<0.2		●	●	●
	VCGT 110301MFP-GF	6.35	3.18	2.8	<0.1	7°	●	●	●
	110302MFP-GF				<0.2		●	●	●
	VCGT 110301MFP-SKS	6.35	3.18	2.8	<0.1	7°	●	●	●
	110302MFP-SKS				<0.2		●	●	●
	110304MFP-SKS				<0.4		●	●	●
	VCMT 080202PP	4.76	2.38	2.3	0.2	7°	●	●	●
	080204PP				0.4		●	●	●
	160404PP				0.4		7°	●	●
160408PP	0.8	●	●	●					
	VCMT 080202VF	4.76	2.38	2.3	0.2	7°	●	●	●
	080204VF				0.4		●	●	●
	VCMT 080202HQ	4.76	2.38	2.3	0.2	7°	●	●	●
	080204HQ				0.4		●	●	●
	VCET 110301M <sup>R/L-F</sup>	6.35	3.18	2.8	<0.1	7°	●	●	●
	110302M <sup>R/L-F</sup>				<0.2		●	●	●
	110304M <sup>R/L-F</sup>				<0.4		●	●	●
	VCET 1103005M <sup>R/L-Y</sup>	6.35	3.18	2.8	<0.05	7°	●	●	●
	110301M <sup>R/L-Y</sup>				<0.1		●	●	●
	110302M <sup>R/L-Y</sup>				<0.2		●	●	●
	VPGT 110301MP-CF	6.35	3.18	2.8	<0.1	11°	●	●	●
	110302MP-CF				<0.2		●	●	●

Shape Handed Insert shows Left-hand	Description	Dimensions (mm)				MEGACOAT NANO PLUS			MEGA COAT NANO
		I.C.	Thickness	Hole	Corner-R (RE)	Relief Angel	PR1725	PR1705	
	VPGT 110301MFP-GF	6.35	3.18	2.8	<0.1	11°	●	●	●
	110302MFP-GF				<0.2		●	●	●
	VPGT 110301MFP-SKS	6.35	3.18	2.8	<0.1	11°	●	●	●
	110302MFP-SKS				<0.2		●	●	●
	110304MFP-SKS				<0.4		●	●	●
	VPGT 080201MP-CK	4.76	2.38	2.3	<0.1	11°	●	●	●
	080202MP-CK				<0.2		●	●	●
	VPGT 110301MP-CK	6.35	3.18	2.8	<0.1	11°	●	●	●
	110302MP-CK				<0.2		●	●	●
	VPET 080201M <sup>R/L-F</sup>	4.76	2.38	2.3	<0.1	11°	●	●	●
	080202M <sup>R/L-F</sup>				<0.2		●	●	●
	VPET 1103005MR-F	6.35	3.18	2.8	<0.05	11°		R	R
	110301MR-F				<0.1			R	R
	110302M <sup>R/L-F</sup>				<0.2		●	●	●
	VPET 080201MF <sup>R/L-U</sup>	4.76	2.38	2.3	<0.1	11°	●	●	●
	080202MF <sup>R/L-U</sup>				<0.2		●	●	●
	VPET 1103005MF <sup>R/L-U</sup>	6.35	3.18	2.8	<0.05	11°	●	●	●
	110301MF <sup>R/L-U</sup>				<0.1		●	●	●
	110302MF <sup>R/L-U</sup>				<0.2		●	●	●
	VPET 1103005MFR-J	6.35	3.18	2.8	<0.05	11°		R	R
	110301MF <sup>R/L-U</sup>				<0.1		●	●	●
	110302MF <sup>R/L-U</sup>				<0.2		●	●	●
	WBGT 060101MP <sup>R/L-CF</sup>	3.97	1.59	2.3	<0.1	5°	●		●
	060102MP <sup>R/L-CF</sup>				<0.2		●	L	●
	WBGT 060101MFP <sup>R/L-PF</sup>	3.97	1.59	2.3	<0.1	5°	●	●	●
	060102MFP <sup>R/L-PF</sup>				<0.2		●	●	●
	080201MFP <sup>R/L-PF</sup>				<0.1		●	●	●
	WBGT 080201MFP <sup>R/L-PF</sup>	4.76	2.38	2.3	<0.1	5°	●	●	●
	080202MFP <sup>R/L-PF</sup>				<0.2		●	●	●
	WBMT 060102 <sup>R/L-DP</sup>	3.97	1.59	2.3	0.2	5°	●	●	●
	060104 <sup>R/L-DP</sup>				0.4		●	●	●
	080202 <sup>R/L-DP</sup>				0.2		5°	●	●
080204 <sup>R/L-DP</sup>	0.4	●	●	●					
	WBET 0601005ML-F	3.97	1.59	2.3	<0.05	5°		L	L
	060101M <sup>R/L-F</sup>				<0.1		●	L	●
	060102M <sup>R/L-F</sup>				<0.2		●	L	●
	060104M <sup>R/L-F</sup>				<0.4		●	L	●
	WBET 080201ML-F	4.76	2.38	2.3	<0.1	5°		L	L
	080202ML-F				<0.2		●		●
	080204M <sup>R/L-F</sup>				<0.4		●		●
	WBET 080201M <sup>R/L-P</sup>	4.76	2.38	2.3	<0.1	5°	●	●	●
	080202M <sup>R/L-P</sup>				<0.2		●	●	●
	080204M <sup>R/L-P</sup>				<0.4		●	●	●
	WPMT 110204GP	6.35	2.38	2.8	0.4	11°	●		
	160304GP	9.525	3.18	4.4	0.4	11°	●		
	WPMT 110202HQ	6.35	2.38	2.8	0.2	11°	●		
	110204HQ				0.4		●		
	160304HQ				0.4		11°	●	
160308HQ	0.8	●							
	WPGT 110204M <sup>R/L-Y</sup>	6.35	2.38	2.8	<0.4	11°	L	●	

● : Standard Stock R : R-hand Only L : L-hand Only

\* Insert with corner R (RE) dimension expressed with less than sign (e.g. <0.1, <0.2 etc.) indicates models with minus tolerance for corner R (RE)













## Stock Items (Negative)

Shape	Description	Dimensions (mm)				MEGACOAT NANO PLUS		MEGACOAT NANO
		I.C.	Thickness	Hole	Corner-R (RE)	PR1725	PR1535	PR1535
 Finishing-Medium / Sharp Edge / Polished	CNGG 120402MFP-SK	12.70	4.76	5.16	< 0.2	●	●	
	120404MFP-SK				< 0.4	●	●	
 Medium-Roughing / Sharp Edge / Polished	CNGG 120404FP-TK	12.70	4.76	5.16	0.4	●	●	
	120408FP-TK				0.8	●	●	
 Finishing-Medium / Sharp Edge / Polished	DNGG 150402MFP-SK	12.70	4.76	5.16	< 0.2	●	●	
	150404MFP-SK				< 0.4	●	●	
 Large DOC	DNMG 150402R-LD	12.70	4.76	5.16	0.2	R	R	
	150404R-LD				0.4	R	R	
 Medium-Roughing / Sharp Edge / Polished	DNGG 150404FP-TK	12.70	4.76	5.16	0.4	●	●	
	150408FP-TK				0.8	●	●	
 Finishing-Medium / Sharp Edge / Polished	TNGG 160401MFP-SK	9.525	4.76	3.81	< 0.1	●	●	
	160402MFP-SK				< 0.2	●	●	
	160404MFP-SK				< 0.4	●	●	
 Large DOC	TNMG 160402R-LD	9.525	4.76	3.81	0.2	R	R	
	160404R-LD				0.4	R	R	
 Medium-Roughing / Sharp Edge / Polished	TNGG 160404FP-TK	9.525	4.76	3.81	0.4	●	●	
	160408FP-TK				0.8	●	●	
 Finishing / Surface Roughness Oriented / Sharp Edge	TNGG 160402 <sup>R/L-S</sup>	9.525	4.76	3.81	0.2	●	●	
	160404 <sup>R/L-S</sup>				0.4	●	●	
	160408 <sup>R/L-S</sup>				0.8	●	●	
 Finishing-Medium / Sharp Edge / Polished	VNGG 160402MFP-SK	9.525	4.76	3.81	< 0.2	●	●	
	160404MFP-SK				< 0.4	●	●	

● : Standard Stock R : R-hand Only

\* Insert with corner R (RE) dimension expressed with less than sign (e.g. <0.1, <0.2 etc.) indicates models with minus tolerance for corner R (RE)

## Stock Item (Small double-sided tooling)

Shape	Description	Dimensions (mm)				MEGACOAT NANO PLUS		MEGACOAT NANO
		I.C.	Thickness	Hole	Corner-R (RE)	PR1725	PR1705	PR1535
 Finishing-Medium / Sharp Edge / Polished	CNGU 070301MFP-SK	7.5	3.18	3.6	< 0.1	●	●	
	070302MFP-SK				< 0.2	●	●	
 Medium-Roughing / Honed Edge	CNMU 070302E-GK	7.5	3.18	3.6	0.2	●	●	
	070304E-GK				0.4	●	●	
 Finishing / Sharp Edge	CNGU 0703005MFR-F	7.5	3.18	3.6	< 0.05		R	
	070301MFR-F				< 0.1	R	R	R
	070302MFR-F				< 0.2	R	R	R
	070304MFR-F				< 0.4	R	R	R
 Low Feed / Sharp Edge	CNGU 0703005MFR-U	7.5	3.18	3.6	< 0.05		R	
	070301MFR-U				< 0.1	R	R	R
	070302MFR-U				< 0.2	R	R	R
	070304MFR-U				< 0.4	R	R	R
 Finishing-Medium / Sharp Edge / Polished	DNGU 080301MFP-SK	7.0	3.18	3.6	< 0.1	●	●	
	080302MFP-SK				< 0.2	●	●	
	080304MFP-SK				< 0.4	●	●	
 Medium-Roughing / Honed Edge	DNMU 080302E-GK	7.0	3.18	3.6	0.2	●	●	
	080304E-GK				0.4	●	●	
 Finishing / Sharp Edge	DNGU 080301MFR-F	7.0	3.18	3.6	< 0.1	R	R	
	080302MFR-F				< 0.2	R	R	R
	080304MFR-F				< 0.4	R	R	R
 Low Feed / Sharp Edge	DNGU 080301MFR-U	7.0	3.18	3.6	< 0.1	R	R	
	080302MFR-U				< 0.2	R	R	R
	080304MFR-U				< 0.4	R	R	R
 Low Feed / Honed Edge	DNGU 080301MER-U	7.0	3.18	3.6	< 0.1	R	R	
	080302MER-U				< 0.2	R	R	R
	080304MER-U				< 0.4	R	R	R
 Finishing / Sharp Edge	TNGU 090301MFR-F	5.56	3.18	3.0	< 0.1	R	R	
	090302MFR-F				< 0.2	R	R	R
	090304MFR-F				< 0.4	R	R	R
 Low Feed / Sharp Edge	TNGU 090301MFR-U	5.56	3.18	3.0	< 0.1	R	R	
	090302MFR-U				< 0.2	R	R	R
	090304MFR-U				< 0.4	R	R	R
 Low Feed / Honed Edge	TNGU 090304MER-U	5.56	3.18	3.0	< 0.4	R	R	

● : Standard Stock R : R-hand Only

\* Insert with corner R (RE) dimension expressed with less than sign (e.g. <0.1, <0.2 etc.) indicates models with minus tolerance for corner R (RE)

\* For more details on applicable toolholders, see the KYOCERA general product catalog



## Additional Small Part Applications

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Expanded lineup of PR1725/PR1705 for many products

Small Parts Machining

# KTKF Series

### Cut-off

Cut-off for small parts machining

**TKF**

Cut-off for small parts machining  
Sub-spindle operations

**TKFS**

### Back Turning

For Back turning

**TKFB**

For Back turning

**TKFB**  
**GQ Chipbreaker**

### Threading

For Threading

**TKFT**

### Multipurpose

KTKF for small part machining applications

**TKF GTP Chipbreaker**



Small Internal Machining

# EZ Bar Series

### Boring

For Small internal machining

**EZ Bar**

Indexable boring bar

**EZ Bar PLUS**



### Small Internal Grooving

High-Precision Small Internal Grooving

**SIGC**

### Back Turning

For Back turning

**ABS/ABW**

### Copying

25° Insert Profiling Tools

**ZBMT**



# FEATURED INSERTS FOR VIBRATION MACHINING

## - Introduction -

Chips issues are common when machining small parts

There is an increasing demand for reducing labor, increasing automation, and productivity improvement in small parts machining as the trend for lights-out machining grows.

- Shorter tool life : Chipping due to chip entanglement
- Decline in quality : Chips causing damage to the workpiece
- Costly downtime : Stopping machines to clean or remove chips

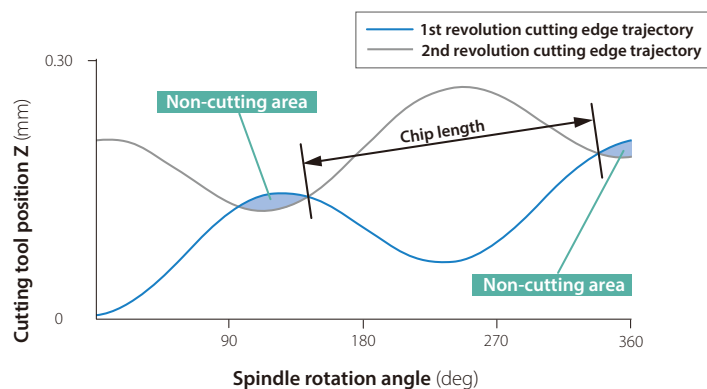
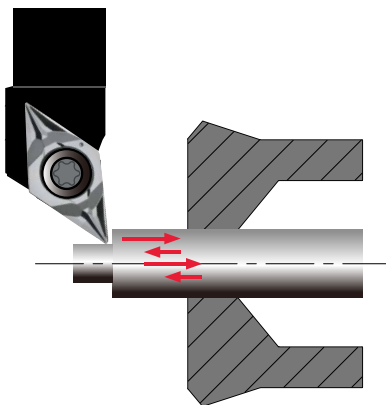


## Utilizing vibration machining

### What is vibration machining ?

The unique vibration machining method generates intentional micro vibrations of a tool or workpiece in a cutting direction to finely cut chips. This creates a stable and intermittent discharge of chips to prevent entanglement issues with the workpiece and is compatible with a variety of workpiece materials.

Example of vibration machining



## Solution

Inserts for high precision, high quality, and high productivity

Combination of a high toughness substrate and special coating to withstand high machining load

PVD Coating MEGACOAT NANO

**PR1535**

+

Low cutting resistance enables longer tool life and stable machining

Controls chips with a slanted cutting edge

Molded Sharp Edge Chipbreaker

**SK Chipbreaker**

**CK Chipbreaker**

MEGACOAT NANO

# PR1535

Fracture resistant with a tough substrate and high heat-resistant coating  
Stable machining with high machining load in vibration machining

**Point 1** Toughening by a new cobalt mixing ratio  
\*Internal evaluation

↑  
23%  
Fracture toughness \*

**Point 2** Various machining applications, from continuous to heavy interruption

**Point 3** MEGACOAT NANO coating technology for long tool life and stable machining

	Base material hardness (HV)	Fracture toughness (MPam <sup>1/2</sup> )	Flexural strength (Mpa)
<b>PR1225</b>	1,600	13.0	3,400
<b>PR1535</b>	1,320	16.0	3,700

Cracking comparison by diamond indenter (Internal evaluation)



Molded Sharp Edge Chipbreaker

# SKChipbreaker / CKChipbreaker

Unique sharp edge chipbreaker maintains long tool life and stable machining in vibration machining

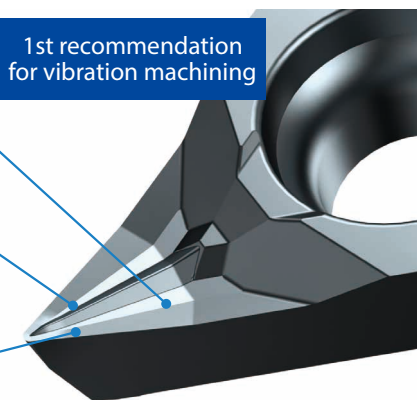
**SK Chipbreaker** Low cutting force, for finishing

1st recommendation for vibration machining

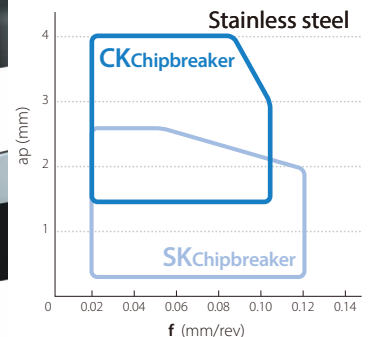
Stable chip evacuation in large D.O.C. due to large rake angle

Chip control is improved in small depths of cut due to chipbreaker projecting out to the corner tip

Cutting force is reduced as the cutting edge is lowered towards the center of the workpiece



Applicable chipbreaker range (for vibration machining)

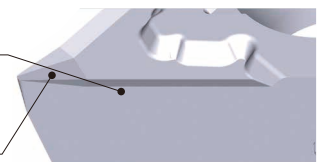


**CK Chipbreaker** Low cutting force, for general purpose



Cutting force is reduced as the cutting edge is lowered towards the center of the workpiece

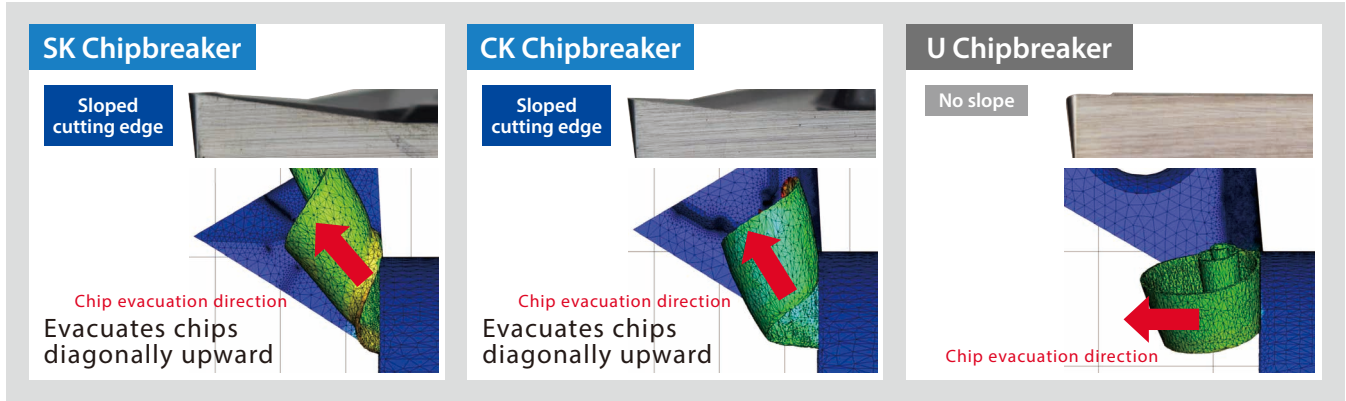
Large rake angle reduces cutting force  
Stable chip evacuation



# FEATURED INSERTS FOR VIBRATION MACHINING

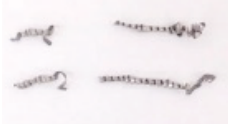




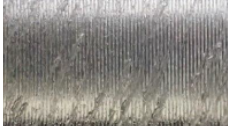



Chip evacuation examples (Internal evaluation)

**SK and CK chipbreakers evacuate chips upward with sloped cutting edge**  
**Prevents workpiece damage due to chip entanglement**



Machining condition comparison in vibration machining (Internal evaluation)

**SK chipbreaker shows good chip condition, reduced burrs, and excellent surface finish.**  
**In vibration machining, the combination of PR1535 and SK or CK chipbreakers provides excellent performance**

	SK Chipbreaker	Competitor Q (Sloped cutting edge)	Competitor R (No slope)
<b>Chips</b>	✓ 	✗ 	✗ 
<b>Surface finish</b>	✓ 	✓ 	✗ 
<b>Burr</b>	✓ 	✗ 	✓ 

Cutting conditions :  $V_c = 60$  m/min,  $f = 0.05$  mm/rev,  $a_p = 2.0$  mm, SUS304