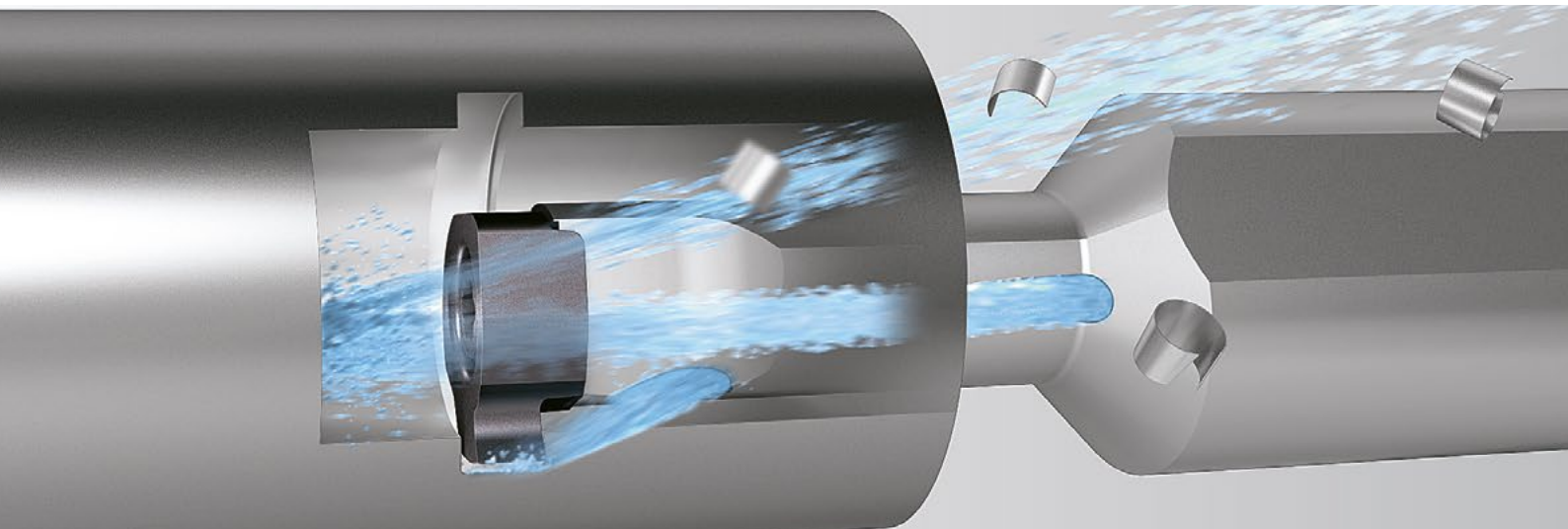


THE NEW VALUE FRONTIER



High-precision  
small internal grooving | **SIGC**

# SIGC



## High-precision small internal grooving tool series

Newly developed clamping system ensures a firm insert hold to provide high-precision machining

Excellent chip evacuation with double coolant holes

Minimum cutting diameter  $\varnothing 8$  mm

Excellent bars and carbide shank bars added to the lineup



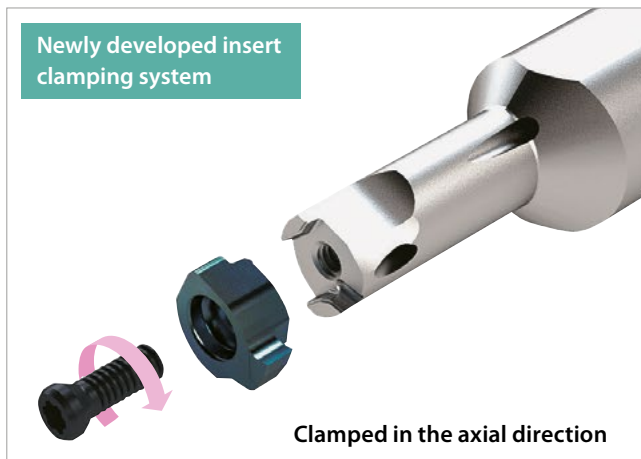
High-precision small internal grooving

# SIGC

Newly developed clamping system ensures a firm insert hold to provide high-precision machining. Excellent chip evacuation with double coolant holes and optimized flute shape with a  $\varnothing 8$  mm minimum cutting diameter.

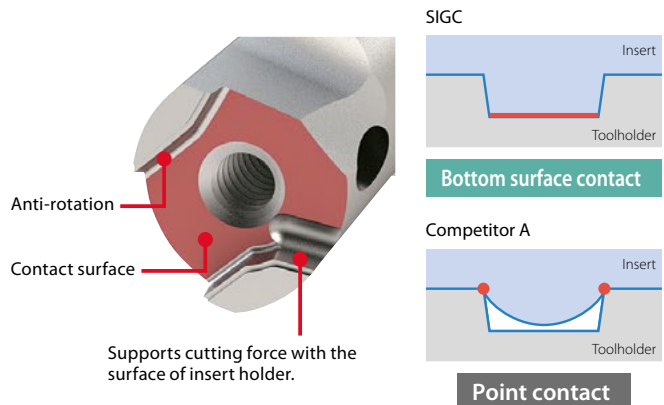
## 1 Firm insert clamping system provides high-precision machining

Firm clamping action by pulling the bottom surface of the insert in axial direction  
 Precise machining is achieved by ensuring a firm clamp on the insert



### Clamping part (image)

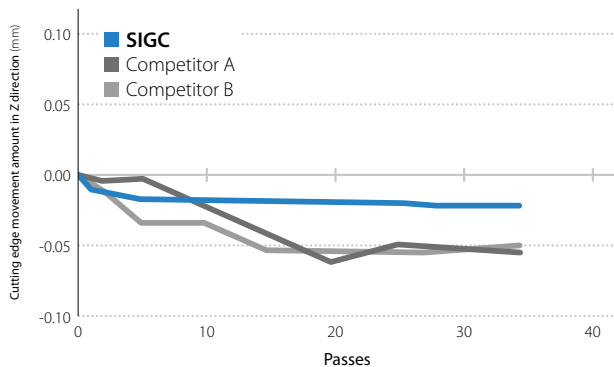
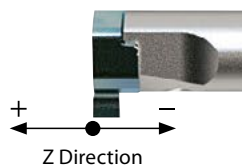
Firm clamping is available due to large contact surface



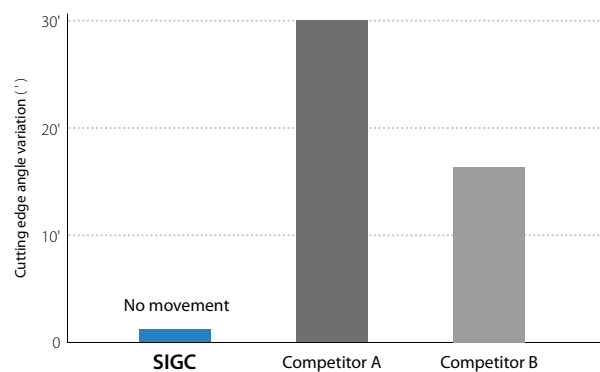
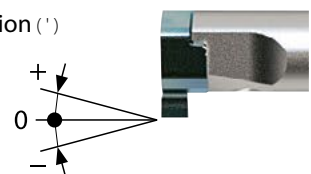
### Cutting edge stability position comparison (internal evaluation)

Measurement of the cutting edge position and angle after turning

Cutting edge movement amount in z direction (mm)



Cutting edge angle variation (°)

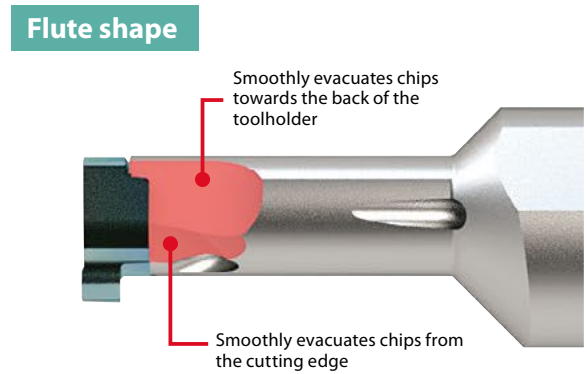
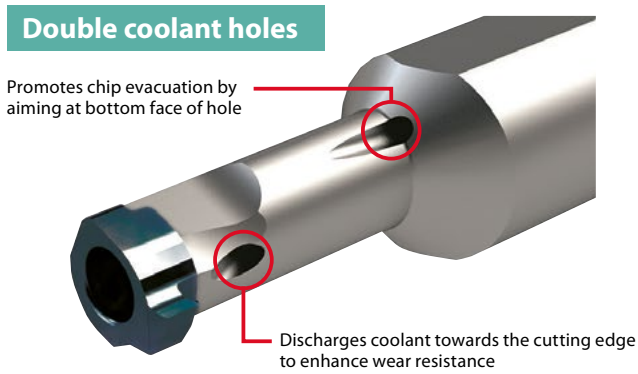


Cutting conditions:  $V_c = 50$  m/min,  $a_p = 0.2$  mm,  $f = 0.05$  mm/rev, wet, workpiece : 34CrMo4 External turning

SIGC ensures high precision machining by preventing cutting edge position movement

## 2 Excellent chip evacuation

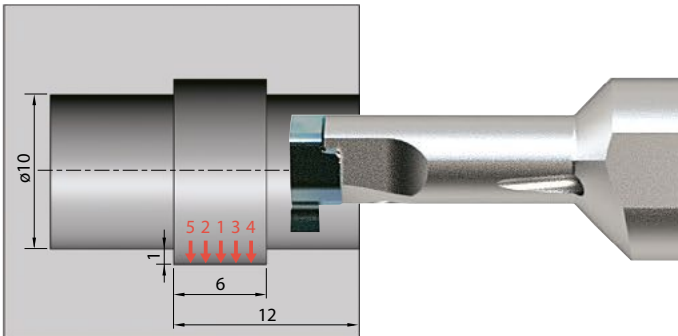
### Excellent chip evacuation with double coolant holes and optimized flute shape



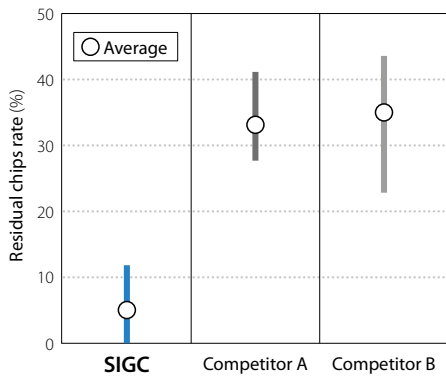
Provides a better solution when facing chip evacuation difficulties in small internal grooving  
Prevents chip crunching

### Chip evacuation comparison (internal evaluation)

Cutting conditions:  $V_c = 50$  m/min,  $a_p = 1.0$  mm (Shouldering),  $f = 0.03$  mm/rev, wet (Internal coolant), Workpiece: 15CrMo4, with edge width 2 mm

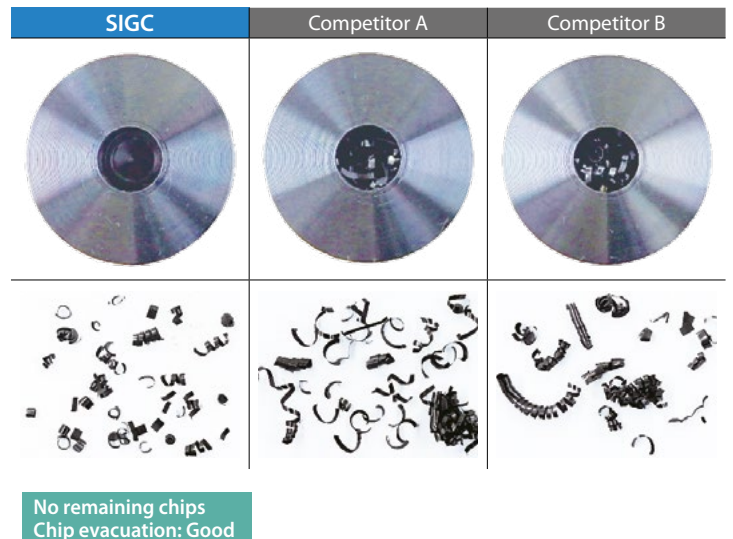


### Residual chips rate (%)



$$\text{Residual chips rate (\%)} = \frac{\text{Weight of remaining chip in the hole (g)}}{\text{Weight of machined part (g)}} \times 100$$

### Chip evacuation comparison



# Applicable inserts

Inserts Right-hand insert shown	Description	Dimension (mm)							MEGACOAT NANO PLUS		MEGACOAT NANO		Applicable toolholders		
		CW	CDX	RE	W1	INSL	S	D1	PR1725		PR1535				
									R	L	R	L			
	GC08 <sup>R</sup> /L	100-005	1.00	1.5	0.05	3.4	7.7	3.5	2.7	●	●	●	●	SIGC <sup>R</sup> /L0812-EH SIGC <sup>R</sup> /L0806-WH	
		120-005	1.20							●	●	●	●		
		125-005	1.25							●	●	●	●		
		150-010	1.50							●	●	●	●		
		200-010	2.00							●	●	●	●		
	GC10 <sup>R</sup> /L	100-005	1.00	2.2	0.05	4.7	9.6	4.4	3.5	●	●	●	●		SIGC <sup>R</sup> /L1016-EH SIGC <sup>R</sup> /L1008-WH-L85 SIGCR1008-WH-L100
		120-005	1.20							●	●	●	●		
		125-005	1.25							●	●	●	●		
		145-010	1.45							●	●	●	●		
		150-010	1.50		0.1			●	●	●	●				
		200-010	2.00					●	●	●	●				
		250-020	2.50		0.2			●	●	●	●				
		300-020	3.00					●	●	●	●				
	GC12 <sup>R</sup> /L	100-005	1.00	2.2	0.05	4.7	11.6	5.4	3.5	●	●	●	●		SIGC <sup>R</sup> /L1216-EH SIGCR1210-WH-L95 SIGC <sup>R</sup> /L1210-WH-L110
		120-005	1.20							●	●	●	●		
		125-005	1.25							●	●	●	●		
		145-010	1.45							●	●	●	●		
		150-010	1.50		0.1			●	●	●	●				
		200-010	2.00					●	●	●	●				
		250-020	2.50		0.2			●	●	●	●				
		300-020	3.00					●	●	●	●				

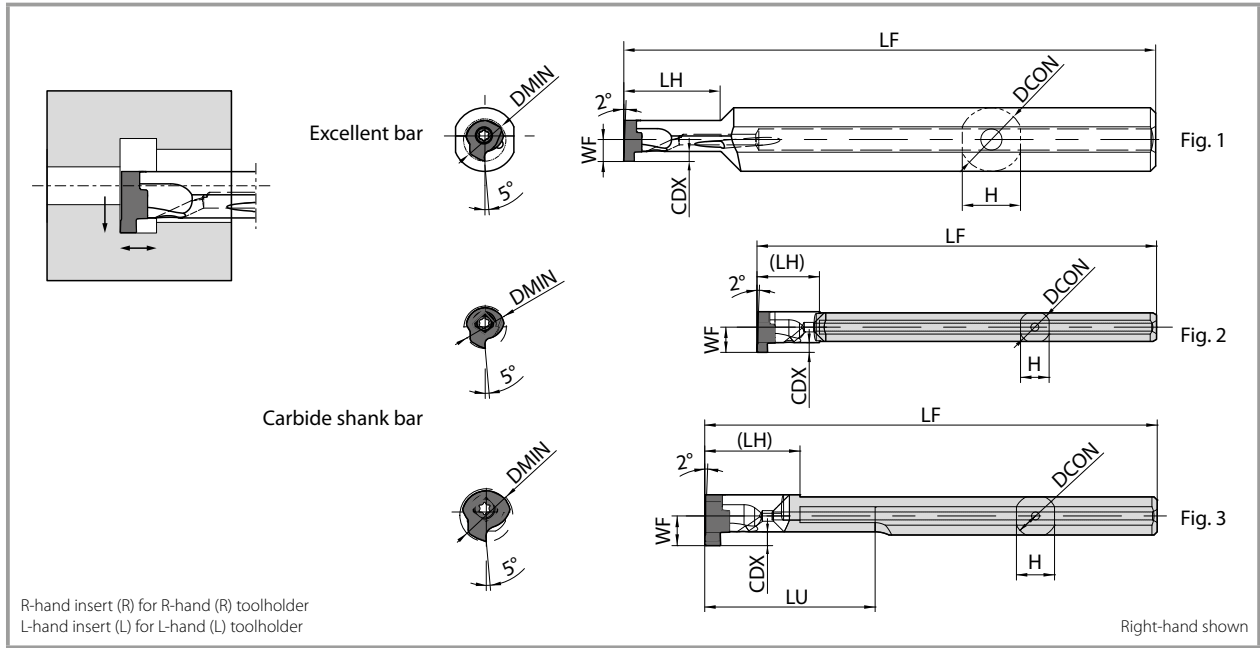
· CDX : shows available grooving depth  
 · Inserts are sold in 5 piece boxes

● : Available

# Recommended cutting conditions

Workpiece	Recommended insert grade Vc: m/min		(1) f for Grooving (mm/rev)			Notes
	MEGACOAT NANO PLUS	MEGACOAT NANO	(2) f for Turning (mm/rev)			
			(3) ap for Turning (mm)			
			GC08 <sup>R</sup> /L...	GC10 <sup>R</sup> /L, GC12 <sup>R</sup> /L 100 ~ 200...	GC10 <sup>R</sup> /L, GC12 <sup>R</sup> /L 250 ~ 300...	
PR1725	PR1535					
Carbon steel	★ 50 ~ 80	☆ 50 ~ 80	(1) 0.01 ~ 0.03	(1) 0.02 ~ 0.04	(1) 0.02 ~ 0.04	Wet
			(2) 0.01 ~ 0.03	(2) 0.02 ~ 0.04	(2) 0.02 ~ 0.04	
			(3) Max. 0.05	(3) Max. 0.05	(3) Max. 0.1	
Alloy steel	★ 50 ~ 80	☆ 50 ~ 80	(1) 0.01 ~ 0.03	(1) 0.02 ~ 0.04	(1) 0.02 ~ 0.04	
			(2) 0.01 ~ 0.03	(2) 0.02 ~ 0.04	(2) 0.02 ~ 0.04	
			(3) Max. 0.05	(3) Max. 0.05	(3) Max. 0.1	
Stainless steel	☆ 50 ~ 80	★ 50 ~ 80	(1) 0.01 ~ 0.03	(1) 0.01 ~ 0.03	(1) 0.01 ~ 0.03	
			(2) 0.01 ~ 0.03	(2) 0.01 ~ 0.03	(2) 0.01 ~ 0.03	
			(3) Max. 0.05	(3) Max. 0.05	(3) Max. 0.1	

★ : 1st Recommendation ☆ : 2nd Recommendation

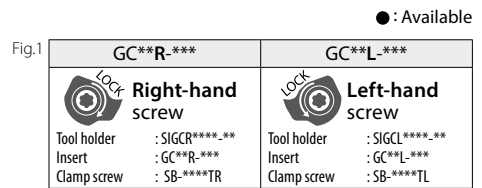


Toolholder dimensions

Description	Availability		Min. cutting dia.	Dimension (mm)										Spare parts		Applicable insert
	R	L		DMIN	DCON	H	LF	LU	LH	WF	CDX	Shape	Clamp screw	Wrench		
															Icon	
SIGC <sup>®</sup> /L 0812-EH	●	●	8	12	11	100	-	18	4.1	1.5	Fig. 1	SB-2270T <sup>®</sup> /L	FT-7	GC08 <sup>®</sup> /L100-005 ~ GC08 <sup>®</sup> /L200-010		
1016-EH	●	●	10	16	15	100	-	21	5.0	2.2				SB-3070T <sup>®</sup> /L	FT-8	GC10 <sup>®</sup> /L100-005 ~ GC10 <sup>®</sup> /L300-020
1216-EH	●	●	12	16	15	110	-	25	6.0	2.2				SB-3070T <sup>®</sup> /L	FT-8	GC12 <sup>®</sup> /L100-005 ~ GC12 <sup>®</sup> /L300-020
SIGC <sup>®</sup> /L 0806-WH	●	●	8	6	5.4	75	-	12	4.8	1.5	Fig. 2	SB-2270T <sup>®</sup> /L	FT-7	GC08 <sup>®</sup> /L100-005 ~ GC08 <sup>®</sup> /L200-010		
1008-WH-L85	●	●	10	8	7.2	85	32	18	5.6	2.2				Fig. 3	SB-3070T <sup>®</sup> /L	FT-8
1008-WH-L100	●	●				100	45				9.2	110	45			
1210-WH-L95	●	●	12	10	9.2	95	32	110	45	6.6				2.2	Fig. 3	SB-3070T <sup>®</sup> /L
1210-WH-L110	●	●				GC12 <sup>®</sup> /L100-005 ~ GC12 <sup>®</sup> /L300-020										

Mounting inserts

Use compressed air or other measures to remove chips from the insert pocket  
 Mount the insert into the toolholder ensure the bottom makes contact with the end of the toolholder's surface  
 Keeping the insert seated, tighten the insert clamp screw at an appropriate torque  
 Recommended tightening torque for clamp screw : 0.8 N · m (SB-2270TR) 1.2 N · m (SB-3070TR)  
 L-hand clamp screw for L-hand toolholder (Fig.1)



Applicable sleeve

Please see the KYOCERA general product catalog for more details.

Shank size Diameter: mm	06 6 mm	08 8 mm	10 10 mm	12 12 mm	16 16 mm
Toolholders	SIGC <sup>®</sup> /L 0806-WH	SIGC <sup>®</sup> /L 1008-WH-L85 SIGC <sup>®</sup> /L 1008-WH-L100	SIGC <sup>®</sup> /L 1210-WH-L95 SIGC <sup>®</sup> /L 1210-WH-L110	SIGC <sup>®</sup> /L 0812-EH	SIGC <sup>®</sup> /L 1016-EH SIGC <sup>®</sup> /L 1216-EH
SH sleeve For boring bars	SH 06...	SH 08...	SH 10...	SH 12...	SH 16...
SHC sleeve For coolant sleeves	-	SHC 08...	SHC 10...	SHC 12...	SHC 16...
SHA sleeve	-	SHA 08...	SHA 10...	SHA 12...	-
EZH sleeve for EZ bars	EZH 06...ST/CT/HP...	EZH 08...ST/CT/HP...	-	-	-

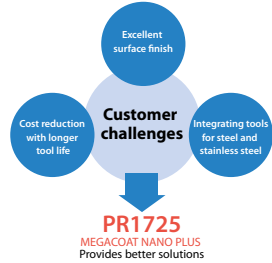
Remove the positioning pin when mounting SIGC to the EZH-CT/HP Sleeve.  
 Positioning function is not available.

PVD coating for small parts machining

# PR1725

MEGACOAT NANO PLUS maintains long tool life and excellent surface finish. Great performance in small parts machining applications

Long tool life leads to improved cycle time  
Excellent surface finish with no tearing lowers quality control costs

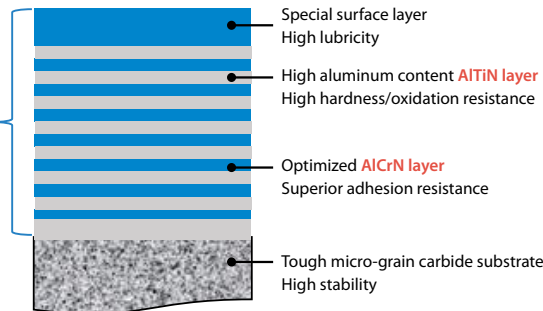


## MEGACOAT NANO PLUS

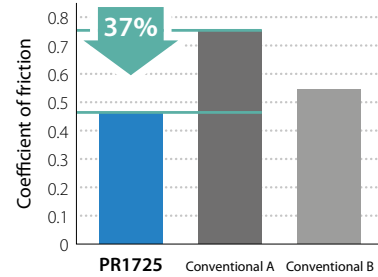
AlTiN/AlCrN Nano laminated film with superior wear resistance and adhesion resistance  
Excellent surface finish and long tool life

### Reduces cracking

Reduces abnormal damages such as chipping because of increased lamination layer with a thinner gap than conventional coatings.



Coefficient of friction comparison (Internal evaluation)



### Superior wear and chipping resistance

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

### Excellent surface finish

Special surface layer with great lubricity reduces adhesion.

### Applicable to various workpiece materials

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

### High machining stability

Tough micro-grain carbide substrate provides stable machining.