

THE NEW VALUE FRONTIER



Double-Sided Swiss Tools

- Double-sided negative insert increases productivity and stability
- Sharp cutting edge equivalent to positive insert edge
- Two new PVD Coated grades:
 - ◆ PR1005 for Titanium and free cutting steel
 - ◆ PR1025 for Stainless Steel and general use



Double the
Cost Savings!

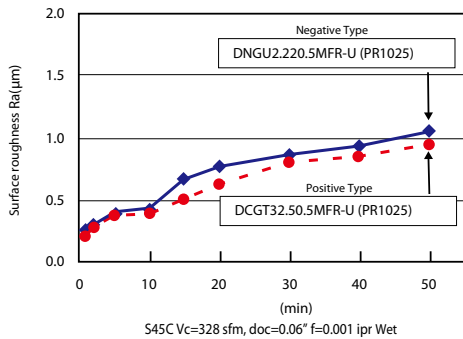
ADVANCING PRODUCTIVITY

Product Highlights

- New SK chipbreaker for finishing to medium cutting
- Popular inch sized shanks available in 1/2" and 5/8", with metric shanks available in 10, 12, and 16mm.
- Corner R (rε) = 0.2mm type available for GK chipbreaker for medium to rough cutting

Double-sided design allows both edges to be used. Compared to the positive type, the double-sided design offers less cost per edge and more stability.

■ Surface roughness comparison (sharp edge)



(In house evaluation)

Smaller double sided tooling for precision machining

TNGU1.8

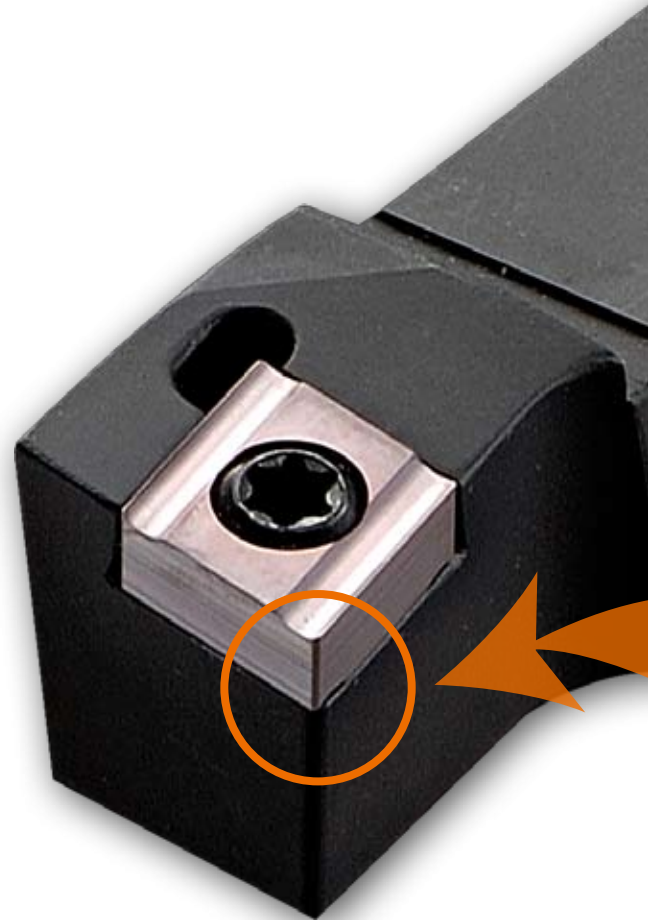


Small Negative Insert

TNGG33



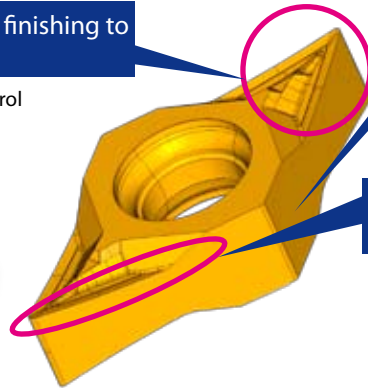
Industry Standard



■ Features of SK Chipbreaker

Optimum chipbreaker design for finishing to medium cutting

Suitable geometry for smooth chip control



Periphery ground finish

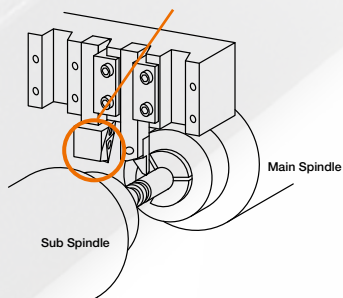
High quality G class periphery grinding.

Sharp Edge

Molded chipbreaker with sharp edge. Lowering cutting force and deformation by sharp edge

Holder can be placed in multiple tool post locations

The oversized head of the conventional toolholders for negative inserts can possibly interfere with the sub spindle.



No interference with sub spindle

Minus tolerance for Corner-R($r\epsilon$) of G class (ground) insert

M: indicates minus tolerance for corner-R($r\epsilon$)

Corner-R($r\epsilon$) (minus tolerance) = Corner-R on the drawing

Example

CNGU2.420.13MFR-U

Sharp edge

Hand

Chipbreaker shape

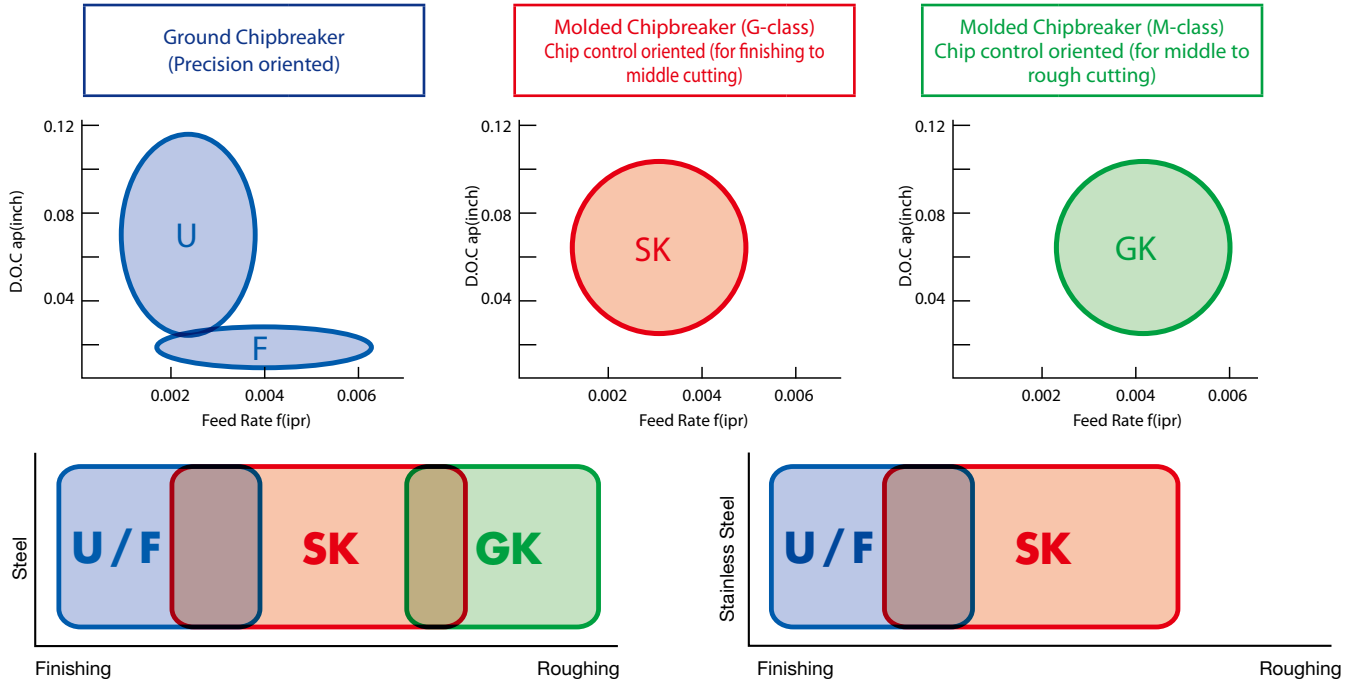
CNGU2.420.5MER-U

With Honing

Hand

Chipbreaker shape

Chip Control Range



Cutting Range	Name	Design	Advantages
Finishing-Medium	SK		A low cutting force chipbreaker designed for chip control in stainless steel. Cutting performance is similar to comparable sized positive inserts.
Medium-Roughing	GK		Chip breaker "dot" and pocket design provide chip control at multiple depths of cut and feed rates.
Finishing	F		Good chip control for finishing to light cutting with low cutting force.
Low Feed	U		Good chip control at low feed rate and varied depths of cut with low cutting force.

PR1005: For free cutting steel

Better wear resistance due to high hardness substrate

PR1025: For steel and stainless steel

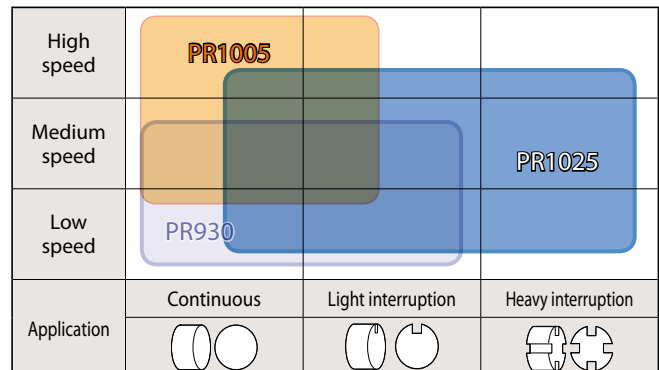
Better fracture resistance due to high toughness substrate












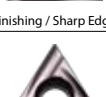
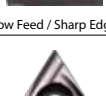
Recommended Cutting Conditions

Work material	Grade	
	PR1005	PR1025
Free cutting steel	 Vc=325 sfm (200~500)	
Carbon Steel / Alloy Steel	 Vc=325 sfm (200-500)	 Vc=325 sfm (200-500)
Stainless Steel		 Vc=325 sfm (200-500)

Light interrupted to continuous / 1st recommendation
 Light interrupted to continuous / 2nd recommendation

Application range map for PR1025/PR1005

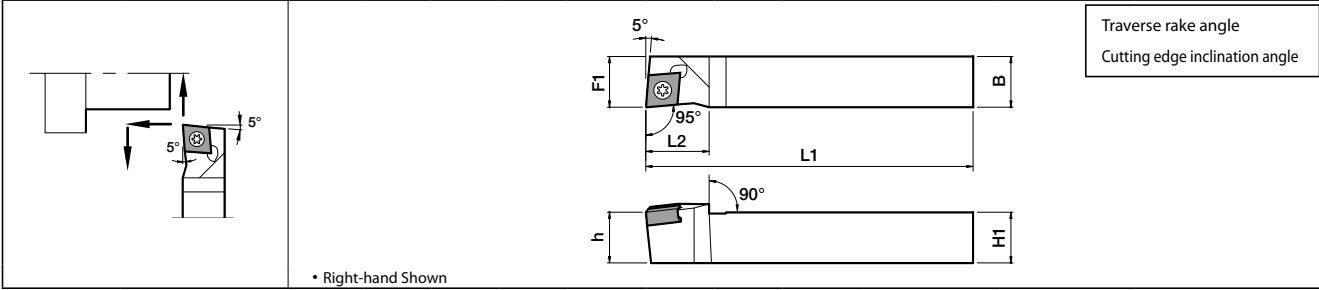


Shape	Description	Dimension(inch)				Stock Grades	
		I.C.	Thickness	Hole	Corner-R(re)	PVD Coated	
						PR1005	PR1025
Right-hand Shown							
 Finishing-Medium / Sharp Edge	CNGU 2.420.2MF-SK 2.420.5MF-SK	0.295	0.125	0.142	< 0.004 < 0.008		●●
 Medium-Roughing / With Honing	CNMU 2.420.5E-GK 2.421E-GK	0.295	0.125	0.142	0.008 0.016	●	●●
 Finishing / Sharp Edge	CNGU 2.420.13MFR-F 2.420.2MFR-F 2.420.5MFR-F 2.421MFR-F	0.295	0.125	0.142	< 0.002 < 0.004 < 0.008 < 0.016	○ ○ ○ ○	○ ○ ○ ○
 Low Feed / Sharp Edge	CNGU 2.420.13MFR-U 2.420.2MFR-U 2.420.5MFR-U 2.421MFR-U	0.295	0.125	0.142	< 0.002 < 0.004 < 0.008 < 0.016	● ● ● ●	● ● ● ●
 Low Feed / With Honing	CNGU 2.420.2MER-U 2.420.5MER-U 2.421MER-U	0.295	0.125	0.142	< 0.004 < 0.008 < 0.016	● ● ●	● ● ●
 Finishing-Medium / Sharp Edge	DNGU 2.220.2MF-SK 2.220.5MF-SK 2.221MF-SK	0.276	0.125	0.142	< 0.004 < 0.008 < 0.016		● ● ●
 Medium-Roughing / With Honing	DNMU 2.220.5E-GK 2.221E-GK	0.276	0.125	0.142	0.008 0.016	●	●●
 Finishing / Sharp Edge	DNGU 2.220.13MFR-F 2.220.2MFR-F 2.220.5MFR-F 2.221MFR-F	0.276	0.125	0.142	< 0.002 < 0.004 < 0.008 < 0.016	○ ○ ○ ○	○ ○ ○ ○
 Low Feed / Sharp Edge	DNGU 2.220.13MFR-U 2.220.2MFR-U 2.220.5MFR-U 2.221MFR-U	0.276	0.125	0.142	< 0.002 < 0.004 < 0.008 < 0.016	● ● ● ●	● ● ● ●
 Low Feed / With Honing	DNGU 2.220.2MER-U 2.220.5MER-U 2.221MER-U	0.276	0.125	0.142	< 0.004 < 0.008 < 0.016	● ● ●	● ● ●
 Finishing / Sharp Edge	TNGU 1.820.13MFR-F 1.820.2MFR-F 1.820.5MFR-F 1.821MFR-F	0.219	0.125	0.118	< 0.002 < 0.004 < 0.008 < 0.016	○ ○ ○ ○	● ● ● ●
 Low Feed / Sharp Edge	TNGU 1.820.13MFR-U 1.820.2MFR-U 1.820.5MFR-U 1.821MFR-U	0.219	0.125	0.118	< 0.002 < 0.004 < 0.008 < 0.016	● ● ● ●	● ● ● ●
 Low Feed / With Honing	TNGU 1.820.2MER-U 1.820.5MER-U 1.821MER-U	0.219	0.125	0.118	< 0.004 < 0.008 < 0.016	● ● ●	● ● ●

•Inserts whose corner R(re) dimension is expressed with less than sign (e.g.: <0.002, <0.004, <0.008, etc.) indicate models with minus tolerance for corner R(re).

●: Standard Stock
○: World Express

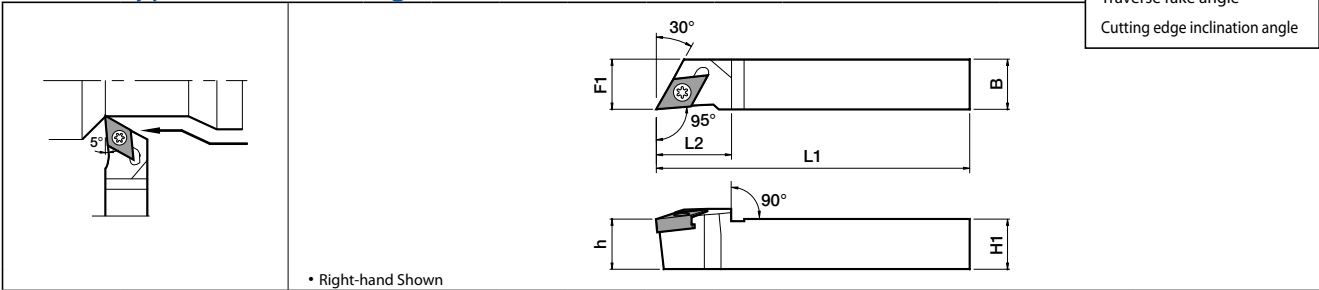
SCLN type (External/Facing)



Toolholder Dimension

Description	Stock	Dimension						Std.Corner-R(°)	Spare Parts		Applicable Insert
		Unit	H1=h	B	L1	L2	F1		Clamp Screw	Wrench	
SCLNR 1010K-07FF	●	mm	10	10	120	15	10	0.2	SB-3080TR	LTW-10SS	CNGU2.42.. CNMU2.42..
SCLNR 1212F-07FF	●		12	12	85		12				
SCLNR 1212K-07FF	●		16	16	120	16					
SCLNR 1616K-07FF	●										
SCLNR 6-2.4FF	●	inch	0.375	0.375	6.00	0.590	0.375	0.008			
SCLNR 8-2.4DF	●		0.500	0.500	6.00		0.500				
SCLNR 10-2.4CF	●		0.625	0.625	5.00		0.625				

SDLN type (External/Facing)

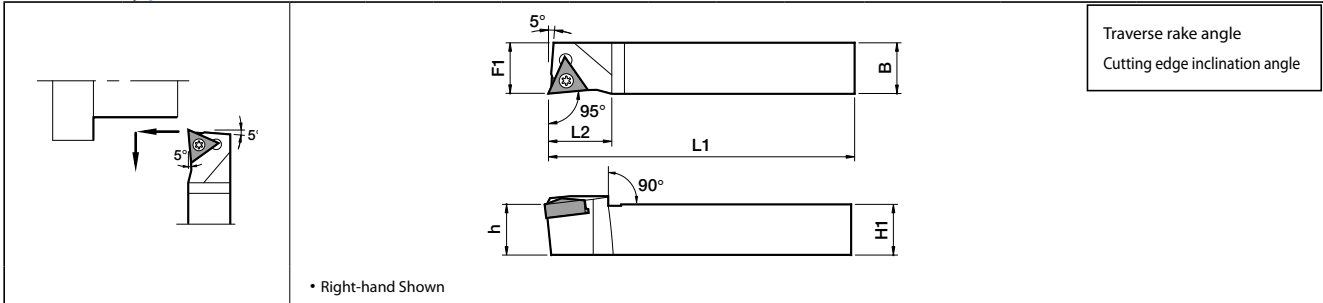


Toolholder Dimension

Description	Stock	Dimension						Std.Corner-R(°)	Spare Parts		Applicable Insert
		Unit	H1=h	B	L1	L2	F1		Clamp Screw	Wrench	
SDLNR 1010K-08FF	●	mm	10	10	120	18	10	0.2	SB-3080TR	LTW-10SS	DNGU2.22.. DNMU2.22..
SDLNR 1212F-08FF	●		12	12	85		12				
SDLNR 1212K-08FF	●		16	16	120	16					
SDLNR 1616K-08FF	●										
SDLNR 6-2.2FF	●	inch	0.375	0.375	6.00	0.708	0.375	0.008			
SDLNR 8-2.4DF	●		0.500	0.500	6.00		0.500				
SDLNR 10-2.2CF	●		0.625	0.625	5.00		0.625				



■ STLN type (External)



● Toolholder Dimension

Description	Stock	Dimension						Std.Corner-R(°)	Spare Parts		Applicable Insert
		Unit	H1=h	B	L1	L2	F1		Clamp Screw	Wrench	
STLNR 1010K-09FF	●	mm	10	10	120	15	10	0.2			TNGU1.82..
1212F-09FF	●		12	12	85						
1212K-09FF	●		16	16	120						
1616K-09FF	●				16						
STLNR 6-1.8FF	●	inch	0.375	0.375	6.00	0.590	0.375	0.008			TNGU1.82..
8-1.8DF	●		0.500	0.500	6.00						
10-1.8CF	●		0.625	0.625	5.00						

● : Standard Stock

■ Case Studies

Chrome Moly Steel

- Pin
- Vc=394 sfm
- doc=0.06"
- f=0.003 ipr
- Wet

CNMU2.421E-GK (PR1025)	4,800pcs/insert
Comp. A (DCMT type)	2,400pcs/insert

Against competitor A (DCMT type), the CNMU with the GK chipbreaker machined the same number of parts per edge. However because the Kyocera inserts have double the usable edges, the number of machined pieces per insert was doubled.

Carbon Steel Pipe

- Nozzle
- Vc=289 sfm
- doc=0.04"
- f=0.002~0.003 ipr
- Wet

DNGU2.220.5MF-SK (PR1025)	6,000pcs/insert
Comp. B (DCGT type)	2,000pcs/insert

Against competitor B (DCGT type) PR1025's tool life is improved 1.5 times per edge and 3 times per insert.

Case Studies

Structural Steel	
<p>Hexagonal bar Vc=394 sfm doc=0.07" (2 passes) f=0.004 ipr Wet</p>	
<p>DNMU2.221E-GK (PR1025)</p>	<p>5,600pcs/insert</p>
<p>Comp. E (DCGT type)</p>	<p>2,000pcs/insert</p>
<p>Competitor E (DCGT type) machined 1,000 pcs/edge (2,000 pcs/insert). PR1025 improved tool life to 1,400 pcs/edge (5,600 pcs/insert), about 1.4 times per edge, and 2.8 times per insert.</p>	

Free Cutting Steel	
<p>Shaft Vc=656 sfm doc=0.004" f=0.002 ipr Wet</p>	
<p>CNGU2.220.5MFR-U (PR1025)</p>	<p>8,000pcs/insert</p>
<p>Comp. F (DCGT type)</p>	<p>4,000pcs/insert</p>
<p>Competitor F (DCGT type) machined 2,000 pcs/edge. The machining number was relatively the same as PR1025 per one edge. However due to the negative insert, the pieces machined per insert was doubled.</p>	

1045	
<p>•Shaft •Vc=361 sfm •doc=0.04" •f=0.004 ipr •Wet</p>	
<p>DNGU2.220.5MF-SK (PR1025)</p>	<p>800pcs/insert</p>
<p>Comp. C (DCGT type)</p>	<p>300pcs/insert</p>
<p>Competitor C (DCGT type) performs 150 pcs per edge while PR1025 produces 200 pcs per edge. Due to negative type insert of PR1025, machining performance is improved about 2.6 times per one insert (1.3 times per edge).</p>	

303 SS	
<p>•Spool ■Φ0.24" portion •Vc=217 sfm •doc=0.05" •f=0.001 ipr •Wet ■Φ0.31" portion •Vc=427 sfm •doc=0.01" •f=0.001 ipr •Wet</p>	
<p>DNGU2.220.5MF-SK (PR1025)</p>	<p>60,000pcs/insert</p>
<p>Comp. D (DCGT type)</p>	<p>20,000pcs/insert</p>
<p>Competitor D (DCGT type) machined 10,000 pcs/edge. PR1025 machined 15,000 pcs/edge resulting in 3 times longer tool life per insert.</p>	