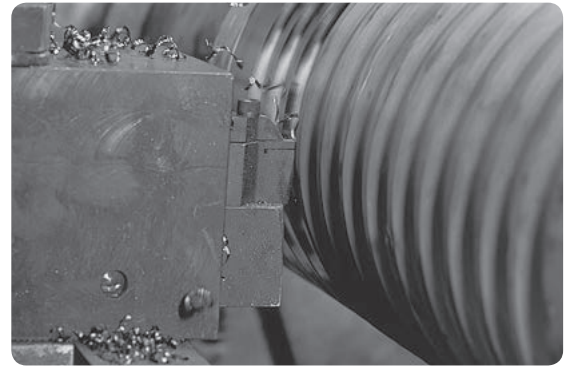


Machining Mill Rolls with NTK Ceramics and CBNs

Features

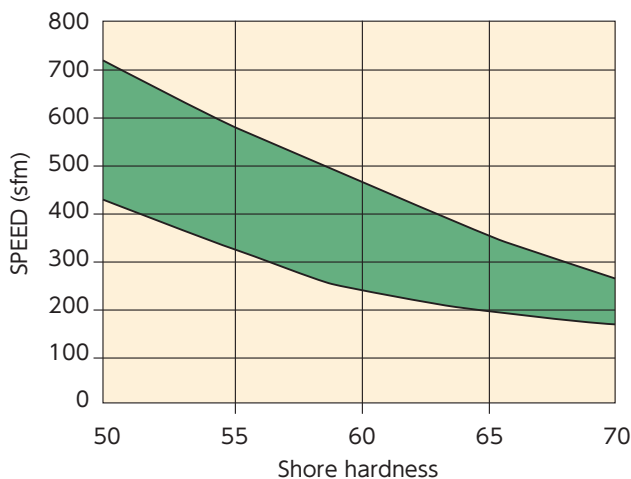
- In addition to our general purpose ceramic HC2 grade, NTK offers HC5, and HC7 for higher productivity
- WA1's wear resistance is an advantage when roughing carbide and hardened rolls
- ZC7 covers a wide range of applications such as carburized or induction hardened steels.
- ZC4 performs the best in hardened material applications from 74-97 Shore hardness



Recommended Cutting Conditions

Roll Material	Grade		Cutting speed (SFM)	Shore Hardness Scale			Feed (IPR)	Depth of cut (inch)	DRY	WET
				55-65	65-72	72-				
				Steel ex. D2	Ceramic HC7	450-600				
	Ceramic HC5	450-600	100%	80%	60%	.004-.012	.025-.075	●		
	Ceramic HC2	350-450	100%	80%	60%	.004-.012	.025-.075	●		
Chilled Cast Iron	Ceramic HC7	450-600	100%	80%	60%	.004-.012	.025-.075	●		
	Ceramic HC5	450-600	100%	80%	60%	.004-.012	.025-.075	●		
	Ceramic HC2	350-450	100%	80%	60%	.004-.012	.025-.075	●		
Ductile Cast iron	Ceramic HC7	300-600	100%	80%	60%	.004-.012	.025-.075	●		
	Ceramic HC5	300-600	100%	80%	60%	.004-.012	.025-.075	●		
	Ceramic HC2	250-450				.004-.012	.025-.075	●		
Carbide	CBN B30,B99	100-200				.004-.012	.010	●		
	Whisker WA1	150-500				.004-.012	.010-.080	●		
CPM Rolls ex. Powdered Metal	Ceramic ZC4	400-500				.004-.012	.025-.075	●		
	Ceramic HC5	400-500				.004-.012	.025-.075	●		
	Ceramic HC7	400-500				.004-.012	.025-.075	●		
Continuous cuts 42-86 Shore hardness	Ceramic ZC7	130-700		Finish		.003-.008	.005-.030	●	●	
Continuous cuts 74-97 Shore hardness	Ceramic ZC4	130-700		Finish		.003-.008	.005-.030	●	●	

Recommended Speed Chart

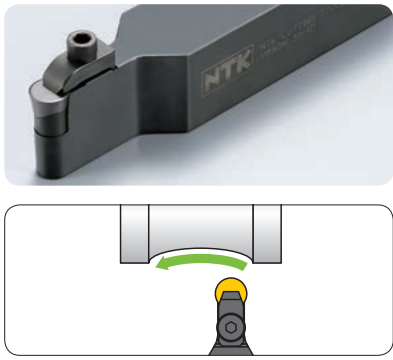


Recommended Feed Chart

Nose radius	Depth of cut (inch)	Feed (IPR)	
		30 micro	60 micro
1/64	-.007	.002-.003	.003-.004
1/32	-.015	.003-.004	.004-.005
3/64	-.020	.004-.005	.005-.0065
1/16	-.030	.004-.0055	.006-.0075
1/4	-.080	.007-.010	.010-.014

U.S. rebar size chart			
Imperial bar size	Metric size	Nominal diameter	
		(inch)	(mm)
#2	#6	0.250 = 1/4	6.35
#3	#10	0.375 = 3/8	9.525
#4	#13	0.500 = 1/2	12.7
#5	#16	0.625 = 5/8	15.875
#6	#19	0.750 = 3/4	19.05
#8	#25	1.000 = 1	25.4

VRAON for RCGX inserts



Key Points for Machining Mill Rolls

- **Hardness of the roll is an important factor. As the roll gets harder the SFM should be reduced.**
- **RCGX style inserts are the preferred insert for rigidity and cost savings.**
- **If making multiple passes with one edge, vary your DOC to move the wear on the insert edge and reduce notch wear.**
- **If you encounter chatter, increase your feed rate. Variable RPM controllers are helpful to reduce harmonics.**
- **Heavy chatter is often a sign of tooling being above centerline.**
- **Chilled and ductile iron rolls are typically softer and short chipping materials. Even after running in the mill, these rolls rarely exceed a 67 Shore hardness.**
- **Tool steel and CPM rolls run quite similar and are normally over 100 Shore hardness. These rolls have a higher Chrome and Cobalt content and are considered a longer chipping material. The combination of the material type and hardness require a slower speed to run successfully.**
- **RCGX 103 & 104 feed rate runs best at .006 IPR (0.15 mm/rev).**

Types, Applications and Features of Rolls

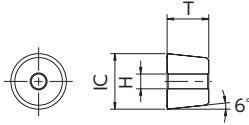
Mill Rolls	Applications	Features
Forged rolls <ul style="list-style-type: none"> ● Cr-Mo-based ● High-speed-steel-based ● Carbide-based 	Bloom-milling at heavy rolling load. Work rolls for rough cold rolling, and rolls for reinforcement.	Strong and relatively high in heat resistance.
Cast iron rolls <ul style="list-style-type: none"> ● Carbide based 	Semi-rolling or finishing that requires a very heavy load.	More wear-resistant and high-heat-resistant than steel in between ordinary steel and cast-iron-based steel.
Cast Steel rolls <ul style="list-style-type: none"> ● Adamite roll for deep profile ● Chilled roll for boards and wire steel process ● Grain roll for steel finishing process boards (Resistant to thermal crack) ● Ductile roll for boards, profile steel, and bar wire steel process (Rolls for roughing and finishing use) ● Special cast iron roll 	Wide range of applications from bloom-milling and semi-rolling to finishing.	Suitable for the applications that require heat resistance and strength. Suitable for the applications that require wear resistance.
Carbide rolls	<ul style="list-style-type: none"> ● Pinch mills ● Wire rod ● Wire flatterer or forming ● ERW tube mills ● Turks heads ● Hot & Cold rolls ● Work reducing rolls 	Preferred in abrasive operations. High wear capabilities.

Tooling for Mill Rolls

CDH.. Inserts

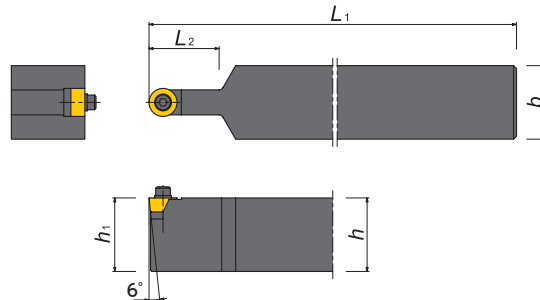
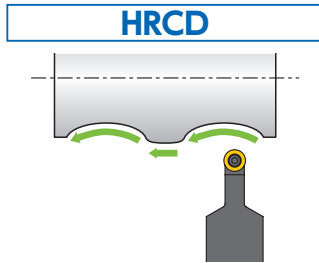
CDH

● : 1st Choice ● : 2nd choice



Steel	P			
Stainless Steel	M			
Cast Iron	K	●	●	●
Non-Ferrous Material	N			
Heat Resistant Alloy	S			
Hardened Material	H	●	●	●

Item Number	ISO Item Number	IC	T	H	Ceramics		
					Alumina - TiC		
					HC2	HC5	HC7
CDH 22 P2810	CDH 1207 P07010	1/2	1/4	.125	●	●	●
CDH 33 P6015	CDH 1909 P15015	3/4	3/8	.250	○		
CDH 33 Q6010	CDH 1909 Q15010	3/4	3/8	.250	●		
CDH 33 Q6010B	CDH 1909 Q15010B	3/4	3/8	.250		●	●
CDH 42 P8015	CDH 2512 P20015	1	1/2	.266			●
CDH 42 P12010	CDH 2512 P30010G	1	1/2	.266	●	●	
CDH 43 P6010	CDH 2519 P15015	1	3/4	.266	●		
CDH 515 P7110B	CDH 3209 P18010B	1-1/4	3/8	.391	●		
CDH 515 P7110	CDH 3209 P18010	1-1/4	3/8	.391	●		
CDH 515 P8015	CDH 3209 P20015	1-1/4	3/8	.391			●
CDH 515 Q7110	CDH 3209 Q18010	1-1/4	3/8	.391	●	●	●
CDH 53 P8015	CDH 3219 P20015	1-1/4	3/4	.391			●
CDH 53 Q9515	CDH 3219 Q24015	1-1/4	3/4	.391	●	●	



● Inch Holders

Item Number	Stock	Dimensions (inch)					Insert	Clamp Screw	Washer	Shim	Wrench
		h	b	L ₁	h ₁	L ₂					
HRCD-22-IN	●	2.0	2.0	12.0	2.0	1.0	CDH 22	CS0316	W120	HACDH22	LW-2.5
HRCD-33-IN	●	2.0	2.0	12.0	2.0	1.0	CDH 33	CS0625	W110	HACDH33	LW-5
HRCD-42-IN	●	2.0	2.0	12.0	2.0	1.0	CDH 42	1/4-20UNC×1-1/4	W106	HACDH42	LWU-4
HRCD-43-IN	●	2.0	2.0	12.0	2.0	1.0	CDH 43	1/4-20UNC×1-1/2		HACDH43	
HRCD-53-IN	●	2.0	2.0	12.0	2.0	1.0	CDH 53 / CDH 515	3/8-16UNC×1-1/2	W107	HACDH53 [CDH53] HACDH515 [CDH515] (OP)	LWU-5

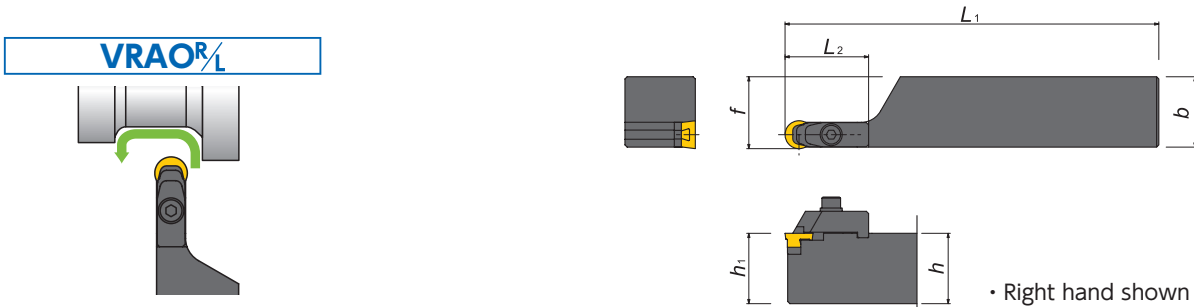
● Metric Holders

Item Number	Stock	Dimensions (mm)					Insert	Clamp Screw	Washer	Shim	Wrench
		h	b	L ₁	h ₁	L ₂					
HRCD-22	○	50	50	300	50	30	CDH 22	CS0316	W120	HACDH22	LW-2.5
HRCD-33	○	50	50	300	50	30	CDH 33	CS0625	W110	HACDH33	LW-5

RCGX

● : 1st Choice ● : 2nd choice

Item Number	ISO Item Number	IC	T	θ	Ceramics						
					Alumina - TiC				Whisker		CBN
					HC2	HC5	HC7	ZC4	WA1	B30	
RCGX 101 P2010		3/16	.240	90	●						
RCGX 102 P4815		1/4	.309	120	●	●	●			●	
RCGX 102 T0225		1/4	.309	120							
RCGX 102 T0820		1/4	.309	120	●						
RCGX 103 P4815		3/8	.309	120	●	●	●			●	
RCGX 103 P8015		3/8	.309	120		●	●				
RCGX 103 T0820		3/8	.309	120	●						
RCGX 103 T0825		3/8	.309	120				●			
RCGX 103 T1625		3/8	.309	120				●			
RCGX 104 P4815		1/2	.312	120	●	●	●			●	
RCGX 104 P6015		1/2	.312	120							
RCGX 104 P8015		1/2	.312	120		●	●				
RCGX 104 T0820		1/2	.312	120	●						
RCGX 104 T1625		1/2	.312	120				●			
RCGX 45 E02	RCGX 120700 E004	1/2	5/16	120					●		
RCGX 45 T0220	RCGX 120700 T00520	1/2	5/16	120					●		
RCGX 45 T0320	RCGX 120700 T00820	1/2	5/16	120					●		
RCGX 45 T0420	RCGX 120700 T01020	1/2	5/16	120					●		
RCGX 45 Z0620	RCGX 120700 Z01520	1/2	5/16	120					●		
RCGX 45 Z0820	RCGX 120700 Z02020	1/2	5/16	120					●		
RCGX 105 P4815		5/8	.388	120	●	●	●			●	
RCGX 105 P8015		5/8	.388	120		●					
RCGX 105 S8020		5/8	.388	120	●		●	●			
RCGX 106 P4815		3/4	.388	120	●		●			●	
RCGX 106 P8015		3/4	.388	120	●	●	●				
RCGX 108 P8015		1	.461	140	●						



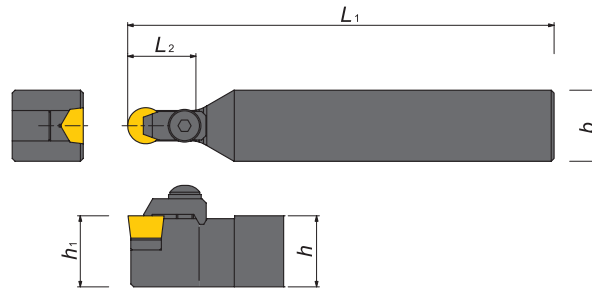
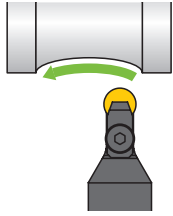
● Inch Holders

Item Number	Stock		Dimensions (inch)					Insert	Clamp	Shim	Clamp Screw	Shim Screw
	R	L	h	b	L ₁	h ₁	L ₂					
VRAO ^{R/L} 16-2D	●	●	1.00	1.00	6.00	1.00	1.00	RCGX 102 RCGX 25 RCGX 25 RPGX 23 RPGX 25	CL2RVRL (Clamp with a differential screw)	SM2RV(RCGX102. / R.GX.25) SM2RVS(R.GX23) (OP)	—	SC02C-08
VRAO ^{R/L} 20-2D	●	●	1.25	1.25	6.00	1.25	1.00					
VRAO ^{R/L} 16-3D	●	●	1.00	1.00	6.00	1.00	1.25					SC05C-08
VRAO ^{R/L} 20-3D	●	●	1.25	1.25	6.00	1.25	1.25	RCGX 103 RCGX 35 RPGX 35	CL3RV	SM3RV	SC10F-10	SC05C-10
VRAO ^{R/L} 24-3E	●	●	1.50	1.50	7.00	1.50	1.25					
VRAO ^{R/L} 16-4D	●	●	1.00	1.00	6.00	1.00	1.50					SC06C-08
VRAO ^{R/L} 20-4D	●	●	1.25	1.25	6.00	1.25	1.50	RCGX 104 RCGX 45 RPGX 45	CL4RV	SM4RV	SC40F-12	SC06C-10
VRAO ^{R/L} 24-4E	●	●	1.50	1.50	7.00	1.50	1.50					

● : Stock ● : Stock (Newly added) ■□□□ : While stocks last
 R L : Stock (Right / Left-hand only) R L : Stock (Right / Left-hand only, Newly added) ● : Mirror finish
 ○ : 1-2 week delivery ○ : 1-2 week delivery (Newly added) ● : Coolant through
 (R/L) : 1-2 week delivery (Right / Left-hand only) (R/L) : 1-2 week delivery (Right / Left-hand only, Newly added)

Tooling for Mill Rolls

VRAON



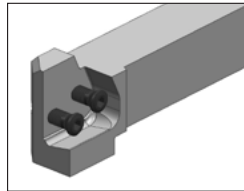
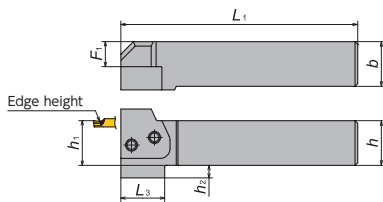
Inch Holders

Item Number	Stock	Dimensions (inch)				Insert	Clamp	Shim	Clamp Screw	Shim Screw
		<i>h</i>	<i>b</i>	<i>L</i> ₁	<i>L</i> ₂					
VRAON 16-2D	●	1.00	1.00	6.00	1.00	RCGX 102 RCGX 23 RCGX 25	CL2RVRL	SM2RV (RCGX102 / R.GX25) SM2RV5 (R.GX23) (OP)	comes with clamp	SC02C-08
VRAON 20-2D	●	1.25	1.25	6.00	1.00	RCGX 103 RCGX 35 RPGX 23 RPGX 25	CL3RV	SM3RV	SC10F-10	SC05C-08 SC05C-10
VRAON 16-3D	●	1.00	1.00	6.00	1.25	RCGX 104 RCGX 45 RPGX 45	CL4RV	SM4RV	SC40F-12	SC06C-08
VRAON 20-3D	●	1.25	1.25	6.00	1.25					SC06C-10
VRAON 24-3E	●	1.50	1.50	7.00	1.25	RCGX 105	CL5RV	SM5RV	SC50F-16	SC08C-10
VRAON 16-4D	●	1.00	1.00	6.00	1.50					SC10C-10
VRAON 20-4D	●	1.25	1.25	6.00	1.50	RCGX 106	CL6RV	SM6RV	SC50F-16	SC10C-10
VRAON 24-4E	●	1.50	1.50	7.00	1.50					SC40C-10
VRAON 16-5D	●	1.25	1.25	6.00	1.50	RCGX 108	CL8RV	SM8RV	SC60F-16	SC40C-10
VRAON 24-5E	●	1.50	1.50	7.00	1.50					SC40C-10
VRAON 20-6F	●	1.25	1.25	8.00	1.75	RCGX 108	CL8RV	SM8RV	SC60F-16	SC40C-10
VRAON 24-6F	●	1.50	1.50	8.00	1.75					SC40C-10
VRAON 20-8F	●	1.25	1.25	8.00	2.00					
VRAON 24-8F	●	1.50	1.50	8.00	2.00					

Modular Holder Body

GTWP-H

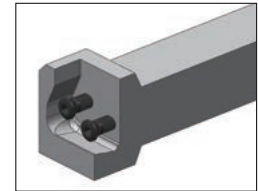
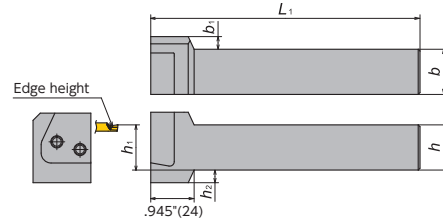
Straight style toolholder



Right-Hand style shown

GKWP-H

L-style toolholder



Right-Hand style shown
* Use opposite hand blade

Toolholder Body

Holder Number	Stock		Dimensions											Blade	Spare Parts						
	R	L	<i>h</i>		<i>b</i>		<i>h</i> ₁		<i>L</i> ₁		<i>F</i> ₁		<i>h</i> ₂		<i>L</i> ₃		Clamp Screw	Wrench			
			(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)			
GTWP _{1/4} 16-IN-H	●	●	1.000	—	1.000	—	1.000	—	5.311	134.9	0.567	14.4	0.260	6.6	0.965	24.5	—	—	GBRR/L	FS128-6.0×18	LW-4
GTWP _{1/4} 20-IN-H	●	●	1.250	—	1.250	—	1.250	—	6.311	160.3	0.817	20.75	—	—	—	—	—	—	GBRR/L	FS128-6.0×18	LW-4
GTWP _{1/4} 24-IN-H	●	●	1.500	—	1.500	—	1.500	—	6.311	160.3	1.067	27.1	—	—	—	—	—	—	GBRR/L	FS128-6.0×18	LW-4
GTWP _{1/4} 32-IN-H	●	●	2.000	—	2.000	—	2.000	—	6.311	160.3	1.567	39.8	—	—	—	—	—	—	GBRR/L	FS128-6.0×18	LW-4
GTWP _{1/4} 2020-H	○	○	0.787	20.0	0.787	20.0	0.787	20.0	4.232	107.5	0.354	9	0.315	8	1.122	28.5	—	—	GBRR/L	FS128-6.0×18	LW-4
GTWP _{1/4} 2525-H	●	●	0.984	25.0	0.984	25.0	0.984	25.0	5.217	132.5	0.551	14	0.276	7	0.965	24.5	—	—	GBRR/L	FS128-6.0×18	LW-4
GTWP _{1/4} 3232-H	○	○	1.260	32.0	1.000	32.0	1.260	32.0	6.004	152.5	0.827	21	—	—	—	—	—	—	GBRR/L	FS128-6.0×18	LW-4

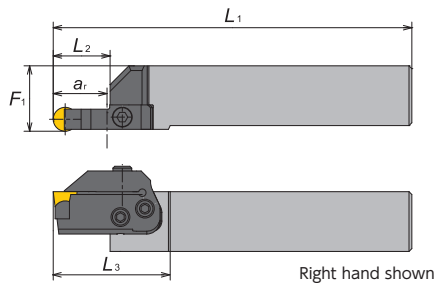
Toolholder Body

Holder Number	Stock		Dimensions											Blade	Spare Parts						
	R	L	<i>h</i>		<i>b</i>		<i>h</i> ₁		<i>L</i> ₁		<i>b</i> ₁		<i>h</i> ₂		Clamp Screw	Wrench					
			(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)			
GKWP _{1/4} 16-IN-H	●	●	1.000	—	1.000	—	1.000	—	5.961	151.4	0.260	6.6	0.260	6.6	—	—	—	—	GBRR/L	FS128-6.0×18	LW-4
GKWP _{1/4} 20-IN-H	●	●	1.250	—	1.250	—	1.250	—	6.961	176.8	—	—	—	—	—	—	—	—	GBRR/L	FS128-6.0×18	LW-4
GKWP _{1/4} 2020-H	○	○	0.787	20.0	0.787	20.0	0.787	20.0	4.882	124	0.472	12	0.315	8	—	—	—	—	GBRR/L	FS128-6.0×18	LW-4
GKWP _{1/4} 2525-H	●	●	0.984	25.0	0.984	25.0	0.984	25.0	5.866	149	0.276	7	0.276	7	—	—	—	—	GBRR/L	FS128-6.0×18	LW-4
GKWP _{1/4} 3232-H	○	○	1.260	32.0	1.000	32.0	1.260	32.0	6.654	169	—	—	—	—	—	—	—	—	GBRR/L	FS128-6.0×18	LW-4

Blade

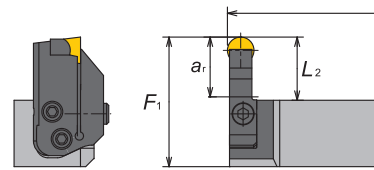
GBR

For GTWP

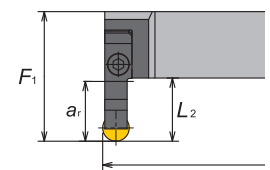


For GKWP

RH



LH



● Right hand

Hand	Blade number	Stock	Insert	Dimensions (Inch)		Holder	Dimensions (Inch)				
				ar	L ₂		GTWPR-H			GKWPL-H	
							L ₁	L ₃	F ₁	L ₁	F ₁
R	GBRR-R23-19	●	RCGX23 RPGX23	.750	.889	GTWPR16-IN-H	6.200	1.854	1.118	6.000	1.889
						GKWPL16-IN-H	7.200	—	1.368	7.000	2.139
						GTWPR2020-H	5.121	2.011	.906	4.921	1.676
						GKWPL2020-H	6.106	1.854	1.102	5.906	1.873
						GTWPR2525-H	6.893	—	1.378	6.693	2.149
						GKWPL2525-H	6.893	—	1.378	6.693	2.149
	GBRR-R35-25	●	RCGX35 RPGX35 RCGX103	1.000	1.089	GTWPR16-IN-H	6.400	2.054	1.118	6.000	2.089
						GKWPL16-IN-H	7.400	—	1.368	7.000	2.339
						GTWPR2020-H	5.321	2.211	.906	4.921	1.876
						GKWPL2020-H	6.306	2.054	1.102	5.906	2.073
						GTWPR2525-H	7.093	—	1.378	6.693	2.349
						GKWPL2525-H	7.093	—	1.378	6.693	2.349
	GBRR-R45-25	●	RCGX45 RPGX45 RCGX104	1.125	1.189	GTWPR16-IN-H	6.500	2.154	1.118	6.000	2.189
						GKWPL16-IN-H	7.500	—	1.368	7.000	2.439
						GTWPR2020-H	5.421	2.311	.906	4.921	1.976
GKWPL2020-H						6.406	2.154	1.102	5.906	2.173	
GTWPR2525-H						7.193	—	1.378	6.693	2.449	
GKWPL2525-H						7.193	—	1.378	6.693	2.449	

● Left hand

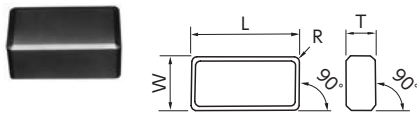
Hand	Blade number	Stock	Insert	Dimensions (Inch)		Holder	Dimensions (Inch)				
				ar	L ₂		GTWPL-H			GKWPL-H	
							L ₁	L ₃	F ₁	L ₁	F ₁
L	GBRL-R23-19	●	RCGX23 RPGX23	.750	.889	GTWPL16-IN-H	6.200	1.854	1.118	6.000	1.889
						GKWPR16-IN-H	7.200	—	1.368	7.000	2.139
						GTWPL2020-H	5.121	2.011	.906	4.921	1.676
						GKWPR2020-H	6.106	1.854	1.102	5.906	1.873
						GTWPL2525-H	6.893	—	1.378	6.693	2.149
						GKWPR2525-H	6.893	—	1.378	6.693	2.149
	GBRL-R35-25	●	RCGX35 RPGX35 RCGX103	1.000	1.089	GTWPL16-IN-H	6.400	2.054	1.118	6.000	2.089
						GKWPR16-IN-H	7.400	—	1.368	7.000	2.339
						GTWPL2020-H	5.321	2.211	.906	4.921	1.876
						GKWPR2020-H	6.306	2.054	1.102	5.906	2.073
						GTWPL2525-H	7.093	—	1.378	6.693	2.349
						GKWPR2525-H	7.093	—	1.378	6.693	2.349
	GBRL-R45-28	●	RCGX45 RPGX45 RCGX104	1.125	1.189	GTWPL16-IN-H	6.500	2.154	1.118	6.000	2.189
						GKWPR16-IN-H	7.500	—	1.368	7.000	2.439
						GTWPL2020-H	5.421	2.311	.906	4.921	1.976
GKWPR2020-H						6.406	2.154	1.102	5.906	2.173	
GTWPL2525-H						7.193	—	1.378	6.693	2.449	
GKWPR2525-H						7.193	—	1.378	6.693	2.449	

● : Stock
 ● : Stock (Newly added)
 ■□□□ : While stocks last
 R L : Stock (Right / Left-hand only)
 R L : Stock (Right / Left-hand only, Newly added)
 □ : Mirror finish
 ○ : 1-2 week delivery
 ○ : 1-2 week delivery (Newly added)
 ● : Coolant through
 (R)L : 1-2 week delivery (Right / Left-hand only)
 (R)L : 1-2 week delivery (Right / Left-hand only, Newly added)

Tooling for Mill Rolls

LNJ / LNM

● : 1st Choice ● : 2nd choice

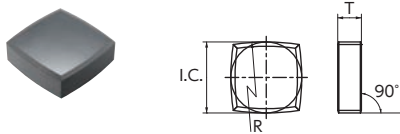


Steel	P								
Stainless Steel	M								
Cast Iron	K	●	●	●	●	●	●	●	●
Non-Ferrous Material	N								
Heat Resistant Alloy	S	●	●	●	●	●	●	●	●
Hardened Material	H	●	●	●	●	●	●	●	●

Item Number	ISO Item Number	R	W	L	T	Ceramics				
						Whisker	Alumina - TiC			SiAlon
						WA1	HC2	HC5	HC7	SX9
LNJ 6688 P6015	LNJ 6688 P15015	.125	3/4	1-1/2	1/2		●			●
LNJ 6688 Q8015	LNJ 6688 Q20015	.125	3/4	1-1/2	1/2			●	●	
LNM 6688 S6015	LNM 6688 SN2	.125	3/4	1-1/2	1/2	○				
LNM 6688 SNX2	LNM 6688 SNX2	.125	3/4	1-1/2	1/2		○			
LNM 6688 SNX6	LNM 6688 SNX6	.125	3/4	1-1/2	1/2				○	

ZT 1130

● : 1st Choice ● : 2nd choice

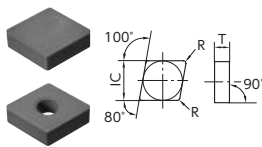


Steel	P								
Stainless Steel	M								
Cast Iron	K	●	●	●	●	●	●	●	●
Non-Ferrous Material	N								
Heat Resistant Alloy	S	●	●	●	●	●	●	●	●
Hardened Material	H	●	●	●	●	●	●	●	●

Item Number	ISO Item Number	IC	T	R	Ceramics		
					Alumina - TiC		
					HC2	HC5	HC7
ZT 1130 PNX5		1-1/2	1/2	4-1/2	●	●	●

CNG / CNGA

● : 1st Choice ● : 2nd choice

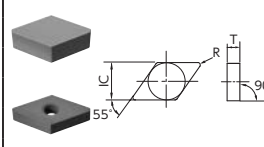


Steel	P								
Stainless Steel	M								
Cast Iron	K	●	●	●	●	●	●	●	●
Non-Ferrous Material	N								
Heat Resistant Alloy	S	●	●	●	●	●	●	●	●
Hardened Material	H	●	●	●	●	●	●	●	●

Item Number	ISO Item Number	IC	T	R	Ceramics					
					Whisker	Alumina - TiC				
					WA1	HC2	HC5	HC7	ZC7	ZC4
CNG 452 T0220	CNGN 120708 T00520	1/2	5/16	.031	●					
CNG 452 T0825	CNGN 120708 T02025	1/2	5/16	.031		●				
CNG 453 T0220	CNGN 120712 T00520	1/2	5/16	.047	●					
CNG 453 T0825	CNGN 120712 T02025	1/2	5/16	.047		●				
CNG 454 T0220	CNGN 120716 T00520	1/2	5/16	.063	●					
CNG 454 T0825	CNGN 120716 T02025	1/2	5/16	.063		●				
CNG 543 T0825	CNGN 160612 T02025	5/8	1/4	.047		●				
CNG 552 T0825	CNGN 160708 T02025	5/8	5/16	.031		●				
CNG 554 T0220	CNGN 160716 T00520	5/8	5/16	.063	○					
CNG 643 T0825	CNGN 190612 T02025	3/4	1/4	.047		●				
CNG 644 T0825	CNGN 190616 T02025	3/4	1/4	.063		●				
CNG 646 T0220	CNGN 190624 T00520	3/4	1/4	.094	●					
CNG 648 T0825	CNGN 190632 T02025	3/4	1/4	.125		●				
CNGA 542 T0825	CNGA 160608 T02025	5/8	1/4	.031		●				
CNGA 543 T0220	CNGA 160612 T00520	5/8	1/4	.047	●					
CNGA 543 T0420	CNGA 160612 T01020	5/8	1/4	.047						
CNGA 543 T0820	CNGA 160612 T02020	5/8	1/4	.047						
CNGA 543 T0825	CNGA 160612 T02025	5/8	1/4	.047		●	●			
CNGA 543 Z0825	CNGA 160612 Z02025	5/8	1/4	.047	●					●
CNGA 544 T0220	CNGA 160616 T00520	5/8	1/4	.063	●					
CNGA 544 T0825	CNGA 160616 T02025	5/8	1/4	.063		●				
CNGA 544 Z0825	CNGA 160616 Z02025	5/8	1/4	.063						●
CNGA 643 T0220	CNGA 190612 T00520	3/4	1/4	.047	●					
CNGA 643 T0420	CNGA 190612 T01020	3/4	1/4	.047	●					
CNGA 643 T0525	CNGA 190612 T01225	3/4	1/4	.047	●					
CNGA 643 Z0620	CNGA 190612 Z01520	3/4	1/4	.047	●					
CNGA 643 T0820	CNGA 190612 T02020	3/4	1/4	.047	●					
CNGA 643 T0825	CNGA 190612 T02025	3/4	1/4	.047	●		●			●
CNGA 644 T0220	CNGA 190616 T00520	3/4	1/4	.063	●					
CNGA 644 T0825	CNGA 190616 T02025	3/4	1/4	.063		●				

DNG / DNGA

● : 1st Choice ● : 2nd choice



Steel	P								
Stainless Steel	M								
Cast Iron	K	●	●	●	●	●	●	●	●
Non-Ferrous Material	N								
Heat Resistant Alloy	S	●	●	●	●	●	●	●	●
Hardened Material	H	●	●	●	●	●	●	●	●

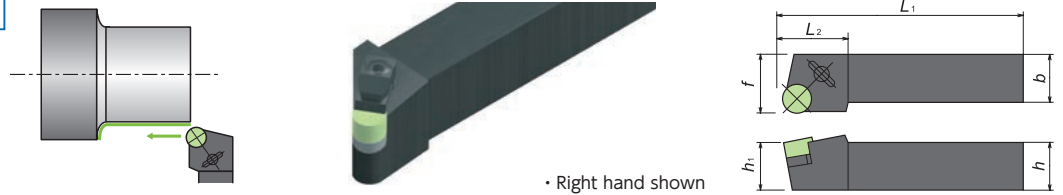
Item Number	ISO Item Number	IC	T	R	Ceramics					
					Whisker	Alumina - TiC				
					WA1	HC2	HC5	HC7	ZC7	ZC4
DNG 453 T0825	DNGN 150712 T02025	1/2	5/16	.047	○	●				
DNG 454 T0825	DNGN 150716 T02025	1/2	5/16	.063		●				
DNG 543 T0825	DNGN 190612 T02025	5/8	1/4	.047		●				
DNGA 442 T0825	DNGA 150608 T02025	1/2	1/4	.031		●				
DNGA 542 T0820	DNGA 190608 T02020	5/8	1/4	.031		●				
DNGA 543 T0820	DNGA 190612 T02020	5/8	1/4	.047		●				
DNGA 544 T0825	DNGA 190616 T02025	5/8	1/4	.063		●				

RNG

● : 1st Choice ● : 2nd choice


Item Number	ISO Item Number	IC	T	R	Ceramics						Solid CBN	
					Whisker		Alumina - TiC					
					WA1	HC2	HC5	HC7	ZC7	ZC4		B99
RNG 43 T0425	RNGN 120400 T01025	1/2	3/16			○				○		
RNG 43 T0525	RNGN 120400 T01225	1/2	3/16			●				●		
RNG 43 Z0520	RNGN 120400 Z01220	1/2	3/16								●	
RNG 43 T0820	RNGN 120400 T02020	1/2	3/16									
RNG 43 S0825	RNGN 120400 S02025	1/2	3/16							●		
RNG 43 T0825	RNGN 120400 T02025	1/2	3/16									
RNG 43 Z0825	RNGN 120400 Z02025	1/2	3/16								●	
RNG 43 T2820	RNGN 120400 T07020	1/2	3/16			●						
RNG 45 T0525	RNGN 120700 T01225	1/2	5/16		●							
RNG 45 Z0620	RNGN 120700 Z01520	1/2	5/16									
RNG 45 S0825	RNGN 120700 S02025	1/2	5/16									
RNG 45 T0825	RNGN 120700 T02025	1/2	5/16			●			○			
RNG 45 Z0825	RNGN 120700 Z02025	1/2	5/16								●	
RNG 45 P2810	RNGN 120700 P07010	1/2	5/16									
RNG 64 T0825	RNGN 190600 T02025	3/4	1/4									
RNG 64 P6010	RNGN 190600 P15010	3/4	1/4									
RNG 65 T0420	RNGN 190700 T01020	3/4	5/16		●							

CRGN



• Right hand shown

● Inch Holders

Item Number	Stock		Dimensions (inch)						Insert*
	R	L	h	b	L ₁	h ₁	f	L ₂	
CRGN [®] 164 CD	●	●	1.00	1.00	6.00	1.00	1.25	1.34	
CRGN [®] 204 CD	●	●	1.25	1.25	6.00	1.25	1.50	1.34	
CRGN [®] 165 CD	●	●	1.00	1.00	6.00	1.00	1.25	1.34	
CRGN [®] 205 CD	●	●	1.25	1.25	6.00	1.25	1.50	1.34	
CRGN [®] 206 CD	●	●	1.25	1.25	6.00	1.25	1.50	1.65	

● Spare Parts

	Insert	Clamp	Blade	Shim	Shim Screw	Wrench
Standard	RNG 45	2413	9414	IRSN 43	1160	LW-4
Standard	RNG 43			IRSN 45 (OP)		
Standard	RNG 55	2417	IRSN 53	1180		
Standard	RNG 65		3919	1182		

VNGA

● : 1st Choice ● : 2nd choice

Item Number	ISO Item Number	IC	T	R	Ceramics						
					Whisker		Alumina - TiC				
					WA1	HC2	HC5	HC7	ZC7	ZC4	
VNGA 431 T0425	VNGA 220404 T01025	1/2	3/16	.016		●					
VNGA 432 T0425	VNGA 220408 T01025	1/2	3/16	.031		●					
VNGA 433 T0425	VNGA 220412 T01025	1/2	3/16	.047							
VNGA 436 T0420	VNGA 220424 T01020	1/2	3/16	.094	●						

● : Stock ● : Stock (Newly added) ■□□□ : While stocks last
 R L : Stock (Right / Left-hand only) R L : Stock (Right / Left-hand only, Newly added) M : Mirror finish
 ○ : 1-2 week delivery ○ : 1-2 week delivery (Newly added) ● : Coolant through
 (R)L : 1-2 week delivery (Right / Left-hand only) (R)L : 1-2 week delivery (Right / Left-hand only, Newly added)