

THE NEW VALUE FRONTIER



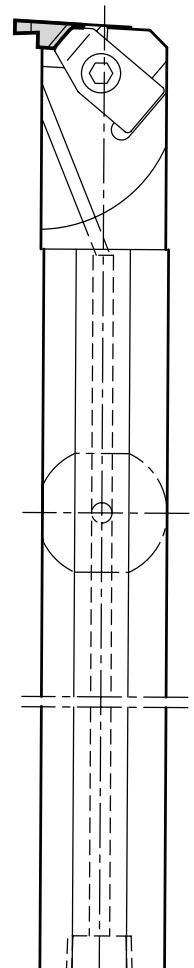
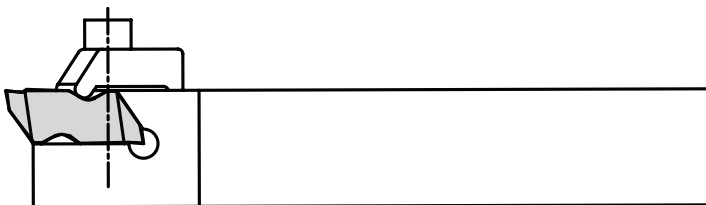
Ceranotch Grooving System

Grooving

Threading

Face Grooving

Deep Grooving



KYOCERA Industrial Ceramics Corp. ■ ph. 800-823-7284
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Grooving with Cermets

Characteristics:

- Offer better surface finishes on carbon and alloy steel than coated carbides
- Higher cutting speeds than coated carbide are possible, reducing cycle times
- Cermets are ideal for light feeds and few interruptions
- Kyocera offers the largest selection of cermets for grooving anywhere

Grades:

- **TC40** is the first choice for carbon and alloy steels
- **TC60** is recommended for ID grooving and tool steel

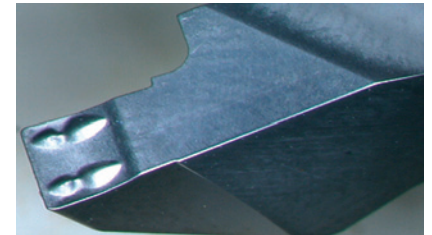
Grooving with Coated Carbides

Characteristics:

- Offer better edge strength for high feeds and interruptions
- Coating improves tool life and surface finish
- Better suited for low speed applications or stainless steel

Grades:

- **PR930** is a good general purpose grade for steels and stainless steels
- **PR660** is the first choice for stainless steels and tougher applications
- **KW10(Uncoated)** is the first choice for cast irons and non-ferrous materials



Kyocera's unique MY chip breaker available in both carbide and cermet

Grooving with Ceramics

Characteristics:

- Ideal for grooving cast irons and hardened steels
- Excellent wear resistance
- No coolant is needed

Grades:

- **A65** can achieve high tool life and cycle times in cast iron and hardened steels in continuous operations

Grooving with Kyocera cermets can save you money!

Increased Tool Life

Stress Proof	
Spool	
V = 885 SFM d = .035 f = .004 ipr Wet KCGP2031R TC40	
	
TC40	4200 pcs/edge
Competitor Coated Carbide	1400 pcs/edge
Notes: TC40 tripled the tool life of the competitor's coated carbide	

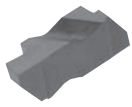
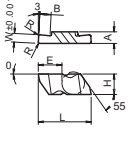
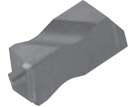
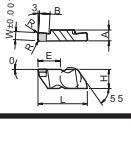
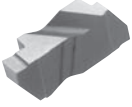
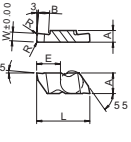
Decreased Cycle Time

8620	
Shaft Housing	
Kyocera Conditions V = 750 SFM d = .040 f = .003 ipr Wet KCGP3062L TC60	
Competitor Conditions V = 550 SFM d = .040 f = .003 ipr Wet	
	
TC60	120 pcs/edge
Competitor Coated Carbide	55 pcs/edge
Notes: TC60 cut cycle time by 30% and doubled the tool life of the competitor's coated carbide	


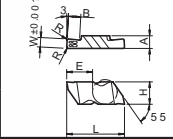
Better tool life leads to less inserts, less down time, and fewer offsets.

Decreased cycle time means you spend less time and money machining the part.

■ **Grooving Inserts**


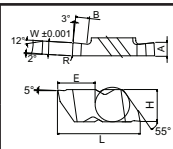
Insert	Description	Dimensions							Cermet		Carbide			Cer-amic	CBN					
		W	B	R	A	L	H	E	TC40	TC60	PR660	PR930	KW10	A65	KBN10B					
 	KCG 2062 R/L	.062	.110	.008	.150	.540	.219	.270						●						
	KCG 2125 R/L	.125																	L	
	KCG 3062 R/L	.062	.094												R					
	KCG 3094 R/L	.094	.150		.195	.810	.344	.405							●					
	KCG 3125 R/L	.125													R					
KCG 3156 R/L	.156													●						
 	KCG 3047 R/L	.047	.075	.008	.195	.810	.344	.405							R					
	KCG 3062 R/L	.062	.094																●	
	KCG 3094 R/L	.094	.150																	L
 	KCGP 2031 R/L	.031	.050	.003	.150	.540	.219	.270	●	●	●	●	●							
	KCGP 2041 R/L	.041													●	●		●		
	KCGP 2047 R/L	.047													●	●	●	●	●	
	KCGP 2058 R/L	.058	.110	.008	.150	.540	.219	.270	●			●								
	KCGP 2062 R/L	.062							●	●	●	●	●							
	KCGP 2094 R/L	.094							●		●	●	●							
	KCGP 2125 R/L	.125							●		●	R								
	KCGP 3047 R/L	.047	.075	.008	.195	.810	.344	.405	●	●	●	●	●	R						
	KCGP 3062 R/L	.062	.094						●	●	●	●	●							
	KCGP 3072 R/L	.072							●	●	●	●								
	KCGP 3078 R/L	.078	.094	.008	.195	.810	.344	.405	●	R	●	●								
	KCGP 3088 R/L	.088							●	L	●									
	KCGP 3094 R/L	.094	.150	.008	.195	.810	.344	.405	●	●	●	●	●							
	KCGP 3097 R/L	.097							●		●									
	KCGP 3105 R/L	.105							●		●									
	KCGP 3110 R/L	.110	.150	.008	.195	.810	.344	.405	●			●								
	KCGP 3122 R/L	.122							●		●									
	KCGP 3125 R/L	.125							●	●	●	●	●							
	KCGP 3142 R/L	.142	.150	.008	.195	.810	.344	.405	●			●								
	KCGP 3156 R/L	.156							●	R	L	●								
KCGP 3178 R/L	.178	●								●										
KCGP 3185 R/L	.185	.150	.008	.195	.810	.344	.405	●			●									
KCGP 3189 R/L	.189							●	●	●	●	●								
KCGP 4125 R/L	.125							●		●										
KCGP 4189 R/L	.189	.250	.018	.255	1.272	.453	.636	●			●									
KCGP 4213 R/L	.213							●		●										
KCGP 4219 R/L	.219							●		●										
KCGP 4250 R/L	.250							●		●										

■ Grooving Inserts with Chipbreaker

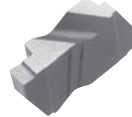
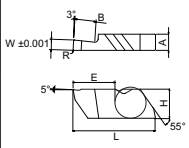
Insert	Description	Dimensions							Cermet	Carbide
		W	B	R	A	L	H	E	TC40	PR930
 	KCGP 3062MY R/L	.062	.094	.008	.195	.810	.344	.405	◇	◇
	KCGP 3094MY R/L	.094	.150						◇	◇
	KCGP 3125MY R/L	.125							◇	◇

Note- Items marked with ◇ will be available in Spring, 2006

■ Face Grooving Inserts

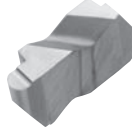
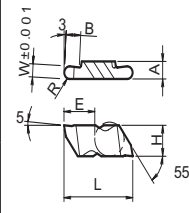
Insert	Description	Dimensions							Carbide		
		W	B	R	A	L	H	E	PR660	PR930	KW10
 	KCFP 3125 R/L	.125		.008	.195	.886	.344	.405		●	
	KCFP 3156 R/L	.156	.150	.008					●		
	KCFP 3189 R/L	.189		.023					●		

■ Deep Grooving Inserts

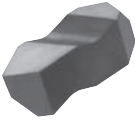
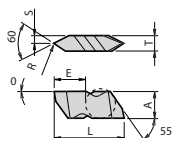

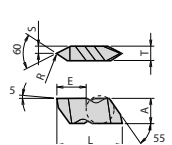
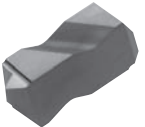
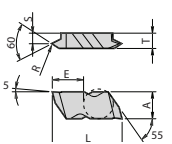
Insert	Description	Dimensions							Cermet		Carbide		
		W	B	R	A	L	H	E	TC40	TC60	PR660	PR930	KW10
 	KCGDP 3062 R/L	.062	.125	.008	.195	.990	.344	.405	●			●	
	KCGDP 3094 R/L *	.094							●		●		
	KCGDP 3125 R/L *	.125	.250						●		●		
	KCGDP 3189 R/L *	.189							.023	●		●	

* These inserts have one cutting edge

■ Full Radius Grooving Inserts

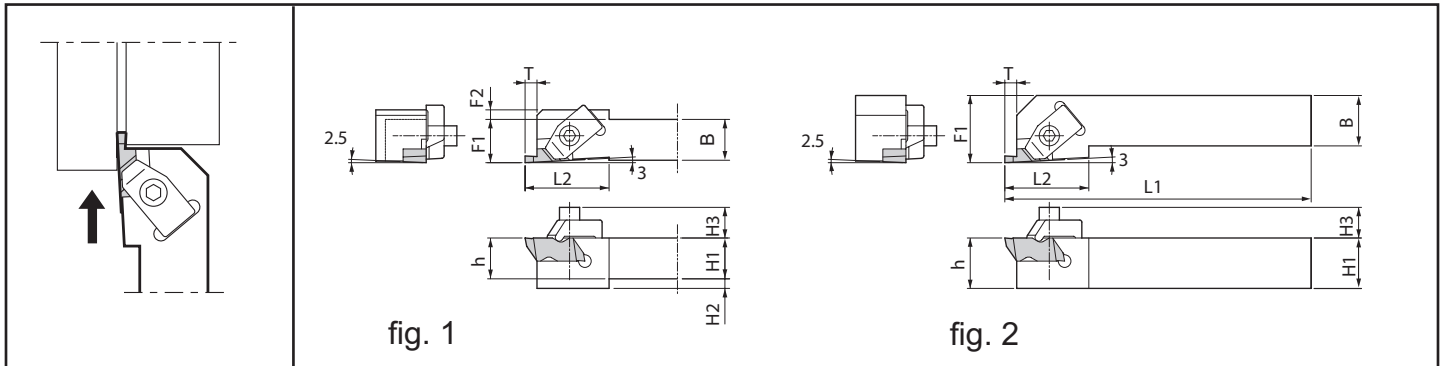
Insert	Description	Dimensions							Cermet		Carbide						
		W	B	R	A	L	H	E	TC40	TC60	PR660	PR930	KW10				
 	KCRP 2031 R/L	.062	.094	.031	.150	.540	.219	.270		R	R	R					
	KCRP 2047 R/L	.094	.150	.047					●								
	KCRP 2062 R/L	.125		.062													
	KCRP 3031 R/L	.062	.094	.031	.195	.810	.344	.405	●	R	●	●					
	KCRP 3047 R/L	.094	.150	.047					●		●	●					
	KCRP 3062 R/L	.125		.062					●		●	●					
	KCRP 3078 R/L	.156		.078					●								
	KCRP 3094 R/L	.188		.094					●			R					
KCRP 4125 R/L	.250	.250		.125					.255	1.272	.453	.636	●		R	●	

■ **Threading Inserts**

Insert	Description	Dimensions							Angle	Cermet		Carbide	
		Pitch TPI	A	T	R	E	S	L	θ	TC40	TC60	PR660	PR930
 	KCT 2 R/L	external 8-36 internal 7-20	.219	.150	.004	.2661	.075	.503	60°		●	●	
	KCT 3 R/L	external 6-20 internal 5-12	.344	.195	.007	.3999	.098	.885	60°		●	●	
 	KCTP 2 R/L	external 8-36 internal 7-20	.219	.150	.004	.2661	.075	.503	60°		●	●	
	KCTP 3 R/L	external 6-20 internal 5-12	.344	.195	.007	.3999	.098	.885	60°		●	●	
 	KCTK 2 R/L	external 14-44 internal 12-24	.219	.150	.003	.2679	.110	.505	60°		●	●	
	KCTK 3 R/L	external 10-44 internal 9-24	.344	.195	.003	.4022	.141	.887	60°		●	●	

■ Toolholders (External Grooving)

KKC



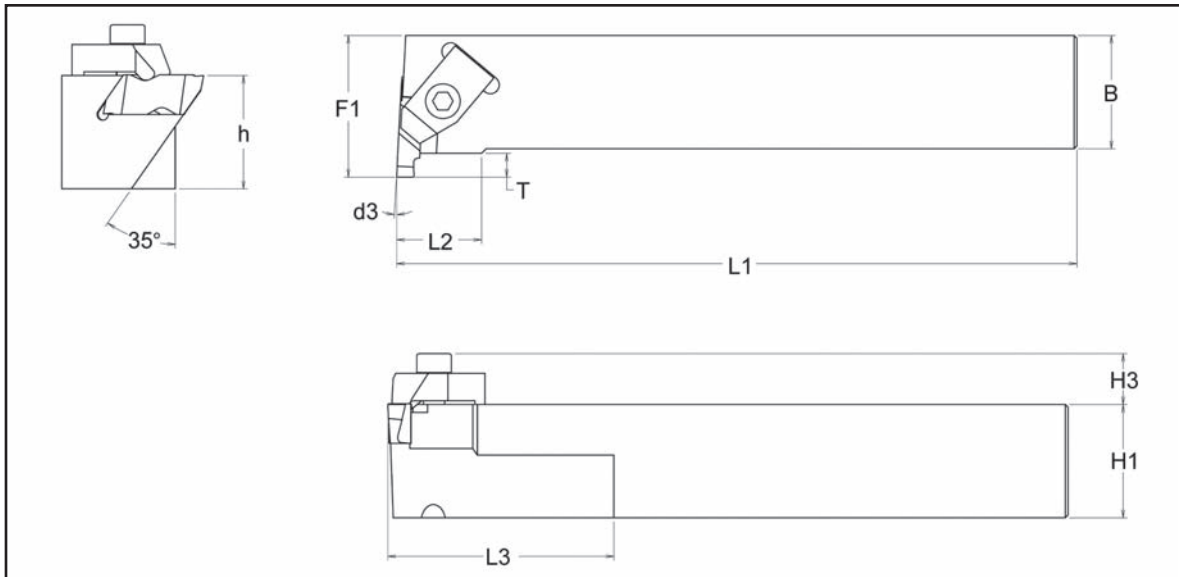
Description	Stock		Unit	Dimensions									Fig.	Spare Parts				
	R	L		H1=h	H2	H3	B	L1	L2	F1	F2	T		Clamp	Clamp Screw	Wrench		
KKC R/L 1010K-2-125F	●		mm	10	2	9.2	10	125	19.05	12.25	2	3.2		CKC-2 R/L	SKC-2	(7/64 hex)		
1212M-2-150F	●			12	-	9.2	12	150	19.05	12.25	-	3.2						
KKC R/L 6-2X	●	●	in	.375	-	.362	.375	2.50	.750	.562	-	.138	CKC-2 R/L	SKC-2	(7/64 hex)			
6-2CF	●	●		.375	.125		.775	5.00		.385	.125	.125						
8-2X	●	●		.500	-		.500	3.50		.750	-	.138						
8-2DF	●	●		.500			.500	6.00		.510		.125						
10-2DF	●	●		.625			.625	6.00		.635		.125						
12-2B	●	●		.750			.750	4.50		1.000		.138						
12-2C	●	●		.750			.750	5.00		1.000		.125						
16-2C	●	●		1.00			1.00	5.00		1.250		.138						
16-2D	●	●		1.00			1.00	6.00		1.250		.125						
12-3B	●	●		.750			-	.750		4.50		1.250				1.000	-	.210
12-3C	●	●		.750				.750		5.00		1.250				1.000		.180
16-3C	●	●		1.00				1.00		5.00		1.250				1.250		.210
16-3D	●	●		1.00				1.00		6.00		1.250				1.250		.180
20-3D	●	●		1.25				1.25		6.00		1.250				1.500		.210
16-4D	●	●	1.00	1.00		6.00		1.380	1.250	.280								
20-4D	●	●	1.25	1.25		6.00		1.380	1.500	.294								

Note- Right hand bars require left hand inserts and clamps; left hand bars require right hand inserts and clamps

Items marked in () are not included with toolholder

Toolholder	Applicable Insert
KKC...2	KC_2..., KCT2...
KKC...3	KC_3..., KCT3...
KKC...4	KC_4...,

KKCE



Description	Stock		Dimensions (inch)								Spare Parts		
	R	L	H1=h	H3	B	L1	L2	F1	L3	T	Clamp	Clamp Screw	Wrench
KKCE R/L 12-3B	●	●	.750	.465	.750	4.500	.750	1.125	2.000	.210	CKC-3R/L	SKC-3	LW-156
16-3D	●	●	1.000		1.000	6.000		1.250					
20-3D	●	●	1.250		1.250	6.000		1.500					

Note- Right hand bars require left hand inserts and clamps; left hand bars require right hand inserts and clamps

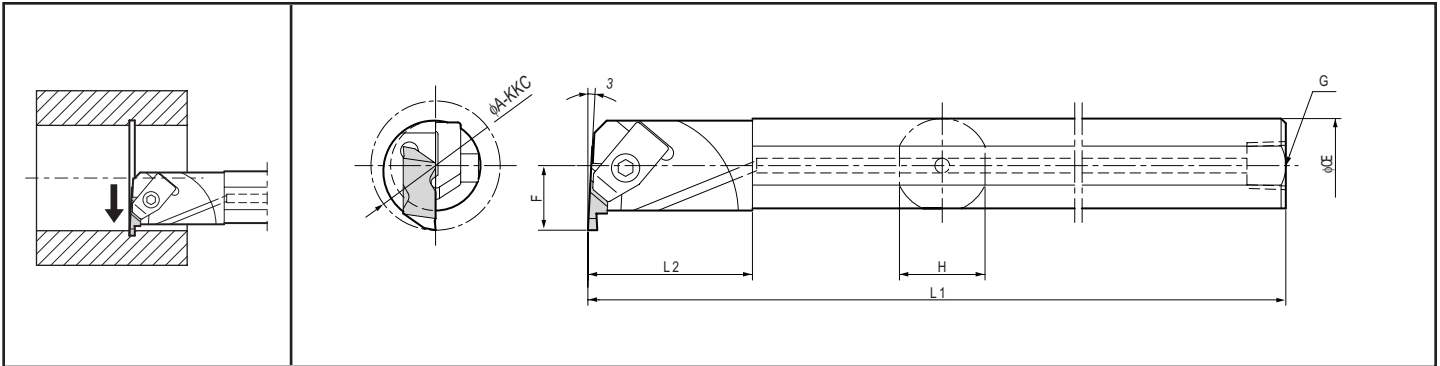
Items marked in () are not included with toolholder

* Minimum bore varies with groove depth. See chart for details.

Toolholder	Applicable Insert
KKC...3	KC_3..., KCT3...

Face Grooving Limits			
Insert Description	Groove Width	Maximum Groove Depth	Minimum Groove Diameter
KCFP 3125	.125	.150	2.375
KCFP 3156	.156		
KCFP 3189	.189		

A-KKC



Description	Stock		Unit	Dimensions					Spare Parts		
	R	L		ϕA^*	ϕD	L1	F	G	Clamp	Clamp Screw	Wrench
A10M-KKCR-2	●			1.000	.625	6.00	.500	1/8-27NPT	CKC-2L	SKC-2	(7/64 hex)
A10S-KKCR-2	●		in	1.000	.625	10.00	.500				
A12R-KKCR-2	●			1.250	.750	8.00	.561				
A12S-KKCR-2	●			1.125	.750	10.00	.562				
A16T-KKCR/L-2	●	●		1.375	1.000	12.00	.688				
A16X-KKCR-3	●			1.375	1.000	9.00	.687	1/4-18NPT	CKC-3R/L	SKC-3	(LW-156)
A16T-KKCR/L-3	●	●		1.375	1.000	12.00	.688				
A20U-KKCR/L-3	●	●		1.750	1.250	14.00	.875				
A24U-KKCR/L-3	●	●		2.000	1.500	14.00	1.000				
A28U-KKCR-3	●			2.250	1.750	14.00	1.125				
A32V-KKCR/L-3	●	●		2.500	2.000	16.00	1.250				
A28U-KKCR/L-4	●	●		2.500	1.750	14.00	1.250				
A32V-KKCR/L-4	●	●		2.750	2.000	16.00	1.375				

Note- Right hand bars require left hand inserts and clamps; left hand bars require right hand inserts and clamps

Items marked in () are not included with toolholder

* Minimum bore varies with groove depth. See chart for details.

Toolholder	Applicable Insert
KKC...2	KC_ 2..., KCT2...
KKC...3	KC_ 3..., KCT3...
KKC...4	KC_ 4...,

■ **Technical Data**

● **Maximum Internal Groove Depth vs. Minimum Bore Diameter**

Insert	Maximum Groove Depth	Minimum Bore Diameter
KCGP 2031R/L KCGP 2041R/L KCGP 2047R/L	.050	.730
KCGP 2058R/L KCGP 2062R/L KCGP 2094R/L KCGP 2125R/L	.110 .102 .098 .080 .055	2.500 1.750 1.500 1.000 .730
KCGP 3047R/L KCGP 3062R/L KCGP 3072R/L KCGP 3078R/L KCGP 3088R/L	.094 .090 .075	1.750 1.625 1.375
KCGP 3094R/L KCGP 3097R/L KCGP 3105R/L KCGP 3110R/L KCGP 3122R/L KCGP 3125R/L KCGP 3142R/L KCGP 3156R/L KCGP 3178R/L KCGP 3185R/L KCGP 3189R/L	.150 .145 .138 .125 .110	2.375 2.125 1.875 1.625 1.375
KCGP 4125R/L	.150	2.750
KCGP 4189R/L KCGP 4213R/L KCGP 4219R/L KCGP 4250R/L	.250 .245 .240 .218 .200	5.750 5.000 4.500 3.250 2.500

● **Ceranotch Running Conditions**

Work Material	Cermet Feeds (ipr)	Carbide Feeds (ipr)	Insert Grade (SFM)						
			TC40	TC60	PR660	PR930	KW10	A65	KBN10B
Stainless Steel	.002~.005	.002~.010	-	200~600	100~500	100~550	-	-	-
Carbon Steel	.002~.005	.002~.010	300~900	250~900	200~550	250~650	-	-	-
Alloy Steel	.002~.005	.002~.010	250~800	250~800	100~500	150~550	-	-	-
Tool Steel	.002~.005	.002~.010	200~650	200~650	-	100~550	-	-	-
Hardened Steel (>45Rc)	-	-	-	-	-	-	-	250~500*	250~500*
Gray Cast Iron	.003~.006	.002~.012	200~700	-	-	-	125~450	500~1000	-
Ductile Iron	.003~.006	.002~.012	-	150~600	-	-	125~500	500~1000	-
Aluminum	.002~.008	.002~.012	150~1600	-	-	-	500~1300	-	-

Note: Speeds/feeds listed are for external grooving. Reduce parameters by 10% for internal grooving.

*Feeds = .003~.008ipr



■ Technical Data

● Ceranotch Conversion Chart

Insert Style	Kyocera	Horizon	Tool-Flo	Kennametal	RTW	Valenite	Sandvik	Mitsubishi
Notch Style Grooving Inserts								
Face Grooving	KCFP	HF	FLF	NF	-	-	TLF*	EF
Deep Face Grooving	-	HFD	FLFD	NFD	-	-	-	EFD
ID or OD Grooving	KCG/KCGP	HG	FLG	NG	PG	VLG	TLG*	EG
w/ Chipbreaker	KCGP-MY	HG RK-LK	FLG CB	NG RK-LK	PG RK-LK	-	-	EG RK-LK
Deep Grooving	KCGDP	HGD	FLGD	NGD	PGD	-	-	EGD
w/ Chipbreaker	-	HGD RK-LK	-	NGD RK-LK	PGD RK-LK	-	-	-
Positive Grooving	KCGP	HGP	FLGP	NGP	-	VLGP	TLGP*	EGP
Back Turning	-	HP	-	NP	-	-	-	EP
Full Nose Radius	KCRP	HR	FLR	NR	PR	VLR	TLR*	EGR
Positive Full Nose Radius	KCRP	HRP	FLRP	NRP	PRP	VLRP	TLRP*	-
45° Undercutting	-	HU	FLU	NU	-	-	TLU*	-
Poly-V 40°	-	HV	FLV	NV	-	-	TLV*	-
Notch Style Threading Inserts								
Acme	-	HA	FLA	NA	PA	VLA	TLA*	-
Stub Acme	-	HAS	FLAS	NAS	PAS	VLAS	TLAS*	-
NPT Full Profile	-	HDC	FLDC	NDC	PDC	VLDC	TLDC*	-
UNJ	-	HJ	FLJ	NJ	-	-	TLJ*	-
UNJ Fine Pitch	-	HJF	FLJF	NJF	-	-	TLJF*	-
60° V Partial Profile	KCT	HT	FLT	NT	PT	VLT	TLT*	ET
American Buttress	-	HTB	FLTB	NTB	-	-	TLTB*	-
60° V Full Profile Topping	-	HTC	FLTC	NTC	PTC	-	TLTC*	-
60° V Fine Pitch	-	HTF	FLTF	NTF	PTF	VLTF	TLTF*	-
60° V Fine Pitch Positive	KCTK	HTK	FLTK	NTK	PTK	VLTK	TLTK*	-
60° V Positive	KCTP	HTP	FLTP	NTP	PTP	VLTP	TLTP*	-

*Sandvik uses different clamp system. Requires Kyocera or any other standard clamp from competitor.