

Threading

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Product Lineup

		KTN (P.351)	KTNS (P.351)	KTT KTTX S-KTTX (P.352~353)	KKC (P.350)	STVP (P.354)
External Threading						
Thread Type	Metric	mm	0.5~5.0	0.5~3.5	0.7~4.0	0.5~4.0
	Unified	TPI	24~11	56~7	44~6	72~6
	Parallel Pipe	TPI	28~11	28~11	—	—
	Whitworth	TPI	24~9	24~9	—	—
	Tapered Pipe	TPI	28~11	—	—	—
	American National Pipe	TPI	18,14,11.5	18,14,11.5	—	—
30° Trapezoidal	mm	2.0~5.0	2.0~3.0	—	—	—
Internal Threading		VNT (P.360)	PST-S (P.359)	SIN CIN S-SIN (P.356)	S...STWP S...STWP-E (P.357)	KITG S-KKC (P.358) (P.355)
Min. Bore Dia. ϕA		.177, .236	.177, .236	.252~1.456	.476~1.240	1.000~1.771
Thread Type	Metric	mm	0.75~1.5	0.5~5.0	0.75~3.5	0.5~3.0
	Unified	TPI	28~18	32~8	28~8	48~5
	Parallel Pipe	TPI	—	28~11	—	28~11
	Whitworth	TPI	—	24~11	—	24~8
	Tapered Pipe	TPI	—	28~11	—	—
	American National Pipe	TPI	—	—	18,14,11.5	—
30° Trapezoidal	mm	—	—	2.0~5.0	—	—

Outlines of Threading Insert

● Full Profile and Partial Profile

	Shape	Function	Features
Full Profile		 Wiper Edge	① Burr-free thread surface; high quality ② Additional stock must be left on the part diameter for full topping ③ Every pitch size requires a specific insert
Partial Profile			① Thread's corner tends to be sharp edged(burr). ② Thread's O.D. or I.D. need to be finished to size before threading. ③ One insert can machine various pitch sizes.

● With and Without "Chipbreaker"

	Shape	Condition	Cutting Resistance	Chip Length
Without Chipbreaker		· When less cutting resistance is needed for small or thin part machining	Small	
With Chipbreaker		· When better chip control is needed	Smaller	

Guide for Threading

Bolded Grades are recommended.

Work Material Insert Grade	Carbon Steel · Alloy Steel		Stainless Steel	Cast Iron
	Cutting Condition	TC40	TC60·PR630· PR930	TC60 PR630·PR660· PR930
Cutting Speed	330~500 SFM		200~270 SFM	330 SFM
First D.O.C.(Radial)	under .010in	under .012in (Depending on Pitch Size)	under .010in	under .012in
No. of Pass	Add a few more passes than recommended	Use Recommended Conditions	Add a few more passes than recommended	Use Recommended Conditions
Coolant	Coolant is recommended			

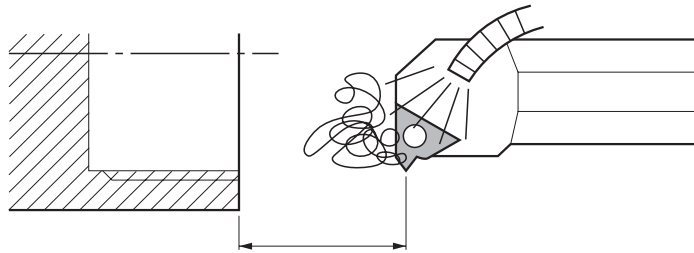
Depth of Cut & Number of Passes [P.368~373](#)
Recommended Cutting Conditions [P.374](#)

Guide for Internal Threading

Good chip evacuation is important when internal threading.

If entangled chips damage the insert, the following countermeasures are recommended.

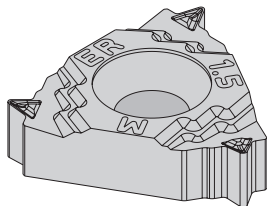
1. Start the threading from a position of 1.2in away from the workpiece.



2. Use Insert Grade PR930.

Replacing with PR930 (PVD coated carbide) will offer stable internal threading since the cutting edge is strong and prevents chipping.

Chip Control of Threading Insert with Chipbreaker



Threading Insert with
"TS"
Chipbreaker

Insert with TS Chipbreaker improves chip control.

- Advantage of TS Chipbreaker Insert
 1. "TS" breaks chips and provides good chip evacuation.
 2. High precision molded insert is economical

● Cutting Conditions: 330 SFM, P=1.5 mm, No. of Passes: 6 Pass, 4135, Coolant, Flank Infeed (External Threading)

Pass	1st Pass	2nd Pass	3rd Pass	5th Pass	6th Pass
TS Chipbreaker Insert					
Conventional Insert					

Summary of External Threading

General External Threading

Male Thread	M	: Metric	(mm)
	UN	: Unified	(TPI)
	G	: Parallel Pipe	(TPI)
	W	: Whitworth	(TPI)
	R	: Tapered Pipe	(TPI)
	NPT	: American National Pipe	(TPI)
Tr	: 30° Trapezoidal	(mm)	

→P.352

KTT	
M	:0.5~3.5
UN	:56~7
G	:28~11
W	:24~7
R	:28~11

Partial Profile	Full Profile
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→P.351

KTNS	
M	:0.5~2.5
UN	:24~11
G	:28~11
W	:24~9
R	:28~11
NPT	:18~11.5
Tr	:2.0~3.0

→P.350

KTC	
UN	:44~8

→P.354

STVP	
UN	:72~6

→P.351

KTN	
M	:0.5~5.0
UN	:24~8
G	:28~11
W	:24~9
R	:28~11
NPT	:18~11.5
Tr	:2.0~5.0

Full Profile	Partial Profile
With Chipbreaker	

Summary of External Threading

Threading

Small Dia. Parts External Threading

Round Shank Tool

Thread End
(Small clearance groove)

KTTX

→P.352~353

KTTX / S-KTTX	
M	:0.5~2.0
UN	:56~14
G	:28~11
W	:24~14
R	:28~11

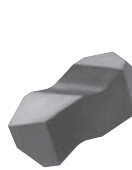
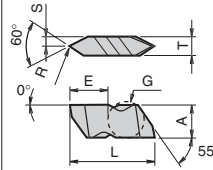
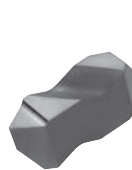
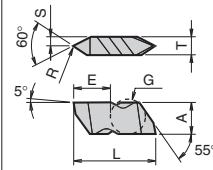
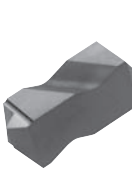
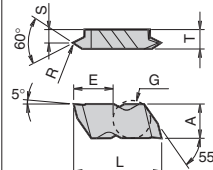
Partial Profile

S-KTTX

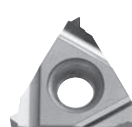
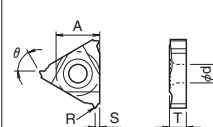
Threading Inserts

External Threading Inserts

External Threading Inserts




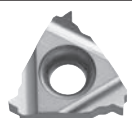
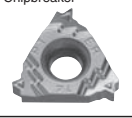
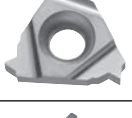
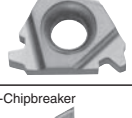



Shape	Description	Applicable Thread	Pitch TPI	Dimension (inch)					Angle θ	Insert Grade						Ref. Page for Toolholder		
				TPI	A	T	R	E		S	L	Cermet			PVD Coated		Carbide	
												TC30	TC40	TC60	PR630			PR660
  KCT-2%:G= ϕ .1875 KCT-3%:G= ϕ .375	KCT -2 $\frac{R}{L}$	M UN	External 8-36 Internal 7-20	.219	.150	.004	.2661	.075	.503	60°			●	●			350	
	KCT -3 $\frac{R}{L}$	M UN	External 6-20 Internal 5-12	.344	.195	.007	.3999	.098	.885	60°			●	●				
  KCTP-2%:G= ϕ .1875 KCTP-3%:G= ϕ .375	KCTP -2 $\frac{R}{L}$	M UN	External 8-36 Internal 7-20	.219	.150	.004	.2661	.075	.503	60°			●	●				
	KCTP -3 $\frac{R}{L}$	M UN	External 6-20 Internal 5-12	.344	.195	.007	.3999	.098	.885	60°			●	●				
  KCTK-2%:G= ϕ .1875 KCTK-3%:G= ϕ .375	KCTK -2 $\frac{R}{L}$	M UN	External 14-44 Internal 12-24	.219	.150	.003	.2679	.110	.505	60°			●	●				
	KCTK -3 $\frac{R}{L}$	M UN	External 10-44 Internal 9-24	.344	.195	.003	.4022	.141	.887	60°			●	●				

TNN-E

Shape	Description	Applicable Thread	Pitch TPI	Unit	Dimension					Angle θ	Insert Grade						Ref. Page for Toolholder						
					mm TPI	A	T	ϕ d	R		S	TC30	TC40	TC60	PVD Coated			Carbide					
															PR630	PR660			PR930	KW10			
 	TNN 32ER050M	M	0.50	mm (in)	9.525 (.375)	3.68 (.145)	4.0 (.157)	0.06	0.40	60°			○	○	●								
	32ER075M	M	0.75					0.09	0.53				○	○	●								
	32ER100M	M	1.0					0.12	0.80				○	○	●		○						
	32EL100M																						
	32ER125M	M	1.25					0.15	0.90														
	32EL125M																						
	32ER150M	M	1.5					0.19	1.00				○	●	○					○			
	32EL150M																						
	32ER175M	M	1.75					0.22	1.50														
	32ER200M	M	2.0					0.25	1.50														
	32EL200M																						
	32ER250M	M	2.5					0.32	1.60														
TNN 43ER300M	M	3.0	0.41	2.10	12.70 (.500)	4.90 (.193)	4.85 (.191)			60°			○	○	●								
43ER350M	M	3.5	0.48	2.10																			
43ER400M	M	4.0	0.55	2.80																			
43ER450M	M	4.5	0.62	2.80																			
43ER500M	M	5.0	0.70	2.80																			
TS-Chipbreaker	TNN 32ER100M-TS	M	1.0	mm (in)	9.525 (.375)	3.80 (.145)	4.0 (.157)	0.12	0.8	60°			○	○	●								
	32ER125M-TS	M	1.25					0.15	0.9														
	32ER150M-TS	M	1.5					0.19	1.0														
	32ER200M-TS	M	2.0					0.25	1.5														

Threading Inserts

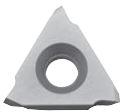
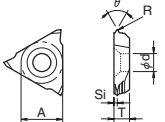
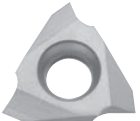
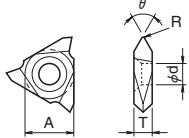
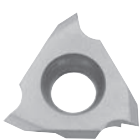
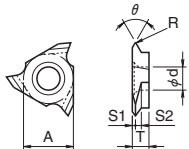
Threading Inserts

Shape	Description	Applicable Thread	Pitch TPI	Unit	Dimension					Angle	Insert Grade						Ref. Page for Toolholder					
					A	T	φd	R	S		θ	Cermet			PVD Coated			Carbide				
												TC30	TC40	TC60	PR630	PR660			PR930	KW10		
 Handed Insert shows Right-hand	TNN 32ER28UN	UN	28	in	.375	.145	.157	.004	.031	60°	●	●	●	●	●	●						
	32ER24UN	UN	24					.005	.031		●	●	●	●	●							
	32ER20UN	UN	20					.006	.039		●	●	●	●	●							
	32ER18UN	UN	18					.007	.039		●	●	●	●	●							
	32ER16UN	UN	16					.008	.043		●	●	●	●	●							
	32EL16UN	UN	16					.009	.059		●	●	●	●	●							
	32ER14UN	UN	14					.010	.059		●	●	●	●	●							
	32ER13UN	UN	13					.011	.059		●	●	●	●	●							
	32ER12UN	UN	12					.012	.059		●	●	●	●	●							
	32EL12UN	UN	12																			
	32ER11UN	UN	11																			
43ER8UN	UN	8	.500	.192	.191	.017	.083	●	○	●												
	TNN 32ER19W	G W	19 -	mm (in)	9.525 (.375)	3.68 (.145)	4.0 (.157)	0.16	1.0	55°		○	○	●	●							
	32ER14W	G W	14 14					0.23	1.5			○	○	●	●							
	32ER11W	G W	11 11					0.30	1.5			○	○	●	●							
TS-Chipbreaker		TNN 32ER19W-TS	G W	19 -	mm (in)	9.525 (.375)	3.68 (.145)	4.0 (.157)	0.16	1.0	55°			○	○	●	●					
32ER14W-TS		G W	14 14	0.23					1.5			○	○	●	●							
32ER11W-TS		G W	11 11	0.30					1.5			○	○	●	●							
	TNN 32ER28PT	R	28	mm (in)	9.525 (.375)	3.68 (.145)	4.0 (.157)	0.10	0.8	55°		○	○	●	○							
	32ER19PT	R	19					0.16	1.0			○	○	●	○							
	32ER14PT	R	14					0.22	1.6			○	○	●	○							
	32ER11PT	R	11					0.29	1.6			○	○	●	○							
TS-Chipbreaker		TNN 32ER19PT-TS	R	19	mm (in)	9.525 (.375)	3.68 (.145)	4.0 (.157)	0.16	1.0	55°			○	○	●	○					
32ER14PT-TS		R	14	0.22					1.6			○	○	●	○							
32ER11PT-TS		R	11	0.29					1.6			○	○	●	○							
	TNN 32ER18NPT	NPT	18	in	.375	.145	.157	.0016	.035	60°		●	○	●	○							
	32ER14NPT	NPT	14					.0020	.059			○	○	●	○							
	32ER11.5NPT	NPT	11.5					.0024	.059			○	○	●	○							
	TNN 32ER200TR	Tr	2.0	mm (in)	9.525 (.375)	3.68 (.145)	4.0 (.157)	0.20	1.6	30°		○	○	●	○							
	32ER300TR	Tr	3.0					0.20	1.6			○	○	●	○							
	43ER400TR	Tr	4.0					0.20	2.5		30°		○	○	●	○						
	43ER500TR	Tr	5.0					0.20	2.5				○	○	●	○						
TS-Chipbreaker		TNN 32ER6001-TS	M UN	1.0~2.5 24~11	mm (in)	9.525 (.375)	3.68 (.145)	4.0 (.157)	0.09	1.5	60°			○	○							
32ER6002-TS		M UN	1.5~2.5 16~11	0.19					1.5			○	○									
	TNN 32ER6001	M UN	1.0~2.5 24~11	mm (in)	9.525 (.375)	3.68 (.145)	4.0 (.157)	0.10	1.5	60°		○	○	●	○							
	32ER6002	M UN	1.5~2.5 16~11					0.20	1.5			○	○	●	○							
	TNN 32ER5501	G,R W	28~11 24~10					55°														
	32ER5502	G,R W	14~11 16~9						0.10	1.5		○	○	●	○							
	TNN 32ER60.004	M UN	36~10	in	.375	.145	.157	.004	.06	60°	●	●	●									
	32EL60.004	M UN	36~10																			
	TNN 32ER60.008	M UN	18~10								60°											
	32EL60.008	M UN	18~10																			


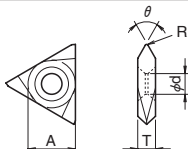
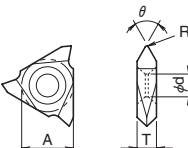
Threading Inserts

● TNN-E

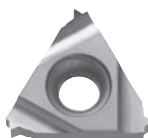
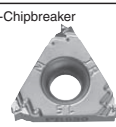
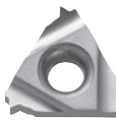
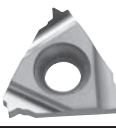
Threading Inserts

Shape	Description	Applicable Thread	Pitch TPI	Unit	Dimension						Angle θ	Insert Grade						Ref. Page for Toolholder							
					A	T	ϕd	R	S1	S2		Cermet			PVD Coated				Carbide						
												TC30	TC40	TC60	PR630	PR660	PR930			KW10					
 <small>Handed Insert shows Right-hand</small>		TT 43ER100M	M	1.00	mm (in)	12.70 (.500)	4.76 (.187)	5.5 (.217)	0.12	0.8	-	60°													
		43ER125M	M	1.25					0.15	0.9															
		43ER150M	M	1.50					0.19	1.0															
		43ER200M	M	2.00					0.25	1.7															
 	TT 32% 6000	M	External 0.5~2.5	in	.375	.125	.177	0.0	-	-	60°														
		UN	56~10																						
		M	External 1.0~2.5					.004	-																
		UN	24~10																						
	M	External 1.5~2.5	.008					-																	
	UN	16~10																							
	M	External 2.5	.012					-																	
	UN	11~10																							
	TT 43% 6001	M	External 1.0~3.5					.004	-			.500	.187	.217			-	60°							
		UN	24~8																						
		M	External 1.5~3.5					.008	-																
		UN	16~8																						
M	External 2.5~3.5	.012	-																						
UN	11~8																								
M	External 3.0~3.5	.016	-																						
UN	8																								
TT 32% 5501	G,R	External 28~11	.004	-	.375	.125	.177			-	55°														
	W	24~10																							
G,R	External 14~11	.008	-																						
W	14~10																								
TT 43% 5501	G,R	External 28~11	.004	-				.500	.187			.217			-	55°									
	W	24~7																							
G,R	External 14~11	.008	-																						
W	14~7																								
G,R	External 11	.012	-																						
W	10~7																								
G,R	External -	.016	-																						
W	8~7																								
 	TTX 32R6000	M	0.5~1.0	in	.375	.125	.173			0.00	.024		.044	60°											
	UN	56~32																							
	M	0.5~1.0	.002							.024	.044														
	UN	48~32																							
	M	1.0~2.0	.004					.043	.064																
	UN	28~14																							
	M	0.5	0.00					.012	.044	.375	.125	.173					60°								
UN	56~48																								
M	0.5	.002	.012	.044																					
UN	48																								
G,R	28~19	.004	.030	.039	.375	.125	.173							55°											
W	24~20																								
G,R	19~11	.006	.047	.057																					
W	20~11																								

●: Std. Stock ○: World Express R: R-hand Only

Shape	Description	Applicable Thread	Pitch TPI	Dimension (inch)							Angle	Insert Grade							Ref. Page for Toolholder			
				mm TPI								θ	Cermet			PVD Coated				Carbide		
				A	T	ϕd	R	S1	S2	TC30			TC40	TC60	PR630	PR660	PR930	KW10				
 Handed Insert shows Right-hand	 TNMC 32NV60.004	M	36~6	.375	.125	.15	.004	-	-	60°			●	●						-		
		UN																				
	 TPMC 32NV60.002	M	72~8				.002	-						●								
		UN																				
		M	36~8	.375	.125	.177	.004	-	-	60°		●	●	●								
												●										
		M	18~8				.008	-			60°		●									
	M	36~6	.500	.188	.217	.004	-	-	60°			●	●									
M	18~6				.008	-			60°													


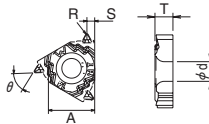

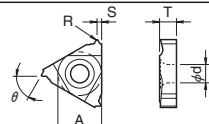

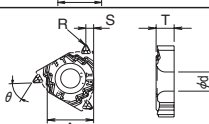

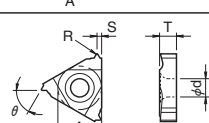

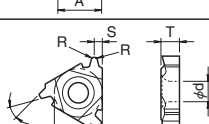
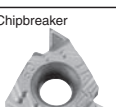
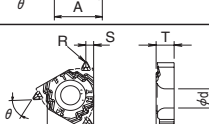
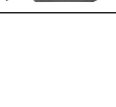
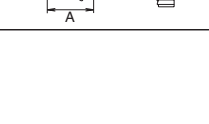

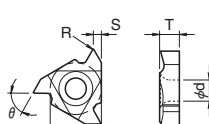

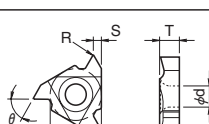

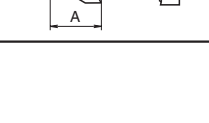


● Internal Threading Insert

Shape	Description	Applicable Thread	Pitch TPI	Unit	Dimension					Angle	Insert Grade							Ref. Page for Toolholder							
					mm TPI						θ	Cermet			PVD Coated				Carbide						
					A	T	ϕd	R	S			TC30	TC40	TC60	PR630	PR660	PR930			KW10					
 Handed Insert shows Right-hand	TNN 22IR050M	M	0.50	mm (in)	6.35 (.250)	3.18 (.125)	3.0 (.118)	0.03	0.55	60°			○	○	○	○	○	○	○						
	TNN 22IR075M	M	0.75					0.05	0.68																
	TNN 22IR100M	M	1.00					0.07	0.80								○	○	○	○	○	○	○	○	
	TNN 22IL100M																								
	TNN 22IR125M	M	1.25					0.08	1.1								○	○	○	○	○	○	○	○	
	TNN 22IR150M	M	1.50					0.10	1.1																
	TNN 22IL150M																								
	TNN 22IR175M	M	1.75		0.12	1.1																			
	TNN 22IR200M	M	2.00		0.14	0.9																			
	TNN 32IR100M	M	1.00		0.07	0.8	9.525 (.375)	3.68 (.145)	4.0 (.157)			60°		○	○	○	○	○	○	○	○				
	TNN 32IR125M	M	1.25		0.08	1.1																			
	TNN 32IR150M	M	1.50		0.10	1.1																			
	TNN 32IL150M																								
	TNN 32IR175M	M	1.75		0.12	1.1																			
	TNN 32IR200M	M	2.00		0.14	1.5												○	○	○	○	○	○	○	○
	TNN 32IL200M																								
	TNN 32IR250M	M	2.50		0.16	1.5																			
	TNN 43IR300M	M	3.00		0.19	1.8	12.70 (.500)	4.90 (.193)	4.85 (.191)			60°													
TNN 43IR350M	M	3.50	0.23	2.1																					
TNN 43IR400M	M	4.00	0.26	2.8																					
TNN 43IR450M					0.30	2.8																			
TNN 43IR500M	M	5.00	0.34	2.8																					
 TS-Chipbreaker	TNN 32IR100M-TS	M	1.00	mm (in)	9.525 (.375)	3.68 (.145)				4.0 (.157)	0.07		0.8	60°				○	○	○	○	○	○		
	TNN 32IR150M-TS	M	1.50				0.10	1.1																	
	TNN 32IR200M-TS	M	2.00				0.14	1.5																	
	TNN 32IR24UN	UN	24	in	.375	.145	.157	.001	.031	60°			○	○	○	○	○	○	○						
	TNN 32IR20UN	UN	20					.002	.039																
	TNN 32IR18UN	UN	18					.003	.039																
	TNN 32IR16UN	UN	16					.003	.043																
	TNN 32IR14UN	UN	14					.004	.059																
	TNN 32IR12UN	UN	12					.005	.059																
	TNN 43IR8UN	UN	8					.007	.071																
	TNN 32IR14W	G	14	mm (in)	9.525 (.375)	3.68 (.145)	4.0 (.157)	0.23	1.5	55°			○	○											
	TNN 32IR11W	G	11					0.30	1.5																

● : Std. Stock ○ : World Express

Threading Inserts

● Internal Threading Inserts

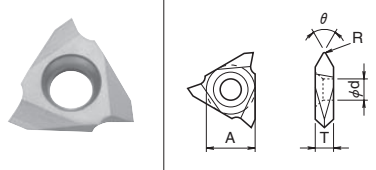
Shape	Description	Applicable Thread	Pitch TPI	Unit	Dimension					Angle	Insert Grade						Ref. Page for Toolholder		
					A	T	φd	R	S		θ	Cermet			PVD Coated			Carbide	
												TC30	TC40	TC60	PR630	PR660			PR930
		TNN 32IR14W-TS	G W 14	mm	9.525 (.375)	3.68 (.145)	4.0 (.157)	0.23	1.5	55°				○	○	●			
			W 11					0.30	1.5					○	○	●			
		TNN 22IR28PT	Rc 28	mm	6.35 (.250)	3.18 (.125)	3.0 (.118)	0.10	0.60	55°		○	○		●				
			Rc 19					0.16	0.78			○	○		●	○			
			Rc 14					0.22	0.97			○	○		●	○			
			Rc 14					0.22	0.97			○	○		●	○			
		TNN 32IR14PT	Rc 14	mm	9.525 (.375)	3.68 (.145)	4.0 (.157)	0.22	0.97	55°		○	○		●	○			
			Rc 14					0.22	0.97			○	○		●	○			
			Rc 14					0.22	0.97			○	○		●	○			
			Rc 11					0.29	1.50			○	○		●	○			
		TNN 22IR19PT-TS	Rc 19	mm	6.35 (.250)	3.18 (.125)	3.0 (.118)	0.16	0.78	55°			○	○	●				
			Rc 14					0.22	0.97				○	○	●				
			Rc 14					0.22	0.97				○	○	●				
			Rc 11					0.29	1.50				○	○	●				
		TNN 32IR18NPT	NPT 18	in	.375	.145	.157	.0016	.035	60°			○	○	●				
			NPT 14					.0020	.059			●	○	●					
			NPT 11.5					.0024	.059			●	○	●					
		TNN 32IR200TR	Tr 2.00	mm	9.525 (.375)	3.68 (.145)	4.0 (.157)	0.20	1.6	30°		○	○		●				
			Tr 3.00					0.20	1.6			○	○		●				
			Tr 4.00					0.20	2.5			○	○		●				
			Tr 5.00					0.20	2.5			○	○		●				
		TNN 32IR6001-TS	M 1.5~2.5	mm	9.525 (.375)	3.68 (.145)	4.0 (.157)	0.09	1.5	60°				○	○				
			UN 16~10					0.13	1.5					○	○				
		TNN 06IR60005	M 0.75~1.25	mm	3.97 (.156)	1.91 (.075)	2.3 (.091)	0.05	0.6	60°					●				
			UN 28~20					0.07	0.8					●					
			M 1.0~1.75					0.05	1.0			○	○		●	○			
			UN 20~16					0.05	1.0			○	○		●	○			
			M 0.75~1.5					0.10	1.5						○	○	●	○	
			UN 32~16					0.15	1.5						○	○	●	○	
			M 1.5~2.5					0.10	0.6						○	○	●		
			UN 16~10					0.10	0.8						○	○	●		
			M 2.5					0.05	1.1						○	○	●	○	
			UN 11~10					0.10	1.5						○	○	●	○	
			G,Rc 28					0.10	0.6						○	○	●		
			W 24					0.10	0.8						○	○	●		
G,Rc 28~19	0.05	1.1					○	○	●	○									
W 24~20	0.10	1.5					○	○	●	○									
G,Rc 28~14	0.10	1.5					○	○	●	○									
W 24~14	0.20	1.5					○	○	●	○									
G,Rc 28~11	0.10	1.5					○	○	●	○									
W 24~11	0.20	1.5					○	○	●	○									
G,Rc 14~11	0.10	1.5					○	○	●	○									
W 16~11	0.20	1.5					○	○	●	○									
		TNN 22IR60.002	M 0.75~1.50	in	.250	.125	.118	.002	.04	60°		●	●						
			UN 32~16					.004	.06			○	●	●					
			M 1.5~2.5					.006	.06			○	●	●					
		TNN 32IR60.004	M 1.5~2.5	in	.375	.145	.157	.004	.06	60°		○	●	●					
			UN 16~10					.006	.06			○	●	●					
		TNN 32IR60.006	M 2.5	in	.375	.145	.157	.006	.06	60°		○	●	●					
			UN 11~10					.006	.06			○	●	●					

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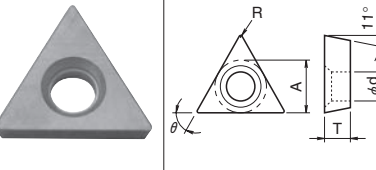
Threading

Threading Inserts

● Internal Threading Inserts

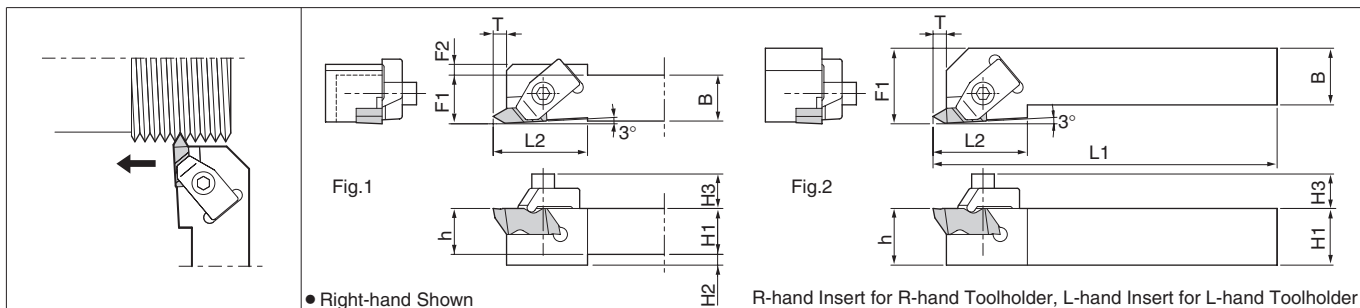
Shape	Description	Applicable Thread	Pitch TPI	Dimension (inch)					Angle	Insert Grade						Ref. Page for Toolholder
				mm TPI						θ	Cermet		PVD Coated		Carbide	
				A	T	φd	R	S			TC30	TC40	TC60	PR630		
Handed Insert shows Right-hand																
	TT 32 ³ / ₄ 6000	M UN	Internal 0.5~2.5 48~10	.375	.125	.177	.00	-	60°			●		R		
	32 ³ / ₄ 6001	M UN	Internal 1.5~2.5 16~10				.004	-				●	○	R	○	
	TT 43 ³ / ₄ 6001	M UN	Internal 1.5~3.0 16~8	.500	.187	.217	.004	-	60°		○	○		○	○	
	43 ³ / ₄ 6002	M UN	Internal 3.0 8				.008	-			○	○		○	○	
	TT 32 ³ / ₄ 5501	G,R W	Internal 28~11 24~10	.375	.125	.177	.004	-	55°			○		○	○	
	32 ³ / ₄ 5502	G,R W	Internal 14~11 16~10				.008	-			○		○	○		
	TT 43 ³ / ₄ 5501	G,R W	Internal 28~11 24~8	.500	.187	.217	.004	-	55°			○		R	○	
	43 ³ / ₄ 5502	G,R W	Internal 14~11 16~8				.008	-			○		R	○		
	43 ³ / ₄ 5503	G,R W	Internal 11 11~8				.012	-			○		R			
	43 ³ / ₄ 5504	G,R W	Internal - 8				.016	-			○					

● TPGB

Shape	Description	Applicable Thread	Pitch TPI	Dimension (inch)					Angle	Insert Grade						Ref. Page for Toolholder
				mm TPI						θ	Cermet		PVD Coated		Carbide	
				A	T	φd	R	S			TC30	TC40	TC60	PR630		
Handed Insert shows Right-hand																
	TPGB 21.50.1	M UN	0.75~1.5 28~16	.250	.094	.138	.002		60°			○		○		
	21.50.2	M UN	1.5 16				.004			○		○				
	TPGB 220.1	M UN	0.75~3.5 28~11	.250	.094	.130	.002		60°		●	○		○	○	
	220.2	M UN	1.5~3.5 16~8				.004			○	○		○	○		
	220.5	M UN	3.0~3.5 8				.008			●	○	●	○	○		

External Threading Toolholders [KCT/KCTK/KCTP Insert]

KKC



● Toolholder Dimensions

Description	Stock		Dimension											Spare Parts		
	R	L	Unit	H1=h	H2	H3	B	L1	L2	F1	F2	T	Fig	Clamp	Clamp Screw	Wrench
KKC ^{R/L} 1010K-2-125F	●		mm	10mm	2mm	9.2mm	10mm	125mm	19.05mm	10.25mm	2mm	3.5mm	1	CKC-2 ^{R/L}	SKC-2	(7/64 Hex)
1212M-2-150F	●		mm	12mm	-	9.2mm	12mm	150mm	19.05mm	12.25mm	-	3.5mm	1			
KKC ^{R/L} 6-2X	●	●	mm	0.375	-	0.362	0.375	2.50	0.750	0.562	-	0.138	2	CKC-2 ^{R/L}	SKC-2	(7/64 Hex)
6-2CF	●	●		0.375	0.125	0.362	0.375	5.00	0.750	0.385	0.125	0.138	1			
8-2X	●	●		0.500	-	0.362	0.500	3.50	0.750	0.750	-	0.138	2			
8-2DF	●	●		0.500	-	0.362	0.500	6.00	0.750	0.510	-	0.138	1			
10-2DF	●	●		0.625	-	0.362	0.625	6.00	0.750	0.635	-	0.138	1			
12-2B	●	●		0.750	-	0.362	0.750	4.50	0.750	1.000	-	0.138	2			
12-2C	●	●		0.750	-	0.362	0.750	5.00	0.750	1.000	-	0.138	2			
16-2C	●	●		1.000	-	0.362	1.000	5.00	0.750	1.250	-	0.138	2			
16-2D	●	●		1.000	-	0.362	1.000	6.00	0.750	1.250	-	0.138	2			
12-3B	●	●	mm	0.750	-	0.465	0.750	4.50	1.250	1.000	-	0.210	2	CKC-3 ^{R/L}	SKC-3	(LW-156)
12-3C	●	●		0.750	-	0.465	0.750	5.00	1.250	1.000	-	0.210	2			
16-3C	●	●		1.000	-	0.465	1.000	5.00	1.250	1.250	-	0.210	2			
16-3D	●	●		1.000	-	0.465	1.000	6.00	1.250	1.250	-	0.210	2			
20-3D	●	●		1.250	-	0.465	1.250	6.00	1.250	1.500	-	0.210	2			

● Clamp : CKC-○R for Right-hand Toolholder, CKC-○L for Left-hand Toolholder

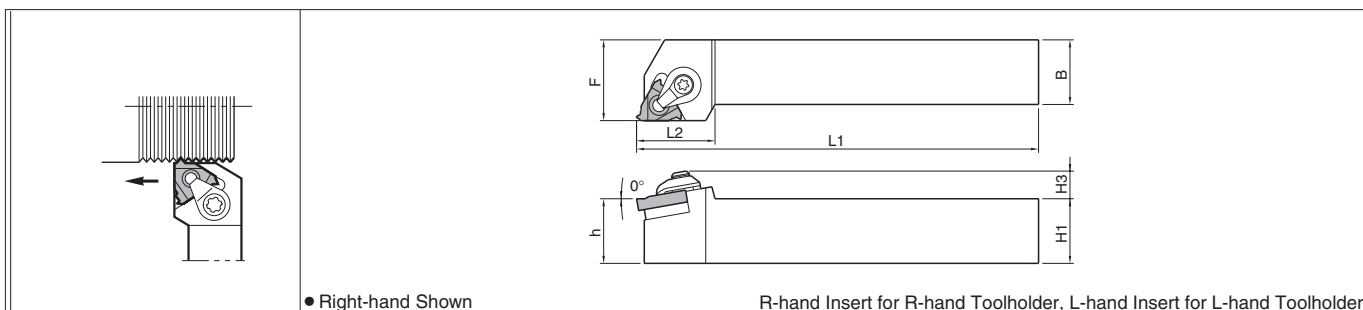
● Applicable Insert

Toolholder	Insert
KKC ^{R/L} ...2-	KCT-2 ^{R/L} , KCTK-2 ^{R/L} , KCTP-2 ^{R/L}
KKC ^{R/L} ...3	KCT-3 ^{R/L} , KCTK-3 ^{R/L} , KCTP-3 ^{R/L}

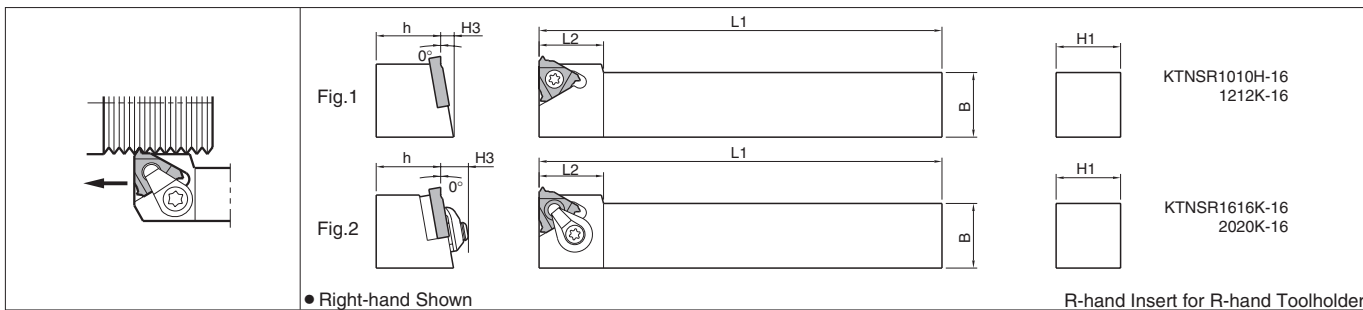
● These holders can also be used for grooving inserts. See page 275 for details.

External Threading Toolholders [TNN Inserts]

KTN



KTNS (For Gang type NC Lathe)



Toolholder Dimensions

Description	Stock		Dimension					Shape	Spare Parts						
	R	L	Unit	H1=h	H3	B	L1		L2	F	Clamp Set	Insert Screw	Wrench	Shim	Shim Screw
											5S	6S	FT	LW	SH
KTN 10-3			inch	0.625	0.750	0.625	4.50	0.87	0.750	-	CPS-5S	-	FT-15	TN-32	SH3X8
12-3	●	0.750		0.900	0.750	5.00	0.87	0.875							
16-3	●	1.000		1.150	1.000	6.00	0.87	1.250							
KTN 1616H-16	○	○	mm	16	8.5	16	100	25	20	-	CPS-5S	-	FT-15	TN-32	SP3X8
2020K-16	○	○		20	8.5	20	125	25	25						
2525M-16	○	○		25	8.5	25	150	25	30						
2525M-22	○	○		25	10	25	150	29	32						
3225P-22	○	○		32	10	25	170	34	32						
KTNS 1010H-16	○	○		10	8.5	10	100	16	16						
1212K-16	○	○	12	8.5	12	125	18	18	Fig.2	CPS-5S	-	FT-15	TN-32	SP3X8	
1616K-16	○	○	16	8.5	16	125	18	22							
2020K-16	○	○	20	8.5	20	125	20	25							

Applicable Inserts

Toolholder	Insert P.344~345		
	Full Profile	Full Profile (With Chipbreaker)	Partial Profile
KTN 10-3 12-3 16-3	TNN32E 10-3M TNN32E 10-3UN TNN32E 10-3W TNN32E 10-3PT TNN32E 10-3NPT	TNN32E 10-3M-TS TNN32E 10-3UN-TS TNN32E 10-3W-TS TNN32E 10-3PT-TS	TNN32E 10-3TR
KTN 1616H-16 2020K-16	TNN43E 1616H-16M TNN43E 1616H-16UN	-	TNN43E 1616H-16TR
KTNS 1010H-16 1212K-16 1616K-16 2020K-16	TNN32E 1010H-16M TNN32E 1010H-16UN TNN32E 1010H-16W TNN32E 1010H-16PT TNN32E 1010H-16NPT	TNN32E 1010H-16M-TS TNN32E 1010H-16UN-TS TNN32E 1010H-16W-TS TNN32E 1010H-16PT-TS	TNN32E 1010H-16TR

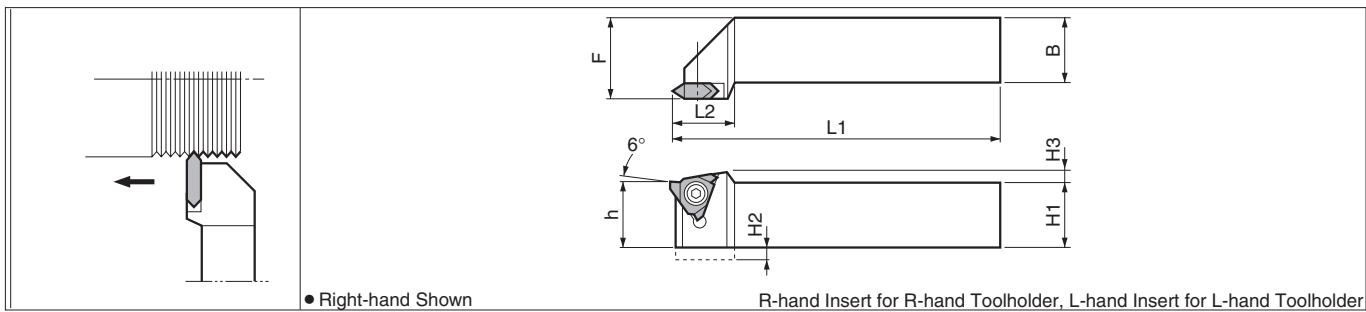
Depth of Cut & Number of Passes P.368~P.373

●: Std. Stock ○: World Express



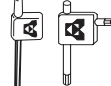
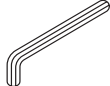
Recommended Cutting Conditions P.374

External Threading Toolholders [TT/TTX Insert]


KTT



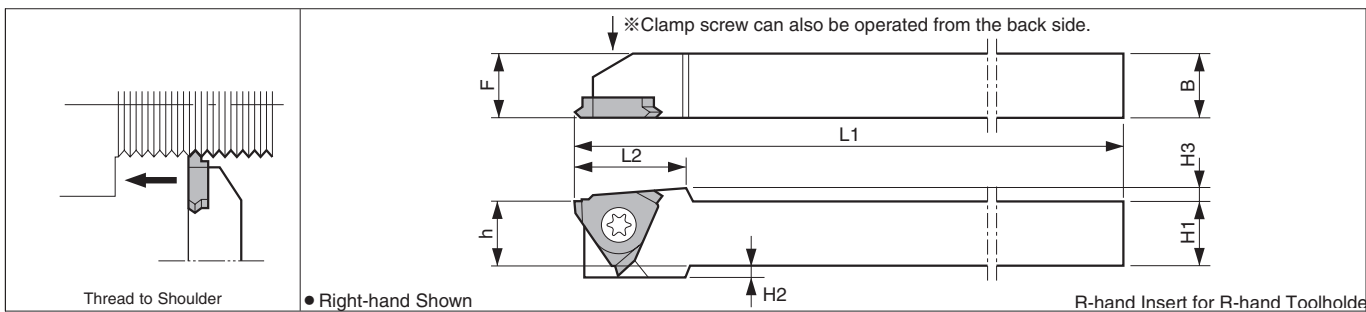
Toolholder Dimensions

Description	Stock		Dimension (mm)							Spare Parts			
	R	L	H1=h	H2	H3	B	L1	L2	F	Insert Screw		Wrench	
													
KTT^{R/L} 1010F -16	○	○	10	4	2.5	10	80	18	12	GS-40TR	-	FT-10	-
1212H -16	○	○	12	2	2.5	12	100	18	16				
1616H -16	○	○	16	-	2.5	16	100	18	20	SB-4TR	-	FT-15	-
2020K -16	○	○	20	-	2.5	20	125	18	25				
2525M -16	○	○	25	-	2.5	25	150	18	30	-	GS-50	-	LW-3
2020K -22	○	○	20	-	3.0	20	125	25	25				
2525M -22	○	○	25	-	3.0	25	150	25	30				





Applicable Inserts

Toolholder	Insert 	
	Full Profile	Partial Profile
KTT ^{R/L} ...-16	-	TT32 ^{R/L} ○○○○
KTT ^{R/L} ...-22	TT43E ^{R/L} ○○○○M	TT43 ^{R/L} ○○○○


KTTX



Toolholder Dimensions

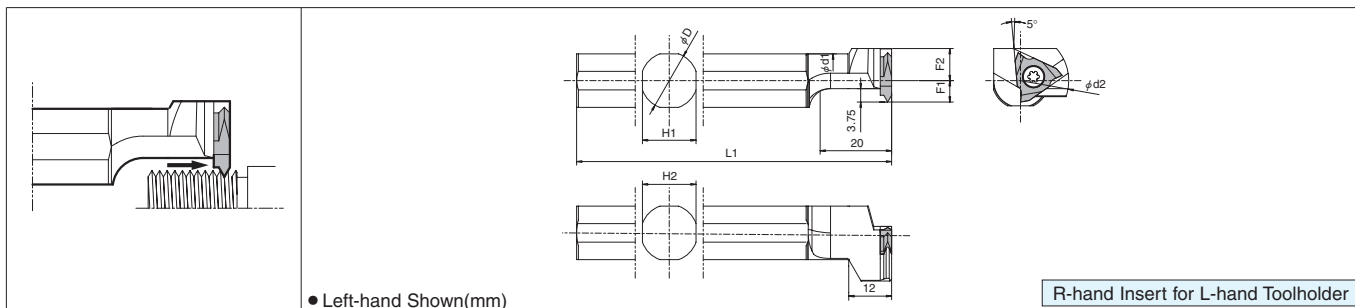
Description	Stock		Dimension (mm)							Spare Parts			
	R	L	H1=h	H2	H3	B	L1	L2	F	Insert Screw		Wrench	
													
KTTX^{R/L} 1010K -16F	○		10	2	2.5	10	125	17.6	10	SB-4070TRW	FT-8		
1212M -16F	○		12	-	2.5	12	150	17.6	12				
1616M -16F	○		16	-	2.5	16	150	17.6	16				
2020K -16F	○		20	-	2.5	20	125	17.6	20				

Applicable Inserts

Toolholder	Insert 	
	Full Profile	Partial Profile
KTTXR...-16	TTX32R ○○○○	
	TTX32R ○○○○S	

External Threading Toolholders



S-KTTX (Round Shank Tool)



● Left-hand Shown(mm)

R-hand Insert for L-hand Toolholder


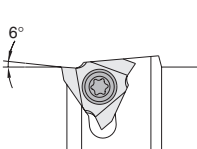
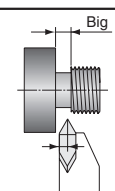
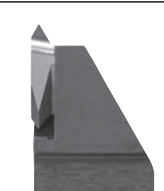
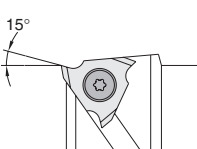
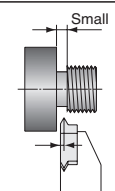
● Toolholder Dimension

Description	Stock		Dimension							Shape	Spare Parts				
	R	L	Unit	ϕD	L1	F1	F2	ϕd1	ϕd2		H1=H2	Insert Screw	Wrench		
															
S14H- KTTXL16	○		mm	14	100	6	9	13	27	13	-	SB-4070TRW	FT-8		
S15F- KTTXL16	●			.625	3.35		.354	.575		.591					
S19G- KTTXL16	●		in	.750	3.54	.236	.413	.693	1.063	.669					
S19K- KTTXL16	○			.750	4.73										
S20G- KTTXL16	○			20	90	6	11	18.6	27	18					
S20K- KTTXL16	○		mm		120										
S25.0H- KTTXL16	○			25	100	10	14	23.6	32	23					
S25K- KTTXL16	●		in	1.00	4.73	.394	.551	.929	1.260	.906					

● Applicable Inserts

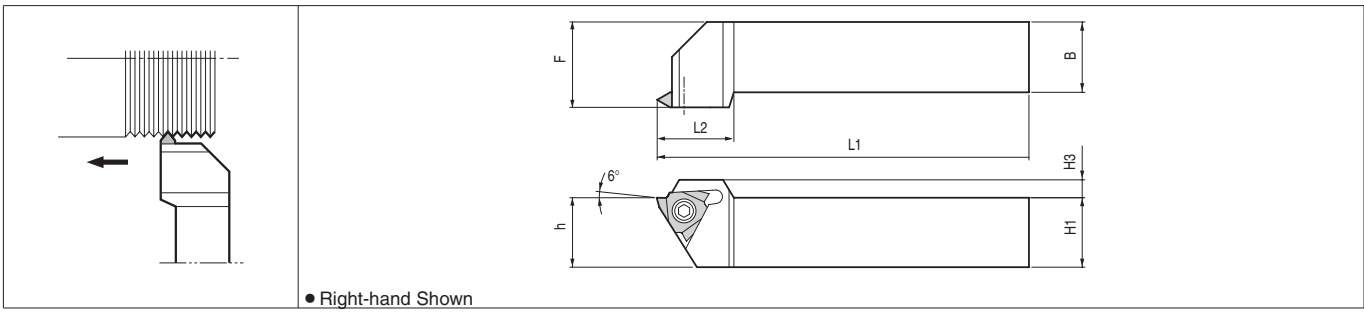
Toolholder	Insert
	● P.346
S-KTTXL16	TTX32R○○○○ TTX32R○○○○S

◆ TT type and TTX type


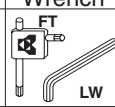
Type	Shape	Feature		
		Rake Angle after Installment	Notes	Dead Space
TT			<ul style="list-style-type: none"> One insert can machine various pitch sizes. 	
TTX			<ul style="list-style-type: none"> Least Cutting Resistance One insert can machine various pitch sizes, but has less range than TT. 	

External Threading Toolholders


STVP



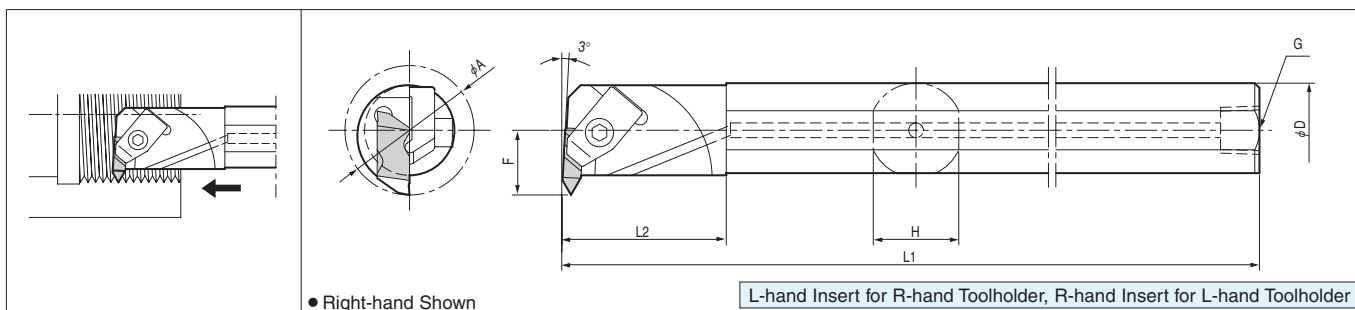
● Toolholder Dimensions

Description	Stock		Dimension							Shape	Spare Parts			
	R	L	Unit	H1=h	H3	B	L1	L2	F		Insert Screw	Wrench		
														
STVP $\frac{R}{L}$ 12-3	●		inch	0.750	0.100	0.750	4.50	0.750	0.875	-	SB-4TR	FT-15		
16-3	●			1.000		1.000	6.00	0.750	1.125					
12-4			inch	0.750	0.150	0.750	4.50	0.950	0.875	-	GS-50	LW-3		
16-4	●			1.000		1.000	6.00	0.950	1.125					

● Applicable Inserts

Toolholder	Insert 
STVPR -3	TPMC32NV
STVPR -4	TPMC43NV

A-KKC



● Toolholder Dimensions

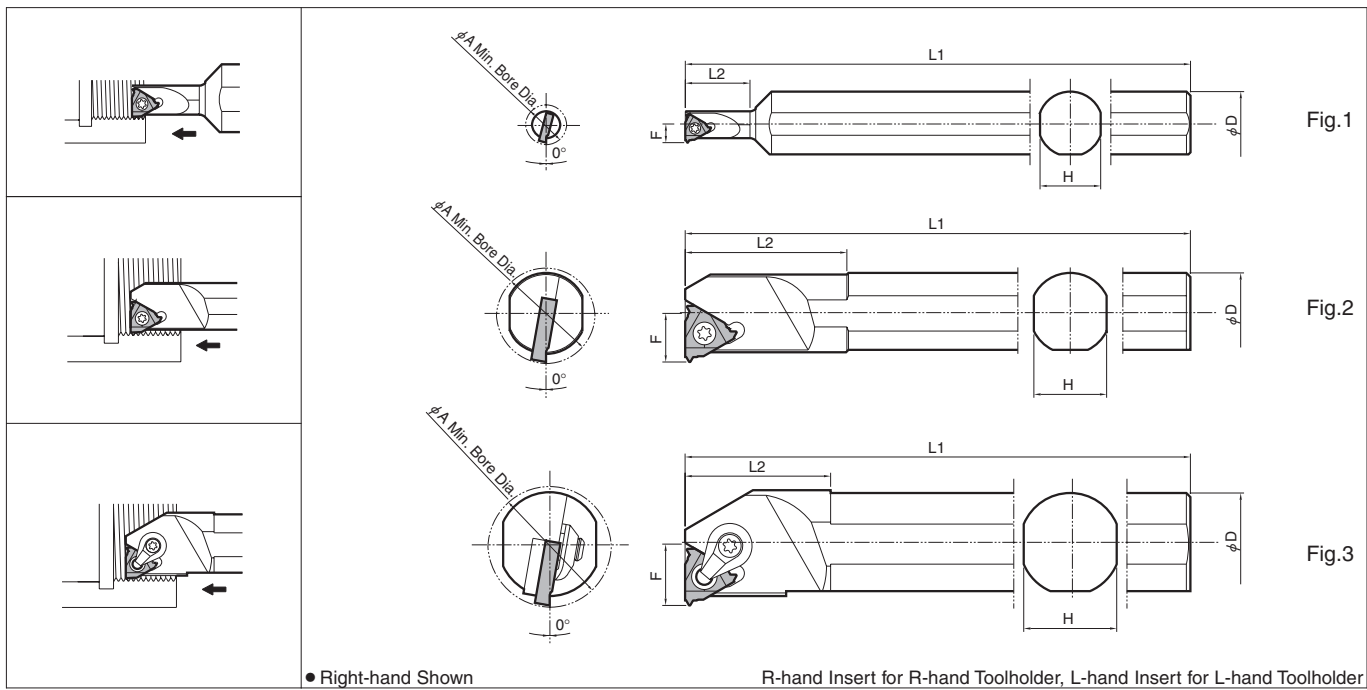
Description	Stock		Unit	Min. Cutting Dia.	Dimension					Spare Parts		
	R	L			ϕA	ϕD	L1	F	G	Clamp	Clamp Screw	Wrench
	A10M-KKCR-2 A10S-KKCR-2 A12R-KKCR-2 A12S-KKCR-2	●		inch	1.000	0.625	6.00	0.500				
A16T-KKC^{R/L}-2 A16X-KKC^{R/L}-3 A16T-KKC^{R/L}-3 A20U-KKC^{R/L}-3 A24U-KKC^{R/L}-3 A28U-KKC^{R/L}-3 A32V-KKC^{R/L}-3	●	●	inch	1.375	1.000	12.00	0.688					
	●			1.000	0.625	10.00	0.500					
	●			1.125	0.750	8.00	0.562	1/8-27 NPT	CKC-2L	SKC-2	(7/64 Hex)	
	●			1.125	0.750	10.00	0.562					
	●	●		1.375	1.000	9.00	0.688					
	●	●		1.375	1.000	12.00	0.688					
	●	●		1.750	1.250	14.00	0.875					
	●	●		2.000	1.500	14.00	1.000	1/4-18 NPT	CKC-3R/L	SKC-3	(LW-156)	
	●			2.250	1.750	14.00	1.125					
	●	●		2.500	2.000	16.00	1.250					

● Applicable Inserts

Toolholder	Insert P.344
A-KKCR -2	KCT-2L, KCTP-2L, KCTK-2L
A-KKCR -3	KCT-3L, KCTP-3L, KCTK-3L

● These holders can also be used for grooving. See page 291 for details.

S-SIN · SIN · CIN



● Toolholder Dimensions

Description	Stock		Min. Bore Dia.	Dimension					Drawing	Spare Parts					
	R	L		Unit	φA	φD	H	L1		L2	F	Clamp Set	Insert Screw	Wrench	Shim
S10M-SIN ^{R/L} -2	●		inch	0.590	0.625	0.56	5.91	1.18	0.295	Fig.1	SB-2TR	-	FT-8	-	-
S10M-SIN ^{R/L} -3	●			0.790	0.625	0.584	5.91	1.46	0.369	Fig.2	SB-3.5TR	-	FT-15	-	-
S12X-SIN ^{R/L} -3	●			0.940	0.750	0.710	7.09	1.57	0.470						
SIN ^{R/L} 0612S-06E	○		mm	6.4	12	11	100	10	3.8	Fig.1	SB-2040TR	-	FT-6	-	-
0816S-08E	○			7.8	16	15	125	16	4.0		SB-2050TR	-	FT-6	-	-
1216S-11E	○	○		12	16	14	150	25	6.3		SB-2TR	-	FT-8	-	-
1516S-11	○	○		15	16	14	150	30	7.5						
2016S-16	○	○		20	16	14	150	37	10.0	Fig.2	SB-3.5TR	-	FT-15	-	-
2420S-16	○	○		24	20	18	180	40	12.0		SB-4085TR	-	FT-15	-	-
2420S-22	○	○		24	20	18	180	40	12.0						
CIN ^{R/L} 3025S-16	○	○		mm	30	25	23	200	36	15.0	Fig.3	-	CPS-5S	FT-15	TN-32
3732S-16	○	○	37		32	30	250	45	18.5						
3025S-22	○	○	30		25	23	200	40	15.0		-	CPS-6S	LW-3	TN-43	SP3X8
3732S-22	○	○	37		32	30	250	45	18.5						

● Applicable Inserts

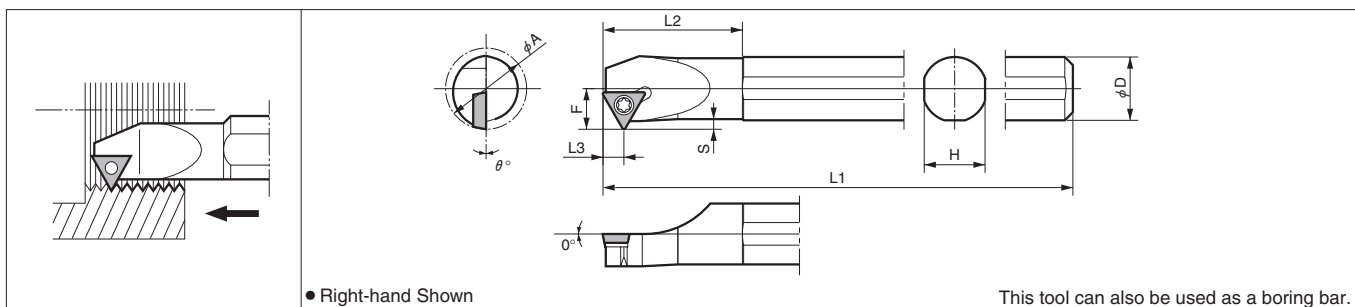
Toolholder	Insert P.347~348		
	Full Profile	Full Profile (With Chipbreaker)	Partial Profile
SINR...-06E	-	-	TNN06IR○○○○
SINR...-08E	-	-	TNN08IR○○○○
S-SINR -2 SIN ^{R/L} ...-11E SIN ^{R/L} ...-11	TNN22I ^{R/L} ○○○○M, TNN22I ^{R/L} ○○○PT	TNN22I ^{R/L} ○○○PT-TS	TNN22I ^{R/L} ○○○○
S-SINR -3 SIN ^{R/L} ...-16 CIN ^{R/L} ...-16	TNN32I ^{R/L} ○○○○M, TNN32I ^{R/L} ○○○UN TNN32I ^{R/L} ○○○W, TNN32I ^{R/L} ○○○PT TNN32I ^{R/L} ○○○NPT	TNN32I ^{R/L} ○○○○M-TS, TNN32I ^{R/L} ○○○○○-TS TNN32I ^{R/L} ○○○W-TS, TNN32I ^{R/L} ○○○PT-TS	TNN32I ^{R/L} ○○○○○○○, TNN32I ^{R/L} ○○○○○TR
SIN ^{R/L} ...-22 CIN ^{R/L} ...-22	TNN43I ^{R/L} ○○○○M, TNN43I ^{R/L} ○○○UN	-	TNN43I ^{R/L} ○○○○○TR

Depth of Cut & Number of Passes P.368~P.373
Recommended Cutting Conditions P.374

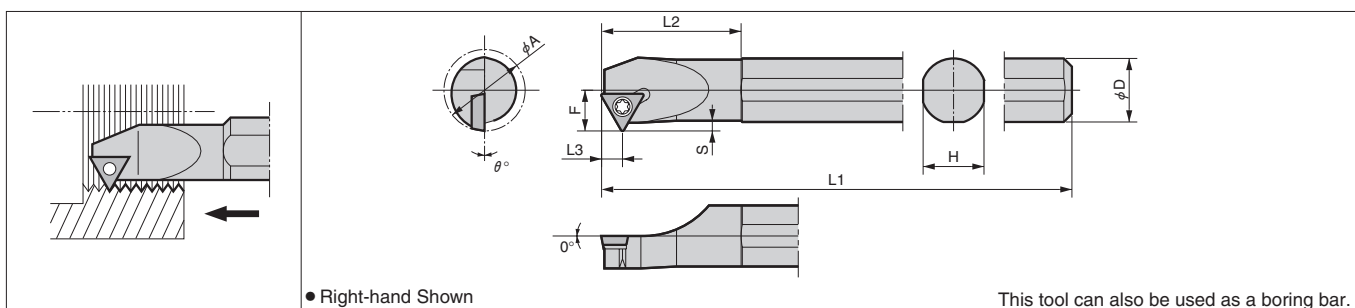
●: Std. Stock ○: World Express

Internal Threading Toolholders [TPGB Insert]

■ S...STWP Steel Bar



■ S...STWP-E Excellent Bar



● Toolholder Dimensions

Description	Stock		Unit	Min. Bore Dia.	Dimension							Available Pitch (mm) (TPI)	Spare Parts			
	R	L			ϕA	ϕD	H	L1	L2	L3	F		S	Insert Screw	Wrench	
S06M-STWP ^{R/L} -2	●		inch	0.476	0.375	0.340	6.00	0.910	0.217	0.238	0.050	14-32	SB-3STR	FT-10		
S08M-STWP ^{R/L} -2	●			0.630	0.500	0.475	6.00	1.200	0.217	0.315	0.065	TPI				
S10X-STWP ^{R/L} -2	●			0.786	0.625	0.595	7.00	1.400	0.217	0.393	0.080	8-32				
S12R-STWP ^{R/L} -2	●			0.970	0.750	0.720	8.00	1.600	0.217	0.485	0.110	TPI				
S16R-STWP ^{R/L} -2	●			1.240	1.000	0.970	8.00	2.000	0.217	0.620	0.120					
S10M-STWP ^{R/L} 11-12	○		mm	12	10	9.2	150	23	5.5	6	1.0	Under 1.5	SB-3STR	FT-10		
S12M-STWP ^{R/L} 11-16	○			16	12	11	150	30	5.5	8	1.5	Under 2.0				
S16Q-STWP ^{R/L} 11-20	○			20	16	15	180	35	5.5	10	2.0	Under 3.0	SB-3TR			
S20R-STWP ^{R/L} 11-25	○			25	20	19	200	40	5.5	12.5	2.5	Under 3.5				
S10M-STWP ^{R/L} 11-12E	○	○		12	10	9.2	150	23	5.5	6	1.0	Under 1.5	SB-3STR			
S12M-STWP ^{R/L} 11-16E	○	○	16	12	11	150	30	5.5	8	1.5	Under 2.0		FT-10			
S16R-STWP ^{R/L} 11-20E	○	○	20	16	15	200	35	5.5	10	2.0	Under 3.0					
S20X-STWP ^{R/L} 11-25E	○	○	25	20	19	220	40	5.5	12.5	2.5	Under 3.5	SB-3TR				

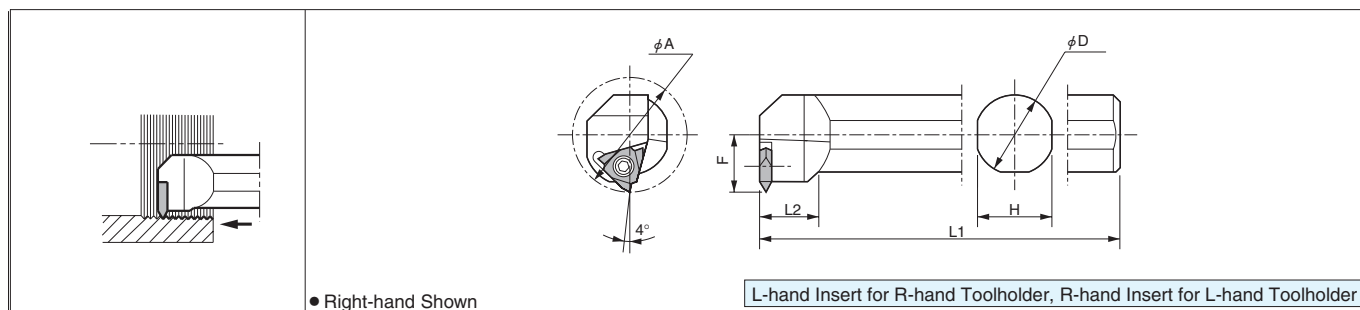
● S Dimension shows the Max. available D.O.C.

● Applicable Inserts

Toolholder	Insert P.349 Partial Profile
S06M-STWP ^{R/L} -2	TPGB21.5○○○
S10M-STWP ^{R/L} 11-12(E)	
S08M-STWP ^{R/L} -2	TPGB22○○○
S10X-STWP ^{R/L} -2	
S12R-STWP ^{R/L} -2	
S16R-STWP ^{R/L} -2	
...STWP ^{R/L} 11-16(E)	
...STWP ^{R/L} 11-20(E)	
...STWP ^{R/L} 11-25(E)	

●: Std. Stock ○: World Express

KITG



● Right-hand Shown

L-hand Insert for R-hand Toolholder, R-hand Insert for L-hand Toolholder

● Toolholder Dimension

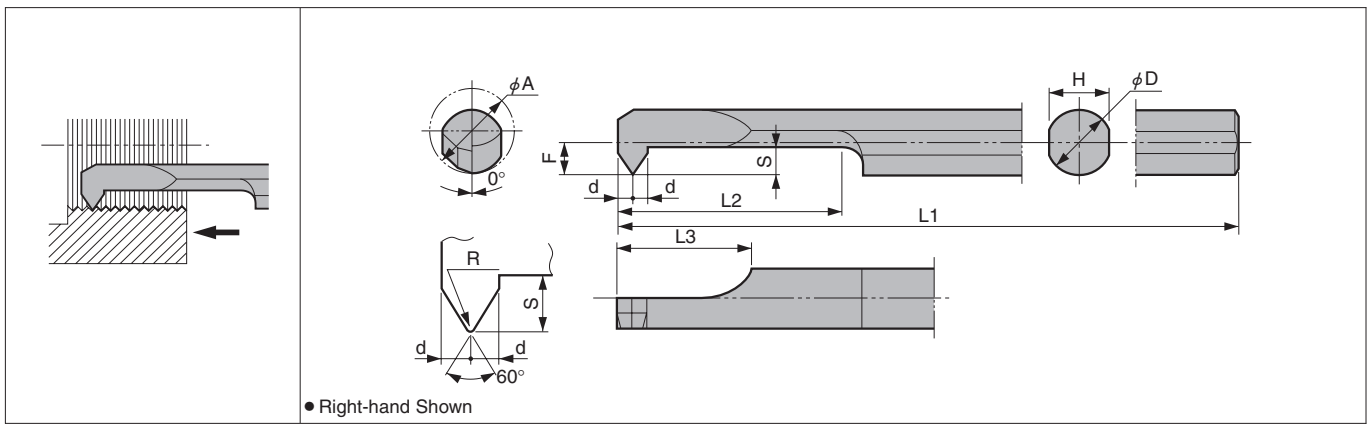
Description	Stock		Min. Bore Dia.	Dimension (mm)					Spare Parts				
	R	L		ϕA	ϕD	H	L1	L2	F	Insert Screw		Wrench	
	KITG $\frac{P}{L}$ 3525T-16	○	○	35	25	23	220	18	17.5	SB-4TR	-	FT-15	-
KITG $\frac{P}{L}$ 4532T-22	○	○	45	32	30	250	20	22.5	-	GS-50	-	LW-3	

· Max. available Pitch: KITG $\frac{P}{L}$ 3525T-16...P2.5 or 10TPI, KITG $\frac{P}{L}$ 4532T-22...P3.0 or 8TPI.

● Applicable Insert

Toolholder	Insert $\frac{P}{L}$ P.349	
	Partial Profile	
KITG $\frac{P}{L}$-16	TT32 $\frac{P}{L}$	○○○○
KITG $\frac{P}{L}$-22	TT43 $\frac{P}{L}$	○○○○

■ PST-S



● Dimensions

Description	Min. Bore Dia.	Dimension (mm,inch)										Insert Grade	Applicable Thread			
		φA	φD	H	L1	L2	L3	F	S	d	R	Carbide	Metric		Unified	
												KW10	Nominal Thread	Pitch (mm)	Nominal Thread	Pitch (TPI)
PSTR	0604-60S (in)	4.5 (.177)	3.8 (.150)	3.6 (.142)	60 (2.36)	15 (.59)	8 (.32)	1.7 (.067)	1.6 (.063)	0.8 (.031)	0.05 (.002)	●	over M6	P0.75 ~P1.25	over 1/4-20UNC, 1/4-28UNF	28~20
	0805-70S (in)	6.0 (.236)	4.8 (.189)	4.4 (.173)	70 (2.76)	20 (.79)	8 (.32)	2.2 (.087)	2.1 (.083)	1.0 (.04)	0.05 (.002)	●	over M8	P0.75 ~P1.50	over 5/16-18UNC, 5/16-24UNF	24~18

● Applicable Sleeve

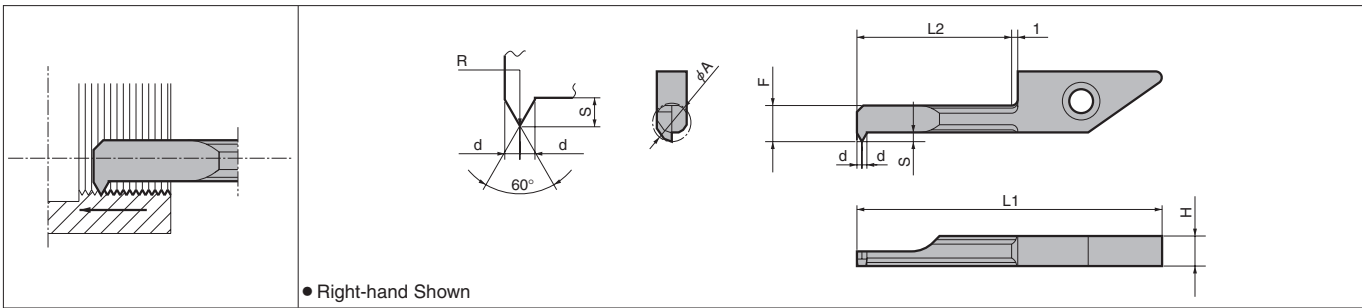
Shape	Description	(Old Description)	Stock	Dimension (mm,inch)						Spare Parts		Applicable Micro Bar	
				φD1	φD2	φd1	φd2	H	L1	L2	Screw		Wrench
	PH 0412-60	PH -0412	○	12	19	3.8	6	11	60	20	HS4X4	LW-2	PST% 0604-60S
	0512-60	-0512	○			4.8							PST% 0805-70S
	PH 0416-80	PH -0416	○	16	22	3.8	Rp ^{1/4} (PS ^{1/4})	14	80	20	HS4X4	LW-2	PST% 0604-60S
	0516-80	-0516	○			4.8							PST% 0805-70S
	PH10-4mm	PH10-4mm	●	.625	.875	.150	3/8-24 UNF				SLS-1	LW-2	PST% 0604-60S
	PH10-5mm	PH10-5mm	●			.189							PST% 0805-70S

◆ Depth of Cut & Number of Passes

Pitch (mm)	Total D.O.C. (mm)	No. of Pass	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
0.75	0.44	10	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.03	0.03	0.03							
1.00	0.60	12	0.07	0.07	0.06	0.06	0.06	0.05	0.05	0.04	0.04	0.04	0.03	0.03					
1.25	0.76	14	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.04	0.03			
1.50	0.92	17	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.05	0.04	0.04	0.04	0.04	0.03

Caution 1)The Standard Cutting Speed is 30 - 50m/min. At small dia. and high RPM conditions, the feed may not reach the expected conditions depending on the machine capabilities.
2)Coolant is recommended.

VNT



Dimensions

Description	Min. Bore Dia.	Dimension (mm,inch)								Insert Grade		Applicable Thread			
		φA	H	L1	L2	F	S	d	R	PVD Coated	Carbide	Metric		Unified	
										PR930	KW10	Nominal Thread	Pitch (mm)	Nominal Thread	Pitch (TPI)
VNTR	045-11	4.5 (.177)	3.9 (.154)	30.8 (1.212)	11 (.433)	3.6 (.142)	1.3 (.051)	0.6 (.024)	0.05 (.002)	●	●	over M6	P0.75 ~P1.25	over 1/4-20UNC, 1/4-28UNF	28~20
	060-11	6.0 (.236)	3.9 (.154)	30.8 (1.212)	11 (.433)	4.6 (.181)	1.6 (.063)	0.8 (.024)	0.05 (.002)	●	●	over M8	P0.75 ~P1.50	over 5/16-18UNC, 5/16-24UNF	24~18

●: Std. Stock ○: World Express R: R-hand Only

Swiss IQ Bars are sold in a 5-pc box.

Depth of Cut & Number of Pass

Pitch (mm)	Total D.O.C. (mm)	No. of Pass	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
0.75	0.44	10	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.03	0.03	0.03							
1.00	0.60	12	0.07	0.07	0.06	0.06	0.06	0.05	0.05	0.04	0.04	0.04	0.03	0.03					
1.25	0.76	14	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.04	0.03			
1.50	0.92	17	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.05	0.04	0.04	0.04	0.04

Caution 1)The Standard Cutting Speed is 30 - 50m/min. At small dia. and high RPM conditions, the feed may not reach the expected conditions depending on the machine capabilities.
2)Coolant is recommended.

Thread Types & Basic Profile

Thread Types & Basic Profile / Applicable Toolholders & Inserts

	Basic Profile	Symbol (Old Symbol)	Applicable Insert	Applicable Toolholder	
Metric		M e.g.) M30	Female Thread	TNN00E% 000M TNN32E% 000M-TS TNN32E% 600(-TS)	KTN% 0000□-00 KTNSR 0000□-16
			Male Thread	TT43E% 000M TT00% 6000	KTT% 0000□-00 KTTX% 0000□-16F
Unified		UN UNC UNF UNEF e.g.) 3/4-16 UNF	Female Thread	TNN00I% 000M TNN00I% 000M-TS TNN00I% 600(○)(-TS) TT00% 6000 TPGB2000	SIN% 0000S-00(E) CIN% 0000S-00 KITG% 0000T-00 S00□-STWP% 11-00(E)
			Male Thread	TPMCO0NV KCT(K/P)0% TNN00E% 000UN TNN32E% 600(-TS) TT00% 6000 TTX32% 6000	STVP% 00-0 KKC% 00-0 KTN% 0000□-00 KTNS% 0000□-16 KTT% 0000□-00 KTTX% 0000□-16F
Parallel Pipe		Male Thread: G(PF) Female Thread: G(PF) Rp(PS) e.g.) G3/4(PF3/4)	Female Thread	TNN00E% 000W TNN32E% 000W-TS TNN32E% 5500 TT00% 5500 TTX32% 5500	KTN% 0000□-00 KTNSR 0000□-16 KTT% 0000□-00 KTTX% 0000□-16F
			Male Thread	TNN00I% 000W TNN00I% 000W-TS TNN00I% 5500(○) TT00% 5500	SIN% 0000S-00(E) CIN% 0000S-00 KITG% 0000T-00
Tapered Pipe		Male Thread: R(PT) Female Thread: Rc(PT) e.g.) R1/2(PT1/2)	Female Thread	TNN00E% 000PT TNN32E% 000PT-TS TT00% 5500* TTX32% 5500*	KTN% 0000□-00 KTNS% 0000□-16 KTT% 0000□-00 KTTX% 0000□-16F
			Male Thread	TNN00I% 000PT TNN00I% 000PT-TS TT00% 5500*	SIN% 0000S-00(E) CIN% 0000S-00 KITG% 0000T-00
American National Pipe		NPT e.g.) 3/8-18 NPT	Female Thread	TNN00E% 000NPT	KTN% 0000□-00 KTNS% 0000□-16
			Male Thread	TNN00I% 000NPT	SIN% 0000S-00 CIN% 0000S-00
30° Trapezoidal		Tr e.g.) Tr 26X3	Female Thread	TNN00E% 000Tr	KTN% 0000□-00 KTNS% 0000□-16
			Male Thread	TNN00I% 000Tr	SIN% 0000S-00 CIN% 0000S-00

*...When the thread's roundness can be ignored

Applicable Toolholders & Inserts

The standard specification of the inch size thread is based on the dimension of 1/8 inch.

The applicable toolholders & inserts table is based on TNN type's right-hand tools.

Parallel Pipe: G(PF),Rp (PS)

Inch	Nominal Thread Symbol (Old Symbol)	TPI	Male Thread (G)		Female Thread (G,RP)			Bore Dia.	Root's Radius Male/Female (mm)
			Toolholder	Insert	Toolholder	Insert			
				Partial Profiling	Full Profiling		Partial Profiling	Full Profiling	
-	G 1/16 (-)	28	KTNROOOO□-16 KTNSROOOO□-16	TNN32ER5501	-	SINR0612S-06E	TNN06IR5501	-	6.56
1/8	G 1/8 (PF 1/8)								8.57
2/8	G 1/4 (PF 1/4)	19	KTNROOOO□-16 KTNSROOOO□-16	TNN32ER5501	TNN32ER19W TNN32ER19W-TS	SINR0816S-08E	TNN08IR5501	-	11.45
3/8	G 3/8 (PF 3/8)								14.95
4/8	G 1/2 (PF 1/2)	14	KTNROOOO□-16 KTNSROOOO□-16	TNN32ER5501	TNN32ER14W TNN32ER14W-TS	SINR1516S-11	TNN22IR55005	-	18.63
5/8	G 5/8 (PF 5/8)								20.59
6/8	G 3/4 (PF 3/4)								24.12
7/8	G 7/8 (PF 7/8)								27.88
8/8	G 1 (PF 1)	11	KTNROOOO□-16 KTNSROOOO□-16	TNN32ER5001 TNN32ER5502	TNN32ER11W TNN32ER11W-TS	SINR2420S-16	TNN32IR5501 TNN32IR5502	TNN32IR11W TNN32IR11W-TS	30.29
9/8	G 1 1/8 (PF 1 1/8)								34.94
10/8	G 1 1/4 (PF 1 1/4)								38.95
Hereafter, all the threads are 11 TPI and the root's radius 0.32, use the same tool as G1 1/4.									

Tapered Pipe: R,Rc (PT)

Inch	Nominal Thread Symbol (Old Symbol)	TPI	Male Thread (R)		Female Thread (Rc)			Bore Dia.	Root's Radius Male/Female (mm)
			Toolholder	Insert	Toolholder	Insert			
				Partial Profiling	Full Profiling		Partial Profiling	Full Profiling	
-	R 1/16, Rc 1/16 (-)	28	KTNROOOO□-16 KTNSROOOO□-16	-	TNN32ER28PT	SINR0612S-06E	TNN06IR5501	-	0.12
1/8	R 1/8, Rc 1/8 (PT 1/8)								
2/8	R 1/4, Rc 1/4 (PT 1/4)	19	KTNROOOO□-16 KTNSROOOO□-16	-	TNN32ER19PT TNN32ER19PT-TS	SINR0816S-08E	TNN08IR5501	-	0.18
3/8	R 3/8, Rc 3/8 (PT 3/8)								
4/8	R 1/2, Rc 1/2 (PT 1/2)	14	KTNROOOO□-16 KTNSROOOO□-16	-	TNN32ER14PT TNN32ER14PT-TS	SINR1516S-11	-	TNN22IR14PT TNN22IR14PT-TS	0.25
6/8	R 3/4, Rc 3/4 (PT 3/4)								
8/8	R 1, Rc 1 (PT 1)								
10/8	R 1 1/4, Rc 1 1/4 (PT 1 1/4)	11	KTNROOOO□-16 KTNSROOOO□-16	-	TNN32ER11PT TNN32ER11PT-TS	SINR2420S-16	-	TNN32IR11PT TNN32IR11PT-TS	0.32
12/8	R 1 1/2, Rc 1 1/2 (PT 1 1/2)								
Hereafter, all the threads are 11 TPI and the root's radius 0.32, use the same tool as R1 1/2.					Hereafter, all the threads are 11 TPI and the root's radius 0.32, use the same tool as Rc1 1/2.				

※The largest toolholder available for the minimum bore dia. is recommended to the female threading in these tables.

Then, the toolholder whose min. bore dia. is smaller than the recommended toolholder can be used for threading.

e.g.) SINR2420S-16 (min. bore dia.:24mm) is recommended for the tool of G7/8 female threading in the above table, but SINR2016S-16 can also be used.

American National Pipe: NPT

Nominal Thread	TPI	Male Thread			Female Thread		
		Toolholder	Insert		Toolholder	Insert	
			Partial Profiling	Full Profiling		Partial Profiling	Full Profiling
1/16 NPT	27	KTRR○○○○○□-16	TT32R6000	-	No Tools Available		
1/8 NPT		KTTXR○○○○○□-16F	TTX32R6000				
1/4 NPT	18	KTNR○○○○○□-16	-	TNN32ER18NPT	No Tools Available	-	-
3/8 NPT		KTNSR○○○○○□-16					
1/2 NPT	14	KTNR○○○○○□-16	-	TNN32ER14NPT	No Tools Available	-	-
3/4 NPT		KTNSR○○○○○□-16			SINR2016S-16	-	TNN32IR14NPT
1 NPT	11.5	KTNR○○○○○□-16 KTNSR○○○○○□-16	-	TNN32ER11.5NPT	SINR2420S-16	-	TNN32IR11.5NPT
1 1/4 NPT					CINR3025S-16		
1 1/2 NPT					CINR3732S-16		
2 NPT							

• Application to NPTF Thread

30° Trapezoidal: Tr

The JIS Standard Trapezoidal Sizes to be machined by TNN Insert are shown.

Nominal Thread	Pitch (mm)	Male Thread			Female Thread			Bore Dia. (mm)
		Toolholder	Insert		Toolholder	Insert		
			Partial Profiling	Full Profiling		Partial Profiling	Full Profiling	
Tr 16X2	2	No Tools Available						14.00
Tr 18X2	2	KTNR○○○○○□-16 KTNSR○○○○○□-16	TNN32ER200TR	-	No Tools Available	-	-	16.00
Tr 20X2	2							18.00
Tr 22X3	3	KTNR○○○○○□-16 KTNSR○○○○○□-16	TNN32ER300TR	-	No Tools Available	-	-	19.00
Tr 24X3	3				SINR2016S-16	TNN32IR300TR	-	21.00
Tr 26X3	3				SINR2420S-16	TNN32IR300TR	-	23.00
Tr 28X3	3				CINR3025S-16	TNN32IR300TR	-	25.00
Tr 30X3	3							27.00
Tr 32X3	3							29.00
Tr 34X3	3							31.00
Tr 36X3	3				CINR3732S-16	TNN32IR300TR	-	33.00
Tr 38X3	3							35.00
Tr 40X3	3							37.00
Tr 42X3	3							39.00
Tr 44X3	3				KTNR○○○○○□-22	TNN43ER400TR	-	41.00
Tr 46X3	3							43.00
Tr 48X3	3							45.00
Tr 50X3	3							47.00
Tr 52X3	3							49.00
Tr 55X3	3	52.00						
Tr 60X3	3	57.00						
Tr 65X3	3	62.00						
Tr 70X4	4	KTNR○○○○○□-22	TNN43ER400TR	-	66.00			
Tr 75X4	4				72.00			
Tr 80X4	4				81.00			
Tr 90X4	4				86.00			
Tr 95X4	4				91.00			
Tr 100X4	4				96.00			
Tr 105X4	4				101.00			
Tr 110X4	4				106.00			

• TM Thread:

TM Thread of old JIS 30° Trapezoidal Thread was discontinued. If the Nominal Dia. X Pitch is the same, the above Tr Thread insert can be used.

• TW Thread:

TW Thread is 29° Trapezoidal Thread and the above Inserts are not available.

Applicable Toolholders & Inserts (Female Thread)

Metric Coarse Thread: M

Nominal Thread	Pitch (mm)	Female Thread				Bore Dia. (mm)
		Toolholder	Insert		Bore Dia. (mm)	
			Partial Profiling	Full Profiling		
M 1	0.25	No Tools Available	-	-	0.73	
.	
M3	0.5		.	.	2.46	
M4	0.7		.	.	3.24	
M5	0.8		.	.	4.13	
M6	1.0		-	PSTR0604-60S / VNTR045-11	4.92	
M7	1.0		-	PSTR0604-60S / VNTR045-11	5.92	
M8	1.25	-	PSTR0805-70S / VNTR060-11	6.65		
M9	1.25	SINR0612S-06E	TNN06IR60005	-	7.65	
M10	1.5	SINR0816S-08E	TNN08IR60007	-	8.38	
M11	1.5	SINR0816S-08E	TNN08IR60007	-	9.38	
M12	1.75	SINR0816S-08E	TNN08IR60007	-	10.11	
M16	2.0	No Tools Available			13.84	
M18	2.5	No Tools Available			15.29	
M20	2.5	No Tools Available			17.29	
M22	2.5	No Tools Available			19.29	
M24	3.0	No Tools Available			20.75	
M27	3.0	No Tools Available			23.75	
M30	3.5	SINR2420S-22	-	TNN43IR350M	26.21	
M33	3.5	SINR2420S-22	-	TNN43IR350M	29.21	
M36	4.0	CINR3025S-22	-	TNN43IR400M	31.67	
M39	4.0	CINR3025S-22	-	TNN43IR400M	34.67	
M42	4.5	CINR3732S-22	-	TNN43IR450M	37.19	
M45	4.5	CINR3732S-22	-	TNN43IR450M	40.19	
M48	5.0	CINR3732S-22	-	TNN43IR500M	42.59	
M52	5.0	CINR3732S-22	-	TNN43IR500M	46.59	
M56	5.5	* Threading of M56 and over is not available due to too large Pitch Size.			50.05	
.	.				.	
.	.				.	

Metric Fine Thread: M

Part 2

Nominal Thread	Pitch (mm)	Female Thread				Bore Dia. (mm)
		Toolholder	Insert		Bore Dia. (mm)	
			Partial Profiling	Full Profiling		
M17×1.5	1.5	SINR1516S-11	TNN22IR60005	TNN22IR150M	15.38	
M17×1.0	1.0	-	-	TNN22IR100M	15.92	
M18×2.0	2.0	-	-	TNN22IR200M	15.84	
M18×1.5	1.5	SINR1516S-11	TNN22IR60005	TNN22IR150M	16.38	
M18×1.0	1.0	-	-	TNN22IR100M	16.92	
M20×2.0	2.0	-	-	TNN22IR200M	17.84	
M20×1.5	1.5	SINR1516S-11	TNN22IR60005	TNN22IR150M	18.38	
M20×1.0	1.0	-	-	TNN22IR100M	18.92	
M22×2.0	2.0	SINR1516S-11	-	TNN22IR200M	19.84	
M22×1.5	1.5	SINR2016S-16	TNN32IR6001(-TS)	TNN32IR150M(-TS)	20.38	
M22×1.0	1.0		TNN32IR6001(-TS)	TNN32IR100M(-TS)	20.92	
M24×2.0	2.0	SINR2016S-16	TNN32IR6001(-TS)	TNN32IR200M(-TS)	21.84	
M24×1.5	1.5		TNN32IR6001(-TS)	TNN32IR150M(-TS)	22.38	
M24×1.0	1.0	TNN32IR6001(-TS)	TNN32IR100M(-TS)	22.92		
M25×2.0	2.0	SINR2016S-16	TNN32IR6001(-TS)	TNN32IR200M(-TS)	22.84	
M25×1.5	1.5		TNN32IR6001(-TS)	TNN32IR150M(-TS)	23.38	
M25×1.0	1.0	TNN32IR6001(-TS)	TNN32IR100M(-TS)	23.92		
M26×1.5	1.5	SINR2420S-16	TNN32IR6001(-TS)	TNN32IR150M(-TS)	24.38	
M27×2.0	2.0	SINR2420S-16	TNN32IR6001(-TS)	TNN32IR200M(-TS)	24.84	
M27×1.5	1.5		TNN32IR6001(-TS)	TNN32IR150M(-TS)	25.38	
M27×1.0	1.0	TNN32IR6001(-TS)	TNN32IR100M(-TS)	25.92		
M28×2.0	2.0	SINR2420S-16	TNN32IR6001(-TS)	TNN32IR200M(-TS)	25.84	
M28×1.5	1.5		TNN32IR6001(-TS)	TNN32IR150M(-TS)	26.38	
M28×1.0	1.0	TNN32IR6001(-TS)	TNN32IR100M(-TS)	26.92		
M30×3.0	3.0	SINR2420S-22	-	TNN43IR300M	26.75	
M30×2.0	2.0	SINR2420S-16	TNN32IR6001(-TS)	TNN32IR200M(-TS)	27.84	
M30×1.5	1.5		TNN32IR6001(-TS)	TNN32IR150M(-TS)	28.38	
M30×1.0	1.0	TNN32IR6001(-TS)	TNN32IR100M(-TS)	28.92		
M32×2.0	2.0	SINR2420S-16	TNN32IR6001(-TS)	TNN32IR200M(-TS)	29.84	
M32×1.5	1.5	CINR3025S-16	-	TNN32IR150M(-TS)	30.38	
M33×3.0	3.0	SINR2420S-22	-	TNN43IR300M	29.75	
M33×2.0	2.0	CINR3025S-16	TNN32IR6001(-TS)	TNN32IR200M(-TS)	30.84	
M33×1.5	1.5		TNN32IR6001(-TS)	TNN32IR150M(-TS)	31.38	
M35×1.5	1.5	CINR3025S-16	TNN32IR6001(-TS)	TNN32IR150M(-TS)	33.38	
M36×3.0	3.0	CINR3025S-22	-	TNN43IR300M	32.75	
M36×2.0	2.0	CINR3025S-16	TNN32IR6001(-TS)	TNN32IR200M(-TS)	33.84	
M36×1.5	1.5		TNN32IR6001(-TS)	TNN32IR150M(-TS)	34.38	
M38×1.5	1.5	CINR3025S-16	TNN32IR6001(-TS)	TNN32IR150M(-TS)	36.38	
M39×3.0	3.0	CINR3025S-22	-	TNN43IR300M	35.75	
M39×2.0	2.0	CINR3025S-16	TNN32IR6001(-TS)	TNN32IR200M(-TS)	36.84	
M39×1.5	1.5		TNN32IR6001(-TS)	TNN32IR150M(-TS)	37.38	
M40×3.0	3.0	CINR3025S-22	-	TNN43IR300M	36.75	
M40×2.0	2.0	CINR3732S-16	TNN32IR6001(-TS)	TNN32IR200M(-TS)	37.84	
M40×1.5	1.5		TNN32IR6001(-TS)	TNN32IR150M(-TS)	38.38	
M42×4.0	4.0	CINR3732S-22	-	TNN43IR400M	37.67	
M42×3.0	3.0		TNN43IR300M	TNN32IR300M	38.75	
M42×2.0	2.0	CINR3732S-16	TNN32IR6001(-TS)	TNN32IR200M(-TS)	39.84	
M42×1.5	1.5		TNN32IR6001(-TS)	TNN32IR150M(-TS)	40.38	
M45×4.0	4.0	* Threading of M45 and over can be machined by the same Tool for M42. (P=4.0, 3.0, 2.0, 1.5)			40.67	
.	.				.	
.	.				.	

Metric Fine Thread: M

Part 1

Nominal Thread	Pitch (mm)	Female Thread				Bore Dia. (mm)
		Toolholder	Insert		Bore Dia. (mm)	
			Partial Profiling	Full Profiling		
M 1×0.2	0.2	No Tools Available	-	-	0.78	
.	
M 5.5×0.5	0.5	-	-	-	4.96	
M 6×0.75	0.75	-	PSTR0604-60S / VNTR045-11	-	5.19	
M 7×0.75	0.75	-	PSTR0604-60S / VNTR045-11	-	6.20	
M 8×1.0	1.0	-	PSTR0805-70S / VNTR060-11	-	6.92	
M 8×0.75	0.75	SINR0612S-06E	TNN06IR60005	-	7.19	
M 9×1.0	1.0	-	PSTR0805-70S / VNTR060-11	-	7.92	
M 9×0.75	0.75	SINR0612S-06E	TNN06IR60005	-	8.19	
M10×1.25	1.25	-	PSTR0805-70S / VNTR060-11	-	8.65	
M10×1.0	1.0	SINR0816S-08E	TNN08IR60007	-	8.92	
M10×0.75	0.75	-	PSTR0805-70S / VNTR060-11	-	9.19	
M11×1.0	1.0	SINR0612S-06E	TNN06IR60005	-	9.92	
M11×0.75	0.75	-	PSTR0805-70S / VNTR060-11	-	10.19	
M12×1.5	1.5	SINR0816S-08E	TNN08IR60007	-	10.38	
M12×1.25	1.25		TNN08IR60007	-	10.65	
M12×1.0	1.0		TNN08IR60007	-	10.92	
M14×1.5	1.5	SINR1216S-11E	TNN22IR150M	-	12.38	
M14×1.25	1.25		TNN22IR125M	-	12.65	
M14×1.0	1.0		TNN22IR100M	-	12.92	
M15×1.5	1.5	SINR1216S-11E	TNN22IR150M	-	13.38	
M15×1.0	1.0		TNN22IR100M	-	13.92	
M16×1.5	1.5	SINR1216S-11E	TNN22IR150M	-	14.38	
M16×1.0	1.0		TNN22IR100M	-	14.92	

Threading Insert Design

Unified Coarse Thread: UNC

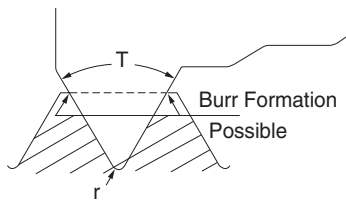
Nominal Thread	TPI	Female Thread			Bore Dia. (in)
		Toolholder	Insert		
			Partial Profiling	Full Profiling	
2-56 UNC	56	No Tools Available	-	-	0.066
.					.
.					.
10-24 UNC	24				0.145
1/4-20 UNC	20	-	PSTR0604-60S / VNTR045-11		0.196
5/16-18 UNC	18	-	PSTR0805-70S / VNTR060-11		0.252
3/8-16 UNC	16	No Tools Available			0.307
7/16-14 UNC	14				0.360
1/2-13 UNC	13				0.416
9/16-12 UNC	12				0.472
5/8-11 UNC	11				0.526
3/4-10 UNC	10			0.642	
7/8- 9 UNC	9	No Tools Available			0.735
.					.
.					.

Unified Fine Thread: UNF

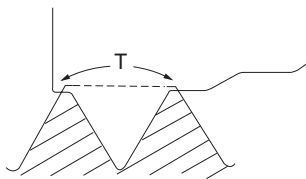
Nominal Thread	TPI	Female Thread			Bore Dia. (in)
		Toolholder	Insert		
			Partial Profiling	Full Profiling	
0-80 UNF	80	No Tools Available	-	-	0.046
.					.
.					.
10-32 UNF	32				0.156
1/4-28 UNF	28	-	PSTR0604-60S / VNTR045-11		0.211
5/16-24 UNF	24	-	PSTR0805-70S / VNTR060-11		0.267
		SINR0612S-06E	TNN061R60005	-	
3/8-24 UNF	24	-	PSTR0805-70S / VNTR060-11		0.330
		SINR0612S-06E	TNN061R60005	-	
7/16-20 UNF	20	SINR0816S-08E	TNN081R60007	-	0.383
1/2-20 UNF	20				0.446
9/16-18 UNF	18	SINR1216S-11E	TNN221R60005		0.502
5/8-18 UNF	18			-	0.565
3/4-16 UNF	16	SINR1516S-11	TNN221R60005	-	0.682
7/8-14 UNF	14	SINR2016S-16	TNN321R6001(-TS)	TNN321R14UN	0.798
1 -12 UNF	12	SINR2016S-16			0.909
1 1/8-12 UNF	12	SINR2420S-16	TNN321R6001(-TS)	TNN321R12UN	1.035
1 1/4-12 UNF	12				1.160
1 3/8-12 UNF	12				1.285
1 1/2-12 UNF	12	CINR3025S-16			1.449

Threading Insert Design

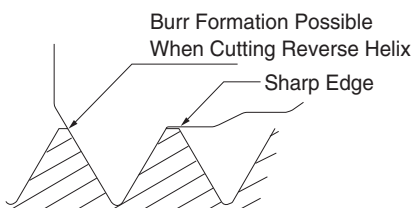
The insert design should optimize the quality of thread and the tool life. There are two basic designs for threading inserts, partial profiling and full profiling. Examples of each design are shown below.



Partial profiling or non-topping inserts generate threads without topping the crest of the thread. Inserts are selected by the root radius, flank angle and kind of thread (external or internal).



Full profiling inserts generate the complete thread form including topping the crest, thereby removing burrs. Each kind of thread (external or Internal), thread form and pitch requires a specific insert.



Full profiling inserts, crest cutting on one side only, may generate a burr when cutting in reverse helix mode (lefthanded threads) and leave a sharp edge.

The basic V-height is designed for maximum material conditions for both external and internal threads. As the flank wear develops, radial adjustments keep the pitch diameter constant and the crest diameter becomes smaller.

The nose radius of the insert, which is generally exposed to higher wear when compared to the flank or crest cutting portion of the insert, is designed to have the smallest radius permissible for external threads and the largest radius permissible for internal threads by thread standards. CERATIP full profiling inserts are crestcutting on both side of the V.

Threading Methods

External Threading (R-hand Thread · L-hand Thread)

		External Threading			
		R-hand Thread		L-hand Thread	
Toolholder	R-hand (R)			Toolholder	L-hand (L)
Insert	R-hand (R)			Insert	L-hand (L)
Toolholder	L-hand (L)			Toolholder	R-hand (R)
Insert	L-hand (L)			Insert	R-hand (R)
Toolholder	R-hand (R)			Toolholder	L-hand (L)
Insert	R-hand (R)			Insert	L-hand (L)
Toolholder	L-hand (L)			Toolholder	R-hand (R)
Insert	L-hand (L)			Insert	R-hand (R)

Threading

Threading Methods

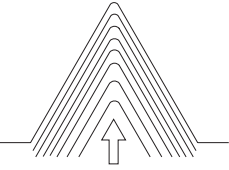
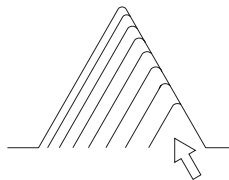
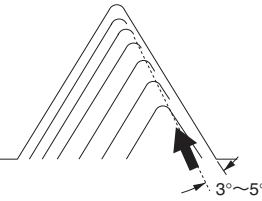
Internal Threading (R-hand Thread · L-hand Thread)

		Internal Threading			
		R-hand Thread		L-hand Thread	
		Toolholder	R-hand (R)		
		Insert	R-hand (R)		
		Toolholder	L-hand (L)		
		Insert	L-hand (L)		

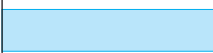



※These Tables are based on TNN type Tools.

KITG Type Tool: L-hand Insert for R-hand Toolholder, R-hand Insert for L-hand Toolholder

Infeed Methods

Infeed Methods	Feature
 <p>Radial Infeed</p>	<ul style="list-style-type: none"> · The most common method. · The cutting edge moves toward the center of the work every pass. · Suitable for relatively small pitch size threading. · V-shape chips are generated and chip control may be difficult depending on work material.
 <p>Flank Infeed</p>	<ul style="list-style-type: none"> · Suitable for large pitch size threading. · Wear of right side edge of the figure (no d.o.c.) tends to become large. · Chips flow to one side.
 <p>Flank Compound Infeed</p>	<ul style="list-style-type: none"> · Revised compound methods of the above flank infeed method. · No "no d.o.c." Condition · Chips flow to one side. · This method is recommended to threading by 2-thread insert.

Thread Precision

Quality	Application Example	CERATIP	Thread Precision & Indexable Insert's Precision	
Precise (1st Class)	Precise screw e.g.) Micrometer	Not available	Strict ← Precision → Loose	
			Indexable Tool	
Middle (2nd Class)	General purpose screw for machines, implements, structural bodies, etc. e.g.) Bolts	Available	Precise (1st Class)	
			Middle (2nd Class)	
Rough (3rd Class)	Screw to be used extreme environments such as construction and installment, or which has difficulty in threading, such as threading to hot rolling material, tapping to long blind hole, etc.	Available	Rough (3rd Class)	

Depth of Cut & Number of Passes

TNN type (Full Profiling)

(This chart is based on the case of TC60 and PR930. In case of TC40, set up a few more passes respectively.)

(d.o.c. shows Value of Radial d.o.c.)

	Pitch mm · TPI	Description	C (mm-in)	Total d.o.c. (mm-in)	No. of Pass																			
						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Metric (mm)	Male Thread	0.50mm TNN32ER050M	0.33	0.38	4	0.14	0.12	0.08	0.04															
		0.75mm 075M	0.48	0.53	5	0.17	0.14	0.10	0.08	0.04														
		1.00mm 100M	0.64	0.72	5	0.23	0.19	0.15	0.10	0.05														
		1.25mm 125M	0.80	0.88	6	0.26	0.21	0.16	0.12	0.08	0.05													
		1.50mm 150M	0.95	1.03	6	0.26	0.24	0.21	0.16	0.11	0.05													
		1.75mm 175M	1.11	1.19	8	0.26	0.22	0.19	0.16	0.13	0.10	0.08	0.05											
		2.00mm 200M	1.27	1.35	10	0.26	0.21	0.18	0.16	0.14	0.12	0.10	0.08	0.05	0.05									
		2.50mm 250M	1.57	1.65	12	0.26	0.23	0.21	0.18	0.14	0.12	0.12	0.10	0.10	0.08	0.06	0.05							
		3.00mm TNN43ER300M	1.87	1.95	14	0.26	0.24	0.22	0.20	0.18	0.16	0.14	0.12	0.10	0.10	0.08	0.08	0.05	0.02					
		3.50mm 350M	2.18	2.26	15	0.28	0.25	0.22	0.20	0.20	0.18	0.16	0.15	0.15	0.12	0.10	0.10	0.08	0.05	0.02				
	4.00mm 400M	2.48	2.56	17	0.28	0.25	0.24	0.22	0.20	0.18	0.16	0.15	0.15	0.14	0.12	0.12	0.10	0.10	0.08	0.05	0.02			
	4.50mm 450M	2.79	2.87	18	0.30	0.28	0.26	0.24	0.22	0.20	0.18	0.16	0.16	0.14	0.14	0.13	0.12	0.10	0.10	0.07	0.05	0.02		
	5.00mm 500M	3.10	3.18	19	0.30	0.28	0.27	0.26	0.23	0.20	0.18	0.18	0.17	0.16	0.16	0.15	0.15	0.13	0.12	0.10	0.07	0.05	0.02	
	Female Thread	0.50mm TNN22IR 050M	0.31	0.36	4	0.14	0.10	0.08	0.04															
		0.75mm 075M	0.45	0.50	5	0.15	0.14	0.10	0.07	0.04														
		1.00mm 100M	0.60	0.68	5	0.20	0.18	0.15	0.11	0.04														
		1.25mm 125M	0.74	0.82	7	0.20	0.18	0.14	0.12	0.08	0.06	0.04												
		1.50mm 150M	0.88	0.96	8	0.24	0.18	0.14	0.10	0.10	0.08	0.07	0.05											
		1.75mm 175M	1.02	1.10	9	0.24	0.18	0.16	0.14	0.10	0.10	0.08	0.05	0.05										
		2.00mm 200M	1.18	1.26	10	0.24	0.20	0.18	0.14	0.12	0.10	0.10	0.08	0.05	0.05									
2.50mm 250M		1.46	1.54	12	0.26	0.22	0.18	0.16	0.14	0.12	0.10	0.10	0.08	0.08	0.05	0.05								
3.00mm TNN43IR 300M		1.76	1.84	14	0.26	0.24	0.21	0.18	0.16	0.15	0.13	0.12	0.10	0.10	0.07	0.05	0.05	0.02						
3.50mm 350M		2.05	2.13	15	0.26	0.24	0.22	0.20	0.17	0.17	0.14	0.14	0.12	0.12	0.10	0.10	0.08	0.05	0.02					
4.00mm 400M	2.34	2.42	17	0.26	0.24	0.22	0.20	0.18	0.18	0.16	0.15	0.14	0.13	0.12	0.12	0.10	0.10	0.05	0.05	0.02				
4.50mm 450M	2.63	2.71	18	0.27	0.26	0.24	0.22	0.22	0.20	0.18	0.17	0.15	0.13	0.13	0.12	0.12	0.10	0.10	0.05	0.05	0.02			
5.00mm 500M	2.92	3.00	19	0.28	0.26	0.24	0.22	0.20	0.20	0.18	0.18	0.16	0.16	0.15	0.14	0.13	0.12	0.11	0.10	0.10	0.05	0.02		
Unified (inch)	Male Thread	24 TPI TNN32ER24UN	0.026	0.030	5	0.009	0.008	0.006	0.004	0.002														
		20 TPI 20UN	0.031	0.034	6	0.009	0.008	0.006	0.005	0.004	0.002													
		18 TPI 18UN	0.035	0.038	6	0.010	0.009	0.007	0.006	0.004	0.002													
		16 TPI 16UN	0.040	0.043	7	0.010	0.009	0.007	0.006	0.005	0.004	0.002												
		14 TPI 14UN	0.045	0.048	8	0.010	0.009	0.007	0.006	0.006	0.005	0.004	0.002											
	12 TPI 12UN	0.053	0.056	11	0.010	0.009	0.007	0.006	0.005	0.005	0.004	0.003	0.003	0.002	0.002									
	8 TPI TNN43ER08UN	0.078	0.081	15	0.012	0.010	0.009	0.008	0.006	0.006	0.006	0.005	0.004	0.004	0.004	0.003	0.002	0.002	0.001					
	Female Thread	24 TPI TNN32IR 24UN	0.024	0.028	5	0.009	0.007	0.006	0.004	0.002														
		20 TPI 20UN	0.030	0.033	6	0.009	0.008	0.006	0.005	0.003	0.002													
		18 TPI 18UN	0.033	0.036	6	0.009	0.007	0.006	0.006	0.004	0.002													
16 TPI 16UN		0.037	0.040	7	0.009	0.008	0.007	0.006	0.004	0.004	0.002													
14 TPI 14UN		0.042	0.045	8	0.009	0.009	0.007	0.006	0.005	0.004	0.004	0.002												
12 TPI 12UN	0.049	0.052	11	0.009	0.009	0.006	0.006	0.005	0.004	0.004	0.003	0.003	0.002	0.002										
8 TPI TNN43IR 08UN	0.072	0.076	15	0.009	0.009	0.008	0.006	0.006	0.006	0.005	0.005	0.005	0.004	0.004	0.004	0.002	0.002	0.001						
Tapered Pipe (mm)	Male Thread	28 TPI TNN32ER28PT	0.58	0.63	5	0.20	0.15	0.13	0.11	0.04														
		19 TPI 19PT	0.86	0.94	6	0.26	0.20	0.18	0.15	0.10	0.05													
		14 TPI 14PT	1.16	1.24	9	0.22	0.20	0.18	0.16	0.14	0.12	0.10	0.08	0.04										
		11 TPI 11PT	1.48	1.56	12	0.26	0.22	0.18	0.16	0.12	0.12	0.11	0.10	0.10	0.07	0.07	0.05							
		28 TPI TNN22IR 28PT	0.58	0.63	5	0.20	0.16	0.13	0.10	0.04														
	Female Thread	19 TPI 19PT	0.86	0.94	7	0.22	0.20	0.18	0.14	0.10	0.06	0.04												
		14 TPI 14PT	1.16	1.24	9	0.22	0.20	0.18	0.16	0.14	0.12	0.10	0.08	0.04										
		14 TPI TNN32IR 14PT	1.16	1.24	9	0.22	0.20	0.18	0.16	0.14	0.12	0.10	0.08	0.04										
		11 TPI 11PT	1.48	1.56	12	0.26	0.22	0.18	0.16	0.12	0.12	0.11	0.10	0.10	0.07	0.07	0.05							
		American National Pipe (inch)	Male Thread	18 TPI TNN32ER18NPT	0.045	0.048	13	0.008	0.006	0.006	0.005	0.004	0.004	0.003	0.003	0.003	0.002	0.002	0.002	0.001				
14 TPI 14NPT	0.057			0.061	15	0.008	0.007	0.006	0.006	0.005	0.005	0.004	0.004	0.004	0.003	0.003	0.002	0.002	0.001					
11.5 TPI 11.5NPT	0.070			0.073	16	0.009	0.008	0.007	0.006	0.006	0.006	0.005	0.005	0.004	0.004	0.004	0.003	0.003	0.003	0.002	0.001			
Female Thread	18 TPI TNN32IR 18NPT		0.045	0.048	13	0.008	0.006	0.006	0.005	0.004	0.004	0.003	0.003	0.003	0.002	0.002	0.002	0.001						
	14 TPI 14NPT		0.057	0.061	15	0.008	0.007	0.006	0.006	0.005	0.005	0.004	0.004	0.004	0.003	0.003	0.002	0.002	0.001					
11.5 TPI 11.5NPT	0.070	0.073	16	0.009	0.008	0.007	0.006	0.006	0.006	0.005	0.005	0.004	0.004	0.003	0.003	0.003	0.003	0.002	0.002	0.001				

(This chart is based on the case of TC60 and PR930. In case of TC40, set up a few more passes respectively.)

TNN06/08 type (60° · 55° Partial Profiling, For Internal Small Dia.)

(d.o.c. shows Value of Radial d.o.c.)

	Pitch mm · TPI	Description	Corner-R (mm-in)	Total d.o.c. (mm-in)	No. of Pass	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		
						Metric (mm)	Female Thread	0.75mm TNN06I ^R /L 60005	0.05	0.44	10	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.03	0.03	0.03					
(60°)	Female Thread	1.00mm TNN06I ^R /L 60005	0.05	0.60	12	0.07	0.06	0.06	0.06	0.06	0.05	0.05	0.04	0.04	0.04	0.04	0.03									
			TNN08I ^R /L 60007	0.07	0.58	12	0.07	0.06	0.06	0.06	0.06	0.05	0.04	0.04	0.04	0.04	0.03	0.03								
		1.25mm TNN06I ^R /L 60005	0.05	0.76	14	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.05	0.04	0.04	0.03						
			TNN08I ^R /L 60007	0.07	0.74	14	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.03	0.03						
		1.50mm TNN08I ^R /L 60007	0.07	0.90	17	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.05	0.05	0.04	0.04	0.04	0.03	0.03		
(60°)	Female Thread	1.75mm TNN08I ^R /L 60007	0.07	1.07	19	0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.05	0.04	0.04	0.04	0.03		
(60°)	Female Thread	28 TPI TNN06I ^R /L 60005	.002	.021	11	.003	.003	.003	.003	.002	.002	.002	.001	.001	.001	.001										
			TNN06I ^R /L 60005	.002	.025	13	.003	.003	.003	.003	.002	.002	.002	.001	.001	.001	.001	.001								
		20 TPI TNN08I ^R /L 60007	.003	.030	14	.003	.003	.003	.003	.003	.003	.002	.002	.002	.002	.001	.001	.001	.001							
			TNN08I ^R /L 60007	.003	.033	16	.003	.003	.003	.003	.003	.003	.002	.002	.002	.002	.001	.001	.001	.001	.001					
		18 TPI TNN08I ^R /L 60007	.003	.038	18	.003	.003	.003	.003	.003	.003	.003	.003	.002	.002	.002	.002	.002	.002	.001	.001	.001	.001	.001	.001	

Caution 1) The Standard Cutting Speed is 30 - 50m/min. Under the Small Dia. and High Revolution Situation, the Table Feed may not follow the Expected Conditions depending on the Machine.
2) Wet cutting is recommended.

TNN22/32 type (60° · 55° Partial Profiling)

(d.o.c. shows Value of Radial d.o.c.)

	Pitch mm · TPI	Description	Corner-R (mm-in)	Total d.o.c. (mm-in)	No. of Pass	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		
						Metric (mm)	Male Thread	1.00mm TNN32E ^R /L 6001	0.10	0.66	5	0.20	0.18	0.12	0.09	0.05										
(60°)	Male Thread	1.25mm TNN32E ^R /L 6001	0.10	0.85	6	0.23	0.20	0.14	0.12	0.07	0.05															
			TNN32E ^R /L 6001	0.10	1.04	8	0.23	0.21	0.19	0.15	0.11	0.06	0.05	0.04												
			6002	0.20	0.94	7	0.23	0.20	0.18	0.14	0.10	0.05	0.04													
		1.75mm TNN32E ^R /L 6001	0.10	1.23	9	0.25	0.22	0.20	0.17	0.14	0.09	0.07	0.05	0.04												
			6002	0.20	1.13	8	0.25	0.22	0.20	0.16	0.14	0.07	0.05	0.04												
		2.00mm TNN32E ^R /L 6001	0.10	1.42	11	0.25	0.22	0.20	0.16	0.14	0.12	0.10	0.08	0.06	0.05	0.04										
			6002	0.20	1.32	10	0.25	0.22	0.20	0.16	0.14	0.12	0.08	0.07	0.04	0.04										
		2.50mm TNN32E ^R /L 6001	0.10	1.79	13	0.25	0.22	0.20	0.18	0.16	0.16	0.14	0.12	0.10	0.09	0.08	0.05	0.04								
			6002	0.20	1.69	12	0.25	0.22	0.20	0.18	0.16	0.16	0.12	0.12	0.10	0.08	0.06	0.04								
		0.75mm TNN22I ^R /L 60005	0.05	0.44	5	0.14	0.12	0.10	0.06	0.02																
		1.00mm TNN22I ^R /L 60005	0.05	0.60	6	0.18	0.15	0.10	0.08	0.05	0.04															
		1.25mm TNN22I ^R /L 60005	0.05	0.76	7	0.18	0.15	0.12	0.10	0.10	0.07	0.04														
1.50mm TNN22I ^R /L 60005	0.05	0.92	9	0.18	0.16	0.12	0.10	0.10	0.08	0.08	0.06	0.04														
	TNN32I ^R /L 6001	0.10	0.87	8	0.18	0.16	0.12	0.10	0.10	0.08	0.08	0.05														
1.75mm TNN32I ^R /L 6001	0.10	1.04	9	0.20	0.18	0.15	0.12	0.12	0.10	0.08	0.05	0.04														
2.00mm TNN32I ^R /L 6001	0.10	1.20	11	0.20	0.18	0.15	0.12	0.12	0.10	0.10	0.08	0.06	0.05	0.04												
2.50mm TNN32I ^R /L 6001	0.10	1.52	14	0.20	0.18	0.16	0.14	0.14	0.12	0.12	0.10	0.10	0.08	0.06	0.06	0.04	0.02									
	60015	0.15	1.47	13	0.20	0.18	0.16	0.15	0.14	0.12	0.12	0.10	0.10	0.08	0.06	0.04	0.02									
(60°)	Male Thread	32 TPI TNN32E ^R /L 60.004	0.004	0.021	4	0.007	0.006	0.005	0.003																	
			TNN32E ^R /L 60.004	0.004	0.025	5	0.007	0.006	0.005	0.004	0.003															
		24 TPI TNN32E ^R /L 60.004	0.004	0.029	6	0.008	0.007	0.005	0.004	0.003	0.002															
			TNN32E ^R /L 60.004	0.004	0.035	7	0.008	0.007	0.006	0.005	0.004	0.003	0.002													
		18 TPI TNN32E ^R /L 60.008	0.008	0.036	7	0.009	0.007	0.006	0.005	0.004	0.003	0.002														
			TNN32E ^R /L 60.008	0.008	0.041	8	0.008	0.007	0.006	0.006	0.005	0.004	0.003	0.002												
		14 TPI TNN32E ^R /L 60.008	0.008	0.048	9	0.009	0.008	0.007	0.006	0.005	0.004	0.004	0.003	0.002												
			TNN32E ^R /L 60.008	0.008	0.051	9	0.009	0.008	0.007	0.007	0.006	0.005	0.004	0.003	0.002											
		13 TPI TNN32E ^R /L 60.008	0.008	0.048	9	0.009	0.008	0.007	0.007	0.006	0.005	0.004	0.003	0.002												
			TNN32E ^R /L 60.008	0.008	0.056	9	0.011	0.010	0.008	0.007	0.006	0.005	0.004	0.003	0.002											
		12 TPI TNN32E ^R /L 60.008	0.008	0.056	9	0.011	0.010	0.008	0.007	0.006	0.005	0.004	0.003	0.002												
			TNN32E ^R /L 60.008	0.008	0.061	10	0.011	0.010	0.008	0.007	0.006	0.005	0.005	0.004	0.003	0.002										
		11 TPI TNN32E ^R /L 60.008	0.008	0.067	11	0.010	0.009	0.008	0.008	0.007	0.006	0.005	0.005	0.004	0.003	0.002										
			TNN32E ^R /L 60.008	0.008	0.067	11	0.010	0.009	0.008	0.008	0.007	0.006	0.005	0.005	0.004	0.003	0.002									
		32 TPI TNN22I ^R /L 60.002	0.002	0.021	5	0.005	0.005	0.004	0.004	0.003																
			TNN22I ^R /L 60.002	0.002	0.024	6	0.005	0.005	0.004	0.004	0.003	0.003														
		24 TPI TNN22I ^R /L 60.002	0.002	0.026	6	0.006	0.005	0.005	0.004	0.003	0.003															
			TNN22I ^R /L 60.002	0.002	0.032	7	0.007	0.006	0.005	0.004	0.003	0.003														
		20 TPI TNN32E ^R /L 60.004	0.004	0.034	7	0.007	0.007	0.006	0.005	0.004	0.003	0.002														
			TNN32E ^R /L 60.004	0.004	0.037	8	0.007	0.007	0.006	0.005	0.004	0.003	0.003	0.002												
		16 TPI TNN32E ^R /L 60.004	0.004	0.037	8	0.007	0.007	0.006	0.005	0.004	0.003	0.003	0.002													
			TNN32E ^R /L 60.006	0.006	0.043	8	0.008	0.008	0.007	0.006	0.005	0.004	0.003	0.002												
		14 TPI TNN32E ^R /L 60.006	0.006	0.047	9	0.009	0.008	0.007	0.006	0.005	0.004	0.003	0.003	0.002												
			TNN32E ^R /L 60.006	0.006	0.049	9	0.009	0.008	0.007	0.006	0.005	0.004	0.004	0.003	0.003											
13 TPI TNN32E ^R /L 60.006	0.006	0.049	9	0.009	0.008	0.007	0.006	0.005	0.004	0.004	0.003	0.003														
	TNN32E ^R /L 60.006	0.006	0.056	10	0.009	0.009	0.008	0.007	0.006	0.005	0.004	0.003	0.003	0.002												
11 TPI TNN32E ^R /L 60.006	0.006	0.056	10	0.009	0.009	0.008	0.007	0.006	0.005	0.004	0.003	0.003	0.002													
	TNN32E ^R /L 60.006	0.006	0.062	11	0.010	0.009	0.008	0.007	0.006	0.005	0.005	0.004	0.003	0.003	0.002											

Caution 1) Select the Insert with Suitable Corner-R Designated by Pitch Respectively.
2) Do not exceed 0.3mm for the 1st d.o.c.
3) Final d.o.c. for Finishing shall be 0.02~0.05mm.
4) Prepare Chamfering for C0.3~C0.5 to the Work to prevent the Insert Crack at the 1st Pass.
5) Coolant is

TT type (60° Partial Profiling)

(d.o.c. shows Value of Radial d.o.c.)

Metric (mm)	Pitch mm - TPI	Description	Corner-R (mm-in)	Total d.o.c. (mm-in)	No. of Pass	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17		
Metric (mm)	Male Thread	0.50mm TT32% 6000	0.00	0.38	6	0.10	0.10	0.07	0.05	0.04	0.02													
		0.70mm TT32% 6000	0.00	0.53	7	0.10	0.10	0.10	0.08	0.07	0.06	0.02												
		0.75mm TT32% 6000	0.00	0.57	8	0.10	0.10	0.10	0.08	0.08	0.05	0.04	0.02											
		0.80mm TT32% 6000	0.00	0.61	8	0.10	0.10	0.10	0.10	0.08	0.06	0.05	0.02											
		1.00mm TT32% 6000	0.00	0.76	8	0.15	0.13	0.12	0.12	0.10	0.08	0.06	0.02											
			TT32/43% 6001	0.10	0.66	6	0.20	0.15	0.12	0.10	0.07	0.02												
		1.25mm TT32% 6000	0.00	0.95	9	0.18	0.16	0.14	0.12	0.10	0.10	0.08	0.05	0.02										
			TT32/43% 6001	0.10	0.85	7	0.25	0.20	0.13	0.10	0.10	0.05	0.02											
		1.50mm TT32% 6000	0.00	1.14	10	0.20	0.18	0.16	0.14	0.12	0.10	0.10	0.07	0.05	0.02									
			TT32/43% 6001	0.10	1.04	9	0.25	0.18	0.14	0.12	0.10	0.10	0.08	0.05	0.02									
			6002	0.20	0.94	8	0.25	0.18	0.14	0.12	0.10	0.08	0.05	0.02										
		1.75mm TT32% 6000	0.00	1.33	11	0.25	0.23	0.20	0.13	0.10	0.10	0.10	0.08	0.07	0.05	0.02								
			TT32/43% 6001	0.10	1.23	10	0.25	0.23	0.20	0.13	0.10	0.10	0.08	0.07	0.05	0.02								
			6002	0.20	1.13	9	0.25	0.23	0.20	0.13	0.10	0.08	0.07	0.05	0.02									
		2.00mm TT32% 6000	0.00	1.52	12	0.25	0.23	0.20	0.16	0.13	0.10	0.10	0.10	0.10	0.08	0.05	0.02							
	TT32/43% 6001	0.10	1.42	11	0.25	0.23	0.20	0.16	0.13	0.10	0.10	0.10	0.08	0.05	0.02									
	6002	0.20	1.32	10	0.25	0.23	0.20	0.16	0.13	0.10	0.10	0.08	0.05	0.02										
2.50mm TT32% 6000	0.00	1.89	13	0.27	0.25	0.20	0.18	0.17	0.15	0.14	0.14	0.13	0.10	0.08	0.06	0.02								
	TT32/43% 6001	0.10	1.79	12	0.27	0.25	0.20	0.18	0.17	0.15	0.14	0.13	0.12	0.10	0.08	0.02								
	6002	0.20	1.69	11	0.27	0.25	0.20	0.18	0.17	0.15	0.14	0.13	0.10	0.08	0.02									
	6003	0.30	1.59	11	0.27	0.25	0.20	0.18	0.17	0.15	0.12	0.10	0.08	0.05	0.02									
3.00mm TT43% 6001	0.10	2.17	14	0.30	0.25	0.23	0.20	0.20	0.18	0.16	0.14	0.14	0.12	0.10	0.08	0.02								
	6002	0.20	2.07	13	0.30	0.25	0.23	0.20	0.20	0.18	0.15	0.14	0.13	0.12	0.10	0.05	0.02							
	6003	0.30	1.97	12	0.30	0.25	0.23	0.20	0.20	0.18	0.15	0.14	0.12	0.10	0.08	0.02								
	6004	0.40	1.87	12	0.30	0.25	0.23	0.20	0.20	0.18	0.14	0.12	0.10	0.08	0.05	0.02								
3.50mm TT43% 6001	0.10	2.55	16	0.30	0.27	0.23	0.22	0.20	0.18	0.18	0.16	0.16	0.14	0.14	0.12	0.10	0.08	0.05	0.02					
	6002	0.20	2.45	15	0.30	0.27	0.23	0.22	0.20	0.18	0.18	0.16	0.16	0.14	0.14	0.10	0.10	0.05	0.02					
	6003	0.30	2.35	14	0.30	0.27	0.23	0.22	0.20	0.18	0.18	0.16	0.15	0.14	0.12	0.10	0.08	0.02						
	6004	0.40	2.25	14	0.30	0.27	0.23	0.22	0.20	0.18	0.18	0.16	0.15	0.14	0.12	0.10	0.08	0.02						
Metric (mm)	Female Thread	0.50mm TT32% 6000	0.00	0.32	5	0.12	0.08	0.06	0.04	0.02														
		0.70mm TT32% 6000	0.00	0.45	6	0.15	0.10	0.08	0.06	0.04	0.02													
		0.75mm TT32% 6000	0.00	0.49	6	0.15	0.12	0.08	0.07	0.05	0.02													
		0.80mm TT32% 6000	0.00	0.52	6	0.15	0.12	0.10	0.08	0.05	0.02													
		1.00mm TT32% 6000	0.00	0.65	7	0.15	0.14	0.12	0.10	0.08	0.04	0.02												
		1.25mm TT32% 6000	0.00	0.81	8	0.18	0.16	0.14	0.12	0.10	0.05	0.04	0.02											
		1.50mm TT32% 6000	0.00	0.97	9	0.20	0.18	0.16	0.14	0.10	0.08	0.05	0.04	0.02										
			TT32/43% 6001	0.10	0.87	8	0.20	0.18	0.16	0.14	0.08	0.05	0.04	0.02										
		1.75mm TT32% 6000	0.00	1.14	10	0.20	0.18	0.16	0.13	0.12	0.10	0.10	0.08	0.05	0.02									
			TT32/43% 6001	0.10	1.04	9	0.20	0.18	0.16	0.13	0.12	0.10	0.08	0.05	0.02									
		2.00mm TT32% 6000	0.00	1.30	12	0.20	0.18	0.16	0.13	0.13	0.12	0.10	0.10	0.08	0.05	0.03	0.02							
			TT32/43% 6001	0.10	1.20	11	0.20	0.18	0.16	0.13	0.13	0.12	0.10	0.08	0.05	0.03	0.02							
		2.50mm TT32% 6000	0.00	1.62	14	0.23	0.20	0.18	0.18	0.13	0.13	0.12	0.10	0.10	0.08	0.07	0.05	0.03	0.02					
			TT32/43% 6001	0.10	1.52	13	0.23	0.20	0.18	0.18	0.13	0.13	0.12	0.10	0.08	0.07	0.05	0.03	0.02					
		3.00mm TT43% 6001	0.10	1.85	15	0.25	0.22	0.20	0.18	0.14	0.14	0.13	0.12	0.10	0.10	0.08	0.07	0.05	0.05	0.02				
	6002	0.20	1.75	14	0.25	0.22	0.20	0.18	0.14	0.14	0.13	0.12	0.10	0.08	0.07	0.05	0.05	0.02						
Unified (inch)	Male Thread	32TPI TT32/43% 6001	0.004	0.021	4	0.007	0.006	0.005	0.003															
		28TPI TT32/43% 6001	0.004	0.025	5	0.007	0.006	0.005	0.004	0.003														
		24TPI TT32/43% 6001	0.004	0.029	6	0.008	0.007	0.005	0.004	0.003	0.002													
		20TPI TT32/43% 6001	0.004	0.035	7	0.008	0.007	0.006	0.005	0.004	0.003	0.002												
		18TPI TT32/43% 6002	0.008	0.036	7	0.008	0.007	0.006	0.005	0.004	0.003	0.003												
		16TPI TT32/43% 6002	0.008	0.041	7	0.008	0.008	0.007	0.006	0.005	0.004	0.003												
		14TPI TT32/43% 6002	0.008	0.048	8	0.009	0.008	0.007	0.006	0.006	0.005	0.004	0.003											
		13TPI TT32/43% 6002	0.008	0.051	9	0.009	0.008	0.007	0.006	0.005	0.005	0.004	0.004	0.003										
		12TPI TT32/43% 6002	0.008	0.056	9	0.009	0.008	0.008	0.007	0.006	0.006	0.005	0.004	0.003										
		11TPI TT32/43% 6003	0.012	0.060	10	0.009	0.008	0.008	0.007	0.006	0.006	0.005	0.004	0.004	0.003									
		10TPI TT43% 6003	0.012	0.066	11	0.010	0.009	0.008	0.007	0.007	0.006	0.005	0.004	0.004	0.003	0.003								
		8TPI TT43% 6004	0.016	0.081	13	0.010	0.009	0.008	0.008	0.007	0.007	0.006	0.006	0.005	0.005	0.004	0.003	0.003						
		32TPI TT32% 6000	0	0.021	5	0.006	0.005	0.004	0.003	0.003														
		28TPI TT32% 6000	0	0.025	6	0.006	0.005	0.005	0.004	0.003	0.002													
		24TPI TT32% 6000	0	0.028	7	0.006	0.005	0.005	0.004	0.003	0.003	0.002												
20TPI TT32/43% 6001	0.004	0.030	6	0.007	0.006	0.005	0.005	0.004	0.003															
18TPI TT32/43% 6001	0.004	0.034	7	0.009	0.007	0.006	0.005	0.004	0.003															
16TPI TT32/43% 6001	0.004	0.037	7	0.008	0.007	0.006	0.005	0.004	0.004	0.003														
14TPI TT32/43% 6001	0.004	0.045	8	0.008	0.007	0.007	0.006	0.005	0.005	0.004	0.003													
13TPI TT32/43% 6001	0.004	0.049	9	0.008	0.008	0.007	0.006	0.005	0.005	0.004	0.003	0.003												
12TPI TT32/43% 6001	0.004	0.051	9	0.009	0.008	0.007	0.006	0.005	0.005	0.004	0.004	0.003												
11TPI TT32/43% 6001	0.004	0.057	10	0.009	0.008	0.008	0.007	0.006	0.006	0.005	0.004	0.004	0.003	0.003										
10TPI TT32/43% 6002	0.008	0.059	11	0.009	0.008	0.008	0.007	0.006	0.005	0.004	0.004	0.003	0.003	0.002										
8TPI TT43% 6002	0.008	0.074	13	0.010	0.																			

Depth of Cut & Number of Passes

TTX type (60° Partial Profiling)

(d.o.c. shows Value of Radial d.o.c.)

	Pitch mm · TPI	Description	Corner-R (mm-in)	Total d.o.c. (mm-in)	No. of Pass	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
Metric (mm)	0.50mm	TTX32R% 6000	0.00	0.38	6	0.10	0.10	0.07	0.05	0.04	0.02												
		6000S																					
		60005S	0.05	0.33	5	0.10	0.10	0.07	0.04	0.02													
	0.70mm	TTX32R% 6000	0.00	0.53	7	0.10	0.10	0.10	0.08	0.07	0.06	0.02											
		60005	0.05	0.48	6	0.10	0.10	0.10	0.10	0.06	0.02												
	0.75mm	TTX32R% 6000	0.00	0.57	8	0.10	0.10	0.10	0.08	0.08	0.05	0.04	0.02										
		60005	0.05	0.52	7	0.10	0.10	0.10	0.08	0.07	0.05	0.02											
	0.80mm	TTX32R% 6000	0.00	0.61	8	0.10	0.10	0.10	0.10	0.08	0.06	0.05	0.02										
		60005	0.05	0.56	7	0.10	0.10	0.10	0.10	0.08	0.06	0.02											
	1.00mm	TTX32R% 6000	0.00	0.76	8	0.15	0.13	0.12	0.12	0.10	0.08	0.04	0.02										
60005		0.05	0.71	7	0.18	0.15	0.12	0.10	0.08	0.06	0.02												
(60°)	1.25mm	TTX32R% 6001	0.10	0.85	7	0.25	0.20	0.13	0.10	0.10	0.05	0.02											
	1.50mm	TTX32R% 6001	0.10	1.04	9	0.25	0.18	0.14	0.12	0.10	0.10	0.08	0.05	0.02									
	1.75mm	TTX32R% 6001	0.10	1.23	10	0.25	0.23	0.20	0.13	0.10	0.10	0.08	0.07	0.05	0.02								
	2.00mm	TTX32R% 6001	0.10	1.42	11	0.25	0.23	0.20	0.16	0.13	0.10	0.10	0.10	0.08	0.05	0.02	0.02						
	Unified (inch)	32 TPI	TTX32R% 6001	0.004	0.021	4	0.007	0.006	0.005	0.003													
		28 TPI	TTX32R% 6001	0.004	0.025	5	0.007	0.006	0.005	0.004	0.003												
		24 TPI	TTX32R% 6001	0.004	0.029	6	0.008	0.007	0.005	0.004	0.003	0.002											
		20 TPI	TTX32R% 6001	0.004	0.035	7	0.008	0.007	0.006	0.005	0.004	0.003	0.002										
		18 TPI	TTX32R% 6001	0.004	0.040	8	0.009	0.008	0.007	0.005	0.005	0.003	0.002	0.001									
		16 TPI	TTX32R% 6001	0.004	0.045	9	0.009	0.008	0.007	0.006	0.005	0.004	0.003	0.002	0.001								
14 TPI		TTX32R% 6001	0.004	0.052	10	0.009	0.008	0.007	0.006	0.005	0.004	0.003	0.003	0.002	0.002								
13 TPI		TTX32R% 6001	0.004	0.055	11	0.009	0.008	0.007	0.006	0.006	0.005	0.004	0.004	0.003	0.002	0.001							
(60°)	12 TPI	TTX32R% 6001	0.004	0.060	12	0.009	0.008	0.007	0.007	0.006	0.006	0.005	0.004	0.003	0.002	0.002	0.001						
	11 TPI	TTX32R% 6001	0.004	0.066	13	0.009	0.008	0.008	0.007	0.006	0.005	0.004	0.004	0.003	0.002	0.002	0.001	0.001					
	10 TPI	TTX32R% 6001	0.004	0.073	14	0.010	0.009	0.008	0.008	0.007	0.006	0.005	0.005	0.004	0.003	0.003	0.002	0.002	0.001				
	8 TPI	TTX32R% 6001	0.004	0.088	15	0.010	0.009	0.009	0.008	0.008	0.007	0.006	0.005	0.005	0.004	0.003	0.003	0.002	0.002	0.001			

- Caution
- 1) Select the Insert with Suitable Corner-R Designated by Pitch Respectively.
 - 2) Do not exceed 0.3mm for the 1st d.o.c.
 - 3) Final d.o.c. for Finishing shall be 0.02~0.05mm.
 - 4) Prepare Chamfering for C0.3~C0.5 to the Work to prevent the Insert Crack at the 1st Pass.
 - 5) Coolant is recommended.

• TTX type

Suitable for threading of smaller pitch size or more TPI than TT type.
Suitable for threading to the shoulder.

Insert	Thread Type	Metric (mm)	Unified (TPI)	Parallel Pipe (TPI)	Whitworth (TPI)
TTX32R6000 60005 6001		0.5~1.0	56~32	-	-
		0.5~1.0	48~32	-	-
		1.0~2.0	28~14	-	-
TTX32R6000S 60005S		0.5	56~48	-	-
		0.5	48	-	-
TTX32R5501 55015		-	-	28~19	24~20
		-	-	19~11	20~14

◆ Corner-R Selection for Partial Profiling Insert

	Male Thread	Female Thread
Metric Unified	$R \leq 0.1443P$	$R \leq 0.0720P$
Parallel Pipe (Whitworth) Tapered Pipe	(For Both Male and Female Thread) $R \leq 0.1373P$	

R: Corner-R P: Pitch ($= \frac{25.4}{n}$) n: TPI

- Metric, Unified Thread

Corner-R at Female Threading is almost half of that of Male.

- Parallel Pipe, Tapered Pipe, Whitworth Thread

Same Corner-R for Both Male and Female Threading

TPGB type (60° Partial Profiling)

(d.o.c. shows Value of Radial d.o.c.)

	Pitch	Description	Corner-R (mm-in)	Total d.o.c. (mm-in)	No. of Pass	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17			
	mm · TPI																								
Metric (mm)	Female Thread	0.75mm	TPGB 21.50.1 220.1	0.05	0.44	5	0.15	0.12	0.10	0.05	0.02														
		0.80mm	TPGB 21.50.1 220.1	0.05	0.47	5	0.15	0.14	0.10	0.06	0.02														
		1.00mm	TPGB 21.50.1 220.1	0.05	0.60	6	0.18	0.14	0.12	0.10	0.04	0.02													
		1.25mm	TPGB 21.50.1 220.1	0.05	0.76	7	0.18	0.16	0.14	0.12	0.10	0.04	0.02												
		1.50mm	TPGB 21.50.1 220.1	0.05	0.92	8	0.20	0.18	0.16	0.14	0.10	0.08	0.04	0.02											
			TPGB 21.50.2 220.2	0.10	0.87	8	0.20	0.18	0.16	0.14	0.08	0.05	0.04	0.02											
		1.75mm	TPGB 21.50.1 220.1	0.05	1.09	9	0.20	0.18	0.16	0.14	0.13	0.12	0.10	0.04	0.02										
			TPGB 220.2	0.10	1.04	9	0.20	0.18	0.16	0.13	0.12	0.10	0.08	0.05	0.02										
		2.00mm	TPGB 21.50.1 220.1	0.05	1.25	11	0.20	0.18	0.16	0.14	0.13	0.12	0.10	0.10	0.06	0.04	0.02								
			TPGB 220.2	0.10	1.20	11	0.20	0.18	0.16	0.13	0.13	0.12	0.10	0.08	0.05	0.03	0.02								
		2.50mm	TPGB 21.50.1 220.1	0.05	1.57	13	0.23	0.20	0.18	0.18	0.14	0.13	0.12	0.10	0.08	0.07	0.05	0.02							
			TPGB 220.2	0.10	1.52	13	0.23	0.20	0.18	0.18	0.13	0.13	0.12	0.10	0.08	0.07	0.05	0.03	0.02						
3.00mm	TPGB 21.50.1 220.1	0.05	1.90	15	0.25	0.22	0.20	0.18	0.14	0.14	0.13	0.12	0.10	0.10	0.08	0.07	0.05	0.02							
	TPGB 220.5	0.10	1.85	15	0.25	0.22	0.20	0.18	0.14	0.14	0.13	0.12	0.10	0.10	0.08	0.07	0.05	0.05	0.02						
3.50mm	TPGB 21.50.1 220.1	0.05	2.22	16	0.25	0.22	0.20	0.18	0.18	0.16	0.16	0.14	0.14	0.12	0.12	0.10	0.10	0.08	0.05	0.02					
	TPGB 220.2	0.10	2.17	16	0.25	0.22	0.20	0.18	0.18	0.16	0.16	0.14	0.14	0.12	0.10	0.10	0.08	0.07	0.05	0.02					
(60°)		TPGB 220.5	0.20	2.07	15	0.25	0.22	0.20	0.18	0.18	0.16	0.16	0.14	0.14	0.12	0.10	0.08	0.07	0.05	0.02					
Unified (inch)	Female Thread	28 TPI	TPGB 21.50.1 220.1	0.002	0.023	5	0.007	0.006	0.005	0.003	0.002														
		24 TPI	TPGB 21.50.1 220.1	0.002	0.026	6	0.007	0.006	0.005	0.004	0.003	0.001													
		20 TPI	TPGB 21.50.2 220.2	0.004	0.030	8	0.007	0.006	0.005	0.004	0.003	0.002	0.002	0.001											
			TPGB 21.50.2 220.2	0.004	0.033	9	0.007	0.006	0.005	0.004	0.003	0.003	0.002	0.002	0.001										
		16 TPI	TPGB 21.50.2 220.2	0.004	0.037	10	0.007	0.006	0.005	0.004	0.004	0.003	0.003	0.002	0.002	0.001									
			TPGB 220.2	0.004	0.042	11	0.007	0.006	0.005	0.005	0.004	0.004	0.003	0.003	0.002	0.002	0.001								
		14 TPI	TPGB 21.50.2 220.2	0.004	0.033	9	0.007	0.006	0.005	0.004	0.003	0.003	0.002	0.002	0.001										
			TPGB 220.2	0.004	0.047	12	0.007	0.006	0.006	0.005	0.004	0.004	0.004	0.003	0.003	0.002	0.002	0.001							
		12 TPI	TPGB 220.2	0.004	0.050	12	0.007	0.007	0.006	0.006	0.005	0.004	0.004	0.003	0.003	0.002	0.002	0.001							
		11 TPI	TPGB 220.5	0.008	0.052	13	0.007	0.007	0.006	0.006	0.005	0.004	0.004	0.003	0.003	0.002	0.002	0.001							
		10 TPI	TPGB 220.5	0.008	0.057	14	0.007	0.007	0.006	0.006	0.005	0.004	0.004	0.004	0.003	0.003	0.003	0.002	0.002	0.001					
		8 TPI	TPGB 220.5	0.008	0.072	15	0.008	0.008	0.007	0.007	0.007	0.006	0.005	0.005	0.004	0.004	0.003	0.003	0.002	0.002	0.001				

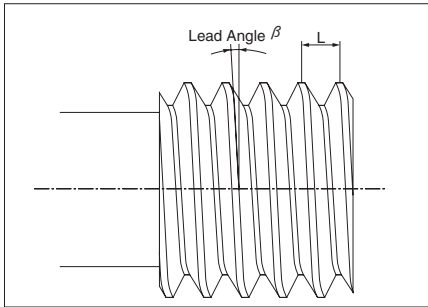
Recommended Cutting Conditions

Work Material	Recommended Insert Grade (Cutting Speed: SFM)						
	Cermet			PVD Coated Carbide			Uncoated Carbide
	TC30	TC40	TC60	PR630	PR660	PR930	KW10
Carbon Steel	200~600	200~600	200~600	200~600	200~350	150~450	-
Depth of cut for 1st pass	Under .010"	Under .010"	Under .012"	Under .012"	Under .012"	Under .012"	
Alloy Steel	250~500	250~500	250~500	250~500	150~350	150~400	-
Depth of cut for 1st pass	Under .010"	Under .010"	Under .012"	Under .012"	Under .012"	Under .012"	
Stainless Steel	-	-	100~400	100~400	100~300	100~300	-
Depth of cut for 1st pass			Under .010"	Under .010"	Under .010"	Under .010"	
Cast Iron	200~500	200~500	-	-	-	-	100~350
Depth of cut for 1st pass	Under .010"	Under .010"					Under .012"
Heat Resistant Alloys	-	-	-	-	50~150	30~100	25~75
Depth of cut for 1st pass					Under .010"	Under .010"	Under .010"
Non-ferrous	-	-	-	-	-	-	500~1300
Depth of cut for 1st pass							Under .012"

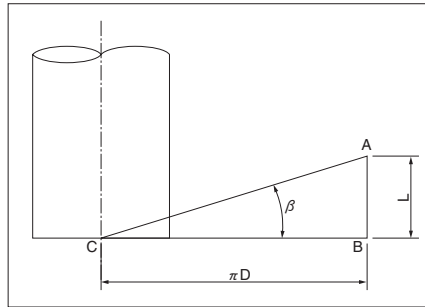
Lead Angle of Thread

Thread's Lead Angle β as shown in Fig. 1 decides from the Work Diameter (Pitch Dia.) "D" and Lead "L" (in case of Single-start Thread, it is the same as Pitch "P"). Rolling a right-angled Triangle around a Cylinder and the Angle ACB in Fig. 2 becomes the Lead Angle β . The Calculation Formula is shown as follows.

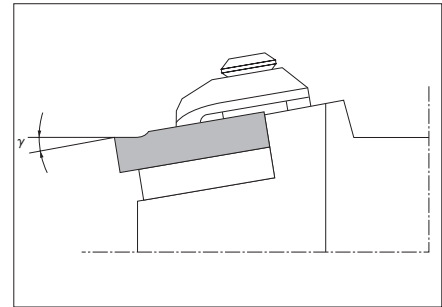
$$\tan \beta = \frac{L}{\pi D} = \frac{nP}{\pi D} \quad \left\{ \begin{array}{l} \beta: \text{Lead Angle} \quad D: \text{Pitch Dia.} \quad n: \text{Number of Thread (such as double-start thread)} \quad P: \text{Pitch} \\ L: \text{Lead (In case of single-start thread, it is equal to P. In case of n-start thread, it is equal to } n \times P) \end{array} \right.$$



(Fig.1)



(Fig.2)

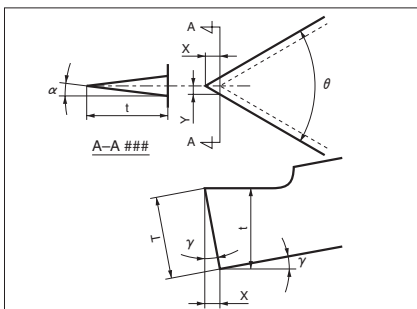


(Fig.3)

Relief Angle of Thread

Against this Lead Angle, the Threading Insert needs Side Relief Angle α . TNN type Threading Insert is a negative Insert and it does not prepare the Relief Angle originally. But when installing the Insert on the Toolholder, the Edge Inclination Angle γ is prepared as shown in Fig. 3, and it generates both the front Relief Angle and the Side Relief Angle α . This Side Relief Angle is obtained by the Formula as follows. (See Fig. 4)

$$\tan \alpha = \tan \gamma \times \tan \left(\frac{\theta}{2} \right)$$



(Fig.4)

Symbol	Example
α : Side Relief Angle	
γ : Inclination Angle after Installing Insert	External Insert : 10° Internal Insert : 15°
θ : Insert's Thread Angle	Metric : 60° Tapered Pipe : 55° 30° Trapezoidal : 30°
T: Insert Thickness	

$$\begin{cases} X = T \sin \gamma \\ Y = X \tan(\theta/2) = t \tan \alpha \\ t = T \cos \gamma \end{cases}$$

(Chart 1)

Inserts	α : Side Relief Angle	
	External	Internal
60° Thread (M, UN, NPT)	5°49'	8°47'
55° Thread (W, PT)	5°14'	7°56'
30° Thread (TR)	2°43'	5°7'

This Side Relief Angle α becomes as shown in Chart 1 depending on the Insert.

However, the Side Relief Angle is prepared to Toolholder itself for 1°, and the actual Side Relief Angle becomes $\alpha + 1^\circ$.