

# Threading

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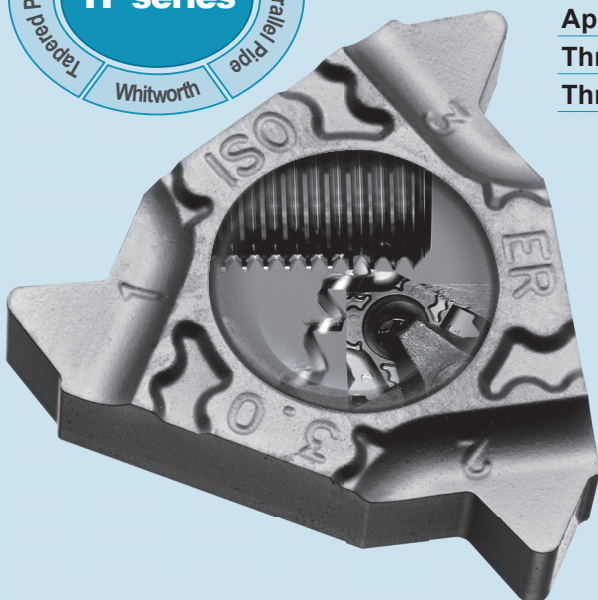
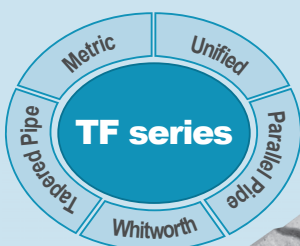
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# Summary of External Threading

## Tooling Application Table (External Threading)

Thread Type	Metric	Unified	Parallel Pipe	Whitworth	Tapered Pipe	American National Tapered Pipe	30° Trapezoidal	
	M	UN. UNC UNF. UNEF	G (PF)	W	R (PT) (BSPT)	NPT	Tr	
Thread shape								
Pitch	mm	TPI	TPI	TPI	TPI	TPI	mm	
Toolholder Shape								
<b>KTN</b> ⚙️ <b>J16</b> 	Full Profile	0.5~5.0 ⚙️ <b>J6</b>	28~8 ⚙️ <b>J8</b>	19~11 ⚙️ <b>J8</b>	16~11 ⚙️ <b>J8</b>	28~11 ⚙️ <b>J10</b>	18~11.5 ⚙️ <b>J10</b>	-
	Partial Profile	0.5~5.0 ⚙️ <b>J12</b>	48~5 ⚙️ <b>J12</b>	28~11 ⚙️ <b>J14</b>	40~5 ⚙️ <b>J14</b>	28~11 ⚙️ <b>J14</b>	-	2.0~5.0 ⚙️ <b>J14</b>
<b>KTNS</b> ⚙️ <b>J16</b> 	Full Profile	0.5~3.0 ⚙️ <b>J6</b>	24~8 ⚙️ <b>J8</b>	19~11 ⚙️ <b>J8</b>	16~11 ⚙️ <b>J8</b>	28~11 ⚙️ <b>J10</b>	18~11.5 ⚙️ <b>J10</b>	-
	Partial Profile	0.5~3.0 ⚙️ <b>J12</b>	48~8 ⚙️ <b>J12</b>	28~11 ⚙️ <b>J14</b>	40~8 ⚙️ <b>J14</b>	28~11 ⚙️ <b>J14</b>	-	2.0~3.0 ⚙️ <b>J14</b>
<b>KTJ</b> ⚙️ <b>J22</b> 	Full Profile	1.0~2.0 ⚙️ <b>J22</b>	-	-	-	-	-	-
	Partial Profile	0.5~3.5 ⚙️ <b>J22</b>	56~8 ⚙️ <b>J22</b>	28~11 ⚙️ <b>J22</b>	24~7 ⚙️ <b>J22</b>	28~11 ⚙️ <b>J22</b>	-	-
<b>KTTX</b> ⚙️ <b>J20</b> 	Partial Profile	0.5~2.0 ⚙️ <b>J21</b>	56~14 ⚙️ <b>J21</b>	28~11 ⚙️ <b>J21</b>	24~11 ⚙️ <b>J21</b>	28~11 ⚙️ <b>J21</b>	-	-
<b>S-KTTX</b> ⚙️ <b>J20</b> 	Partial Profile	0.5~2.0 ⚙️ <b>J21</b>	56~14 ⚙️ <b>J21</b>	28~11 ⚙️ <b>J21</b>	24~11 ⚙️ <b>J21</b>	28~11 ⚙️ <b>J21</b>	-	-
<b>KTKF</b> ⚙️ <b>J18</b> 	Partial Profile	0.5~1.5 ⚙️ <b>J18</b>	64~18 ⚙️ <b>J18</b>	28~19 ⚙️ <b>J18</b>	40~16 ⚙️ <b>J18</b>	28~19 ⚙️ <b>J18</b>	-	-
<b>KTKF</b> ⚙️ <b>J18</b> (Goose-neck Holder) 	Partial Profile	0.5~1.5 ⚙️ <b>J18</b>	64~18 ⚙️ <b>J18</b>	28~19 ⚙️ <b>J18</b>	40~16 ⚙️ <b>J18</b>	28~19 ⚙️ <b>J18</b>	-	-

• Threading Inserts Identification System

Full Profile ⚙️ Please see **J6**

Partial Profile ⚙️ Please see **J12**

# Summary of Internal Threading

## Tooling Application Table (Internal Threading)

Thread Type	Metric	Unified	Parallel Pipe	Whitworth	Tapered Pipe	American National Tapered Pipe	30° Trapezoidal
	M	UN. UNC UNF. UNEF	G(PF) Rp(PS)	W	Rc (PT) (BSPT)	NPT	Tr
Thread shape							
Pitch	mm	TPI	TPI	TPI	TPI	TPI	mm
Toolholder Shape							
<b>VNT</b> Ⓢ <b>J27</b> 	Partial Profile	0.75~1.5 Ⓢ <b>J27</b>	28~18 Ⓢ <b>J27</b>	-	-	-	-
<b>HPT</b> Ⓢ <b>J24</b> ( <b>PST</b> Ⓢ <b>J27</b> ) 	Partial Profile	0.75~1.5 (0.75~1.5) Ⓢ <b>J24</b> (Ⓢ <b>J27</b> )	28~16 (28~18) Ⓢ <b>J24</b> (Ⓢ <b>J27</b> )	28~19 Ⓢ <b>J24</b>	24~18 Ⓢ <b>J24</b>	28~19 Ⓢ <b>J24</b>	-
<b>SIN</b> Ⓢ <b>J17</b> 	Full Profile	0.5~5.0 Ⓢ <b>J7</b>	24~8 Ⓢ <b>J9</b>	19~11 Ⓢ <b>J9</b>	16~11 Ⓢ <b>J9</b>	28~11 Ⓢ <b>J11</b>	18~11.5 Ⓢ <b>J11</b>
	Partial Profile	0.5~5.0 Ⓢ <b>J13</b>	48~8 Ⓢ <b>J13</b>	28~11 Ⓢ <b>J15</b>	40~5 Ⓢ <b>J15</b>	28~11 Ⓢ <b>J15</b>	- 2.0~5.0 Ⓢ <b>J15</b>
<b>CIN</b> Ⓢ <b>J17</b> 	Full Profile	1.0~5.0 Ⓢ <b>J7</b>	24~8 Ⓢ <b>J9</b>	19~11 Ⓢ <b>J9</b>	16~11 Ⓢ <b>J9</b>	28~11 Ⓢ <b>J11</b>	18~11.5 Ⓢ <b>J11</b>
	Partial Profile	0.5~5.0 Ⓢ <b>J13</b>	48~5 Ⓢ <b>J13</b>	28~11 Ⓢ <b>J15</b>	40~5 Ⓢ <b>J15</b>	28~11 Ⓢ <b>J15</b>	- 2.0~5.0 Ⓢ <b>J15</b>
<b>KITG</b> Ⓢ <b>J23</b> 	Partial Profile	0.5~3.0 Ⓢ <b>J23</b>	48~8 Ⓢ <b>J23</b>	28~11 Ⓢ <b>J23</b>	24~8 Ⓢ <b>J23</b>	28~11 Ⓢ <b>J23</b>	-
<b>STWP</b> Ⓢ <b>J28</b> 	Partial Profile	0.75~3.5 Ⓢ <b>J28</b>	28~8 Ⓢ <b>J28</b>	-	-	-	-

· For parallel pipe and tapered pipe the average values are only to be used if specifically recommended.  
· Pitch inside ( ) indicates PST.

# Product Introduction

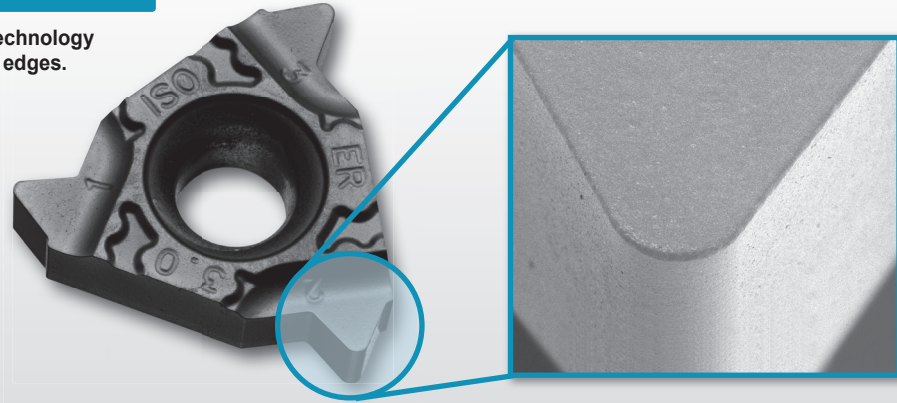
## TF Series Threading Inserts

High quality edge and new grade insert PR1115 achieves long tool life.  
Economical, owing to new molding technology

### High Quality Cutting Edge

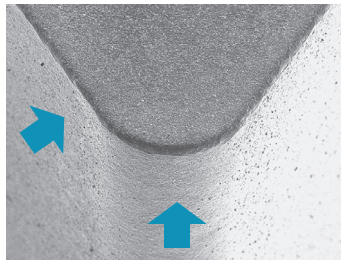
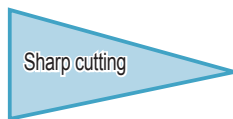
#### TF series

- High precision fine molding technology produces high quality cutting edges.



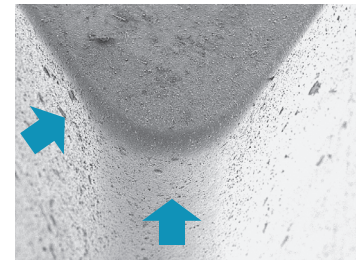
### Cutting Edge close-up picture

Consistent micro honing technology enables sharpness and high quality thread shape.



16ER150ISO-TF

Inconsistent edge honing condition.



Competitor

### Available for every standard screw thread.

Metric (M)

Tapered Pipe [R, Rc (PT), (BSPT)]

Unified (UN)

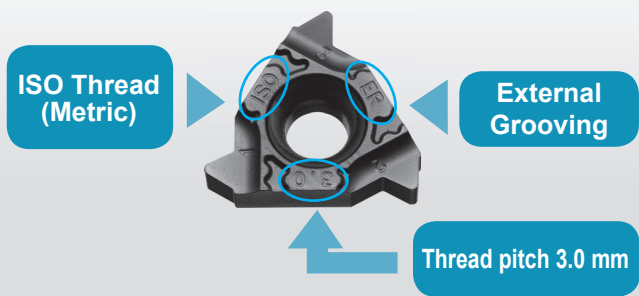
60° Angle (Partial Profile)

Parallel Pipe [G(PF)]

55° Angle (Partial Profile)

Whitworth (W)

### Clear markings provide user friendly insert identification.

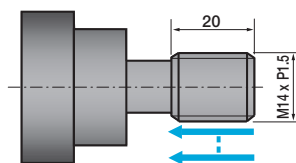


• 16--TF has the mark on its top face side, and 11--TF has the mark on its seating face side (bottom side).

### Case Studies

#### 15CrMo4 (SCM415)

- Machine Part
- Vc=65m/min
- WET



16ER150ISO-TF(PR1115)

1800 pcs/edge

Competitor A

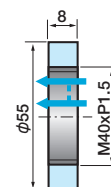
600 pcs/edge

New TF Series extended the tool life 3 times compared to Competitor A.

(Evaluation by the user)

#### C25 (S25C)

- Nut
- Vc=262m/min
- WET



16IR150ISO-TF(PR1115)

500 pcs/edge

Competitor B

300 pcs/edge

New TF Series extended the tool life 1.7 times compared to Competitor B.

(Evaluation by the user)

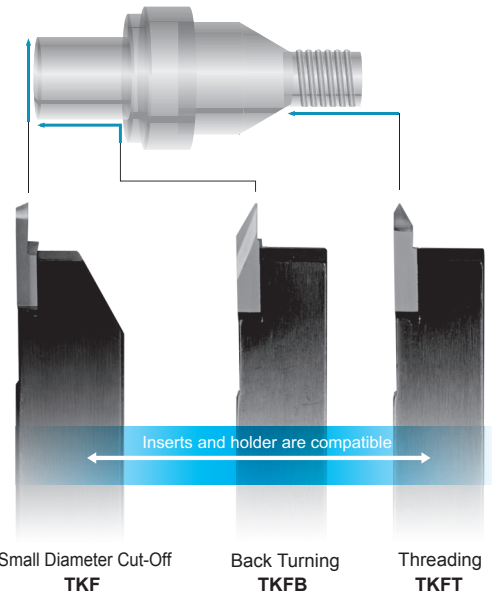
# Summary of Threading Inserts

## KTKF J18

“Threading” is added to Small Tools special tool series.

Total toolholder length 120 mm series is now available (referred to as JX in the part number).

### Threading For Threading **TKFT**



#### ● Applicable for various types of threading

Metric (M)

Parallel Pipe [G (PF)]

Unified (UN)

Tapered Pipe  
[R (PT) (BSPT)]

## Threading Insert Features

### ● Full Profile and Partial Profile

	Shape	Function	Features
Full Profile			<ul style="list-style-type: none"> <li>① Burr-free thread surface; high quality (Smooth feeling)</li> <li>② Leave the workpiece diameter slightly oversized for full topping</li> <li>③ Every pitch size requires a specific insert</li> </ul>
Partial Profile			<ul style="list-style-type: none"> <li>① Thread's corner tends to be sharp edged</li> <li>② Thread's O.D. or I.D. needs to be finished to the size before threading</li> <li>③ One insert can machine various pitch sizes</li> </ul>

### ● Thread Precision

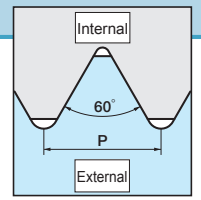
Type of Thread		Thread Precision		
		Strict	← →	Loose
M	External	4h (1st Class)	6g (2nd Class)	8g (3rd Class)
	Internal	5H (1st Class)	6H (2nd Class)	7H (3rd Class)
Unified	External	3A	2A	1A
	Internal	3B	2B	1B
* Applicable precision with Full Profile Insert		×	○	○

\* Not recommended if strict thread precision is required.

### ● With and Without Chipbreaker

	Shape	Condition	Cutting Force	Chip Length
Without Chipbreaker		<ul style="list-style-type: none"> <li>· When less cutting force is needed for small or thin part machining</li> </ul>	Small	
1-Thread, With Chipbreaker	<b>-TS</b> 	<ul style="list-style-type: none"> <li>· When Better Chip Control is needed</li> </ul>	Smaller	
2-Thread, With Chipbreaker	<b>-M02</b> 	<ul style="list-style-type: none"> <li>① Fewer passes and less machining time</li> <li>② For rigid workpiece</li> <li>③ Wider dead space</li> </ul>	Large (2 Edges engage in threading)	

# Threading Inserts



## External Threading Inserts

### Metric (M)

Full Profile 60°

Description	Previous Description	A	T	ød (mm)	Classification of usage				P	Carbon Steel / Alloy Steel	●	○	●	○	●	○	●	○	●	○						
					Classification of usage																M	Stainless Steel	K	Cast Iron	N	Non-ferrous Metals
					Classification of usage																					
16E <sup>9/L</sup>	TNN32E <sup>9/L</sup>	9.525	3.68	4.0	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
22E <sup>9/L</sup>	TNN43E <sup>9/L</sup>	12.70	4.9	4.85	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						

Insert	Description	Previous Description	Applicable Thread		Dimension (mm)		Angle (°)	Cermet		PVD Coated Carbide		Carbide		Ref. Page for Depth of Cut & Number of Passes	
			M	Pitch	r <sub>e</sub>	S		θ	TC60	PR1115	PR930	GW15	KW10		
	<b>16E<sup>9/L</sup> 100ISO-TF</b> <b>125ISO-TF</b> <b>150ISO-TF</b> <b>175ISO-TF</b> <b>200ISO-TF</b> <b>250ISO-TF</b> <b>300ISO-TF</b>	-	1.0	0.12	0.80	60°								J30	
			1.25	0.15	0.90										
			1.5	0.19	1.00										
			1.75	0.22	1.60										
			2.0	0.25	1.50										
			2.5	0.33	1.60										
			3.0	0.41	1.60										
	<b>16E<sup>9/L</sup> 050ISO</b> <b>075ISO</b> <b>100ISO</b> <b>125ISO</b> <b>150ISO</b> <b>175ISO</b> <b>200ISO</b> <b>250ISO</b> <b>22E<sup>9/L</sup> 300ISO</b> <b>350ISO</b> <b>400ISO</b> <b>450ISO</b> <b>500ISO</b>	<b>TNN32E<sup>9/L</sup> 050M</b> <b>075M</b> <b>100M</b> <b>125M</b> <b>150M</b> <b>175M</b> <b>200M</b> <b>250M</b> <b>TNN43E<sup>9/L</sup> 300M</b> <b>350M</b> <b>400M</b> <b>450M</b> <b>500M</b>	0.5	0.06	0.40	60°		●	●		●				J30
			0.75	0.09	0.53			●	●		●				
			1.0	0.12	0.80			●	●		●				
			1.25	0.15	0.90			●	●		●				
			1.5	0.19	1.00			●	●		●				
			1.75	0.22	1.50			●	●		●				
			2.0	0.25	1.50			●	●		●				
			2.5	0.32	1.60			●	●		●				
			3.0	0.41	2.10			●	●		●				
			3.5	0.48	2.10			●	●		●				
			4.0	0.55	2.80			●	●		●				
4.5	0.62	2.80		●	●		●								
5.0	0.70	2.80		●	●		●								
	<b>16E<sup>9/L</sup> 100ISO-TS</b> <b>125ISO-TS</b> <b>150ISO-TS</b> <b>200ISO-TS</b>	<b>TNN32E<sup>9/L</sup> 100M-TS</b> <b>125M-TS</b> <b>150M-TS</b> <b>200M-TS</b>	1.0	0.12	0.80	60°							J35		
			1.25	0.15	0.90										
			1.5	0.19	1.00										
			2.0	0.25	1.50										
	<b>16E<sup>9/L</sup> 100ISO-M02</b> <b>150ISO-M02</b> <b>200ISO-M02</b>	<b>TNN32E<sup>9/L</sup> 100M02</b> <b>150M02</b> <b>200M02</b>	1.0	0.12	1.80	60°							J35		
			1.5	0.19	2.25										
			2.0	0.25	2.90										

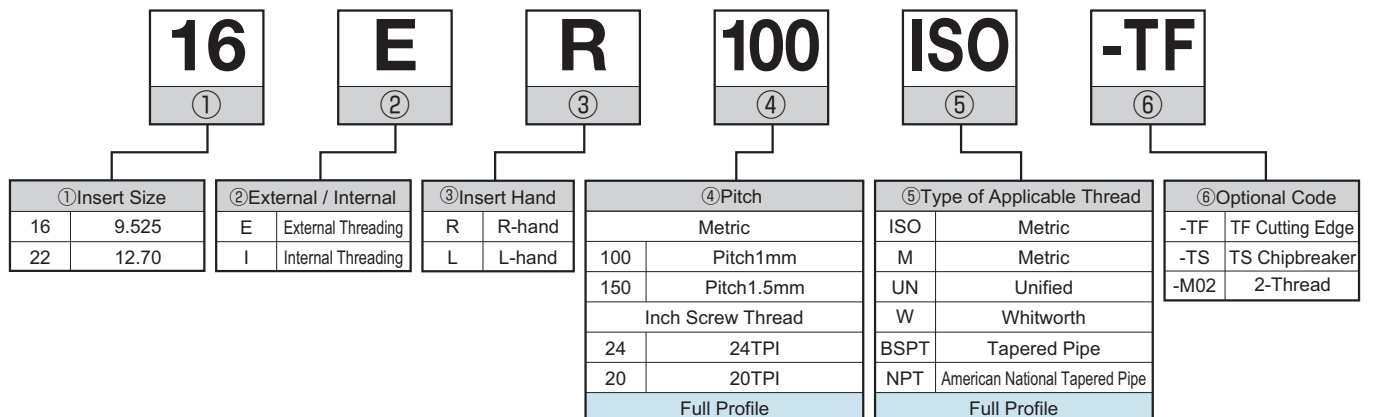
### Applicable Toolholder

Description	Applicable Toolholder	Ref. Page for Toolholder
16ER ...	KTNR...-16 KTNSR...-16	J16
16EL ...	KTNL...-16	
22ER ...	KTNR...-22	

For recommended cutting conditions, see page J29

Applicable Thread	M: Metric	R, Rc (PT), (BSPT): Tapered Pipe
	UN: Unified	W: Whitworth
	UNF: Unified Fine Thread	NPT: American National Tapered Pipe
	G (PF): Parallel Pipe	Tr: 30°Trapezoidal

### Threading Inserts Identification System (Full Profile) J6~J11



PR930 / PR1115 / GW15  
(Threading Insert) is sold in 5 piece boxes.

Inserts are sold in 10 piece boxes.

● : Std. Item □ : Check Availability

# Internal Threading Inserts

● Metric (M)

Full Profile 60° (mm)

Description	Previous Description	A	T	ød	Classification of usage ● : 1st Choice ○ : 2nd Choice	P	●		○		Ref. Page for Depth of Cut & Number of Passes		
						Carbon Steel / Alloy Steel	Stainless Steel	Cast Iron	Non-ferrous Metals				
11I <sup>R/L</sup>	TNN22I <sup>R/L</sup>	6.35	3.18	3.0		M	●	○					
16I <sup>R/L</sup>	TNN32I <sup>R/L</sup>	9.525	3.68	4.0		K	●	○	●				
22I <sup>R/L</sup>	TNN43I <sup>R/L</sup>	12.70	4.9	4.85		N				●			
Insert	Description	Previous Description	Applicable Thread	Dimension (mm)		Angle (°)	Cermet		PVD Coated Carbide		Carbide		Ref. Page for Depth of Cut & Number of Passes
				M	Pitch		r <sub>e</sub>	S	θ	TC60	PR1115	PR930	
Handed Insert shows Right-hand													
Full Profile		-	11I <sup>R/L</sup> 100ISO-TF	1.0	0.07	0.8	60°		●				
			125ISO-TF	1.25	0.08	1.1		●					
			150ISO-TF	1.5	0.11	1.1		●					
			175ISO-TF	1.75	0.12	1.1		●					
		-	16I <sup>R/L</sup> 100ISO-TF	1.0	0.07	0.8	60°		●				
			125ISO-TF	1.25	0.08	1.1		●					
			150ISO-TF	1.5	0.11	1.1		●					
			175ISO-TF	1.75	0.12	1.1		●					
			200ISO-TF	2.0	0.14	1.5		●					
			250ISO-TF	2.5	0.17	1.5		●					
			300ISO-TF	3.0	0.19	1.6		●					
			11I <sup>R/L</sup> 050ISO	TNN22I <sup>R/L</sup> 050M	0.5	0.03		0.55	60°	<input type="checkbox"/>	●	<input type="checkbox"/>	●
	075ISO	075M	0.75	0.05	0.68	<input type="checkbox"/>	●	<input type="checkbox"/>		●			
	100ISO	100M	1.0	0.07	0.8	<input type="checkbox"/>	●	●		<input type="checkbox"/>	●		
	125ISO	125M	1.25	0.08	1.1	<input type="checkbox"/>	●	<input type="checkbox"/>		●			
	150ISO	150M	1.5	0.11	1.1	<input type="checkbox"/>	●	●		<input type="checkbox"/>	●		
175ISO	175M	1.75	0.12	1.1	<input type="checkbox"/>	●	<input type="checkbox"/>						
200ISO	200M	2.0	0.14	0.9	<input type="checkbox"/>	●							
16I <sup>R/L</sup> 100ISO	TNN32I <sup>R/L</sup> 100M	1.0	0.07	0.8	60°	<input type="checkbox"/>	●	●		<input type="checkbox"/>	●	<input type="checkbox"/>	
125ISO	125M	1.25	0.08	1.1		<input type="checkbox"/>	●	<input type="checkbox"/>					
150ISO	150M	1.5	0.11	1.1		<input type="checkbox"/>	●	●	<input type="checkbox"/>	●			
175ISO	175M	1.75	0.12	1.1		<input type="checkbox"/>	●	<input type="checkbox"/>					
200ISO	200M	2.0	0.14	1.5		<input type="checkbox"/>	●	●	<input type="checkbox"/>	●			
250ISO	250M	2.5	0.16	1.5		<input type="checkbox"/>	●	<input type="checkbox"/>	●				
300ISO	300M	3.0	0.19	1.6		<input type="checkbox"/>	●		●				
22I <sup>R/L</sup> 300ISO	TNN43I <sup>R/L</sup> 300M	3.0	0.19	1.8		60°	<input type="checkbox"/>		<input type="checkbox"/>				
350ISO	350M	3.5	0.23	2.1	<input type="checkbox"/>		●	<input type="checkbox"/>					
400ISO	400M	4.0	0.26	2.8	<input type="checkbox"/>		●	<input type="checkbox"/>					
450ISO	450M	4.5	0.30	2.8	<input type="checkbox"/>		●	<input type="checkbox"/>					
500ISO	500M	5.0	0.34	2.8	<input type="checkbox"/>		●	<input type="checkbox"/>					
1-Thread, With Chipbreaker		-	16I <sup>R/L</sup> 100ISO-TS	TNN32I <sup>R/L</sup> 100M-TS	1.0	0.07	0.8	60°					
			150ISO-TS	150M-TS	1.5	0.11	1.1				<input type="checkbox"/>		
			200ISO-TS	200M-TS	2.0	0.14	1.5				<input type="checkbox"/>		

For recommended cutting conditions, see page J29

● Applicable Toolholder

Description	Applicable Toolholder	Ref. Page for Toolholder	Description	Applicable Toolholder	Ref. Page for Toolholder
11IR ...	SINR--11E SINR--11	J17	16IR ...	SINR--16 CINR--16	J17
11IL ...	SINL--11E SINL--11		16IL ...	SINL--16 CINL--16	
		22IR ...	SINR--22 CINR--22		

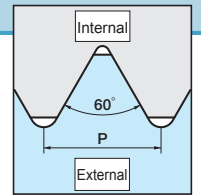
Applicable Thread	M: Metric	R, Rc (PT), (BSPT): Tapered Pipe
	UN: Unified	W: Whitworth
	UNF: Unified Fine Thread	NPT: American National Tapered Pipe
	G (PF): Parallel Pipe	Tr: 30°Trapezoidal

● : Std. Item    □ : Check Availability

PR930 / PR1115 / GW15  
(Threading Insert) is sold in 5 piece boxes.

Inserts are sold  
in 10 piece boxes.

# Threading Inserts



## External Threading Inserts

### Unified (UN)

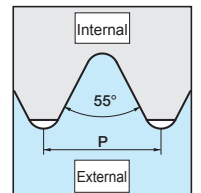
Full Profile 60°

Description	Previous Description	A	T	ød	Classification of usage ● : 1st Choice ○ : 2nd Choice	P							Ref. Page for Depth of Cut & Number of Passes										
						Carbon Steel / Alloy Steel	●	○	M	Stainless Steel	●	○		K	Cast Iron	N	Non-ferrous Metals						
Insert		Description		Previous Description		Applicable Thread		Dimension (mm)		Angle (°)	Cermet		PVD Coated Carbide		Carbide								
Handed Insert shows Right-hand						UN, UNF	re	S	θ	TC60	PR1115		PR930		GW15		KW10						
						Pitch				R	L	R	L	R	L	R	L						
						TPI																	
Full Profile		16E <sup>R/L</sup> 24UN-TF 20UN-TF 18UN-TF 16UN-TF 14UN-TF 13UN-TF 12UN-TF 10UN-TF 08UN-TF	-			24	0.12	0.80	60°			●						J30					
						20	0.15	1.00				●											
						18	0.18	1.00				●											
						16	0.20	1.10				●											
						14	0.23	1.50				●											
						13	0.25	1.50				●											
						12	0.27	1.50				●											
						10	0.34	1.50				●											
						8	0.43	1.75				●											
						Full Profile		16E <sup>R/L</sup> 24UN 20UN 18UN 16UN 14UN 12UN		TNN32E <sup>R/L</sup> 24UN 20UN 18UN 16UN 14UN 12UN			24	0.13	0.8	60°				●			
20	0.16	1.0			●																		
18	0.18	1.0			●																		
16	0.20	1.1			●																		
14	0.23	1.5			●																		
12	0.27	1.5			●																		
22E <sup>R/L</sup> 08UN	TNN43E <sup>R/L</sup> 08UN	8	0.43	2.1																			

### Applicable Toolholder

For recommended cutting conditions, see page J29

Description	Applicable Toolholder	Ref. Page for Toolholder
16ER ...	KTNR...-16 KTNSR...-16	J16
22ER ...	KTNR...-22	



## External Threading Inserts

### Parallel Pipe [G (PF)] Whitworth (W)

Full Profile 55°

Description	Previous Description	A	T	ød	Classification of usage ● : 1st Choice ○ : 2nd Choice	P							Ref. Page for Depth of Cut & Number of Passes						
						Carbon Steel / Alloy Steel	●	○	M	Stainless Steel	●	○		K	Cast Iron	N	Non-ferrous Metals		
Insert		Description		Previous Description		Applicable Thread		Dimension (mm)		Angle (°)	Cermet		PVD Coated Carbide		Carbide				
Handed Insert shows Right-hand						G (PF)	W	re	S	θ	TC60	PR1115		PR930		GW15		KW10	
						Pitch					R	L	R	L	R	L	R	L	
						TPI													
Full Profile		16E <sup>R/L</sup> 19W-TF 16W-TF 14W-TF 11W-TF	-			19	-	0.16	1.0	55°			●						J31
						-	16	0.19	1.1				●						
						14	14	0.23	1.5				●						
						11	11	0.30	1.5				●						
						16E <sup>R/L</sup> 19W	TNN32E <sup>R/L</sup> 19W	19	-		0.16	1.0							
Full Profile		16E <sup>R/L</sup> 19W 14W 11W	TNN32E <sup>R/L</sup> 19W 14W 11W			14	14	0.23	1.5			●							
						11	11	0.30	1.5			●							
						16E <sup>R/L</sup> 19W-TS	TNN32E <sup>R/L</sup> 19W-TS	19	-	0.16	1.0								
Full Profile		16E <sup>R/L</sup> 19W-TS 14W-TS 11W-TS	TNN32E <sup>R/L</sup> 19W-TS 14W-TS 11W-TS			14	14	0.23	1.5										
						11	11	0.30	1.5										

### Applicable Toolholder

For recommended cutting conditions, see page J29

Description	Applicable Toolholder	Ref. Page for Toolholder
16ER ...	KTNR...-16 KTNSR...-16	J16

Applicable Thread	M: Metric	R, Rc (PT), (BSPT): Tapered Pipe
	UN: Unified	W: Whitworth
	UNF: Unified Fine Thread	NPT: American National Tapered Pipe
	G (PF): Parallel Pipe	Tr: 30°Trapezoidal

PR930 / PR1115 / GW15  
(Threading Insert) is sold in 5 piece boxes.

Inserts are sold  
in 10 piece boxes.

● : Std. Item □ : Check Availability



## Internal Threading Inserts

### Unified (UN)

Full Profile 60°

Description		A	T	ød	Classification of usage ● : 1st Choice ○ : 2nd Choice	P	Carbon Steel / Alloy Steel						Ref. Page for Depth of Cut & Number of Passes		
16I <sup>1/2</sup> /L	TNN32I <sup>1/2</sup> /L	9.525	3.68	4.0		M	Stainless Steel		●	○					
22I <sup>1/2</sup> /L	TNN43I <sup>1/2</sup> /L	12.70	4.9	4.85	K	Cast Iron									
						N	Non-ferrous Metals								
Insert	Description	Previous Description	Applicable Thread		Dimension (mm)		Angle (°)	Cermet		PVD Coated Carbide		Carbide		Ref. Page for Depth of Cut & Number of Passes	
			UN, UNF	Pitch	r <sub>e</sub>	S		θ	TC60	PR1115	PR930	GW15	KW10		
Handed Insert shows Right-hand															
Full Profile		16I <sup>1/2</sup> /L 24UN-TF 20UN-TF 18UN-TF 16UN-TF 14UN-TF 13UN-TF 12UN-TF 10UN-TF 08UN-TF	-		24	0.06	0.8	60°							J30
			20	0.08	1.0		●								
			18	0.09	1.0		●								
			16	0.10	1.1		●								
			14	0.12	1.5		●								
			13	0.13	1.5		●								
			12	0.14	1.5		●								
			10	0.17	1.5		●								
			8	0.21	1.8		●								
			22I <sup>1/2</sup> /L 08UN	TNN43I <sup>1/2</sup> /L 08UN	8	0.20	1.8		60°		□	●	□		
Full Profile		16I <sup>1/2</sup> /L 24UN 20UN 18UN 16UN 14UN 12UN	TNN32I <sup>1/2</sup> /L 24UN	24	0.05	0.8	60°	□	●	□					
			TNN32I <sup>1/2</sup> /L 20UN	20	0.07	1.0		□	●	□					
			TNN32I <sup>1/2</sup> /L 18UN	18	0.09	1.0		□	●	□					
			TNN32I <sup>1/2</sup> /L 16UN	16	0.10	1.1		□	●	□					
			TNN32I <sup>1/2</sup> /L 14UN	14	0.12	1.5		□	●	□					
			TNN32I <sup>1/2</sup> /L 12UN	12	0.14	1.5		□	●	□					
			TNN32I <sup>1/2</sup> /L 08UN	8	0.20	1.8		60°	□	●	□				

### Applicable Toolholder

Description	Applicable Toolholder	Ref. Page for Toolholder
16IR ...	SINR...-16 CINR...-16	J17
22IR ...	SINR...-22 CINR...-22	

For recommended cutting conditions, see page J29

## Internal Threading Inserts

### Parallel Pipe [G (PF)] Whitworth (W)

Full Profile 55°

Description		A	T	ød	Classification of usage ● : 1st Choice ○ : 2nd Choice	P	Carbon Steel / Alloy Steel						Ref. Page for Depth of Cut & Number of Passes					
16I <sup>1/2</sup> /L	TNN32I <sup>1/2</sup> /L	9.525	3.68	4.0		M	Stainless Steel		●	○								
						K	Cast Iron											
						N	Non-ferrous Metals											
Insert	Description	Previous Description	Applicable Thread		Dimension (mm)		Angle (°)	Cermet		PVD Coated Carbide		Carbide		Ref. Page for Depth of Cut & Number of Passes				
			G (PF)	W	r <sub>e</sub>	S		θ	TC60	PR1115	PR930	GW15	KW10					
Handed Insert shows Right-hand																		
Full Profile		16I <sup>1/2</sup> /L 19W-TF 16W-TF 14W-TF 11W-TF	-		19	-	0.16	1.0	55°						J31			
			-	16	0.19	1.1		●										
			14	14	0.23	1.5		●										
			11	11	0.30	1.5		●										
			16I <sup>1/2</sup> /L 14W	TNN32I <sup>1/2</sup> /L 14W	14	14	0.23	1.5		□	●	□						
			11W	11W	11	11	0.30	1.5		□	●	□						
			16I <sup>1/2</sup> /L 14W-TS	TNN32I <sup>1/2</sup> /L 14W-TS	14	14	0.23	1.5					□					
			11W-TS	11W-TS	11	11	0.30	1.5					□					

### Applicable Toolholder

Description	Applicable Toolholder	Ref. Page for Toolholder
16IR ...	SINR...-16 CINR...-16	J17
16IL ...	SINL...-16 CINL...-16	

For recommended cutting conditions, see page J29  
 ● No wiper effect is expected when threading the internal whitworth screw using 16IR ○○ W-○○ insert.

Applicable Thread	M: Metric	R, Rc (PT), (BSPT): Tapered Pipe
	UN: Unified	W: Whitworth
	UNF: Unified Fine Thread	NPT: American National Tapered Pipe
	G (PF): Parallel Pipe	Tr: 30°Trapezoidal

● : Std. Item □ : Check Availability

PR930 / PR1115 / GW15  
(Threading Insert) is sold in 5 piece boxes.

Inserts are sold  
in 10 piece boxes.

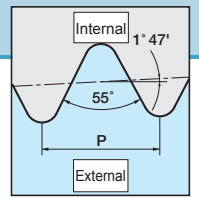
J



Threading

J9

# Threading Inserts



## External Threading Inserts

### Tapered Pipe [R (PT) (BSPT)]

Full Profile 55° (mm)

Description	Previous Description	A	T	ød
16E <sup>R/L</sup>	TNN32E <sup>R/L</sup>	9.525	3.68	4.0

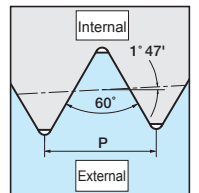
Classification of usage ● : 1st Choice ○ : 2nd Choice	P	Carbon Steel / Alloy Steel		●	○			
	M	Stainless Steel			●	○		
K	Cast Iron						●	
N	Non-ferrous Metals							●

Insert	Description	Previous Description	Applicable Thread		Dimension (mm)		Angle (°)	Cermet		PVD Coated Carbide			Carbide			Ref. Page for Depth of Cut & Number of Passes		
			R (PT) (BSPT)	Pitch	r <sub>e</sub>	S		TC60	PR1115	PR930	GW15	KW10						
			TPI	θ	R	L	R	L	R	L	R	L	R	L				
Full Profile Handed Insert shows Right-hand	16E <sup>R/L</sup> 28BSPT-TF 19BSPT-TF 14BSPT-TF 11BSPT-TF	-	28	0.10	0.8	55°									J31			
			19	0.16	1.0													
			14	0.22	1.6													
			11	0.29	1.6													
	16E <sup>R/L</sup> 28BSPT 19BSPT 14BSPT 11BSPT	TNN32E <sup>R/L</sup> 28PT 19PT 14PT 11PT	28	0.10	0.8												J31	
			19	0.16	1.0													
			14	0.22	1.6													
			11	0.29	1.6													
	16E <sup>R/L</sup> 19BSPT-TS 14BSPT-TS 11BSPT-TS	TNN32E <sup>R/L</sup> 19PT-TS 14PT-TS 11PT-TS	19	0.16	1.0												J35	
			14	0.22	1.6													
			11	0.29	1.6													

### Applicable Toolholder

For recommended cutting conditions, see page J29

Description	Applicable Toolholder	Ref. Page for Toolholder
16ER ...	KTNR...16 KTNSR...16	J16



## External Threading Inserts

### American National Tapered Pipe (NPT60°)

Full Profile 60° (mm)

Description	Previous Description	A	T	ød
16E <sup>R/L</sup>	TNN32E <sup>R/L</sup>	9.525	3.68	4.0

Classification of usage ● : 1st Choice ○ : 2nd Choice	P	Carbon Steel / Alloy Steel		●	○			
	M	Stainless Steel			●	○		
K	Cast Iron						●	
N	Non-ferrous Metals							●

Insert	Description	Previous Description	Applicable Thread		Dimension (mm)		Angle (°)	Cermet		PVD Coated Carbide			Carbide			Ref. Page for Depth of Cut & Number of Passes
			NPT	Pitch	r <sub>e</sub>	S		TC60	PR1115	PR930	GW15	KW10				
			TPI	θ	R	L	R	L	R	L	R	L	R	L		
Full Profile Handed Insert shows Right-hand	16E <sup>R/L</sup> 18NPT 14NPT 11.5NPT	TNN32E <sup>R/L</sup> 18NPT 14NPT 11.5NPT	18	0.04	0.9	60°									J31	
			14	0.05	1.5											
			11.5	0.06	1.5											

### Applicable Toolholder

For recommended cutting conditions, see page J29

Description	Applicable Toolholder	Ref. Page for Toolholder
16ER ...	KTNR...16 KTNSR...16	J16

Applicable Thread	M: Metric	R, Rc (PT), (BSPT): Tapered Pipe
	UN: Unified	W: Whitworth
	UNF: Unified Fine Thread	NPT: American National Tapered Pipe
	G (PF): Parallel Pipe	Tr: 30°Trapezoidal

# Internal Threading Inserts

## Tapered Pipe [Rc (PT) (BSPT)]

Full Profile 55° (mm)					Classification of usage										Ref. Page for Depth of Cut & Number of Passes				
Description	Previous Description	A	T	ød	P	M	K	N	Cement			PVD Coated Carbide				Carbide			
					● : 1st Choice	○ : 2nd Choice													
					● : 1st Choice	○ : 2nd Choice													
Insert	Description	Previous Description	Applicable Thread		Dimension (mm)		Angle (°)	Cement			PVD Coated Carbide			Carbide					
			RC (PT) (BSPT)	Pitch	TC60	PR1115	PR930	GW15	KW10										
			TC60	PR1115	PR930	GW15	KW10												
Handed Insert shows Right-hand					rc	S	θ	R	L	R	L	R	L	R	L	R	L		
Full Profile		111°/L 28BSPT-TF 19BSPT-TF 14BSPT-TF	-	28	0.10	0.6	55°			●	○								
				19	0.16	0.78				●	○								
				14	0.22	0.97				●	○								
		161°/L 14BSPT-TF 11BSPT-TF	-	14	0.22	0.97	55°			●	○								
				11	0.29	1.5				●	○								
		111°/L 28BSPT 19BSPT 14BSPT	TNN221°/L 28PT	28	0.10	0.6	55°	□		●	○	□	●		□	●		□	
				19	0.16	0.78		□		●	○	□	●		□	●		□	
				14	0.22	0.97		□		●	○	□	●		□	●		□	
			161°/L 14BSPT 11BSPT	TNN321°/L 14PT	14	0.22	0.97	55°	□		●	○	□	●		□	●		□
					11	0.29	1.5		□		●	○	□	●		□	●		□
1-Thread, With Chipbreaker		111°/L 19BSPT-TS 14BSPT-TS	TNN221°/L 19PT-TS	19	0.16	0.78	55°			□									
				14	0.22	0.97				□									
				161°/L 14BSPT-TS 11BSPT-TS	TNN321°/L 14PT-TS	14		0.22	0.97			□							
				11	0.29	1.5			□										

### Applicable Toolholder

Description	Applicable Toolholder	Ref. Page for Toolholder
11IR ..	SINR...11E SINR...11	J17
11IL ..	SINL...11E SINL...11	
16IR ..	SINR...16 CINR...16	

For recommended cutting conditions, see page J29

# Internal Threading Inserts

## American National Tapered Pipe (NPT60°)

Full Profile 60° (mm)					Classification of usage										Ref. Page for Depth of Cut & Number of Passes			
Description	Previous Description	A	T	ød	P	M	K	N	Cement			PVD Coated Carbide				Carbide		
					● : 1st Choice	○ : 2nd Choice												
					● : 1st Choice	○ : 2nd Choice												
Insert	Description	Previous Description	Applicable Thread		Dimension (mm)		Angle (°)	Cement			PVD Coated Carbide			Carbide				
			NPT	Pitch	TC60	PR1115	PR930	GW15	KW10									
			TC60	PR1115	PR930	GW15	KW10											
Handed Insert shows Right-hand					rc	S	θ	R	L	R	L	R	L	R	L	R	L	
Full Profile		161°/L 18NPT 14NPT 11.5NPT	TNN321°/L 18NPT	18	0.04	0.9	60°	□		●	○	□	●		□	●		□
				14	0.05	1.5		□		●	○	□	●		□	●		□
				11.5	0.06	1.5		□		●	○	□	●		□	●		□

### Applicable Toolholder

Description	Applicable Toolholder	Ref. Page for Toolholder
16IR ...	SINR...16 CINR...16	J17

For recommended cutting conditions, see page J29

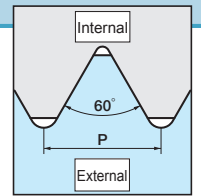
Applicable Thread	M: Metric	R, Rc (PT), (BSPT): Tapered Pipe
	UN: Unified	W: Whitworth
	UNF: Unified Fine Thread	NPT: American National Tapered Pipe
	G (PF): Parallel Pipe	Tr: 30°Trapezoidal

● : Std. Item □ : Check Availability

PR930 / PR1115 / GW15  
(Threading Insert) is sold in 5 piece boxes.

Inserts are sold in 10 piece boxes.

# Threading Inserts



## External Threading Inserts

### 60° Type [Partial Profile / M, UN]

Partial Profile 60° (mm)

Description	Previous Description	A	T	ød	Classification of usage ● : 1st Choice ○ : 2nd Choice	P		M		K		N		Ref. Page for Depth of Cut & Number of Passes
						Carbon Steel / Alloy Steel	Stainless Steel	Cast Iron	Non-ferrous Metals					
16E <sup>R/L</sup>	TNN32E <sup>R/L</sup>	9.525	3.68	4.0		●	○		●	○		●	○	
22E <sup>R/L</sup>	TNN43E <sup>R/L</sup>	12.70	4.9	4.85								●	○	

Insert	Description	Previous Description	Applicable Thread		Dimension (mm)		Angle (°)	Cermet		PVD Coated Carbide		Carbide		Ref. Page for Depth of Cut & Number of Passes
			M	UN UNF	rε	S		TC60	PR1115	PR930	GW15	KW10		
			Pitch		R	L	R	L	R	L	R	L		
Handed Insert shows Right-hand			mm	TPI										
Partial Profile	16E <sup>R/L</sup> A60-TF G60-TF AG60-TF	-	0.5~1.5	48~16	0.06	1.00	60°		●					J31 J32
			1.75~3	14~8	0.22	1.60		●						
			0.5~3	48~8	0.06	1.60		●						
	16E <sup>R/L</sup> A60 G60 AG60 22E <sup>R/L</sup> N60	-	0.5~1.5	48~16	0.06	1.00	60°				●			J31 J32
			1.75~3	14~8	0.22	1.60					●			
			0.5~3	48~8	0.06	1.60					●			
			3.5~5	7~5	0.48	2.50			●		●			
	16E <sup>R/L</sup> 6001 6002	TNN32E <sup>R/L</sup> 6001 6002	1.0~2.5	24~11	0.10	1.50	60°	□		□			●	J35
			1.5~2.5	16~11	0.20	1.50		□		□		●		
1-Thread, With Chipbreaker 16E <sup>R/L</sup> 6001-TS 6002-TS	TNN32E <sup>R/L</sup> 6001-TS 6002-TS	1.0~2.5	24~11	0.09	1.50	60°				□			J35	
		1.5~2.5	16~11	0.19	1.50					□				

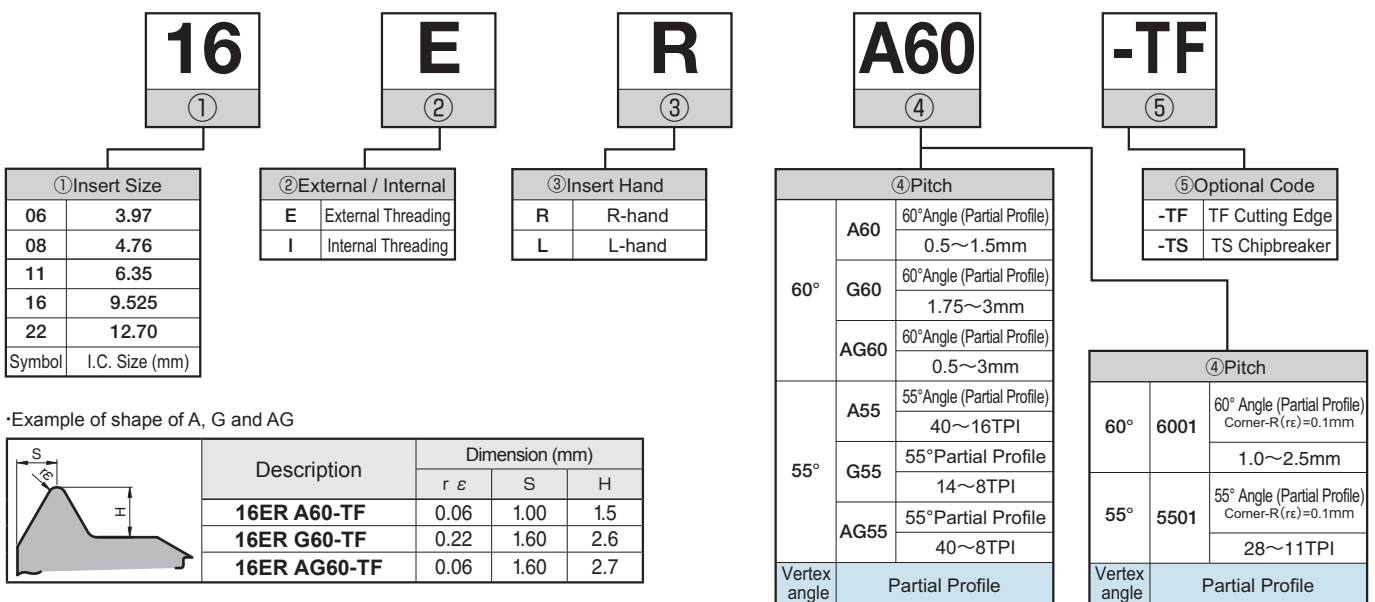
### Applicable Toolholder

Description	Applicable Toolholder	Ref. Page for Toolholder
16ER ...	KTNR...-16 KTNSR...-16	J16
22ER ...	KTNR...-22	

For recommended cutting conditions, see page J29

Applicable Thread	M: Metric	R, Rc (PT), (BSPT): Tapered Pipe
	UN: Unified	W: Whitworth
	UNF: Unified Fine Thread	NPT: American National Tapered Pipe
	G (PF): Parallel Pipe	Tr: 30° Trapezoidal

## Threading Inserts Identification System (Partial Profile) J12~J15



Example of shape of A, G and AG

Description	Dimension (mm)		
	rε	S	H
16ER A60-TF	0.06	1.00	1.5
16ER G60-TF	0.22	1.60	2.6
16ER AG60-TF	0.06	1.60	2.7

### Corner-R (rε) Selection for Partial Profiling Insert

	External Threading	Internal Threading
Metric Unified	$r\epsilon \leq 0.1443P$	$r\epsilon \leq 0.0720P$
Parallel Pipe (Whitworth) Tapered Pipe	(For Both External and Internal Thread) $r\epsilon \leq 0.1373P$	

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

- Metric, Unified Thread  
Corner-R (rε) at Internal Threading is almost half of that of External.
- Parallel Pipe, Tapered Pipe, Whitworth Tread  
Same Corner-R (rε) for both External and Internal Threading

Note) Pitch and threads per inch of an insert without wiper depend on the size of insert.

PR930 / PR1115 / GW15  
(Threading Insert) is sold in 5 piece boxes.


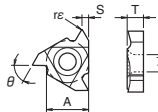

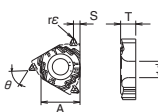
Inserts are sold  
in 10 piece boxes.

● : Std. Item □ : Check Availability

# Internal Threading Inserts

## 60° Type [Partial Profile / M, UN]

Partial Profile 60° (mm)

Description	Previous Description	A	T	ød	Classification of usage												Ref. Page for Depth of Cut & Number of Passes		
					P	Carbon Steel / Alloy Steel		●	○										
					M	Stainless Steel		●	○										
					K	Cast Iron						●	○						
					N	Non-ferrous Metals						●	○						
Insert	Description	Previous Description	Applicable Thread		Dimension (mm)		Angle (°)	Cermet		PVD Coated Carbide			Carbide						
			M	UN UNF	r <sub>e</sub>	S		θ	TC60		PR1115		PR930		GW15		KW10		
			Pitch						R	L	R	L	R	L	R		L	R	L
Handed Insert shows Right-hand		mm		TPI															
 Partial Profile	 1-Thread, With Chipbreaker	-	111 <sup>F</sup> /L A60	0.5~1.5	48~16	0.02	1.00	60°		●			●						J32 J33
			161 <sup>F</sup> /L A60	0.5~1.5	48~16	0.02	1.00			●			●						
			G60	1.75~3	14~8	0.11	1.70			●			●						
			AG60	0.5~3	48~8	0.02	1.70			●			●						
			221 <sup>F</sup> /L N60	3.5~5	7~5	0.22	2.50			●			●						
	061 <sup>F</sup> /L 60005	TNN061 <sup>F</sup> /L 60005	0.75~1.25	28~20	0.05	0.60	60°		●		□								
	081 <sup>F</sup> /L 60007	TNN081 <sup>F</sup> /L 60007	1.0~1.75	20~16	0.07	0.80			●		□								
	111 <sup>F</sup> /L 60005	TNN221 <sup>F</sup> /L 60005	0.75~1.5	32~16	0.05	1.00		□			□	□			●				
	161 <sup>F</sup> /L 6001	TNN321 <sup>F</sup> /L 6001	1.5~2.5	16~10	0.10	1.50		□			□				●				
	60015	60015	2.5	11~10	0.15	1.50		□			□				●				
 1-Thread, With Chipbreaker		-	161 <sup>F</sup> /L 6001-TS	TNN321 <sup>F</sup> /L 6001-TS	1.5~2.5	16~11	0.09	1.50	60°			□						J35	
			60015-TS	60015-TS	2.5	11~10	0.14	1.50				□							

### Applicable Toolholder

For recommended cutting conditions, see page J29

Description	Applicable Toolholder	Ref. Page for Toolholder
06IR ..	SINR--06E	J17
08IR ..	SINR--08E	
11IR ..	SINR--11E SINR--11	
11IL ..	SINL--11E SINL--11	
16IR ..	SINR--16 CINR--16	
22IR ..	SINR--22 CINR--22	

Applicable Thread	M: Metric	R, Rc (PT), (BSPT): Tapered Pipe
	UN: Unified	W: Whitworth
	UNF: Unified Fine Thread	NPT: American National Tapered Pipe
	G (PF): Parallel Pipe	Tr: 30°Trapezoidal

● : Std. Item □ : Check Availability

PR930 / PR1115 / GW15  
(Threading Insert) is sold in 5 piece boxes.

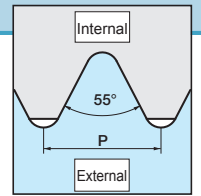
Inserts are sold  
in 10 piece boxes.

J



Threading

# Threading Inserts



## External Threading Inserts

### 55° Type [Partial Profile / G (PF) R (PT, BSPT) (W)]

Partial Profile 55° (mm)					Classification of usage ● : 1st Choice ○ : 2nd Choice	P	Carbon Steel / Alloy Steel						Ref. Page for Depth of Cut & Number of Passes			
Description	Previous Description	A	T	ød		M	Stainless Steel		●							
16E <sup>R/L</sup>	TNN32E <sup>R/L</sup>	9.525	3.68	4.0												
22E <sup>R/L</sup>	TNN43E <sup>R/L</sup>	12.70	4.9	4.85												
Insert <small>Handed Insert shows Right-hand</small>	Description	Previous Description	Applicable Thread		Dimension (mm)		Angle (°)	Cermet		PVD Coated Carbide		Carbide		Ref. Page for Depth of Cut & Number of Passes		
			G(PF) R(PT)	W	re	S		TC60	PR1115	PR930	GW15	KW10				
				Pitch				R	L	R	L	R	L			
				TPI												
Partial Profile		16E <sup>R/L</sup> A55-TF	- 5501 5502	28, 19	48~16	0.06	1.00	55°							J33 J34	
				G55-TF	14, 11	14~8	0.22		1.60		●					
				AG55-TF	28~11	48~8	0.06		1.60		●					
		16E <sup>R/L</sup> A55	-	28, 19	48~16	0.06	1.00	55°					●			
				G55	14, 11	14~8	0.22		1.60					●		
				AG55	28~11	48~8	0.06		1.60					●		
	22E <sup>R/L</sup> N55	-	-	7~5	0.47	2.50			●			●				
	16E <sup>R/L</sup> 5501	TNN32E <sup>R/L</sup> 5501	28~11	24~10	0.10	1.50							□			
	5502	5502	14, 11	16~9	0.20	1.50							□			

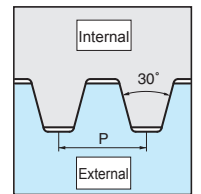
### Applicable Toolholder

For recommended cutting conditions, see page [J29](#)

Description	Applicable Toolholder	Ref. Page for Toolholder
16ER ...	KTNR...-16 KTNSR...-16	J16
22ER ...	KTNR...-22	

## External Threading Inserts

### 30° Trapezoidal (Tr)



Partial Profile 30° (mm)					Classification of usage ● : 1st Choice ○ : 2nd Choice	P	Carbon Steel / Alloy Steel						Ref. Page for Depth of Cut & Number of Passes		
Description	Previous Description	A	T	ød		M	Stainless Steel		●	○					
16E <sup>R/L</sup>	TNN32E <sup>R/L</sup>	9.525	3.68	4.0											
22E <sup>R/L</sup>	TNN43E <sup>R/L</sup>	12.70	4.9	4.85											
Insert <small>Handed Insert shows Right-hand</small>	Description	Previous Description	Applicable Thread		Dimension (mm)		Angle (°)	Cermet		PVD Coated Carbide		Carbide		Ref. Page for Depth of Cut & Number of Passes	
			Tr	Pitch	re	S		TC60	PR1115	PR930	GW15	KW10			
				mm				R	L	R	L	R	L		
Partial Profile		16E <sup>R/L</sup> 200TR	TNN32E <sup>R/L</sup> 200TR	2.0	0.20	1.6	30°	□		●		□			J34
				3.0	0.20	1.6		□		●		□			
		22E <sup>R/L</sup> 400TR	TNN43E <sup>R/L</sup> 400TR	4.0	0.20	2.5	30°	□		●		□			
				5.0	0.20	2.5		□		●		□			

### Applicable Toolholder

For recommended cutting conditions, see page [J29](#)

Description	Applicable Toolholder	Ref. Page for Toolholder
16ER ...	KTNR...-16 KTNSR...-16	J16
22ER ...	KTNR...-22	

Applicable Thread	M: Metric	R, Rc (PT), (BSPT): Tapered Pipe
	UN: Unified	W: Whitworth
	UNF: Unified Fine Thread	NPT: American National Tapered Pipe
	G (PF): Parallel Pipe	Tr: 30° Trapezoidal

PR930 / PR1115 / GW15 (Threading Insert) is sold in 5 piece boxes.

Inserts are sold in 10 piece boxes.

● : Std. Item □ : Check Availability

## Internal Threading Inserts

### 55° Type [Partial Profile / G(PF) Rc(PT, BSPT) (W)]

Partial Profile 55° (mm)

Description	Previous Description	A	T	ød	Classification of usage ● : 1st Choice ○ : 2nd Choice	P Carbon Steel / Alloy Steel		M Stainless Steel		K Cast Iron		N Non-ferrous Metals		Ref. Page for Depth of Cut & Number of Passes				
						●	○	●	○	●	○	●	○					
<b>06I</b> °/L	<b>TNN06I</b> °/L	3.97	1.91	2.3			●	○										
<b>08I</b> °/L	<b>TNN08I</b> °/L	4.76	2.38	2.3			●	○										
<b>11I</b> °/L	<b>TNN22I</b> °/L	6.35	3.18	3.0														
<b>16I</b> °/L	<b>TNN32I</b> °/L	9.525	3.68	4.0						●	○							
<b>22I</b> °/L	<b>TNN43I</b> °/L	12.70	4.9	4.85								●	○					
Insert  Handed Insert shows Right-hand	Description	Previous Description	Applicable Thread		Dimension (mm)		Angle (°)	Cermet		PVD Coated Carbide				Carbide		Ref. Page for Depth of Cut & Number of Passes		
			G(PF) Rc(PT)	W	r <sub>e</sub>	S		TC60	PR1115		PR930		GW15		KW10			
									Pitch	R	L	R	L	R	L		R	L
										TPI								

#### Applicable Toolholder

For recommended cutting conditions, see page J29

Description	Applicable Toolholder	Ref. Page for Toolholder
<b>06IR</b> ...	<b>SINR</b> ...-06E	<b>J17</b>
<b>08IR</b> ...	<b>SINR</b> ...-08E	
<b>11IR</b> ...	<b>SINR</b> ...-11E <b>SINR</b> ...-11	

Description	Applicable Toolholder	Ref. Page for Toolholder
<b>16IR</b> ...	<b>SINR</b> ...-16 <b>CINR</b> ...-16	<b>J17</b>
<b>22IR</b> ...	<b>SINR</b> ...-22 <b>CINR</b> ...-22	

## Internal Threading Inserts

### 30° Trapezoidal (Tr)

Partial Profile 30° (mm)

Description	Previous Description	A	T	ød	Classification of usage ● : 1st Choice ○ : 2nd Choice	P Carbon Steel / Alloy Steel		M Stainless Steel		K Cast Iron		N Non-ferrous Metals		Ref. Page for Depth of Cut & Number of Passes				
						●	○	●	○	●	○	●	○					
<b>16I</b> °/L	<b>TNN32I</b> °/L	9.525	3.68	4.0			●	○										
<b>22I</b> °/L	<b>TNN43E</b> °/L	12.70	4.9	4.85														
Insert  Handed Insert shows Right-hand	Description	Previous Description	Applicable Thread		Dimension (mm)		Angle (°)	Cermet		PVD Coated Carbide				Carbide		Ref. Page for Depth of Cut & Number of Passes		
			Tr	Pitch	r <sub>e</sub>	S		TC60	PR1115		PR930		GW15		KW10			
									mm	R	L	R	L	R	L		R	L

#### Applicable Toolholder

For recommended cutting conditions, see page J29

Description	Applicable Toolholder	Ref. Page for Toolholder
<b>16IR</b> ...	<b>SINR</b> ...-16 <b>CINR</b> ...-16	<b>J17</b>
<b>22IR</b> ...	<b>SINR</b> ...-22 <b>CINR</b> ...-22	

Applicable Thread	M: Metric	R, Rc (PT), (BSPT): Tapered Pipe
	UN: Unified	W: Whitworth
	UNF: Unified Fine Thread	NPT: American National Tapered Pipe
	G (PF): Parallel Pipe	Tr: 30° Trapezoidal

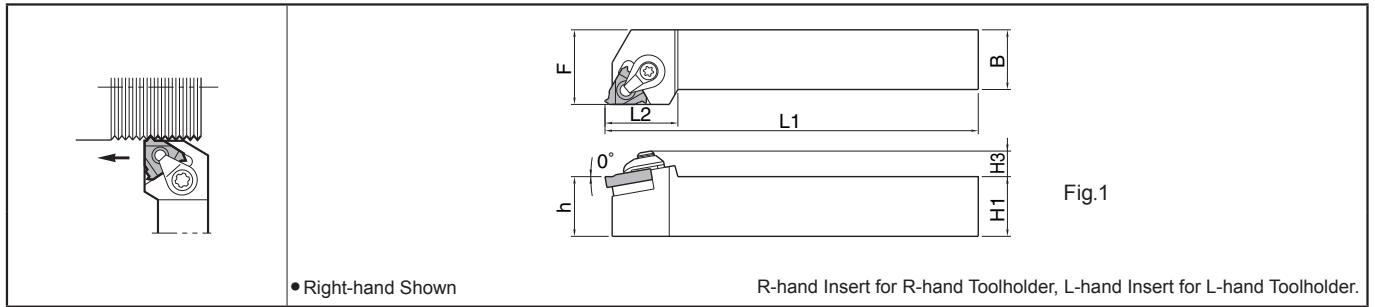
● : Std. Item □ : Check Availability

PR930 / PR1115 / GW15  
(Threading Insert) is sold in 5 piece boxes.

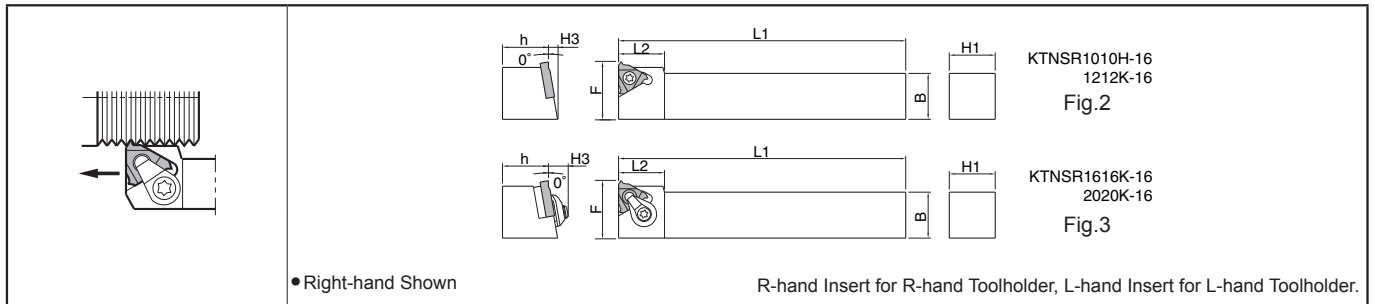
Inserts are sold  
in 10 piece boxes.

# External Threading Toolholders

## KTN



## KTNS (For Gang Type NC Lathe)



### Toolholder Dimensions

Description	Std.		Dimension (mm)						Drawing	Spare Parts					Applicable Inserts						
	R	L	H1=h	H3	B	L1	L2	F		Clamp Set	Clamp Screw	Wrench	Shim	Shim Screw							
										5S 6S		FT LW	TN TNW								
KTN <sup>9/L</sup>	1616H-16	●	●	16	8.5	16	100	25	20	Fig.1	CPS-5S	-	FT-15	TN-32 (TNW-32)	SP3X8	16E <sup>9/L</sup>					
	2020H-16*	●		20		20	25		25												
	2020K-16	●	●	20		20	125	25													
	2525M-16	●	●	25	25	150	30														
	2525M-22	●		25	10	25	150	29	32		CPS-6S	-	LW-3	TN-43	SP3X8		22E <sup>9/L</sup>				
3225P-22	●		32	10	25	170	34	32													
KTNS <sup>9/L</sup>	1010H-16	●		10	8.5	10	100	16	16	Fig.2	-	SB-3.5TR	-	-	-	16E <sup>9/L</sup>					
	1212K-16	●		12		12	18	18													
	1616K-16	●		16		16	125	22	Fig.3								CPS-5S	-	FT-15	TN-32 (TNW-32)	SP3X8
	2020K-16	●		20		20	27.4														

\* mark indicates short shank type.

• Shim (TNW-32), when using 2-Threaded Insert such as 16ER100ISO-M02, TNN32ER100M02. Purchase separately if required.

### Reference page for applicable inserts

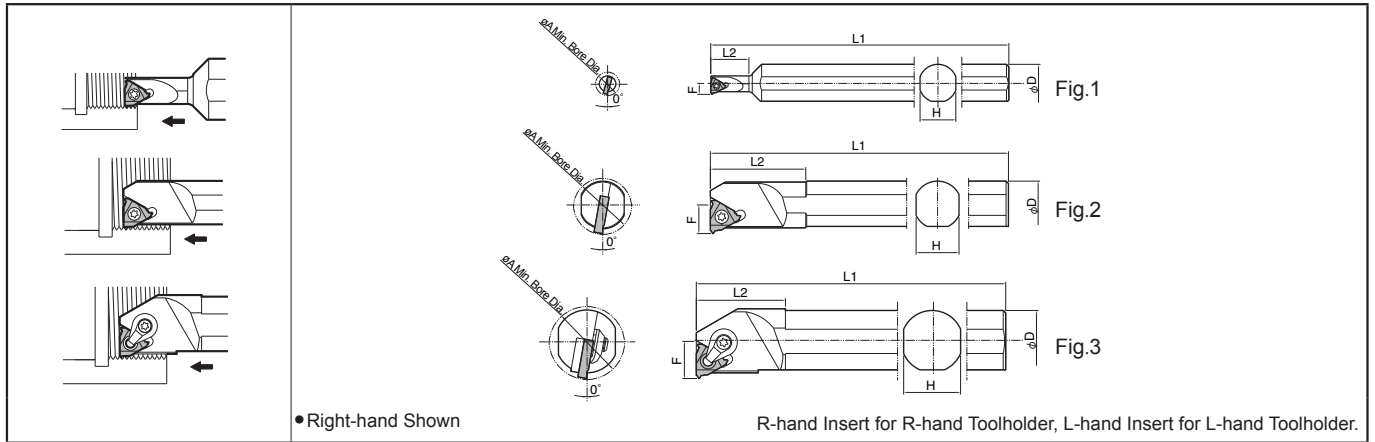
Type of Thread	Full Profile	Partial Profile	Type of Thread	Full Profile	Partial Profile
M: Metric	J6	J12	R(PT) (BSPT) Tapered Pipe	J10	J14
UN: Unified UNF: Unified Fine Thread	J8	J12	W: Whitworth	J8	J14
			NPT American National Tapered Pipe	J10	-
G (PF): Parallel Pipe	J8	J14	Tr: 30°Trapezoidal	-	J14

● : Std. Item □ : Check Availability



# Internal Threading Toolholders

## SIN / CIN



### Toolholder Dimensions

Description	Std.		Min. Bore Dia.	Dimension (mm)					Drawing	Spare Parts					Applicable Inserts	
	R	L		øA	øD	H	L1	L2		F	Clamp Screw	Clamp Set	Wrench	Shim		Shim Screw
SIN <sup>1/2</sup>	0612S-06E	●		6.4	12	11	100	10	3.8	Fig. 1	SB-2040TR	-	FT-6	-	-	06 I <sup>1/2</sup> /L...
	0816S-08E	●		7.8	16	15	125	16	4.0		SB-2050TR	-	FT-6	-	-	08 I <sup>1/2</sup> /L...
	1216S-11E	●	●	12	16	14	150	25	6.3		SB-2TR	-	FT-8	-	-	11 I <sup>1/2</sup> /L...
	1516S-11	●	●	15						30	7.5					
	2016S-16	●	●	20	16	14	150	37	10.0	Fig. 2	SB-3.5TR	-	FT-15	-	-	16 I <sup>1/2</sup> /L...
	2420S-16	●	●	24	20	18	180	40	12.0		SB-4085TR	-	FT-15	-	-	22 I <sup>1/2</sup> /L...
	2420S-22	●		24	20	18	180	40	13.5							
CIN <sup>1/2</sup>	3025S-16	●	●	30	25	23	200	36	15.0	Fig. 3	-	CPS-5S	FT-15	TN-32	SP3X8	16 I <sup>1/2</sup> /L...
	3732S-16	●		37	32	30	250	45	18.5		-	CPS-6S	LW-3	TN-43	SP3X8	22 I <sup>1/2</sup> /L...
	3025S-22	●		30	25	23	200	40	16.5							
	3732S-22	●		37	32	30	250	45	20							

### Reference page for applicable inserts

Type of Thread	Full Profile	Partial Profile	Type of Thread	Full Profile	Partial Profile
M: Metric	<b>J7</b>	<b>J13</b>	Rc(PT) (BSPT) Tapered Pipe	<b>J11</b>	<b>J15</b>
UN: Unified UNF: Unified Fine Thread	<b>J9</b>	<b>J13</b>	W: Whitworth	<b>J9</b>	<b>J15</b>
			NPT American National Tapered Pipe	<b>J11</b>	-
G (PF): Parallel Pipe	<b>J9</b>	<b>J15</b>	Tr: 30°Trapezoidal	-	<b>J15</b>

## Guide for Internal Threading

For the internal threading, pay extra attention to “Stabilizing Bore Dia.” and “chip evacuation”.

### 1 “Stabilizing Bore Dia.”

Because small pitch internal threading has small corner-R( $r_e$ ), there is variation in the Bore Dia. which may greatly influence the tool life of an insert. In order to eliminate the variation in the Bore Dia., “0” cutting (zero cutting) should be performed as the zero pass, before the first pass in threading. The Bore Dia. is cut with the specified dimension, and the first pass of threading becomes stable.

### 2 “Chip evacuation”

If cutting process is continued when chips are tangled with a holder and other parts of the machine, it may cause damages to the insert. Therefore, please ensure that there are no tangled chips in the machine by the following method.

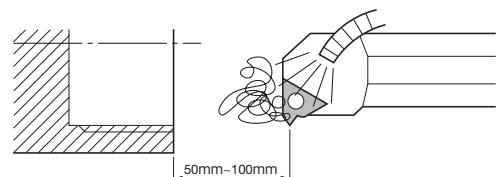
<When processing the first work piece>

Set the program with the “single block”.

Keep the threading starting point 50mm~100mm away from the side of workpiece, and confirm that coolant is flushing down the chips for each pass.

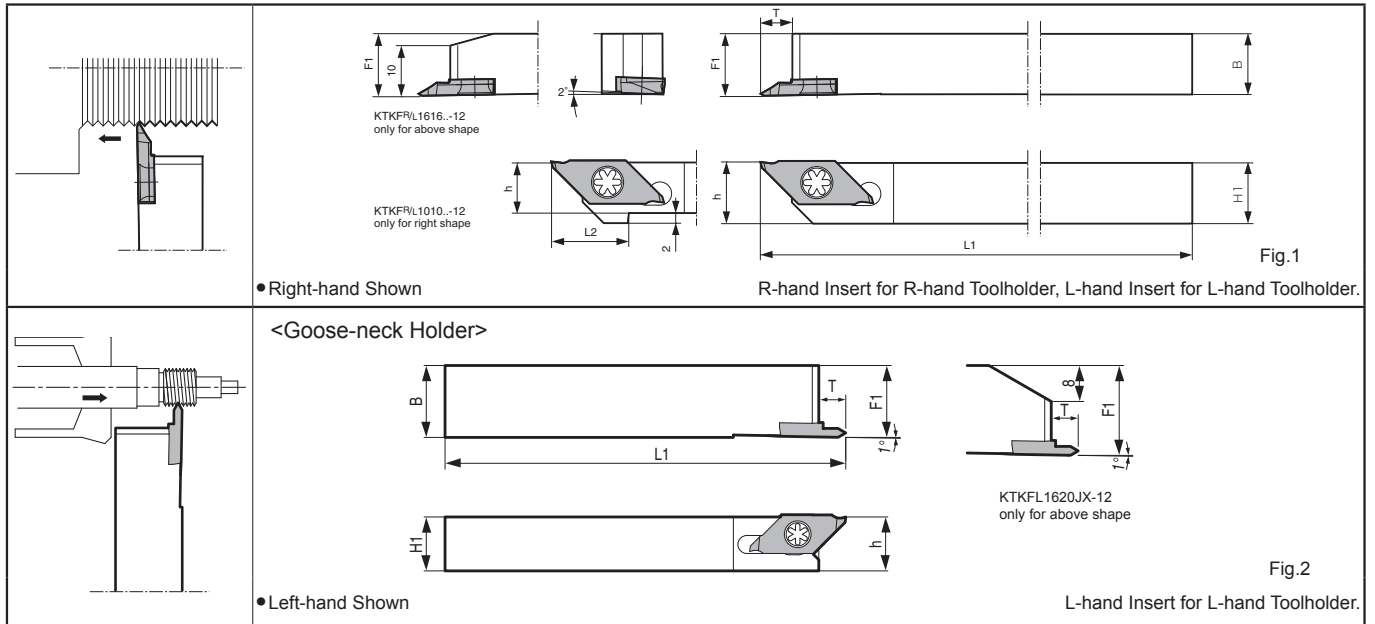
<When processing the second workpiece and later>

Ensure that chips are not tangled; then start the continuous run.



● : Std. Item □ : Check Availability

## KTKF / KTKF Goose-neck Holder



### Toolholder Dimensions

Description	Std.		Dimension (mm)						Drawing	Spare Parts		Applicable Inserts
	R	L	H1=h	B	L1	L2	F1	T		Clamp Screw	Wrench	
	●	●	10	10	120	15	10	6		Fig.1	SB-4590TRWN	
●	●	12	12	-		12						
●	●	16	16	-		16						
KTKF <sup>R/L</sup> 1212F-12	●	●	12	12	85	-	12	6	Fig.1	SB-4590TRWN	LTW-10S	TKFT12 <sup>R/L</sup> ...
KTKFL 1216JX-12		●	12	16	120	-	16	6	Fig.2	SB-4590TRWN	LTW-10S	TKFT12L..
KTKFL 1620JX-12		●	16	20			20					

\*Dimension T: shows the distance from the Toolholder to the cutting edge.

### Applicable Inserts

Insert	Description	Applicable Thread	Pitch		Dimension (mm)						Angle (°)	Insert Grade		Applicable Toolholder	
			mm	TPI	T	W	H	ød	R(rε)	S1		S2	PVD Coated Carbide		Carbide
															PR1025
Partial Profile 	• Right-hand Shown TKFT 12RA6000 12RB6000 12RA6000S 12RB6000S 12RN6001 12RA5500S 12RB5500S	M UN	0.2~0.6	64~48 TPI	3.0	2.5	8.7	5.2	Max 0.05 Flat	0.4	2.1	60°	●	●	KTKFR ...12
			0.5~1.25	48~24 TPI					0.05	0.8	1.7		●	●	
			1~1.5	24~18 TPI					0.1	1.25	1.25		●	●	
			-	40~16 TPI					0.05	0.8	1.7		●	●	
			-	40~16 TPI					0.05	1.7	0.8		●	●	
			-	40~16 TPI					0.05	1.7	0.8		●	●	
	• Left-hand Shown TKFT 12LA6000 12LB6000 12LA6000S 12LB6000S 12LN6001 12LA5500S 12LB5500S	M UN	0.2~0.6	64~48 TPI	3.0	2.5	8.7	5.2	Max 0.05 Flat	2.1	0.4	60°	●	●	KTKFL ...12
			0.5~1.25	48~24 TPI					0.05	0.4	2.1		●	●	
			1~1.5	24~18 TPI					0.05	1.7	0.8		●	●	
			-	40~16 TPI					0.05	0.8	1.7		●	●	
			-	40~16 TPI					0.05	1.7	0.8		●	●	
			-	40~16 TPI					0.05	0.8	1.7		●	●	

## Insert Description (See Table-1)

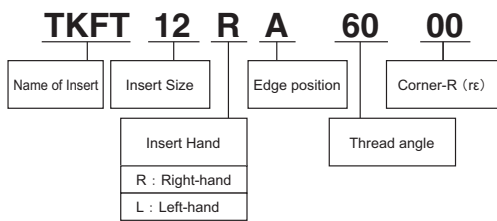
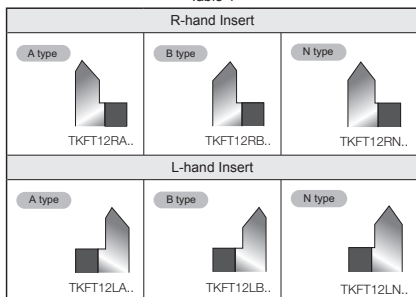


Table-1



## Recommended Cutting Conditions

Workpiece Material	Recommended Insert Grade		
	PVD Coated Carbide		Carbide
	PR1025		KW10
Carbon Steel	Vc = 60~150 m/mim		—
	First ap (Radial)	under 0.2mm	
Alloy Steel	Vc = 60~150 m/mim		—
	First ap (Radial)	under 0.2mm	
Stainless Steel	Vc = 50~80 m/mim		—
	First ap (Radial)	under 0.15mm	
Cast Iron	—		Vc = 100 m/mim
	—		First ap (Radial) under 0.2mm
Non-ferrous Metals	—		Vc = 150~400 m/mim
	—		First ap (Radial) under 0.2mm

- Coolant is recommended.
- In case of threading stainless steel, please set two to three passes more than <ap - passes> listed below.

## Depth of Cut & Number of Passes

### TKFT 60° / 55° Partial Profil

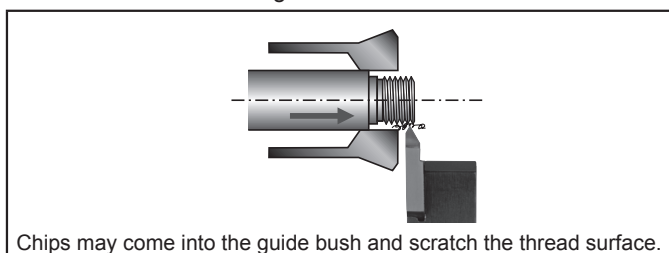
(ap shows the value of radial ap)

Type	Pitch mm · TPI	Description	R(re)	Total ap (mm)	No. of Passes															
						1	2	3	4	5	6	7	8	9	10	11	12			
External Thread	Metric	TKFT 12R/L A/B6000	Max 0.05 Flat	0.15	4	0.06	0.04	0.03	0.02											
				0.19	4	0.07	0.06	0.04	0.02											
				0.23	4	0.08	0.07	0.06	0.02											
				0.27	5	0.08	0.07	0.06	0.04	0.02										
				0.30	5	0.10	0.08	0.06	0.04	0.02										
				0.34	6	0.10	0.08	0.06	0.04	0.02										
		0.50mm	TKFT 12R/L A/B6000 12R/L A/B60005	0.05	0.33	5	0.10	0.10	0.07	0.04	0.02									
		0.60mm	TKFT 12R/L A/B6000 12R/L A/B60005	Max 0.05 Flat	0.45	7	0.10	0.10	0.08	0.06	0.05	0.04	0.02							
				0.05	0.40	6	0.10	0.10	0.08	0.06	0.04	0.02								
			0.70mm		0.05	0.48	6	0.10	0.10	0.10	0.10	0.06	0.02							
		0.75mm	TKFT 12R/L A/B60005	0.05	0.52	7	0.10	0.10	0.10	0.08	0.07	0.05	0.02							
		0.80mm		0.05	0.56	7	0.10	0.10	0.10	0.10	0.08	0.06	0.02							
		1.00mm	TKFT 12R/L A/B60005 12R/L N6001	0.05	0.71	8	0.15	0.15	0.12	0.10	0.08	0.06	0.03	0.02						
				0.10	0.66	7	0.18	0.15	0.12	0.10	0.06	0.03	0.02							
		1.25mm		0.05	0.90	9	0.20	0.18	0.13	0.10	0.10	0.07	0.05	0.05	0.02					
				0.10	0.85	8	0.20	0.18	0.13	0.10	0.10	0.07	0.05	0.02						
		1.50mm	TKFT 12R/L N6001	0.10	1.04	10	0.20	0.18	0.14	0.12	0.10	0.10	0.08	0.05	0.05	0.02				
	Parallel Pipe	28 TPI	TKFT 12R/L A/B55005	0.05	0.67	7	0.18	0.15	0.12	0.10	0.06	0.04	0.02							
19 TPI		0.05		1.01	9	0.20	0.18	0.14	0.12	0.12	0.10	0.08	0.05	0.02						
24 TPI		TKFT 12R/L A/B55005	0.05	0.79	8	0.18	0.18	0.12	0.10	0.08	0.07	0.04	0.02							
20 TPI			0.05	0.96	9	0.20	0.20	0.15	0.10	0.10	0.08	0.06	0.05	0.02						
18 TPI			0.05	1.07	10	0.20	0.18	0.15	0.12	0.10	0.10	0.08	0.07	0.05	0.02					
16 TPI			0.05	1.21	11	0.20	0.18	0.15	0.15	0.12	0.10	0.10	0.08	0.07	0.04	0.02				

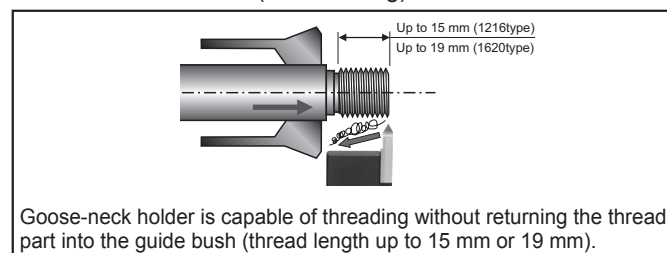
## Swiss Tool Automatic Lathe (Guide Bush System)

Goose-neck holder is applicable to automatic lathes whose toolholder does not move to longitudinal direction (Z-axis direction).

### Conventional Threading Tool

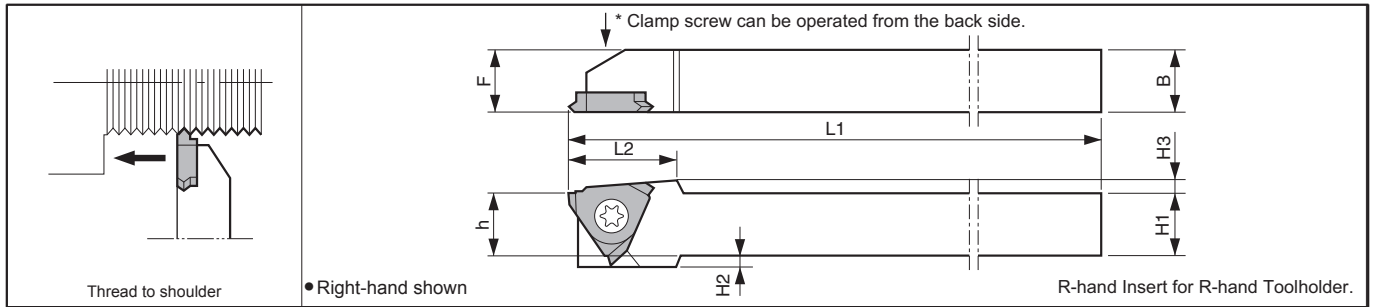


### Goose-neck Holder (for threading)



# External Threading Toolholders [TTX Insert]

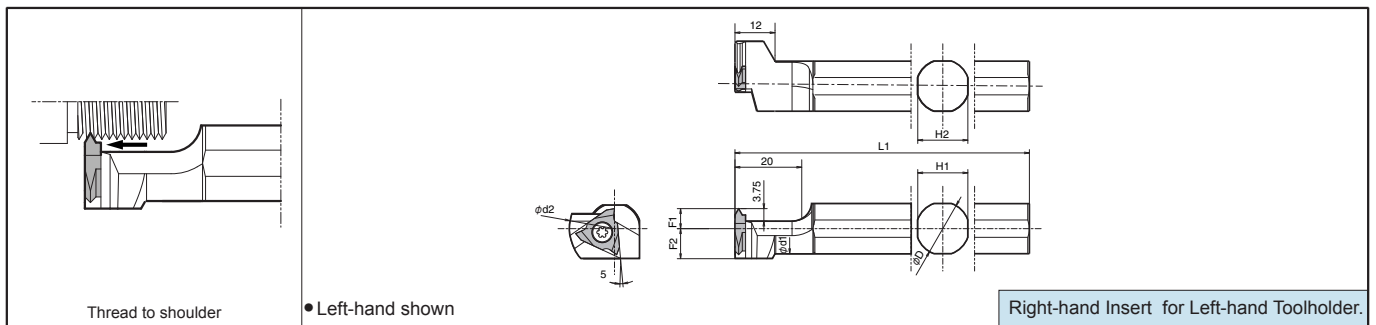
## KTTX



### Toolholder Dimensions

Description	Std.	Dimension (mm)							Spare Parts				
		H1=h	H2	H3	B	L1	L2	F	Clamp Screw	Wrench			
KTTXR 1010JX-16F	●	10	2		10			10	SB-4070TRW	FT-8			
	●	12		2.5	12	120	17.6	12					
	●	16	-		16			16					
KTTXR 1212F -16F	●	12		2.5	12	85	17.6	12	SB-4070TRW	FT-8			
	●	20	-		20	125		20					

## S...KTTX (External Sleeve Holder)



### Toolholder Dimensions

Description	Std.	Dimension (mm)							Spare Parts				
		øD	L1	F1	F2	ød1	ød2	H1=H2	Clamp Screw	Wrench			
S12F-KTTXL16	●	12.0	80			11.0		11	SB-4070TRW	FT-8			
S14H-KTTXL16	●	14.0	100			13.0		13					
S15F-KTTXL16	●	15.875	85			14.6		15					
S16F-KTTXL16	●	16.0					17						
S19G-KTTXL16	●	19.05	90			17.6		17					
S19K-KTTXL16	●		120										
S20G-KTTXL16	●		90										
S20K-KTTXL16	●	20.0	120			18.6		18					
S25.0H-KTTXL16	●	25.0	100										
S25K-KTTXL16	●	25.4	120	10.0	14.0	23.6	32	23					

● Applicable Inserts

Description (mm)				Classification of usage												
Description	A	T	ød	P	M	K	N	Classification of usage								
<b>TTX32R</b>	9.525	3.18	4.4	●	○	●	●	● : 1st Choice ○ : 2nd Choice								
Insert			Description	Applicable Thread	Pitch		Dimension (mm)			Angle (°)	TC60	PR930	PR1115	KW10	Applicable Toolholder	Ref. Page for Depth of Cut & No. of Passes
Right-hand Shown					mm	TPI	ℓ	S1	S2							
Partial Profile			<b>TTX32R 6000</b>	M UN	0.5~1.0 -	56~32	0.00	0.6	1.12	60°	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<b>KTTXR...-16</b> <b>S...KTTXL16</b>	<b>J38</b>
			<b>60005</b>	M UN	0.5~1.0 -	48~32	0.05	0.6	1.12		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
			<b>6001</b>	M UN	1.0~2.0 -	28~14	0.10	1.1	1.62		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
			<b>TTX32R 6000S</b>	M UN	0.5 -	56~48	0.00	0.3	1.12	60°	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
			<b>60005S</b>	M UN	0.5 -	48	0.05	0.3	1.12		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
			<b>TTX32R 5501</b>	G, R W	-	28~19 24~20	0.10	0.75	1.01	55°	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<b>55015</b>	G, R W	-	19~11 20~11	0.15	1.20	1.46	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>					

Applicable Thread	M: Metric UN: Unified UNF: Unified Fine Thread G (PF): Parallel Pipe	R, Rc (PT), (BSPT): Tapered Pipe W: Whitworth NPT: American National Tapered Pipe Tr: 30°Trapezoidal
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For recommended cutting conditions, see page [J29](#)

■ TT and TTX

Type	Shape	Features		
		Rake Angle after Installation	Condition	Dead Space
TT			<ul style="list-style-type: none"> <li>One insert can machine various pitch sizes</li> </ul>	
TTX			<ul style="list-style-type: none"> <li>The Least Cutting Resistance</li> <li>Thread to shoulder (Less dead space)</li> <li>One Insert can machine various pitch sizes. (less than TT)</li> </ul>	

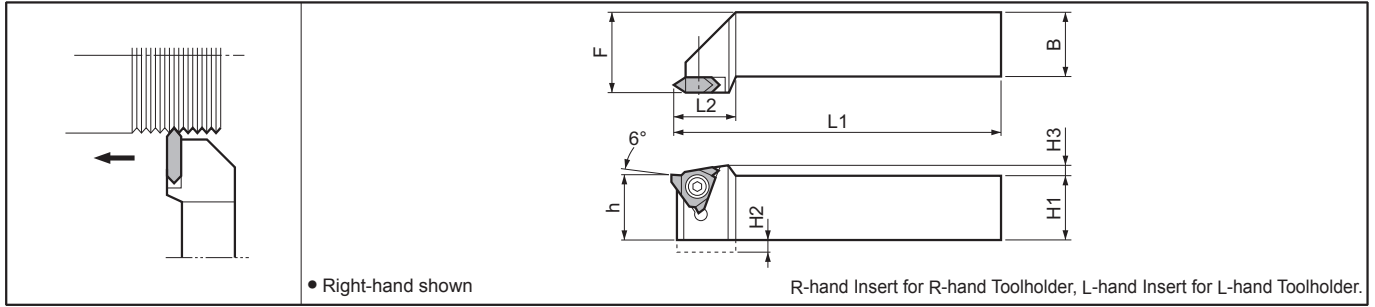
● : Std. Item    □ : Check Availability

PR930 / PR1115 (Threading) are sold in 5 piece boxes.

Inserts are sold in 10 piece boxes.

# External Threading Toolholders [TT Insert]

## KTT



### Toolholder Dimensions

Description	Std.		Dimension (mm)							Spare Parts			
	R	L	H1=h	H2	H3	B	L1	L2	F	Clamp Screw		Wrench	
<b>KTT<sup>R/L</sup></b> <b>1010F -16</b> <b>1212H -16</b> <b>1616H -16</b> <b>2020K -16</b> <b>2525M -16</b> <b>2020K -22</b> <b>2525M -22</b>	●	●	10	4		10	80		12	SB-4070TRS	-	FT-10	-
	●	●	12	2		12	100		16				
	●	●	16	-	2.5	16	100	18	20				
	●	●	20	-		20	125		25	SB-4TR	-	FT-15	-
	●	●	25	-		25	150		30				
	●	●	20	-	3.0	20	125	25	25	-	GS-50	-	LW-3
	●	●	25	-		25	150		30				

### Applicable Inserts

Description	A	T	ød
<b>TT32<sup>R/L</sup></b>	9.525	3.18	4.4
<b>TT43<sup>R/L</sup></b>	12.70	4.76	5.5

	P Carbon Steel / Alloy Steel	M Stainless Steel	K Cast Iron	N Non-ferrous Metals	Classification of usage
●	○	○	○	○	● : 1st Choice ○ : 2nd Choice

Insert Right-hand Shown	Description	Applicable Thread	Pitch		Dimension (mm)			Angle (°)	Cement	PVD Coated Carbide	Carbide	Applicable Toolholder	Ref. Page for Depth of Cut & No. of Passes	
			mm	TPI	rε	S1	S2							
			TC60	PR930	PR1115	KW10								
		M UN M UN M UN M UN G,PT W G,PT W	0.5~2.5	-	0.0			60°	□	●	●	KTT <sup>R/L</sup> ...-16	J37	
			56~10	0.1	-	-	60°	□	●	●	●			
			1.0~2.5	24~10	0.2	-	-	60°	□	●	●			●
			1.5~2.5	16~10	0.3	-	-	60°	□	R	R			
			2.5	11~10	0.1	-	-	55°	□	●	R			●
		M	1.00	-	0.12	0.8		60°	□	R	R	KTT <sup>R/L</sup> ...-22	J38	
			1.25	-	0.15	0.9	-	60°	□	R	R			
			1.50	-	0.19	1.0	-	60°	□	R	R			
			2.00	-	0.25	1.7	-	60°	□	R	R			
								55°	□	R	R			
		M UN M UN M UN M UN G,PT W G,PT W G,PT W G,PT W	1.0~3.5	24~8	0.1			60°	□	●	●	KTT <sup>R/L</sup> ...-22	J37	
			16~8	0.2	-	-	60°	□	●	●	●			
			1.5~3.5	11~8	0.3	-	-	60°	□	●	R			
			2.5~3.5	8	0.4	-	-	60°	□	●	R			
			3.0~3.5	8	0.1	-	-	55°	□	R	R			●
			28~11	24~7	0.2	-	-	55°	□	R	R			●
			14~11	16~7	0.3	-	-	55°	□	R	R			
			11	10~7	0.4	-	-	55°	□	R	R			

For recommended cutting conditions, see page J29

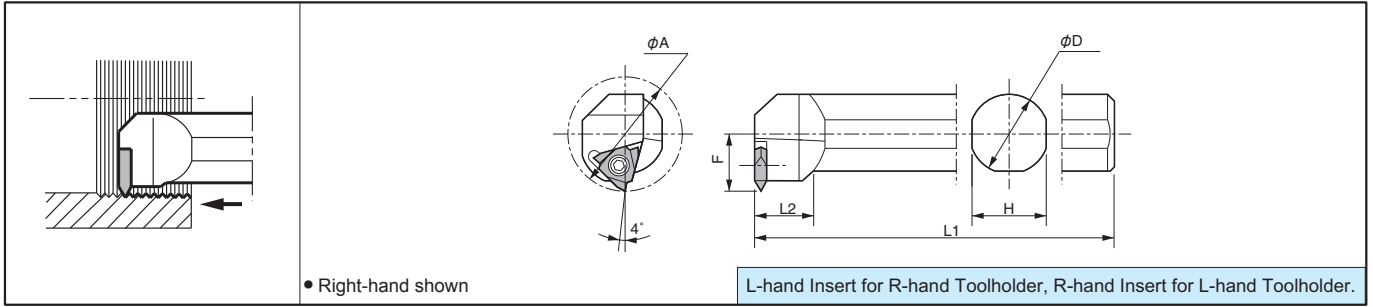
Applicable Thread	M: Metric	R, Rc(PT), (BSPT): Tapered Pipe
	UN: Unified	W: Whitworth
	UNF: Unified Fine Thread	NPT: American National Tapered Pipe
	G (PF): Parallel Pipe	Tr: 30°Trapezoidal

PR930 / PR1115 (Threading) are sold in 5 piece boxes.

Inserts are sold in 10 piece boxes.

● : Std. Item □ : Check Availability  
R : Std. Item (R-hand Only) L : Std. Item (L-hand Only)

# KITG



## Toolholder Dimensions

Description	Std.		Min. Bore Dia.	Dimension (mm)					Spare Parts					
	R	L		φA	φD	H	L1	L2	F	Clamp Screw		Wrench		
	<b>KITG<sup>R/L</sup></b>													
<b>3525T-16</b>	●	●	35	25	23	220	18	17.5	SB-4TR	-	FT-15	-		
<b>4532T-22</b>	●	●	45	32	30	250	20	22.5	-	GS-50	-	LW-3		

\* Max. available Pitch: KITG<sup>R/L</sup>3525T-16...P2.5 or 10 TPI, KITG<sup>R/L</sup>4532T-22...P3.0 or 8 TPI.

## Applicable Inserts

Description	A	T	φd	Classification of usage			
				P	M	K	N
<b>TT32<sup>R/L</sup></b>	9.525	3.18	4.4	○	○	●	●
<b>TT43<sup>R/L</sup></b>	12.70	4.76	5.5				●

Insert Right-hand Shown	Description	Applicable Thread	Pitch		Dimension (mm)		Angle (°)	Cermet	PVD Coated Carbide			Applicable Toolholder	Ref. Page for Depth of Cut & No. of Passes
			mm	TPI	rε	θ			TC60	PR930	PR1115		
	<b>TT32<sup>R/L</sup> 6000</b>	M UN	0.5~2.5	-	0.0	60°	□	●	●	●	<b>KITG<sup>R/L</sup> ...-16</b>	<b>J37</b> <b>J38</b>	
	<b>6001</b>	M UN	1.5~2.5	-	0.1	60°	□	●	●	●			
	<b>TT32<sup>R/L</sup> 5501</b>	G,PT W	-	28~11	24~10	0.1	55°	□	●	R	●		
	<b>5502</b>	G,PT W	-	16~18	-	0.2	55°	□	●	R	●		
	<b>TT43<sup>R/L</sup> 6001</b>	M UN	1.5~3.0	14~11	16~10	0.1	60°	□	●	●	●		
	<b>6002</b>	M UN	3.0	-	8	0.2	60°	□	●	●	●		
	<b>TT43<sup>R/L</sup> 5501</b>	G,PT W	-	28~11	24~8	0.1	55°	□	R	R	●		
	<b>5502</b>	G,PT W	-	14~11	16~8	0.2	55°	□	R	R	●		
	<b>5503</b>	G,PT W	-	11	11~8	0.3	55°	□	R	R			
	<b>5504</b>	G,PT W	-	-	8	0.4	55°	□					

For recommended cutting conditions, see page **J29**

Applicable Thread	M: Metric	R, Rc(PT), (BSPT): Tapered Pipe
	UN: Unified	W: Whitworth
	UNF: Unified Fine Thread	NPT: American National Tapered Pipe
	G (PF): Parallel Pipe	Tr: 30°Trapezoidal

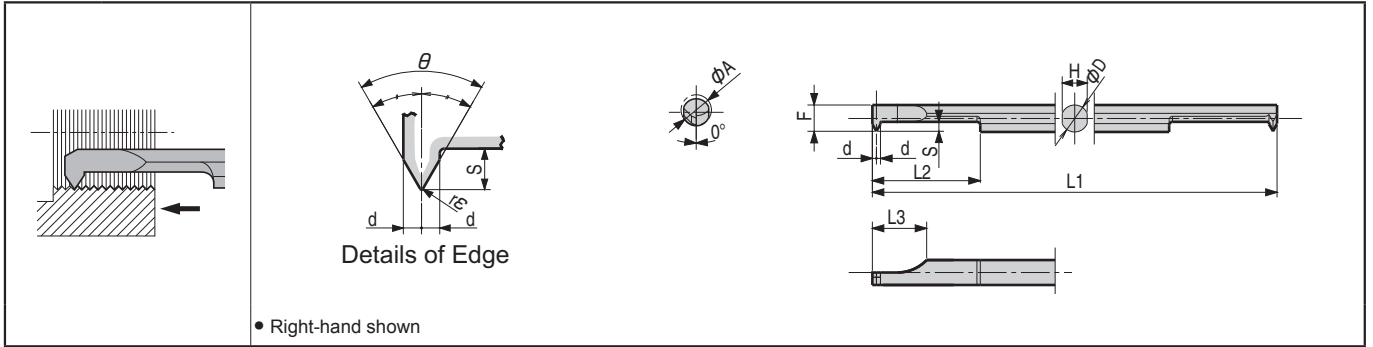
● : Std. Item □ : Check Availability  
R : Std. Item (R-hand Only) L : Std. Item (L-hand Only)

PR930 / PR1115 (Threading) are sold in 5 piece boxes.

Inserts are sold in 10 piece boxes.

# 2 Edges Tip-Bar for Micro Internal Threading HPT

## HPT (Micro Internal Threading)



### Dimensions

Description	Min. Bore Dia.	Dimension (mm)										Insert Grade		Applicable Thread				
		øA	øD	H	L1	L2	L3	F	S	d	rε	θ	PVD Coated Carbide	Carbide	Metric		Unified	
													PR930	KW10	Nominal Thread	Pitch (mm)	Nominal Thread	Pitch (TPI)
HPTR 04504-60-005	4.5	4	3.7	60	16	8	3.9	1.3	0.6	0.05	60°	●	●	M6 and over	P0.75 ~P1.25	1/4-20UNC 1/4-28UNF and over	28~20	
	6	5	4.6	70	21		4.9	1.6	0.8			●	●	M8 and over	P0.75 ~P1.50	5/16-18UNC 5/16-24UNF and over	24~18	
	7.5	7	6.4	80	26		10	6.9	2			1	●	●	M10 and over	P0.75 ~P1.50	3/8-16UNC 3/8-24UNF and over	24~16
HPTR 06005-55-010	6	5	4.6	70	21	8	4.9	1.6	0.8	0.1	55°	●	●	W10 TPI 20 W10 TPI 24 and over	24~20	G1/16 and over R1/16 and over	28	
												●	●	W11 TPI 18 W11 TPI 20 and over	20~18	G1/8 and over R1/8 and over	28~19	
	8	7	6.4	80	26	10	6.9	2.0	1.0	●	●	Whitworth	Parallel Pipe Tapered Pipe					

### Description Table for Tip-Bars and Applicable Sleeves

Description	Applicable Sleeve	
	J26	
HPTR 04504-60-005	PSH	04.....
06005-60-005		05.....
07507-60-005		07.....
HPTR 06005-55-010	PSH	05.....
08007-55-010		07.....

### Recommended Cutting Conditions

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)	
	PVD Coated Carbide	Carbide
	PR930	KW10
Carbon Steel / Alloy Steel	★ 30~100	—
Stainless Steel	★ 30~80	—
Non-ferrous Metals	—	★ ~300

★: 1st Recommendation ☆: 2nd Recommendation

<Note>

- The standard cutting speed is Vc=30~50m/min. The table feed may not follow the expected conditions when machining small diameter workpieces at high speeds.
- Coolant is recommended.

### Depth of Cut & Number of Passes (Metric / M)

Pitch (mm)	Total ap (mm)	No. of Passes	1 Pass	2 Pass	3 Pass	4 Pass	5 Pass	6 Pass	7 Pass	8 Pass	9 Pass	10 Pass	11 Pass	12 Pass	13 Pass	14 Pass	15 Pass	16 Pass	17 Pass
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

### Depth of Cut & Number of Passes (Whitworth / W)

TPI	Total ap (mm)	No. of Passes	1 Pass	2 Pass	3 Pass	4 Pass	5 Pass	6 Pass	7 Pass	8 Pass	9 Pass	10 Pass	11 Pass	12 Pass	13 Pass	14 Pass	15 Pass	16 Pass	17 Pass
24	0.65	13	0.07	0.07	0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.04	0.03	0.03				
20	0.81	15	0.07	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		
18	0.91	17	0.07	0.07	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	0.03

### Depth of Cut & Number of Passes (Unified / UN. UNC. UNF. UNEF)

TPI	Total ap (mm)	No. of Passes	1 Pass	2 Pass	3 Pass	4 Pass	5 Pass	6 Pass	7 Pass	8 Pass	9 Pass	10 Pass	11 Pass	12 Pass	13 Pass	14 Pass	15 Pass	16 Pass	17 Pass	18 Pass
28	0.54	12	0.07	0.06	0.05	0.05	0.05	0.05	0.04	0.04	0.04	0.03	0.03	0.03						
24	0.64	12	0.07	0.06	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.05	0.04	0.03						
20	0.77	14	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.03				
18	0.87	17	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.04	0.03	0.03	0.03	
16	0.98	18	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

Tip-Bars are sold in 1 piece boxes.

● : Std. Item □ : Check Availability



## Application of Parallel Pipe / Tapered Pipe Thread

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

Nominal Thread Symbol (Previous Symbol)	TPI (TPI)	Internal (G,Rp)		Same Root's Radius
		Insert	Bore Dia.	
G <sup>1/16</sup> (-)	28	HPTR 06005-55-010	6.56	0.12
G <sup>1/8</sup> (PF <sup>1/8</sup> )			8.57	
G <sup>1/4</sup> (PF <sup>1/4</sup> )	19	HPTR 08007-55-010	11.45	0.18
G <sup>3/8</sup> (PF <sup>3/8</sup> )			14.95	

### Tapered Pipe: R, Rc(PT) (BSPT)

Nominal Thread Symbol (Previous Symbol)	TPI (TPI)	Internal (G,Rp)		Same Root's Radius
		Insert	Bore Dia.	
R <sup>1/16</sup> , Rc <sup>1/16</sup> (-)	28	HPTR 06005-55-010	-	0.12
R <sup>1/8</sup> , Rc <sup>1/8</sup> (PT <sup>1/8</sup> )			-	
R <sup>1/4</sup> , Rc <sup>1/4</sup> (PT <sup>1/4</sup> )	19	HPTR 08007-55-010	-	0.18
R <sup>3/8</sup> , Rc <sup>3/8</sup> (PT <sup>3/8</sup> )			-	

• When using "HPT type" for Parallel Pipe / Tapered Pipe threading, thread's corners become sharp edged due to its partial profile, and the shape will not be the same as the standard shape for Parallel Pipe / Tapered Pipe.

### Depth of Cut & Number of Passes (Parallel Pipe/G(PF), Tapered Pipe/BSPT (PT) (Rc))

TPI	Total ap (mm)	No. of Passes	1 Pass	2 Pass	3 Pass	4 Pass	5 Pass	6 Pass	7 Pass	8 Pass	9 Pass	10 Pass	11 Pass	12 Pass	13 Pass	14 Pass	15 Pass	16 Pass	17 Pass	18 Pass
28	0.61	12	0.07	0.07	0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.03	0.03						
19	0.95	18	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.04	0.04	0.03	0.03

## Application of ANSI Tapered Pipe Thread (NPT)

Nominal Thread	TPI	Internal Thread		
		Toolholder	Insert	
			Partial Profile	Full Profile
1/16 NPT 1/8 NPT	27	No Tools Available		
1/4 NPT 3/8 NPT	18	PSH Sleeve (See J26)	HPTR06005-60-005 HPTR07507-60-005	-
1/2 NPT 3/4 NPT	14	PSH Sleeve (See J26)	HPTR07507-60-005	-
1/2 NPT 3/4 NPT	14	SINR2016S-16 cannot pass through the processing diameter.		
3/4 NPT		SINR2016S-16	-	16IR14NPT

#### Application of NPTF Thread



NPTF is the thread for sealing pipes without using any sealing material.

Thread symbol is similar to NPT but the Tolerance is different from that of NPT and the above Inserts are not available for NPTF.

### Depth of Cut & Number of Passes (American National Tapered Pipe)

TPI	Total ap (mm)	No. of Passes	1 Pass	2 Pass	3 Pass	4 Pass	5 Pass	6 Pass	7 Pass	8 Pass	9 Pass	10 Pass	11 Pass	12 Pass	13 Pass	14 Pass	15 Pass	16 Pass	17 Pass	18 Pass	19 Pass
18	1.23	16	0.18	0.14	0.12	0.12	0.10	0.09	0.08	0.08	0.07	0.06	0.05	0.04	0.03	0.03	0.02	0.02			
14	1.56	19	0.18	0.16	0.14	0.14	0.12	0.10	0.09	0.09	0.08	0.07	0.07	0.06	0.05	0.05	0.04	0.04	0.03	0.03	0.02

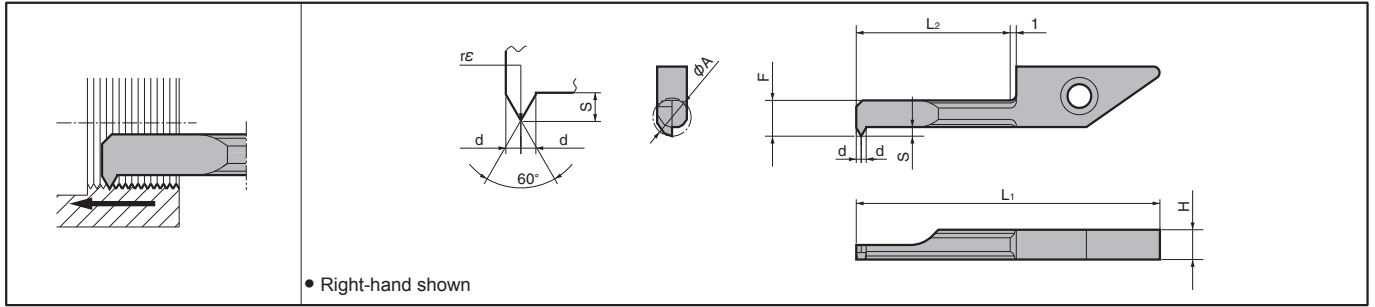
● Applicable Sleeves

Description	Std.	Dimension (mm)									Drawing	Spare Parts		Applicable Machine manufacturer	Ref. Page for Applicable Tip-Bar (Ref. Page for Other Applicable Tip-Bar)
		* ød1	øD1	øD2	ød2	H	L1	L2	L3	Screw		Wrench			
															
PSH 0412-80	●	4													
0512-80	●	5	12	16	6	11	80	20	-	Fig.1	HS4×4P	LW-2	(General use)	Threading Tip-Bar (HPT)⇒ <b>J24</b>	
0712-80	●	7			8										
PSH 0416-100	●	4													
0516-100	●	5	16	-	6	15	100	-	-	Fig.2	HS4×4P	LW-2			
0716-100	●	7			8										
PSH 0420-120	●	4											Amada Wasino Eguro Precision Tsugami Miyano (General use)	Boring Tip-Bar (HPB)⇒ <b>F22</b>	
0520-120	●	5	20	17.5	6	19	120	20	9	Fig.3	HS4×4P	LW-2			
0720-120	●	7			8				7.5						
PSH 0425.0-135	●	4											Citizen Machinery	Grooving Tip-Bar (HPG)⇒ <b>G44</b>	
0525.0-135	●	5	25	18	6	24	135	23	9.5	Fig.3	HS4×4P	LW-2			
0725.0-135	●	7			8				8						
PSH 0419-120	●	4											Star Micronics Nomura VTC	Face Grooving Tip-Bar (HPFG)⇒ <b>G65</b>	
0519-120	●	5	19.05	17.5	6	18	120	20	9	Fig.3	HS4×4P	LW-2			
0719-120	●	7			8				7.5						
PSH 0420-120	●	4											Nomura VTC		
0520-120	●	5	20	17.5	6	19	120	20	9	Fig.3	HS4×4P	LW-2			
0720-120	●	7			8				7.5						
PSH 0425-120	●	4											Nomura VTC		
0525-120	●	5	25.4	18	6	24.4	120	23	9.5	Fig.3	HS4×4P	LW-2			
0725-120	●	7			8				8						
PSH 0422-135	●	4											Nomura VTC		
0522-135	●	5	22	18	6	21	135	22	9.5	Fig.3	HS4×4P	LW-2			
0722-135	●	7			8				8						
PSH 0423-120	●	4											Nomura VTC		
0523-120	●	5	23	18	6	22	120	22	9.5	Fig.3	HS4×4P	LW-2			
0723-120	●	7			8				8						

∴ Length of ød1...20mm (PSH04 type)  
 ...25mm (PSH05, PSH07 type)  
 ∙ Select a sleeve dimension ød1 by adjusting for tip-bar dimension øD.  
 ∙ Names of machining manufacturer in random order.

# System Tip-Bar for Micro Threading

## VNT (System Tip-Bar)



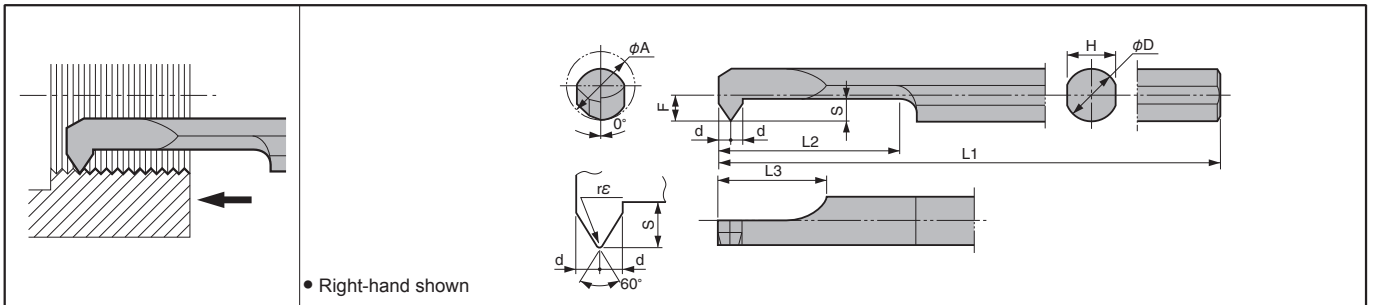
### Insert Dimensions

Description	Min. Bore Dia.	Dimension (mm)								Insert Grade			Applicable Thread			
										Cermet	PVD Coated Carbide	Carbide	Metric		Unified	
		φA	H	L1	L2	F	S	d	rε	TC60	PR930	KW10	Nominal Thread	Pitch (mm)	Nominal Thread	Pitch (TPI)
<b>VNTR</b> <b>045-11</b>	4.5	3.9	30.8	11	3.6	1.3	0.6	0.05		●	●	M6 and over	P0.75 ~P1.25	1/4-20UNC, 1/4-28UNF and over	28~20	
	<b>060-11</b>				6.0	4.6	1.6					0.8	●	●	M8 and over	P0.75 ~P1.50

• For applicable Toolholder, see page **F16~F18**.

## PST-S (Tip-Bar)

This insert will be switched to **HPT** (2-Edge See Page **J24**).



### Insert Dimensions

Description	Min. Bore Dia.	Dimension (mm)									Insert Grade			Applicable Thread			
											Cermet	PVD Coated Carbide	Carbide	Metric		Unified	
		φA	φD	H	L1	L2	L3	F	S	d	rε	TC60	PR930	KW10	Nominal Thread	Pitch (mm)	Nominal Thread
<b>PSTR</b> <b>0604-60S</b>	4.5	3.8	3.6	60	15	8	1.7	1.6	0.8	0.05			□	M6 and over	P0.75 ~P1.25	1/4-20UNC, 1/4-28UNF and over	28~20
	<b>0805-70S</b>	6.0	4.8	4.4	70		20	2.2	2.1					1.0	□	M8 and over	P0.75 ~P1.50

• For applicable Toolholder, see page **F80**.

### ◆ Depth of Cut & Number of Passes (Metric)

Pitch (mm)	Total ap (mm)	No. of Passes	1 Pass	2 Pass	3 Pass	4 Pass	5 Pass	6 Pass	7 Pass	8 Pass	9 Pass	10 Pass	11 Pass	12 Pass	13 Pass	14 Pass	15 Pass	16 Pass	17 Pass
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

<Note> 1) The standard cutting speed is Vc=30~50m/min. The table feed may not follow the expected conditions when machining small diameter workpieces at high speeds.  
2) Coolant is recommended.

● : Std. Item    □ : Check Availability

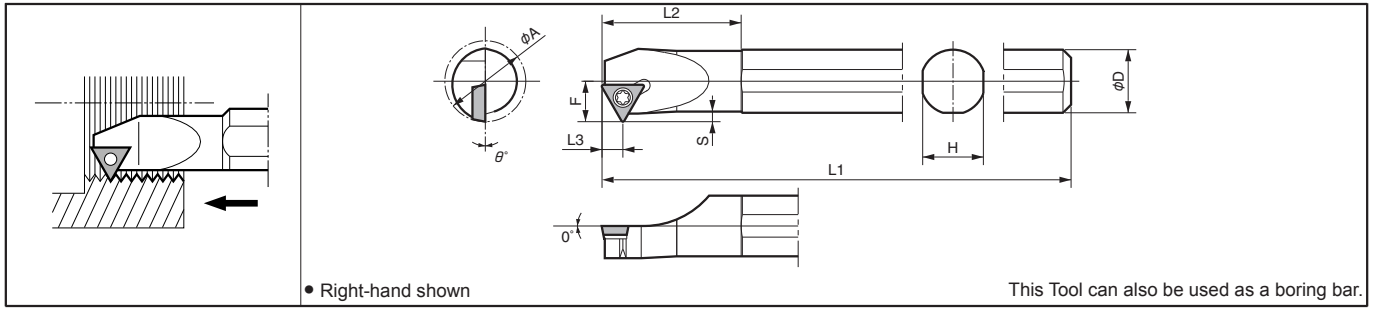
Tip-Bars are sold in 1 piece boxes.

System Tip-Bars are sold in 5 piece boxes.

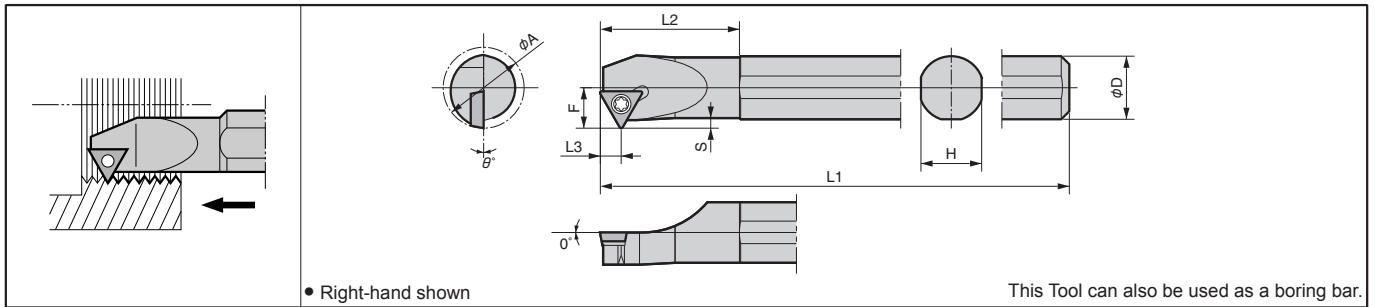


# Internal Threading Toolholders [TPGB Insert]

## S...STWP



## S...STWP-E Excellent Bar



### Toolholder Dimensions

Description	(Previous Description)	Std.		Min. Bore Dia.	Dimension (mm)							Available Pitch (mm)	Spare Parts	
		R	L		ϕA	ϕD	H	L1	L2	L3	F		S	Clamp Screw
S10M -STWP $\frac{P}{L}$ 11-12	SIT $\frac{P}{L}$ 1210-11	●		12	10	9.2	150	23	5.5	6	1.0	1.5 and under	SB-3STR	FT-10
S12M -STWP $\frac{P}{L}$ 11-16		●		16	12	11	150	30		8	1.5	2.0 and under		
S16Q -STWP $\frac{P}{L}$ 11-20		●		20	16	15	180	35		10	2.0	3.0 and under		
S20R -STWP $\frac{P}{L}$ 11-25		●		25	20	19	200	40		12.5	2.5	3.5 and under		
S10M -STWP $\frac{P}{L}$ 11-12E	-	●●		12	10	9.2	150	23	5.5	6	1.0	1.5 and under	SB-3STR	FT-10
S12M -STWP $\frac{P}{L}$ 11-16E		●●		16	12	11	150	30		8	1.5	2.0 and under		
S16R -STWP $\frac{P}{L}$ 11-20E		●●		20	16	15	200	35		10	2.0	3.0 and under		
S20X -STWP $\frac{P}{L}$ 11-25E		●●		25	20	19	220	40		12.5	2.5	3.5 and under		

\* Dimension S: shows the Max. available ap.

### Applicable Inserts

Description	A	T	ϕd
TPGB1102...	6.35 (11)	2.38	3.5
TPGB1103...	6.35 (11)	3.18	3.3

	P Carbon Steel / Alloy Steel	M Stainless Steel	K Cast Iron	N Non-ferrous Metals	Classification of usage
●	●		●	●	● : 1st Choice ○ : 2nd Choice

Partial Profile	Insert	Description	Applicable Thread	Pitch		Dimension (mm)		Angle (°)	Cermet	PVD Coated Carbide	Carbide	Applicable Toolholder	Ref. Page for Depth of Cut & No. of Passes
				mm	TPI	rε	θ						
		TPGB 1102005	M	0.75~1.5	-	28~16	0.05	60°	●		●	...STWP $\frac{P}{L}$ 11-12(E)	J39
			UN	-	-	-	-		-				
		TPGB 1103005	M	1.5	-	16	0.10		●		●		
			UN	-	-	-	-		-				
		TPGB 110301	M	0.75~3.5	-	28~11	0.05		●		●		
UN	-		-	-	-	-							
TPGB 110302	M	1.5~3.5	-	16~8	0.10	●		●					
UN	-	-	-	-	-	-							

Applicable	M: Metric	R, RC (PT), (BSPT): Tapered Pipe
Thread	UN: Unified	W: Whitworth
	UNF: Unified Fine Thread	NPT: American National Tapered Pipe
	G (PF): Parallel Pipe	Tr: 30°Trapezoidal

For recommended cutting conditions, see page J29

Inserts are sold in 10 piece boxes.

● : Std. Item □ : Check Availability

# Recommended Cutting Conditions

## KTN / KTNS

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)			
	Cermet	PVD Coated Carbide		Carbide
	TC60	PR930	PR1115	GW15 (KW10)
Carbon Steel	100~150 ☆	100~150 ☆	100~150 ★	-
First ap (Radial)	under 0.3mm	under 0.3mm	under 0.3mm	
Alloy Steel	100~150 ☆	100~150 ☆	100~150 ★	-
First ap (Radial)	under 0.3mm	under 0.3mm	under 0.3mm	
Stainless Steel	60~80 ☆	60~80 ☆	60~80 ★	-
First ap (Radial)	under 0.25mm	under 0.25mm	under 0.25mm	
Cast Iron	-	-	-	★ 100
First ap (Radial)				under 0.3mm
Non-ferrous Metals	-	-	-	★ 150~400
First ap (Radial)				under 0.3mm

## KTT

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)			
	Cermet	PVD Coated Carbide		Carbide
	TC60	PR930	PR1115	KW10
Carbon Steel	100~150 ☆	100~150 ☆	100~150 ★	-
First ap (Radial)	under 0.3mm	under 0.3mm	under 0.3mm	
Alloy Steel	100~150 ☆	100~150 ☆	100~150 ★	-
First ap (Radial)	under 0.3mm	under 0.3mm	under 0.3mm	
Stainless Steel	60~80 ☆	60~80 ☆	60~80 ★	-
First ap (Radial)	under 0.25mm	under 0.25mm	under 0.25mm	
Cast Iron	-	-	-	★ 100
First ap (Radial)				under 0.3mm
Non-ferrous Metals	-	-	-	★ 150~400
First ap (Radial)				under 0.3mm

## KTTX / S-KTTX

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)			
	Cermet	PVD Coated Carbide		Carbide
	TC60	PR930	PR1115	KW10
Carbon Steel	100~150 ☆	100~150 ☆	100~150 ★	-
First ap (Radial)	under 0.3mm	under 0.3mm	under 0.3mm	
Alloy Steel	100~150 ☆	100~150 ☆	100~150 ★	-
First ap (Radial)	under 0.3mm	under 0.3mm	under 0.3mm	
Stainless Steel	60~80 ☆	60~80 ☆	60~80 ★	-
First ap (Radial)	under 0.25mm	under 0.25mm	under 0.25mm	
Cast Iron	-	-	-	★ 100
First ap (Radial)				under 0.3mm
Non-ferrous Metals	-	-	-	★ 150~400
First ap (Radial)				under 0.3mm

## SIN / CIN

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)			
	Cermet	PVD Coated Carbide		Carbide
	TC60	PR930	PR1115	GW15 (KW10)
Carbon Steel	100~150 ☆	100~150 ☆	100~150 ★	-
First ap (Radial)	under 0.3mm	under 0.3mm	under 0.3mm	
Alloy Steel	100~150 ☆	100~150 ☆	100~150 ★	-
First ap (Radial)	under 0.3mm	under 0.3mm	under 0.3mm	
Stainless Steel	60~80 ☆	60~80 ☆	60~80 ★	-
First ap (Radial)	under 0.25mm	under 0.25mm	under 0.25mm	
Cast Iron	-	-	-	★ 100
First ap (Radial)				under 0.3mm
Non-ferrous Metals	-	-	-	★ 150~400
First ap (Radial)				under 0.3mm

• For TNN061R / 081R, please lower it to a figure under 40% of above condition list

## S...STWP (-E)

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)				
	Cermet		PVD Coated Cermet		Carbide
	TN6020	TN60	PV7020	PV60	KW10
Carbon Steel	100~150 ☆	100~150 ☆	100~150 ★	100~150 ☆	-
First ap (Radial)	under 0.25mm	under 0.25mm	under 0.25mm	under 0.25mm	
Alloy Steel	100~150 ☆	100~150 ☆	100~150 ★	100~150 ☆	-
First ap (Radial)	under 0.25mm	under 0.25mm	under 0.25mm	under 0.25mm	
Stainless Steel	-	-	-	-	-
First ap (Radial)					
Cast Iron	-	-	-	-	★ 100
First ap (Radial)					under 0.25mm
Non-ferrous Metals	-	-	-	-	★ 150~400
First ap (Radial)					under 0.25mm

## KITG

Workpiece Material	Recommended Insert Grade (Cutting Speed: m/min)			
	Cermet	PVD Coated Carbide		Carbide
	TC60	PR930	PR1115	KW10
Carbon Steel	100~150 ☆	100~150 ☆	100~150 ★	-
First ap (Radial)	under 0.3mm	under 0.3mm	under 0.3mm	
Alloy Steel	100~150 ☆	100~150 ☆	100~150 ★	-
First ap (Radial)	under 0.3mm	under 0.3mm	under 0.3mm	
Stainless Steel	60~80 ☆	60~80 ☆	60~80 ★	-
First ap (Radial)	under 0.25mm	under 0.25mm	under 0.25mm	
Cast Iron	-	-	-	★ 100
First ap (Radial)				under 0.3mm
Non-ferrous Metals	-	-	-	★ 150~400
First ap (Radial)				under 0.3mm

Indicates

★ : 1st Recommendation ☆ : 2nd Recommendation

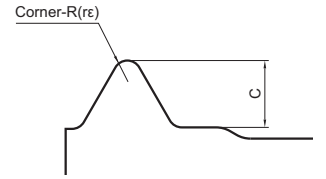
- Coolant is recommended.
- In case of using cermet insert, honing the edge with a hand lapper enables higher stability.
- In case of threading stainless steel, please set two to three passes more than previous description of <ap - passes>.



# Depth of Cut & Number of Passes

## ◆ Cautions for Usage of Full Profile Insert.

- 1) Max. ap is based on the Value of 0.05~0.08mm
- 2) Final ap for Finishing shall be 0.02~0.05mm
- 3) Prepare chamfering of C0.3~C0.5 to the workpiece to prevent the insert from cracking during the 1st Pass.
- 4) Coolant is recommended.



(ap shows the value of radial ap)

## 11 / 16 / 22 (Full Profile) type

Type	Pitch/TPI mm/TPI	Description	C (mm)	Total ap (mm)	No. of Passes	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		
Metric	External Thread	1.00 mm	16E%	100ISO-TF	0.64	0.72	5	0.23	0.19	0.15	0.10	0.05														
		1.25 mm		125ISO-TF	0.80	0.88	6	0.26	0.21	0.16	0.12	0.08	0.05													
		1.50 mm		150ISO-TF	0.95	1.03	6	0.26	0.24	0.21	0.16	0.11	0.05													
		1.75 mm		175ISO-TF	1.11	1.19	8	0.26	0.22	0.19	0.16	0.13	0.10	0.08	0.05											
		2.00 mm		200ISO-TF	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									
		2.50 mm		250ISO-TF	1.57	1.65	12	0.26	0.23	0.21	0.18	0.14	0.12	0.10	0.10	0.08	0.08	0.06	0.05							
		3.00 mm		300ISO-TF	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					
		0.50 mm		16E%	050ISO	0.33	0.38	4	0.14	0.12	0.08	0.04														
		0.75 mm			075ISO	0.48	0.53	5	0.17	0.14	0.10	0.08	0.04													
		1.00 mm			100ISO	0.64	0.72	5	0.23	0.19	0.15	0.10	0.05													
		1.25 mm			125ISO	0.80	0.88	6	0.26	0.21	0.16	0.12	0.08	0.05												
		1.50 mm			150ISO	0.95	1.03	6	0.26	0.24	0.21	0.16	0.11	0.05												
		2.00 mm			200ISO	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								
		2.50 mm			250ISO	1.57	1.65	12	0.26	0.23	0.21	0.18	0.14	0.12	0.10	0.10	0.08	0.06	0.05							
		3.00 mm		22E%	300ISO	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				
	3.50 mm			350ISO	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				
	4.00 mm			400ISO	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	0.10	0.10	0.08	0.05	0.02			
	4.50 mm			450ISO	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	
	5.00 mm			500ISO	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	
	1.00 mm		11F%	100ISO-TF	0.60	0.68	5	0.20	0.18	0.15	0.11	0.04														
	1.25 mm			125ISO-TF	0.74	0.82	7	0.20	0.18	0.14	0.12	0.08	0.06	0.04												
	1.50 mm			150ISO-TF	0.88	0.96	8	0.24	0.18	0.14	0.10	0.10	0.08	0.07	0.05											
	1.75 mm			175ISO-TF	1.02	1.10	9	0.24	0.18	0.16	0.14	0.10	0.10	0.08	0.05	0.05										
	0.50 mm		11F%	050ISO	0.31	0.36	4	0.14	0.10	0.08	0.04															
	0.75 mm			075ISO	0.45	0.50	5	0.15	0.14	0.10	0.07	0.04														
	1.00 mm			100ISO	0.60	0.68	5	0.20	0.18	0.15	0.11	0.04														
	1.25 mm			125ISO	0.74	0.82	7	0.20	0.18	0.14	0.12	0.08	0.06	0.04												
	1.50 mm			150ISO	0.88	0.96	8	0.24	0.18	0.14	0.10	0.10	0.08	0.07	0.05											
	1.75 mm			175ISO	1.02	1.10	9	0.24	0.18	0.16	0.14	0.10	0.10	0.08	0.05	0.05										
	2.00 mm			200ISO	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									
1.00 mm		16F%	100ISO-TF	0.60	0.68	5	0.20	0.18	0.15	0.11	0.04															
1.25 mm			125ISO-TF	0.74	0.82	7	0.20	0.18	0.14	0.12	0.08	0.06	0.04													
1.50 mm			150ISO-TF	0.88	0.96	8	0.22	0.18	0.14	0.12	0.10	0.08	0.07	0.05												
1.75 mm			175ISO-TF	1.02	1.10	9	0.22	0.18	0.16	0.14	0.12	0.10	0.08	0.05	0.05											
2.00 mm			200ISO-TF	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										
2.50 mm			250ISO-TF	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								
3.00 mm			300ISO-TF	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	0.05	0.02					
1.00 mm		16F%	100ISO	0.60	0.68	5	0.20	0.18	0.15	0.11	0.04															
1.25 mm			125ISO	0.74	0.82	7	0.20	0.18	0.14	0.12	0.08	0.06	0.04													
1.50 mm			150ISO	0.88	0.96	8	0.22	0.18	0.14	0.12	0.10	0.08	0.07	0.05												
2.00 mm			200ISO	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										
2.50 mm			250ISO	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								
3.00 mm			300ISO	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	0.05	0.02					
3.00 mm		22F%	300ISO	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	0.05	0.02					
3.50 mm			350ISO	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					
4.00 mm			400ISO	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	0.10	0.10	0.05	0.05	0.02				
4.50 mm			450ISO	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		
5.00 mm			500ISO	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		
Unified	External Thread	24 TPI	16E%	24UN-TF	0.67	0.75	5	0.24	0.20	0.16	0.10	0.05														
		20 TPI		20UN-TF	0.80	0.88	6	0.24	0.20	0.16	0.13	0.10	0.05													
		18 TPI		18UN-TF	0.89	0.97	6	0.26	0.22	0.18	0.15	0.11	0.05													
		16 TPI		16UN-TF	1.01	1.09	7	0.26	0.22	0.18	0.15	0.12	0.11	0.05												
		14 TPI		14UN-TF	1.15	1.23	8	0.26	0.22	0.18	0.16	0.14	0.12	0.10	0.05											
		13 TPI		13UN-TF	1.24	1.32	9	0.26	0.22	0.18	0.16	0.14	0.12	0.11	0.08	0.05										
		12 TPI		12UN-TF	1.34	1.42	11	0.26	0.22	0.18	0.16	0.13	0.12	0.10	0.08	0.07	0.05	0.05								
		10 TPI		10UN-TF	1.59	1.67	12	0.26	0.22	0.20	0.18	0.16	0.14	0.12	0.12	0.10	0.07	0.05	0.05							
		8 TPI		08UN-TF	1.98	2.06	14	0.26	0.24	0.22	0.20	0.18	0.16	0.14	0.14	0.12	0.12	0.10	0.08	0.05	0.05					
		24 TPI		16E%	24UN	0.67	0.75	5	0.24	0.20	0.16	0.10	0.05													
		20 TPI			20UN	0.80	0.88	6	0.24	0.20	0.16	0.13	0.10	0.05												
		18 TPI			18UN	0.89	0.97	6	0.26	0.22	0.18	0.15	0.11	0.05												
		16 TPI			16UN	1.01	1.09	7	0.26	0.22	0.18	0.15	0.12	0.11	0.05											
		14 TPI			14UN	1.15	1.23	8	0.26	0.22	0.18	0.16	0.14	0.12	0.10	0.05										
		12 TPI			12UN	1.34	1.42	11	0.26	0.22	0.18	0.16	0.13	0.12	0.10	0.08	0.07	0.05	0.05							
	8 TPI		22E%	08UN	1.98	2.06	15	0.30	0.26	0.22	0.20	0.16	0.15	0.14	0.13	0.10	0.10	0.10	0.07	0.05	0.02					
	24 TPI		16F%	24UN-TF	0.62	0.70	5	0.																		

**11 / 16** (Full Profile) type

(ap shows the value of radial ap)

Type		Pitch/TPI mm/TPI	Description	C (mm)	Total ap (mm)	No. of Passes	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19					
Parallel Pipe	External Thread	19 TPI	16E% 19W-TF	0.89	0.97	6	0.27	0.22	0.18	0.15	0.10	0.05																		
		14 TPI	14W-TF	1.19	1.27	9	0.27	0.22	0.18	0.16	0.11	0.10	0.10	0.08	0.05															
		11 TPI	11W-TF	1.50	1.58	12	0.27	0.22	0.18	0.16	0.12	0.12	0.12	0.10	0.10	0.07	0.07	0.05												
	Internal Thread	19 TPI	16I% 19W-TF	0.88	0.96	6	0.25	0.21	0.20	0.15	0.10	0.05																		
		14 TPI	14W-TF	1.19	1.27	9	0.27	0.22	0.18	0.16	0.11	0.10	0.10	0.08	0.05															
		11 TPI	11W-TF	1.50	1.58	12	0.27	0.22	0.18	0.16	0.12	0.12	0.12	0.10	0.10	0.07	0.07	0.05												
Whitworth	External Thread	16 TPI	16E% 16W-TF	1.05	1.13	8	0.25	0.21	0.18	0.16	0.12	0.08	0.08	0.05																
		14 TPI	14W-TF	1.19	1.27	9	0.27	0.22	0.18	0.16	0.11	0.10	0.10	0.08	0.05															
		11 TPI	11W-TF	1.50	1.58	12	0.27	0.22	0.18	0.16	0.12	0.12	0.12	0.10	0.10	0.07	0.07	0.05												
	Internal Thread	16 TPI	16I% 16W-TF	1.05	1.13	8	0.25	0.21	0.18	0.16	0.12	0.08	0.08	0.05																
		14 TPI	14W-TF	1.19	1.27	9	0.27	0.22	0.18	0.16	0.11	0.10	0.10	0.08	0.05															
		11 TPI	11W-TF	1.50	1.58	12	0.27	0.22	0.18	0.16	0.12	0.12	0.12	0.10	0.10	0.07	0.07	0.05												
Tapered Pipe	External Thread	28 TPI	16E% 28BSPT-TF	0.58	0.63	5	0.20	0.15	0.13	0.11	0.04																			
		19 TPI	19BSPT-TF	0.86	0.94	6	0.26	0.20	0.18	0.15	0.10	0.05																		
		14 TPI	14BSPT-TF	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	11BSPT-TF	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	16E% 28BSPT	0.58	0.63	5	0.20	0.15	0.13	0.11	0.04																			
		19 TPI	19BSPT	0.86	0.94	6	0.26	0.20	0.18	0.15	0.10	0.05																		
	Internal Thread	14 TPI	14BSPT	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	11BSPT	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	11I% 28BSPT-TF	0.58	0.63	5	0.20	0.16	0.13	0.10	0.04																			
		19 TPI	19BSPT-TF	0.86	0.94	7	0.22	0.20	0.18	0.14	0.10	0.06	0.04																	
		14 TPI	14BSPT-TF	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	11BSPT-TF	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 Tapered Pipe	External Thread	18 TPI	16E% 18NPT	1.14	1.22	13	0.20	0.16	0.14	0.12	0.10	0.10	0.08	0.08	0.07	0.06	0.05	0.04	0.02											
		14 TPI	14NPT	1.46	1.54	15	0.20	0.18	0.15	0.14	0.13	0.12	0.11	0.10	0.09	0.08	0.07	0.06	0.05	0.04	0.02									
		11.5 TPI	11.5NPT	1.77	1.85	16	0.22	0.20	0.18	0.16	0.15	0.14	0.13	0.12	0.10	0.10	0.08	0.08	0.07	0.06	0.05	0.04	0.02							
	Internal Thread	18 TPI	16I% 18NPT	1.14	1.22	13	0.20	0.16	0.14	0.12	0.10	0.10	0.08	0.08	0.07	0.06	0.05	0.04	0.02											
		14 TPI	14NPT	1.46	1.54	15	0.20	0.18	0.15	0.14	0.13	0.12	0.11	0.10	0.09	0.08	0.07	0.06	0.05	0.04	0.02									
		11.5 TPI	11.5NPT	1.77	1.85	16	0.22	0.20	0.18	0.16	0.15	0.14	0.13	0.12	0.10	0.10	0.08	0.08	0.07	0.06	0.05	0.04	0.02							

**60° / 55°** (Partial Profile)

(ap shows the value of radial ap)

Type		Pitch/TPI mm/TPI	Description	Corner-R(r)	Total ap (mm)	No. of Passes	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19								
Metric	External Thread	0.5 mm	16ER A60-TF	0.06	0.33	5	0.10	0.08	0.07	0.05	0.03																						
			AG60-TF	0.06	0.33	5	0.10	0.08	0.07	0.05	0.03																						
		0.75 mm	16ER A60-TF	0.06	0.51	6	0.14	0.11	0.09	0.07	0.06	0.04																					
			AG60-TF	0.06	0.51	6	0.14	0.11	0.09	0.07	0.06	0.04																					
		1.00 mm	16ER A60-TF	0.06	0.70	7	0.18	0.13	0.12	0.09	0.08	0.06	0.04																				
			AG60-TF	0.06	0.70	7	0.18	0.13	0.12	0.09	0.08	0.06	0.04																				
		1.25 mm	16ER A60-TF	0.06	0.89	8	0.18	0.15	0.14	0.12	0.10	0.08	0.07	0.05																			
			AG60-TF	0.06	0.89	8	0.18	0.15	0.14	0.12	0.10	0.08	0.07	0.05																			
		1.50 mm	16ER A60-TF	0.06	1.08	9	0.21	0.17	0.16	0.14	0.11	0.09	0.08	0.07	0.05																		
			AG60-TF	0.06	1.08	9	0.21	0.17	0.16	0.14	0.11	0.09	0.08	0.07	0.05																		
		1.75 mm	16ER G60-TF	0.22	1.11	8	0.24	0.20	0.18	0.16	0.13	0.10	0.06	0.04																			
			AG60-TF	0.06	1.27	11	0.22	0.20	0.18	0.13	0.11	0.09	0.09	0.08	0.07	0.05																	
		2.00 mm	16ER G60-TF	0.22	1.30	10	0.24	0.20	0.18	0.16	0.14	0.12	0.09	0.07	0.06	0.04																	
			AG60-TF	0.06	1.46	11	0.25	0.22	0.20	0.16	0.14	0.12	0.10	0.09	0.08	0.06	0.04																
		2.50 mm	16ER G60-TF	0.22	1.67	12	0.25	0.22	0.20	0.18	0.16	0.14	0.12	0.12	0.10	0.08	0.06	0.04															
			AG60-TF	0.06	1.84	13	0.25	0.22	0.20	0.19	0.17	0.16	0.14	0.11	0.10	0.09	0.09	0.07	0.05														
		3.00 mm	16ER G60-TF	0.22	2.05	14	0.25	0.23	0.22	0.20	0.18	0.16	0.14	0.13	0.12	0.11	0.10	0.09	0.07	0.05													
			AG60-TF	0.06	2.22	15	0.27	0.25	0.22	0.20	0.18	0.16	0.14	0.13	0.12	0.12	0.11	0.10	0.09	0.08	0.05												
	Internal Thread	0.5 mm	16ER A60	0.06	0.33	5	0.10	0.08	0.07	0.05	0.03																						
			AG60	0.06	0.33	5	0.10	0.08	0.07	0.05	0.03																						
		0.75 mm	16ER A60	0.06	0.51	6	0.14	0.11	0.09	0.07	0.06	0.04																					
			AG60	0.06	0.51	6	0.14	0.11	0.09	0.07	0.06	0.04																					
		1.00 mm	16ER A60	0.06	0.70	7	0.18	0.13	0.12	0.09	0.08	0.06	0.04																				
			AG60	0.06	0.70	7	0.18	0.13	0.12	0.09	0.08	0.06	0.04																				
		1.25 mm	16ER A60	0.06	0.89	8	0.18	0.15	0.14	0.12	0.10	0.08	0.07	0.05																			
			AG60	0.06	0.89	8	0.18	0.15	0.14	0.12	0.10	0.08	0.07	0.05																			
		1.50 mm	16ER A60	0.06	1.08	9	0.21	0.17	0.16	0.14	0.11	0.09	0.08	0.07	0.05																		
			AG60	0.06	1.08	9	0.21	0.17	0.16	0.14	0.11	0.09	0.08	0.07	0.05																		
		1.75 mm	16ER G60	0.22	1.11	8	0.24	0.20	0.18	0.16	0.13	0.10	0.06	0.04																			
			AG60	0.06	1.27	11	0.22	0.20	0.18	0.13	0.11	0.09	0.09	0.08	0.07	0.05																	
2.00 mm	16ER G60	0.22	1.30	10	0.24	0.20	0.18	0.16	0.14	0.12	0.09	0.07	0.06	0.04																			

# Depth of Cut & Number of Passes

60° / 55° (Partial Profile)

(ap shows the value of radial ap)

Type	Pitch/TPI	Description	Corner-R(rε)	Total ap (mm)	No. of Passes	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19					
	mm/TPI																												
Metric	External Thread	3.50mm	22ER N60	0.48	2.17	15	0.27	0.25	0.22	0.20	0.18	0.16	0.14	0.13	0.12	0.11	0.10	0.09	0.08	0.07	0.05								
		4.00mm			2.55	17	0.28	0.26	0.24	0.22	0.20	0.18	0.17	0.16	0.14	0.13	0.12	0.10	0.09	0.08	0.07	0.05							
4.50mm	2.93	18			0.30	0.28	0.26	0.25	0.24	0.22	0.20	0.18	0.16	0.14	0.13	0.12	0.10	0.09	0.08	0.07	0.05	0.06	0.05						
5.00mm	3.31	19			0.30	0.28	0.27	0.26	0.25	0.24	0.23	0.22	0.20	0.18	0.16	0.14	0.13	0.12	0.10	0.09	0.08	0.07	0.06	0.05	0.06	0.05			
0.75mm	061R 60005	0.05			0.44	10	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.03	0.03														
Metric	Internal Thread	1.00mm	061R 60005 081R 60007	0.05 0.07	0.60 0.58	12 12	0.07 0.07	0.06 0.06	0.06 0.06	0.06 0.06	0.05 0.05	0.04 0.04	0.04 0.04	0.04 0.04	0.04 0.04	0.04 0.03	0.03 0.03												
		1.25mm	061R 60005 081R 60007	0.05 0.07	0.76 0.74	14 14	0.07 0.07	0.07 0.07	0.06 0.06	0.06 0.06	0.06 0.06	0.05 0.05	0.04 0.05	0.04 0.05	0.05 0.05	0.05 0.04	0.04 0.04	0.03 0.03		0.04	0.03								
		1.5mm	081R 60007	0.07	0.90	17	0.07	0.07	0.07	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						
		1.75mm		0.07	1.07	19	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.04	0.03	0.03			
		0.50mm	111R A60	0.02	0.30	5	0.08	0.07	0.06	0.05	0.04																		
		1.00mm			0.63	6	0.16	0.14	0.12	0.10	0.07	0.04																	
		1.50mm			0.95	9	0.18	0.16	0.13	0.12	0.10	0.08	0.08	0.06	0.04														
		0.5 mm	161R A60 AG60	0.02 0.02	0.30 0.30	5 5	0.08 0.08	0.07 0.07	0.06 0.06	0.05 0.05	0.04 0.04																		
		0.75 mm	161R A60 AG60	0.02 0.02	0.47 0.47	6 6	0.12 0.12	0.10 0.10	0.08 0.08	0.07 0.07	0.06 0.06	0.04 0.04																	
		1.00 mm	161R A60 AG60	0.02 0.02	0.63 0.63	6 6	0.16 0.16	0.14 0.14	0.12 0.12	0.10 0.10	0.07 0.07	0.04 0.04																	
		1.25 mm	161R A60 AG60	0.02 0.02	0.79 0.79	7 7	0.16 0.16	0.15 0.15	0.14 0.14	0.13 0.13	0.10 0.10	0.07 0.04	0.04																
		1.50 mm	161R A60 AG60	0.02 0.02	0.95 0.95	9 9	0.18 0.18	0.16 0.16	0.13 0.13	0.12 0.12	0.10 0.10	0.08 0.08	0.08	0.06	0.04														
		1.75 mm	161R G60 AG60	0.11 0.02	1.03 1.12	9 10	0.20 0.20	0.17 0.18	0.15 0.16	0.13 0.13	0.11 0.12	0.10 0.10	0.08	0.05	0.04	0.04													
		2.00 mm	161R G60 AG60	0.11 0.02	1.19 1.28	10 12	0.20 0.20	0.18 0.17	0.15 0.15	0.13 0.13	0.12 0.12	0.11 0.11	0.10	0.09	0.07	0.06	0.04	0.04											
		2.50 mm	161R G60 AG60	0.11 0.02	1.51 1.6	14 16	0.20 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	0.04	0.04	0.04	0.04	0.05	0.04	0.02								
		3.00 mm	161R G60 AG60	0.11 0.02	1.84 1.93	16 18	0.20 0.20	0.18 0.17	0.16 0.16	0.15 0.15	0.14 0.14	0.13 0.13	0.12	0.10	0.08	0.07	0.06	0.04	0.04	0.07	0.06	0.04	0.02						
		3.50mm	221R N60	0.22	2.05	14	0.26	0.25	0.22	0.20	0.18	0.16	0.14	0.12	0.12	0.11	0.10	0.08	0.06	0.05									
		4.00mm			2.38	16	0.26	0.24	0.23	0.22	0.20	0.18	0.16	0.14	0.13	0.12	0.11	0.10	0.08	0.06	0.05								
		4.50mm			2.7	18	0.26	0.24	0.23	0.22	0.20	0.18	0.17	0.16	0.15	0.14	0.13	0.12	0.11	0.10	0.08	0.06	0.05	0.06	0.05				
		5.00mm			3.03	19	0.30	0.27	0.25	0.24	0.22	0.20	0.18	0.17	0.16	0.15	0.14	0.13	0.12	0.11	0.10	0.08	0.06	0.05	0.06	0.05	0.06	0.05	
		Unified	External Thread	48 TPI	16ER A60-TF AG60-TF	0.06 0.06	0.35 0.35	5 5	0.10 0.08	0.08 0.07	0.06 0.06	0.04 0.04																	
				24 TPI	16ER A60-TF AG60-TF	0.06 0.06	0.75 0.75	7 7	0.18 0.18	0.15 0.15	0.13 0.13	0.10 0.10	0.08 0.07	0.07	0.04														
				20 TPI	16ER A60-TF AG60-TF	0.06 0.06	0.91 0.91	8 8	0.18 0.18	0.16 0.16	0.14 0.14	0.12 0.12	0.10 0.10	0.09	0.07	0.05													
				18 TPI	16ER A60-TF AG60-TF	0.06 0.06	1.01 1.01	8 8	0.20 0.20	0.18 0.18	0.16 0.16	0.14 0.14	0.12 0.12	0.08	0.08	0.05													
				16 TPI	16ER A60-TF AG60-TF	0.06 0.06	1.15 1.15	10 10	0.22 0.22	0.18 0.18	0.15 0.15	0.13 0.13	0.11 0.11	0.10	0.08	0.08	0.06	0.04											
				14 TPI	16ER G60-TF AG60-TF	0.22 0.06	1.15 1.32	9 11	0.20 0.22	0.18 0.20	0.16 0.18	0.14 0.15	0.13 0.13	0.12	0.10	0.07	0.05	0.06	0.04										
				13 TPI	16ER G60-TF AG60-TF	0.22 0.06	1.26 1.43	9 11	0.24 0.25	0.20 0.23	0.18 0.20	0.16 0.16	0.14 0.14	0.12	0.10	0.07	0.05	0.06	0.04	0.05	0.04								
				12 TPI	16ER G60-TF AG60-TF	0.22 0.06	1.38 1.55	10 12	0.25 0.24	0.22 0.20	0.17 0.18	0.15 0.16	0.12 0.15	0.10	0.07	0.06	0.04	0.04	0.06	0.04									
				10 TPI	16ER G60-TF AG60-TF	0.22 0.06	1.71 1.87	12 13	0.25 0.25	0.22 0.21	0.20 0.20	0.18 0.18	0.16 0.16	0.15	0.14	0.12	0.10	0.08	0.06	0.05	0.04								
				9 TPI	16ER G60-TF AG60-TF	0.22 0.06	1.92 2.08	13 14	0.27 0.27	0.24 0.24	0.22 0.20	0.20 0.20	0.18 0.18	0.16	0.14	0.12	0.11	0.10	0.08	0.06	0.04	0.04							
				8 TPI	16ER G60-TF AG60-TF	0.22 0.06	2.19 2.35	15 16	0.27 0.30	0.25 0.25	0.22 0.23	0.20 0.20	0.18 0.18	0.16	0.14	0.12	0.12	0.11	0.10	0.09	0.08	0.05	0.05						
				48 TPI	16ER A60 AG60	0.06 0.06	0.35 0.35	5 5	0.10 0.10	0.08 0.07	0.06 0.06	0.04 0.04																	
				24 TPI	16ER A60 AG60	0.06 0.06	0.75 0.75	7 7	0.18 0.18	0.15 0.15	0.13 0.13	0.10 0.10	0.08 0.08	0.07	0.04														
				20 TPI	16ER A60 AG60	0.06 0.06	0.91 0.91	8 8	0.18 0.18	0.16 0.16	0.14 0.14	0.12 0.12	0.10 0.10	0.09	0.07	0.05													
18 TPI	16ER A60 AG60			0.06 0.06	1.01 1.01	8 8	0.20 0.20	0.18 0.18	0.16 0.16	0.14 0.14	0.12 0.12	0.08	0.08	0.05															
16 TPI	16ER A60 AG60			0.06 0.06	1.15 1.15	10 10	0.22 0.22	0.18 0.18	0.15 0.15	0.13 0.13	0.11 0.11	0.10	0.08	0.08	0.06	0.04													
14 TPI	16ER G60 AG60			0.22 0.06	1.32 1.11	11 12	0.22 0.20	0.18 0.18	0.15 0.15	0.13 0.13	0.10 0.10	0.09	0.08	0.07	0.05	0.06	0.04												
13 TPI	16ER G60 AG60			0.22 0.06	1.26 1.43	9 11	0.24 0.25	0.20 0.23	0.18 0.20	0.16 0.16	0.14 0.12	0.10	0.08	0.06	0.05	0.04	0.04												
12 TPI	16ER G60 AG60			0.22 0.06	1.38 1.55	10 12	0.25 0.24	0.22 0.20	0.17 0.16	0.15 0.15	0.12 0.14	0.10	0.07	0.06	0.04	0.04	0.06	0.04											
10 TPI	16ER G60 AG60			0.22 0.06	1.71 1.87	12 13	0.25 0.25	0.22 0.21	0.20 0.20	0.18 0.18	0.16 0.16	0.15	0.14	0.12	0.10	0.08	0.06	0.05	0.04										
9 TPI	16ER G60 AG60			0.22 0.06	1.92 2.08	13 14	0.27 0.27	0.24 0.24	0.22 0.20	0.20 0.20	0.18 0.18	0.16	0.14	0.12	0.11	0.10	0.08	0.06	0.04	0.04									
8 TPI	16ER G60 AG60			0.22 0.06	2.19 2.35	15 16	0.27 0.30	0.25 0.25	0.22 0.23	0.20 0.20	0.18 0.18	0.16	0.14	0.12	0.12	0.11	0.10	0.09											



**60° / 55° (Partial Profile)**

(ap shows the value of radial ap)

Type	Pitch/TPI	Description	Corner-R(ε)	Total ap (mm)	No. of Passes	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19			
	mm/TPI																										
Unified	Internal Thread	18 TPI	<b>08IR 60007</b>	0.07	0.85	17	0.07	0.07	0.07	0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.04	0.04	0.03	0.03	0.03					
		16 TPI	<b>08IR 60007</b>	0.07	0.96	18	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.05	0.05	0.04	0.04	0.04	0.03				
		48 TPI	<b>11IR A60</b>	0.02	0.32	5	0.08	0.07	0.07	0.06	0.04																
		24 TPI			0.67	7	0.14	0.13	0.12	0.10	0.08	0.06	0.04														
		20 TPI			0.8	8	0.14	0.13	0.12	0.12	0.11	0.08	0.06	0.04													
		18 TPI			0.9	9	0.15	0.14	0.13	0.12	0.11	0.08	0.07	0.06	0.04												
		16 TPI			1.01	10	0.15	0.14	0.13	0.12	0.12	0.10	0.08	0.07	0.06	0.04											
		48 TPI	<b>16IR A60 AG60</b>	0.02	0.32	5	0.08	0.07	0.07	0.06	0.04																
		24 TPI			0.67	7	0.14	0.13	0.12	0.10	0.08	0.06	0.04														
		20 TPI	<b>16IR A60 AG60</b>	0.02	0.80	8	0.14	0.13	0.12	0.12	0.11	0.08	0.06	0.04													
		18 TPI			0.90	9	0.15	0.14	0.13	0.12	0.11	0.08	0.07	0.06	0.04												
		16 TPI	<b>16IR A60 AG60</b>	0.02	1.01	10	0.15	0.14	0.13	0.12	0.12	0.10	0.08	0.07	0.06	0.04											
		14 TPI			1.07	9	0.20	0.18	0.16	0.14	0.12	0.10	0.08	0.05	0.04												
		13 TPI	<b>16IR G60 AG60</b>	0.02	1.16	10	0.20	0.18	0.16	0.14	0.12	0.11	0.08	0.07	0.06	0.04											
		12 TPI			1.25	12	0.18	0.16	0.15	0.13	0.12	0.11	0.10	0.09	0.07	0.06	0.04										
		10 TPI	<b>16IR G60 AG60</b>	0.02	1.54	14	0.20	0.18	0.16	0.15	0.14	0.13	0.12	0.11	0.10	0.08	0.06	0.05	0.04	0.04							
		9 TPI			1.63	16	0.20	0.18	0.16	0.15	0.14	0.13	0.12	0.11	0.10	0.09	0.08	0.07	0.06	0.05	0.04	0.02					
		8 TPI	<b>16IR G60 AG60</b>	0.02	1.81	17	0.20	0.18	0.16	0.15	0.14	0.13	0.12	0.11	0.10	0.09	0.08	0.07	0.06	0.05	0.04	0.02					
		7 TPI			1.95	17	0.20	0.18	0.16	0.15	0.14	0.13	0.12	0.11	0.10	0.09	0.08	0.07	0.06	0.05	0.04	0.02					
		6 TPI	<b>22IR N60</b>	0.22	2.14	14	0.26	0.24	0.23	0.22	0.20	0.18	0.16	0.14	0.12	0.11	0.10	0.07	0.06	0.05							
		5 TPI			2.53	17	0.28	0.26	0.23	0.22	0.20	0.18	0.17	0.15	0.14	0.13	0.12	0.10	0.09	0.08	0.07	0.06	0.05				
					3.08	19	0.30	0.28	0.26	0.25	0.23	0.22	0.20	0.17	0.16	0.14	0.13	0.12	0.11	0.10	0.08	0.06	0.05				
		Parallel Pipe / Tapered Pipe	External Thread	28 TPI	<b>16ER A55-TF AG55-TF</b>	0.06	0.67	7	0.16	0.14	0.10	0.09	0.08	0.06	0.04												
				0.06		0.67	7	0.16	0.14	0.10	0.09	0.08	0.06	0.04													
19 TPI	<b>16ER G55-TF AG55-TF</b>			0.22	1.20	9	0.22	0.19	0.17	0.15	0.13	0.12	0.10	0.08	0.04												
14 TPI				0.06	1.40	11	0.24	0.22	0.19	0.16	0.14	0.12	0.10	0.08	0.06	0.05	0.04										
11 TPI	<b>16ER G55-TF AG55-TF</b>			0.22	1.60	12	0.24	0.22	0.20	0.18	0.16	0.14	0.13	0.10	0.08	0.06	0.05	0.04									
0.06				1.79	13	0.25	0.22	0.21	0.20	0.18	0.16	0.14	0.12	0.10	0.08	0.05	0.05	0.03									
28 TPI	<b>16ER A55 AG55</b>			0.06	0.67	7	0.16	0.14	0.10	0.09	0.08	0.06	0.04														
0.06				0.67	7	0.16	0.14	0.10	0.09	0.08	0.06	0.04															
19 TPI	<b>16ER A55 AG55</b>			0.06	1.02	8	0.20	0.18	0.16	0.14	0.12	0.10	0.07	0.05													
14 TPI				0.06	1.40	11	0.24	0.22	0.19	0.16	0.14	0.12	0.10	0.08	0.06	0.05	0.04										
11 TPI	<b>16ER G55 AG55</b>			0.22	1.60	12	0.24	0.22	0.20	0.18	0.16	0.14	0.13	0.10	0.08	0.06	0.05	0.04									
0.06				1.79	13	0.25	0.22	0.21	0.20	0.18	0.16	0.14	0.12	0.10	0.08	0.05	0.05	0.03									
28 TPI	<b>08IR 5501</b>			0.10	0.61	12	0.07	0.07	0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.03	0.03									
19 TPI				0.10	0.95	18	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.04	0.04	0.03	0.03			
28 TPI	<b>11IR A55</b>			0.06	0.67	7	0.16	0.14	0.10	0.09	0.08	0.06	0.04														
19 TPI				0.06	1.02	8	0.20	0.18	0.16	0.14	0.12	0.10	0.07	0.05													
28 TPI	<b>16IR A55 A G55</b>			0.06	0.67	7	0.16	0.14	0.10	0.09	0.08	0.06	0.04														
19 TPI				0.06	0.67	7	0.16	0.14	0.10	0.09	0.08	0.06	0.04														
14 TPI	<b>16IR G55 AG55</b>			0.22	1.20	9	0.22	0.19	0.17	0.15	0.13	0.12	0.10	0.08	0.04												
11 TPI				0.06	1.40	11	0.24	0.22	0.19	0.16	0.14	0.12	0.10	0.08	0.06	0.05	0.04										
14 TPI	<b>16IR G55 AG55</b>			0.22	1.60	12	0.24	0.22	0.20	0.18	0.16	0.14	0.13	0.10	0.08	0.06	0.05	0.04									
11 TPI				0.06	1.79	13	0.25	0.22	0.21	0.20	0.18	0.16	0.14	0.12	0.10	0.08	0.05	0.05	0.03								
Whitworth	External Thread			48 TPI	<b>16ER A55-TF AG55-TF</b>	0.06	0.37	5	0.12	0.09	0.07	0.05	0.04														
				0.06		0.37	5	0.12	0.09	0.07	0.05	0.04															
		24 TPI	<b>16ER A55-TF AG55-TF</b>	0.06	0.79	7	0.18	0.16	0.14	0.11	0.08	0.07	0.05														
		0.06		0.79	7	0.18	0.16	0.14	0.11	0.08	0.07	0.05															
		20 TPI	<b>16ER A55-TF AG55-TF</b>	0.06	0.96	8	0.20	0.18	0.15	0.13	0.10	0.08	0.07	0.05													
		0.06		0.96	8	0.20	0.18	0.15	0.13	0.10	0.08	0.07	0.05														
		18 TPI	<b>16ER A55-TF AG55-TF</b>	0.06	1.07	9	0.20	0.17	0.16	0.14	0.11	0.09	0.08	0.07	0.05												
		0.06		1.07	9	0.20	0.17	0.16	0.14	0.11	0.09	0.08	0.07	0.05													
		16 TPI	<b>16ER A55-TF AG55-TF</b>	0.06	1.22	11	0.20	0.18	0.16	0.13	0.11	0.10	0.09	0.08	0.07	0.06	0.04										
		0.06		1.22	11	0.20	0.18	0.16	0.13	0.11	0.10	0.09	0.08	0.07	0.06	0.04											
		14 TPI	<b>16ER G55-TF AG55-TF</b>	0.22	1.20	9	0.22	0.19	0.17	0.15	0.13	0.12	0.10	0.08	0.04												
		0.06		1.40	11	0.24	0.22	0.19	0.16	0.14	0.12	0.10	0.08	0.06	0.05	0.04											
		12 TPI	<b>16ER G55-TF AG55-TF</b>	0.22	1.44	10	0.24	0.22	0.20	0.18	0.15	0.12	0.12	0.09	0.07	0.05											
		0.06		1.64	12	0.24	0.22	0.20	0.18	0.16	0.14	0.12	0.10	0.09	0.08	0.06	0.05	0.04									
11 TPI	<b>16ER G55-TF AG55-TF</b>	0.22	1.60	12	0.24	0.22	0.20	0.18	0.16	0.14	0.13	0.10	0.08	0.06	0.05	0.04											



# 11 / 16 (Full Profile) type

## 1-Thread, With Chipbreaker (TS Chipbreaker)

(ap shows the value of radial ap)

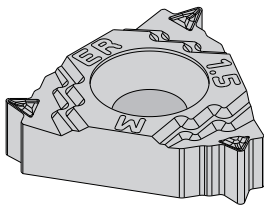
Type	Pitch/TPI		Description	(Previous Description)	C (mm)	*Total ap (mm)	No. of Passes	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
	mm/TPI																										
Metric	External Thread	1.00 mm	<b>16E</b> <sup>1/4</sup> <b>100ISO-TS</b>	<b>TNN32E</b> <sup>1/4</sup> <b>100M-TS</b>	0.64	0.72	5	0.23	0.19	0.15	0.10	0.05															
		1.25 mm	<b>125ISO-TS</b>	<b>125M-TS</b>	0.80	0.88	6	0.26	0.21	0.16	0.12	0.08	0.05														
	Internal Thread	1.50 mm	<b>150ISO-TS</b>	<b>150M-TS</b>	0.95	1.03	6	0.26	0.24	0.21	0.16	0.11	0.05														
		2.00 mm	<b>200ISO-TS</b>	<b>200M-TS</b>	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										
Parallel Pipe	External Thread	19 TPI	<b>16E</b> <sup>1/4</sup> <b>19W-TS</b>	<b>TNN32E</b> <sup>1/4</sup> <b>19W-TS</b>	0.89	0.97	6	0.28	0.20	0.18	0.16	0.10	0.05														
		14 TPI	<b>14W-TS</b>	<b>14W-TS</b>	1.19	1.27	9	0.29	0.20	0.18	0.16	0.11	0.10	0.10	0.08	0.05											
	Internal Thread	11 TPI	<b>11W-TS</b>	<b>11W-TS</b>	1.50	1.58	12	0.29	0.20	0.18	0.16	0.12	0.12	0.12	0.10	0.10	0.07	0.07	0.05								
		14 TPI	<b>14W-TS</b>	<b>14W-TS</b>	1.19	1.27	9	0.29	0.20	0.18	0.16	0.11	0.10	0.10	0.08	0.05											
Whitworth	External Thread	14 TPI	<b>16E</b> <sup>1/4</sup> <b>14W-TS</b>	<b>TNN32E</b> <sup>1/4</sup> <b>14W-TS</b>	1.19	1.27	9	0.29	0.20	0.18	0.16	0.11	0.10	0.10	0.08	0.05											
		11 TPI	<b>11W-TS</b>	<b>11W-TS</b>	1.50	1.58	12	0.29	0.20	0.18	0.16	0.12	0.12	0.12	0.10	0.10	0.07	0.07	0.05								
	Internal Thread	14 TPI	<b>14W-TS</b>	<b>14W-TS</b>	1.19	1.27	9	0.29	0.20	0.18	0.16	0.11	0.10	0.10	0.08	0.05											
		11 TPI	<b>11W-TS</b>	<b>11W-TS</b>	1.50	1.58	12	0.29	0.20	0.18	0.16	0.12	0.12	0.12	0.10	0.10	0.10	0.07	0.05								
Tapered Pipe	External Thread	19 TPI	<b>16E</b> <sup>1/4</sup> <b>19BSPT-TS</b>	<b>TNN32E</b> <sup>1/4</sup> <b>19PT-TS</b>	0.86	0.94	6	0.26	0.20	0.18	0.15	0.10	0.05														
		14 TPI	<b>14BSPT-TS</b>	<b>14PT-TS</b>	1.16	1.24	9	0.22	0.20	0.18	0.16	0.14	0.12	0.10	0.08	0.04											
	Internal Thread	11 TPI	<b>11BSPT-TS</b>	<b>11PT-TS</b>	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								
		19 TPI	<b>11I</b> <sup>1/4</sup> <b>19BSPT-TS</b>	<b>TNN32I</b> <sup>1/4</sup> <b>19PT-TS</b>	0.86	0.94	7	0.22	0.20	0.18	0.14	0.10	0.06	0.04													
Internal Thread	14 TPI	<b>14BSPT-TS</b>	<b>14PT-TS</b>	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	<b>16I</b> <sup>1/4</sup> <b>14BSPT-TS</b>	<b>TNN32I</b> <sup>1/4</sup> <b>14PT-TS</b>	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	<b>11BSPT-TS</b>	<b>11PT-TS</b>	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									

## 2-Thread, With Chipbreaker

(ap shows the value of radial ap)

Type	Pitch/TPI		Description	(Previous Description)	C (mm)	*Total ap (mm)	No. of Passes	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		
	mm/TPI																											
Metric	External Thread	1.00 mm	<b>16E</b> <sup>1/4</sup> <b>100ISO-M02</b>	<b>TNN32E</b> <sup>1/4</sup> <b>100M02</b>	0.64	0.69	3	0.25	0.23	0.21																		
		1.50 mm	<b>150ISO-M02</b>	<b>150M02</b>	0.95	1.00	3	0.36	0.34	0.30																		
		2.00 mm	<b>200ISO-M02</b>	<b>200M02</b>	1.27	1.32	4	0.38	0.36	0.30	0.28																	

## Chip Control of Threading Insert with Chipbreaker



Insert with TS Chipbreaker

• Insert with TS Chipbreaker improves Chip Control.

### • Features

1. "TS" breaks chips into small pieces and shows good chip evacuation.
2. Economical high precision molded insert.

• Cutting Conditions: Vc=100m/min, P=1.5 pitch, No. of Passes: 6, SCM435, WET, Flank Infeed (External Threading)

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

# Depth of Cut & Number of Passes

11 / 16 (60° / 55° Partial Profile) type

(ap shows the value of radial ap)

Type	Pitch/TPI	Description	(Previous Description)	Corner-R(r)	Total ap (mm)	No. of Passes	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
	mm/TPI																									
Metric	External Thread	1.00 mm	16E% 6001(-TS)	TNN32E% 6001(-TS)	0.10	0.66	5	0.20	0.18	0.12	0.09	0.05														
		1.25 mm	16E% 6001(-TS)	TNN32E% 6001(-TS)	0.10	0.85	6	0.23	0.20	0.14	0.12	0.07	0.05													
		1.50 mm	16E% 6001(-TS) 6002(-TS)	TNN32E% 6001(-TS) 6002(-TS)	0.10 0.20	1.04 0.94	8 7	0.23 0.23	0.21 0.20	0.19 0.18	0.15 0.14	0.11 0.10	0.06 0.05	0.05 0.04												
		1.75 mm	16E% 6001(-TS) 6002(-TS)	TNN32E% 6001(-TS) 6002(-TS)	0.10 0.20	1.23 1.13	9 8	0.25 0.25	0.22 0.22	0.20 0.20	0.17 0.16	0.14 0.14	0.09 0.07	0.07 0.05	0.04 0.04											
		2.00 mm	16E% 6001(-TS) 6002(-TS)	TNN32E% 6001(-TS) 6002(-TS)	0.10 0.20	1.42 1.32	11 10	0.25 0.25	0.22 0.22	0.20 0.20	0.16 0.16	0.14 0.14	0.12 0.12	0.10 0.08	0.08 0.07	0.06 0.04	0.05 0.04									
		2.50 mm	16E% 6001(-TS) 6002(-TS)	TNN32E% 6001(-TS) 6002(-TS)	0.10 0.20	1.79 1.69	13 12	0.25 0.25	0.22 0.22	0.20 0.20	0.18 0.18	0.16 0.16	0.16 0.16	0.14 0.12	0.12 0.12	0.10 0.10	0.09 0.08	0.08 0.06	0.05 0.04	0.04 0.04						
	Internal Thread	0.75 mm	11I% 60005	TNN22I% 60005	0.05	0.44	5	0.14	0.12	0.10	0.06	0.02														
		1.00 mm	11I% 60005	TNN22I% 60005	0.05	0.60	6	0.18	0.15	0.10	0.08	0.05	0.04													
		1.25 mm	11I% 60005	TNN22I% 60005	0.05	0.76	7	0.18	0.15	0.12	0.10	0.10	0.07	0.04												
		1.50 mm	11I% 60005 16I% 6001(-TS)	TNN22I% 60005 TNN32I% 6001(-TS)	0.05 0.10	0.92 0.87	9 8	0.18 0.18	0.16 0.16	0.12 0.12	0.10 0.10	0.10 0.10	0.08 0.08	0.08 0.05	0.06 0.05	0.04										
		1.75 mm	16I% 6001(-TS)	TNN32I% 6001(-TS)	0.10	1.04	9	0.20	0.18	0.15	0.12	0.12	0.10	0.08	0.05	0.04										
		2.00 mm	16I% 6001(-TS)	TNN32I% 6001(-TS)	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								
(60°)	External Thread	28 TPI	16E% 5501	TNN32E% 5501	0.10	0.61	5	0.20	0.16	0.12	0.08	0.05														
		19 TPI	16E% 5501	TNN32E% 5501	0.10	0.95	7	0.22	0.20	0.16	0.14	0.10	0.08	0.05												
		14 TPI	16E% 5501 5502	TNN32E% 5501 5502	0.10 0.20	1.34 1.22	10 9	0.24 0.24	0.20 0.20	0.18 0.18	0.16 0.16	0.13 0.11	0.10 0.10	0.10 0.08	0.08 0.05											
		11 TPI	16E% 5501 5502	TNN32E% 5501 5502	0.10 0.20	1.73 1.62	13 12	0.25 0.25	0.22 0.22	0.22 0.20	0.20 0.18	0.14 0.14	0.12 0.12	0.10 0.10	0.08 0.05	0.05 0.04	0.05 0.02									
		28 TPI	11I% 55005 16I% 5501	TNN22I% 55005 TNN32I% 5501	0.05 0.10	0.67 0.61	7 6	0.18 0.18	0.15 0.15	0.12 0.12	0.08 0.08	0.06 0.05	0.05 0.03													
		19 TPI	11I% 55005 16I% 5501	TNN22I% 55005 TNN32I% 5501	0.05 0.10	1.01 0.95	8 7	0.20 0.20	0.18 0.18	0.16 0.16	0.14 0.14	0.12 0.12	0.08 0.10	0.08 0.05	0.05											
	Internal Thread	14 TPI	11I% 55005 16I% 5501 5502	TNN22I% 55005 TNN32I% 5501 5502	0.05 0.10 0.20	1.39 1.34 1.22	11 10 9	0.20 0.20 0.20	0.18 0.18 0.18	0.16 0.16 0.16	0.14 0.14 0.15	0.14 0.14 0.12	0.12 0.10 0.10	0.12 0.10 0.08	0.08 0.05											
		11 TPI	16I% 5501 5502	TNN32I% 5501 5502	0.10 0.20	1.73 1.62	12 11	0.25 0.25	0.20 0.20	0.18 0.18	0.16 0.16	0.16 0.14	0.14 0.12	0.12 0.12	0.10 0.08	0.07 0.05	0.05									
		24 TPI	16E% 5501	TNN32E% 5501	0.10	0.73	6	0.22	0.18	0.12	0.09	0.07	0.05													
		20 TPI	16E% 5501	TNN32E% 5501	0.10	0.90	6	0.22	0.18	0.17	0.16	0.12	0.05													
		18 TPI	16E% 5501	TNN32E% 5501	0.10	1.01	7	0.24	0.20	0.18	0.16	0.10	0.08	0.05												
		16 TPI	16E% 5501 5502	TNN32E% 5501 5502	0.10 0.20	1.15 1.04	9 8	0.24 0.24	0.20 0.20	0.16 0.16	0.14 0.14	0.12 0.10	0.10 0.08	0.06 0.07	0.05 0.05											
Whitworth	External Thread	14 TPI	16E% 5501 5502	TNN32E% 5501 5502	0.10 0.20	1.34 1.22	10 9	0.24 0.24	0.20 0.20	0.18 0.18	0.16 0.16	0.13 0.11	0.10 0.10	0.10 0.08	0.08 0.05											
		12 TPI	16E% 5501 5502	TNN32E% 5501 5502	0.10 0.20	1.58 1.46	12 11	0.25 0.25	0.20 0.20	0.18 0.18	0.16 0.15	0.14 0.14	0.12 0.10	0.08 0.08	0.08 0.07	0.05 0.05										
		11 TPI	16E% 5501 5502	TNN32E% 5501 5502	0.10 0.20	1.73 1.62	12 11	0.25 0.25	0.20 0.20	0.18 0.18	0.16 0.16	0.16 0.14	0.12 0.12	0.10 0.10	0.08 0.05	0.07 0.05										
		10 TPI	16E% 5501 5502	TNN32E% 5501 5502	0.10 0.20	1.92 1.80	14 13	0.25 0.25	0.23 0.23	0.23 0.20	0.20 0.18	0.16 0.16	0.12 0.12	0.10 0.10	0.08 0.08	0.08 0.05	0.05 0.02									
		9 TPI	16E% 5502	TNN32E% 5502	0.20	2.03	14	0.25	0.23	0.23	0.20	0.20	0.18	0.16	0.12	0.12	0.10	0.08	0.08	0.06	0.02					
		24 TPI	11I% 55005 16I% 5501	TNN22I% 55005 TNN32I% 5501	0.05 0.10	0.71 0.65	7 6	0.18	0.15	0.12	0.10	0.08	0.05	0.03												
	Internal Thread	20 TPI	11I% 55005 16I% 5501	TNN22I% 55005 TNN32I% 5501	0.05 0.10	0.87 0.81	8 7	0.18 0.18	0.16 0.16	0.14 0.14	0.12 0.12	0.10 0.10	0.06 0.06	0.06 0.05	0.05											
		18 TPI	11I% 55005 16I% 5501	TNN22I% 55005 TNN32I% 5501	0.05 0.10	0.97 0.91	8 7	0.20 0.20	0.18 0.18	0.16 0.16	0.14 0.14	0.10 0.10	0.08 0.08	0.06 0.05												
		16 TPI	11I% 55005 16I% 5501 5502	TNN22I% 55005 TNN32I% 5501 5502	0.05 0.10 0.20	1.09 1.04 0.92	9 8 7	0.20 0.20 0.20	0.18 0.18 0.18	0.16 0.16 0.16	0.14 0.15 0.10	0.10 0.10 0.08	0.08 0.08 0.05	0.08 0.05												
		14 TPI	11I% 55005 16I% 5501 5502	TNN22I% 55005 TNN32I% 5501 5502	0.05 0.10 0.20	1.26 1.20 1.08	10 9 8	0.20 0.20 0.20	0.18 0.18 0.18	0.16 0.17 0.16	0.14 0.14 0.13	0.12 0.12 0.10	0.10 0.10 0.08	0.08 0.05												
		12 TPI	16I% 5501 5502	TNN32I% 5501 5502	0.10 0.20	1.42 1.30	10 9	0.25 0.25	0.20 0.22	0.18 0.18	0.16 0.16	0.14 0.14	0.12 0.10	0.10 0.08	0.08 0.05											
		11 TPI	16I% 5501 5502	TNN32I% 5501 5502	0.10 0.20	1.56 1.44	11 10	0.25 0.25	0.20 0.20	0.18 0.18	0.16 0.16	0.16 0.14	0.12 0.12	0.10 0.10	0.08 0.05	0.05										

<Note> 1) Select the insert with suitable corner-R(r) determined by the pitch. 2) Do not exceed 0.3mm for the 1st ap.  
 3) Finishing ap should be 0.02~0.05mm. 4) Prepare chamfering of C0.3~C0.5 to prevent the insert from cracking during the 1st Pass.  
 5) Coolant is recommended.

**TT type** (60° / 55° Partial Profile) Part 1

(ap shows the value of radial ap)

Type	Pitch	Description	Corner-R(r)	Total ap (mm)	No. of Passes	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17			
	mm/TPI																								
Metric	External Thread	0.50 mm	TT32% 6000	0.00	0.38	6	0.10	0.10	0.07	0.05	0.04	0.02													
		0.70 mm	TT32% 6000	0.00	0.53	7	0.10	0.10	0.10	0.08	0.07	0.06	0.02												
		0.75 mm	TT32% 6000	0.00	0.57	8	0.10	0.10	0.10	0.08	0.08	0.05	0.04	0.02											
		0.80 mm	TT32% 6000	0.00	0.61	8	0.10	0.10	0.10	0.10	0.08	0.06	0.05	0.02											
		1.00 mm	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													
		1.25 mm	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												
		1.50 mm	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											
		1.75 mm	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										
		2.00 mm	TT32% 6000	0.00	1.52	12	0.25	0.23	0.20	0.16	0.13	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									
		2.50 mm	TT32% 6000	0.00	1.89	13	0.27	0.25	0.20	0.18	0.17	0.15	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	0.06	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									
	3.00 mm	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									
		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	0.05	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							
	3.50 mm	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								
		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					
	Internal Thread	0.50 mm	TT32% 6000	0.00	0.32	5	0.12	0.08	0.06	0.04	0.02														
		0.70 mm	TT32% 6000	0.00	0.45	6	0.15	0.10	0.08	0.06	0.04	0.02													
		0.75 mm	TT32% 6000	0.00	0.49	6	0.15	0.12	0.08	0.07	0.05	0.02													
		0.80 mm	TT32% 6000	0.00	0.52	6	0.15	0.12	0.10	0.08	0.05	0.02													
	Parallel Pipe / Tapered Pipe	External Thread	1.00 mm	TT32% 6000	0.00	0.65	7	0.15	0.14	0.12	0.10	0.08	0.04	0.02											
			1.25 mm	TT32% 6000	0.00	0.81	8	0.18	0.16	0.14	0.12	0.10	0.05	0.04	0.02										
			1.50 mm	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											
			1.75 mm	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								
		Internal Thread	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										
			2.00 mm	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								
			2.50 mm	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						
	3.00 mm	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						
	Whitworth	External Thread	24 TPI	TT32 / 43% 5501	0.10	0.73	6	0.20	0.18	0.16	0.12	0.05	0.02												
			20 TPI	TT32 / 43% 5501	0.10	0.90	7	0.20	0.18	0.16	0.14	0.12	0.08	0.02											
18 TPI			TT32 / 43% 5501	0.10	1.01	8	0.20	0.18	0.18	0.16	0.12	0.10	0.05	0.02											
16 TPI			TT32 / 43% 5501	0.10	1.15	9	0.25	0.20	0.18	0.14	0.12	0.10	0.08	0.06	0.02										
			5502	0.20	1.04	8	0.25	0.20	0.18	0.14	0.10	0.08	0.07	0.02											
14 TPI			TT32 / 43% 5501	0.10	1.34	10	0.25	0.22	0.20	0.16	0.14	0.12	0.10	0.08	0.05	0.02									
			5502	0.20	1.22	9	0.25	0.22	0.20	0.18	0.12	0.10	0.08	0.05	0.02										
12 TPI			TT32 / 43% 5501	0.10	1.58	12	0.25	0.20	0.18	0.16	0.15	0.14	0.12	0.12	0.10	0.08	0.06	0.02							
			5502	0.20	1.46	11	0.25	0.20	0.18	0.16	0.15	0.14	0.12	0.10	0.08	0.06	0.02								
11 TPI			TT32 / 43% 5501	0.10	1.73	13	0.25	0.22	0.22	0.20	0.18	0.14	0.12	0.10	0.10	0.08	0.05	0.05	0.02						
	5502	0.20	1.62	12	0.25	0.22	0.22	0.20	0.18	0.14	0.12	0.10	0.08	0.05	0.04	0.02									
10 TPI	TT43% 5503	0.30	1.50	11	0.25	0.22	0.20	0.18	0.16	0.14	0.12	0.10	0.07	0.04	0.02										
	TT32 / 43% 5501	0.10	1.92	14	0.25	0.23	0.23	0.20	0.18	0.16	0.12	0.12	0.10	0.10	0.08	0.08	0.05	0.02							
	5502	0.20	1.80	13	0.25	0.23	0.23	0.20	0.18	0.16	0.12	0.10	0.10	0.08	0.08	0.05	0.02								
9 TPI	TT43% 5503	0.30	1.68	12	0.25	0.23	0.20	0.18	0.18	0.14	0.13	0.12	0.10	0.08	0.05	0.02									
	TT32 / 43% 5501	0.10	2.14	14	0.25	0.23	0.23	0.20	0.20	0.18	0.18	0.16	0.14	0.12	0.10	0.08	0.08	0.05	0.02						

# Depth of Cut & Number of Passes

## TT type (60° / 55° Partial Profile) Part 2

(ap shows the value of radial ap)

Type	Pitch	Description	Corner-R (re)	Total ap (mm)	No. of Passes	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17			
	mm/TPI																								
Whitworth Internal Thread (55°)	24 TPI	TT32 / 43% 5501	0.10	0.65	6	0.20	0.16	0.12	0.10	0.05	0.02														
	20 TPI	TT32 / 43% 5501	0.10	0.81	7	0.20	0.18	0.16	0.12	0.08	0.05	0.02													
	18 TPI	TT32 / 43% 5501	0.10	0.91	8	0.20	0.18	0.16	0.15	0.10	0.05	0.05	0.02												
	16 TPI	TT32 / 43% 5501 5502	0.10	1.04	9	0.20	0.18	0.15	0.14	0.12	0.10	0.08	0.05	0.02											
			0.20	0.92	8	0.20	0.18	0.16	0.13	0.10	0.08	0.05	0.02												
	14 TPI	TT32 / 43% 5501 5502	0.10	1.20	10	0.20	0.18	0.16	0.15	0.14	0.12	0.10	0.08	0.05	0.02										
			0.20	1.08	9	0.20	0.18	0.16	0.15	0.14	0.10	0.08	0.05	0.02											
	12 TPI	TT32 / 43% 5501 5502	0.10	1.42	10	0.23	0.22	0.20	0.18	0.16	0.14	0.12	0.10	0.05	0.02	0.02									
			0.20	1.30	9	0.25	0.22	0.20	0.18	0.16	0.12	0.10	0.05	0.02											
	11 TPI	T32 / 43% 5501 5502	0.10	1.56	11	0.25	0.22	0.22	0.18	0.16	0.14	0.12	0.10	0.10	0.05	0.02	0.05	0.02							
			0.20	1.44	10	0.25	0.22	0.20	0.18	0.16	0.14	0.12	0.10	0.05	0.02										
	10 TPI	TT43% 5501 5502	0.10	1.73	12	0.25	0.22	0.20	0.18	0.16	0.15	0.14	0.14	0.12	0.10	0.05	0.02	0.02							
			0.20	1.61	11	0.25	0.22	0.20	0.18	0.17	0.16	0.14	0.12	0.10	0.05	0.02									
	9 TPI	TT43% 5501 5502	0.10	1.93	13	0.25	0.23	0.22	0.20	0.18	0.18	0.16	0.14	0.12	0.10	0.08	0.05	0.02	0.02						
			0.20	1.82	12	0.25	0.23	0.22	0.20	0.18	0.16	0.15	0.14	0.12	0.10	0.05	0.02								
	8 TPI	TT43% 5501 5502	0.10	2.19	15	0.27	0.25	0.23	0.21	0.20	0.18	0.16	0.14	0.12	0.10	0.08	0.05	0.02	0.02	0.06	0.06	0.05	0.02		
			0.20	2.07	14	0.27	0.25	0.23	0.21	0.20	0.18	0.16	0.14	0.12	0.10	0.08	0.06	0.05	0.02	0.06	0.06	0.05	0.02		
	(55°)	8 TPI	TT43% 5503	0.30	1.50	10	0.25	0.22	0.22	0.20	0.18	0.14	0.10	0.05	0.02										
TT43% 5504			0.40	1.84	12	0.30	0.25	0.23	0.21	0.20	0.18	0.14	0.12	0.08	0.06	0.05	0.02								

## TT type (60° Full Profile)

(ap shows the value of radial ap)

Type	Pitch/TPI	Description	C (mm)	Total ap (mm)	No. of Passes	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
	mm/TPI																						
Metric External Thread	1.00 mm	TT43E% 100M	0.64	0.72	5	0.23	0.19	0.15	0.10	0.05													
	1.25 mm	125M	0.80	0.88	6	0.26	0.21	0.16	0.12	0.08	0.05												
	1.50 mm	150M	0.95	1.03	6	0.26	0.24	0.21	0.16	0.11	0.05												
	2.00 mm	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								

## TTX type (60° / 55° Partial Profile)

(ap shows the value of radial ap)

Type	Pitch	Description	Corner-R (re)	Total ap (mm)	No. of Passes	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17		
	mm/TPI																							
Metric External Thread (60°)	0.50 mm	TTX32R 6000	0.00	0.38	6	0.10	0.10	0.07	0.05	0.04	0.02													
		6000S	0.05	0.33	5	0.10	0.10	0.07	0.04	0.02														
	0.70 mm	TTX32R 6000	6000	0.00	0.53	7	0.10	0.10	0.10	0.08	0.07	0.06	0.02											
			6000S	0.05	0.48	6	0.10	0.10	0.10	0.10	0.06	0.02												
	0.75 mm	TTX32R 6000	6000	0.00	0.57	8	0.10	0.10	0.10	0.08	0.08	0.05	0.04	0.02										
			6000S	0.05	0.52	7	0.10	0.10	0.10	0.08	0.07	0.05	0.02											
	0.80 mm	TTX32R 6000	6000	0.00	0.61	8	0.10	0.10	0.10	0.10	0.08	0.06	0.05	0.02										
			6000S	0.05	0.56	7	0.10	0.10	0.10	0.10	0.08	0.06	0.02											
	1.00 mm	TTX32R 6000	6000	0.00	0.76	8	0.15	0.13	0.12	0.12	0.10	0.08	0.04	0.02										
			6000S	0.05	0.71	7	0.18	0.15	0.12	0.10	0.08	0.06	0.02											
	1.25 mm	TTX32R 6001	6001	0.10	0.66	6	0.20	0.15	0.12	0.10	0.07	0.02												
6001			0.10	0.85	7	0.25	0.20	0.13	0.10	0.10	0.05	0.02												
1.50 mm	TTX32R 6001	6001	0.10	1.04	9	0.25	0.18	0.14	0.12	0.10	0.10	0.08	0.05	0.02										
		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									
2.00 mm	TTX32R 6001	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							
		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							
Tapered Pipe Parallel Pipe (55°)	28 TPI	TTX32R 5501	0.10	0.61	5	0.20	0.18	0.15	0.06	0.02														
		5501S	0.15	0.95	8	0.20	0.18	0.15	0.13	0.12	0.10	0.05	0.02											
14 TPI	TTX32R 5501S	5501S	0.15	1.07	7	0.20	0.18	0.16	0.14	0.12	0.08	0.02												
		5501S	0.15	1.28	10	0.25	0.20	0.18	0.16	0.12	0.12	0.10	0.08	0.05	0.02									
11 TPI	TTX32R 5501S	5501S	0.15	1.67	12	0.25	0.22	0.20	0.18	0.16	0.14	0.14	0.12	0.10	0.08	0.06	0.02							
		5501S	0.10	0.73	6	0.20	0.18	0.16	0.12	0.05	0.02													
24 TPI	TTX32R 5501	5501	0.10	0.90	7	0.20	0.18	0.16	0.14	0.12	0.08	0.02												
		5501S	0.15	0.84	7	0.20	0.18	0.16	0.12	0.10	0.06	0.02												
18 TPI	TTX32R 5501	5501	0.15	0.95	8	0.20	0.18	0.15	0.14	0.12	0.10	0.04	0.02											
		5501S	0.15	1.10	9	0.20	0.18	0.16	0.14	0.12	0.12	0.10	0.06	0.02										
14 TPI	TTX32R 5501S	5501S	0.15	1.28	10	0.25	0.20	0.18	0.16	0.12	0.12	0.10	0.08	0.05	0.02									
		5501S	0.15	1.52	11	0.25	0.20	0.18	0.16	0.16	0.14	0.14	0.12	0.10	0.05	0.02								
12 TPI	TTX32R 5501S	5501S	0.15	1.52	11	0.25	0.20	0.18	0.16	0.16	0.14	0.14	0.12	0.10	0.05	0.02								
		5501S	0.15	1.67	12	0.25	0.22	0.20	0.18	0.16	0.14	0.14	0.12	0.10	0.08	0.06	0.02							

- <Note> 1) Select the insert with suitable corner-R(re) determined by the pitch.  
 2) Do not exceed 0.3mm for the 1st ap.  
 3) Finishing ap should be 0.02~0.05mm.  
 4) Prepare chamfering for C0.3~C0.5 to prevent the insert from cracking at the 1st pass.  
 5) Coolant is recommended.

### TTX type

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

Insert	Thread Types	Metric (mm)	Unified (TPI)	Parallel Pipe Tapered Pipe (TPI)	Whitworth (TPI)
TTX32R 6000 6000S 6001	0.5~1.0	56~32	-	-	
	0.5~1.0	48~32	-	-	
	1.0~2.0	28~14	-	-	
TTX32R 6000S 60					

## TPGB type (60° Partial Profile)

(ap shows the value of radial ap)

Type	Pitch mm/TPI	Description	Cornor-R (rε)	Total ap (mm)	No. of Passes	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17			
Metric	Internal Thread	0.75 mm TPGB1102005 1103005	0.05	0.44	5	0.15	0.12	0.10	0.05	0.02															
			0.05	0.47	5	0.15	0.14	0.10	0.06	0.02															
		0.80 mm TPGB1102005 1103005	0.05	0.60	6	0.18	0.14	0.12	0.10	0.04	0.02														
			0.05	0.76	7	0.18	0.16	0.14	0.12	0.10	0.04	0.02													
		1.50 mm TPGB1102005 1103005	0.05	0.92	8	0.20	0.18	0.16	0.14	0.10	0.08	0.04	0.02												
			0.10	0.87	8	0.20	0.18	0.16	0.14	0.08	0.05	0.04	0.02												
		1.75 mm TPGB1102005 1103005	0.05	1.09	9	0.20	0.18	0.16	0.14	0.13	0.12	0.10	0.10	0.04	0.02										
			0.10	1.04	9	0.20	0.18	0.16	0.13	0.12	0.10	0.08	0.05	0.02											
		2.00 mm TPGB1102005 1103005	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									
			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									
		2.50 mm TPGB1102005 1103005	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	0.07	0.05	0.02							
			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							
3.00 mm TPGB1102005 1103005	0.05	1.90	15	0.25	0.22	0.20	0.18	0.14	0.14	0.13	0.12	0.12	0.10	0.08	0.07	0.05	0.02								
	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							
	0.20	1.75	14	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							
3.50 mm TPGB1102005 1103005	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						
	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						
	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							

## Lead Angle of Thread

Thread's Lead Angle  $\beta$  as shown in Fig.1 decides from the Workpiece Diameter. (Pitch Dia.)

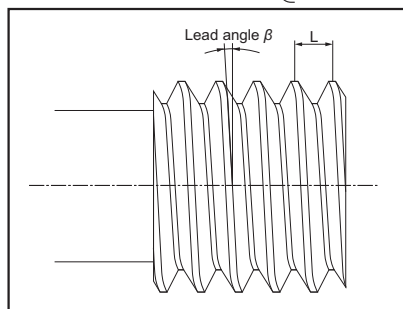
"D" and Lead "L" (in case of Single-start Thread, it is the same as Pitch "P").

By rolling a right-angled Triangle around a Cylinder, the Angle ACB, as seen in Fig.2, becomes the Lead Angle  $\beta$ .

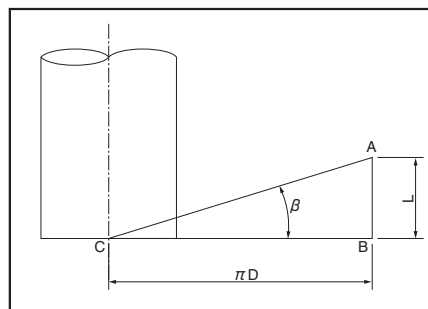
The Calculation Formula is shown as follows.

$$\tan \beta = \frac{L}{\pi D} = \frac{nP}{\pi D}$$

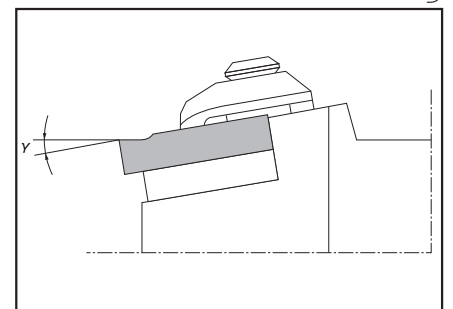
$\beta$ : Lead Angle    D: Pitch Dia.    n: Number of Thread (Such as double-start thread)    P: Pitch  
 L: Lead (In case of single-start thread, it is equal to P. In case of n-start thread, it is equal to  $n \times P$ .)



(Fig.1)



(Fig.2)

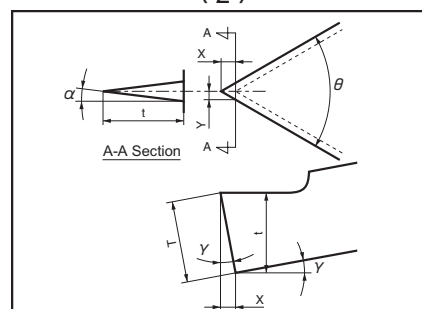


(Fig.3)

## Relief Angle of Thread

Against this lead angle, the threading insert requires side relief angle  $\alpha$ . TNN type threading insert is a negative insert and there is no relief angle. When installing the insert in the toolholder, the edge inclination angle  $\gamma$  (Fig.3) is set, and at the same time front relief angle as well as side relief angle are generated to the insert. Side relief angle is described by the following formula. (Fig.4)

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



(Fig.4)

Symbol	e.g.)
$\alpha$ : Side Relief Angle	
$\gamma$ : Inclination Angle after Installing Insert	External Insert : 10° Internal Insert : 15°
$\theta$ : Insert's Thread Angle	Metric : 60° Tapered Pipe : 55° 30° Trapezoidal : 30°
T: Insert Thickness	

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

(Table1)

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

See table 1 for the Side Relief Angle depending on the insert type.

However, the side relief angle is set to 1° in the traveling direction by the toolholder itself, so that the actual side relief angle becomes  $\alpha + 1^\circ$ .

# Applicable Toolholders & Inserts

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

In Applicable Toolholder / Insert Lists on **J40~J43**, Right-hand Insert / Right-hand Toolholder descriptions are listed based on the previous TNN type inserts. For other applicable inserts / toolholders or stock availability of Left-hand, see each relevant page and **J46**.

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

Nominal Thread Symbol (Previous Symbol)	TPI	External Thread (G)				Internal Thread (G, Rp)				Same Root's Radius
		Toolholder	Insert		Toolholder	Insert		Bore Dia.		
			Partial Profile	Full Profile		Partial Profile	Full Profile			
G <sup>1</sup> / <sub>16</sub> (-)	28	KTNR ○○○○□ -16 KTNSR ○○○○□ -16	16ERA55-TF	-	SINR0612S-06E (HPT J24)	06IR5501	-	6.56	0.12	
G <sup>1</sup> / <sub>8</sub> (PF <sup>1</sup> / <sub>8</sub> )			16ERAG55-TF 16ERA55 16ERAG55					8.57		
G <sup>1</sup> / <sub>4</sub> (PF <sup>1</sup> / <sub>4</sub> )			16ERAG55-TF 16ERAG55							
G <sup>3</sup> / <sub>8</sub> (PF <sup>3</sup> / <sub>8</sub> )	19	KTNR ○○○○□ -16 KTNSR ○○○○□ -16	16ERA55-TF	16ER19W-TF	SINR0816S-08E (HPT J24)	08IR5501	-	11.45	0.18	
G <sup>3</sup> / <sub>8</sub> (PF <sup>3</sup> / <sub>8</sub> )			16ERAG55-TF 16ERA55 16ERAG55	16ER19W 16ER19W-TS				SINR1216S-11E (HPT J24)		11IRA55 11IR55005
G <sup>1</sup> / <sub>2</sub> (PF <sup>1</sup> / <sub>2</sub> )			16ERAG55-TF 16ERAG55		SINR1516S-11	11IR55005	18.63			
G <sup>5</sup> / <sub>8</sub> (PF <sup>5</sup> / <sub>8</sub> )	14	KTNR ○○○○□ -16 KTNSR ○○○○□ -16	16ERAG55-TF	16ER14W-TF	SINR2016S-16	16IRAG55 16IRG55 16IR5501 16IR5502	16IR14W-TF 16IR14W 16IR14W-TS	20.59	0.25	
G <sup>3</sup> / <sub>4</sub> (PF <sup>3</sup> / <sub>4</sub> )			16ERAG55-TF 16ERAG55 16ERAG55	16ER14W 16ER14W-TS				24.12		
G <sup>7</sup> / <sub>8</sub> (PF <sup>7</sup> / <sub>8</sub> )			16ERAG55					27.88		
G 1 (PF 1)	11	KTNR ○○○○□ -16 KTNSR ○○○○□ -16	16ERAG55-TF	16ER11W-TF	SINR2420S-16	16IRAG55 16IRG55 16IR5501 16IR5502	16IR11W-TF 16IR11W 16IR11W-TS	30.29	0.32	
G 1 <sup>1</sup> / <sub>8</sub> (PF 1 <sup>1</sup> / <sub>8</sub> )			16ERAG55-TF 16ERAG55 16ERAG55	16ER11W 16ER11W-TS	CINR3025S-16			34.94		
G 1 <sup>1</sup> / <sub>4</sub> (PF 1 <sup>1</sup> / <sub>4</sub> )			16ERAG55		CINR3732S-16			38.95		
Hereafter, all the threads are 11 TPI and the root's radius 0.32. The same tool for G1 <sup>1</sup> / <sub>4</sub> is recommended.										

## Tapered Pipe: R, Rc(PT)(BSPT)

Nominal Thread Symbol (Previous Symbol)	TPI	External Thread (G)				Internal Thread (G, Rp)				Same Root's Radius	
		Toolholder	Insert		Toolholder	Insert		Bore Dia.			
			Partial Profile	Full Profile		Partial Profile	Full Profile				
R <sup>1</sup> / <sub>16</sub> , Rc <sup>1</sup> / <sub>16</sub> (-)	28	KTNR ○○○○□ -16 KTNSR ○○○○□ -16	(16ERA55-TF)	16ER28BSPT-TF	SINR0612S-06E (HPT J24)	06IR5501	-		0.12		
R <sup>1</sup> / <sub>8</sub> , Rc <sup>1</sup> / <sub>8</sub> (PT <sup>1</sup> / <sub>8</sub> )			(16ERAG55-TF) (16ERA55) (16ERAG55)	16ER28BSPT							
R <sup>1</sup> / <sub>4</sub> , Rc <sup>1</sup> / <sub>4</sub> (PT <sup>1</sup> / <sub>4</sub> )			(16ERAG55-TF) (16ERAG55-TF) (16ERA55) (16ERAG55)	16ER19BSPT-TF 16ER19BSPT 16ER19BSPT-TS							
R <sup>3</sup> / <sub>8</sub> , Rc <sup>3</sup> / <sub>8</sub> (PT <sup>3</sup> / <sub>8</sub> )	19	KTNR ○○○○□ -16 KTNSR ○○○○□ -16	(16ERAG55-TF)	16ER14BSPT-TF	SINR1516S-11	(11IR55005)	11IR14BSPT-TF 11IR14BSPT-TS		0.18		
R <sup>3</sup> / <sub>8</sub> , Rc <sup>3</sup> / <sub>8</sub> (PT <sup>3</sup> / <sub>8</sub> )			(16ERAG55-TF) (16ERAG55-TF) (16ERA55) (16ERAG55)	16ER19BSPT-TF 16ER19BSPT 16ER19BSPT-TS						SINR1216S-11E (HPT J24)	(11IRA55) (11IRA55005)
R <sup>1</sup> / <sub>2</sub> , Rc <sup>1</sup> / <sub>2</sub> (PT <sup>1</sup> / <sub>2</sub> )			16ERAG55-TF 16ERAG55	16ER14BSPT-TF 16ER14BSPT 16ER14BSPT-TS							
R <sup>3</sup> / <sub>4</sub> , Rc <sup>3</sup> / <sub>4</sub> (PT <sup>3</sup> / <sub>4</sub> )	14	KTNR ○○○○□ -16 KTNSR ○○○○□ -16	(16ERAG55-TF)	16ER11BSPT-TF	SINR2420S-16	(16IRAG55) (16IRG55) (16IR5501) (16IR5502)	16IR11BSPT-TF 16IR11BSPT 16IR11BSPT-TS		0.32		
R <sup>1</sup> / <sub>2</sub> , Rc <sup>1</sup> / <sub>2</sub> (PT <sup>1</sup> / <sub>2</sub> )			(16ERAG55-TF) 16ERAG55	16ER14BSPT-TF 16ER14BSPT 16ER14BSPT-TS						SINR2016S-16	16IR14BSPT-TF 16IR14BSPT 16IR14BSPT-TS
R 1, Rc 1 (PT 1)			(16ERAG55-TF) 16ERAG55	16ER11BSPT-TF 16ER11BSPT 16ER11BSPT-TS							
R 1 <sup>1</sup> / <sub>4</sub> , Rc 1 <sup>1</sup> / <sub>4</sub> (PT 1 <sup>1</sup> / <sub>4</sub> )	11	KTNR ○○○○□ -16 KTNSR ○○○○□ -16	(16ERAG55-TF)	16ER11BSPT-TF	SINR2420S-16	(16IRAG55) (16IRG55) (16IR5501) (16IR5502)	16IR11BSPT-TF 16IR11BSPT 16IR11BSPT-TS		0.32		
R 1 <sup>1</sup> / <sub>4</sub> , Rc 1 <sup>1</sup> / <sub>4</sub> (PT 1 <sup>1</sup> / <sub>4</sub> )			(16ERAG55-TF) 16ERAG55	16ER11BSPT 16ER11BSPT-TS						CINR3025S-16	
R 1 <sup>1</sup> / <sub>2</sub> , Rc 1 <sup>1</sup> / <sub>2</sub> (PT 1 <sup>1</sup> / <sub>2</sub> )			(16ERAG55-TF) 16ERAG55							CINR3732S-16	
Hereafter, all the threads are 11 TPI and the root's radius 0.32. The same tool for R1 <sup>1</sup> / <sub>2</sub> is recommended.											

1) The largest size of minimum diameter holder is recommended for internal threading holders.

Therefore it is available if minimum diameter is smaller than recommended holders.

(ex.) SINR2420S-16 (Min. Bore Dia.: ø24mm) is recommended for the Tool of G7/8 Internal Threading from the above Table, but

SINR2016S-16 can also be used.

2) When using "Partial Profile" for Tapered Pipe threading, thread's corners become sharp edged, and the shape will not be the same as the standard shape for Tapered Pipe.



## American National Tapered Pipe: NPT

Nominal Thread	TPI	External Thread			Internal Thread		
		Toolholder	Insert		Toolholder	Insert	
			Partial Profile	Full Profile		Partial Profile	Full Profile
1/16 NPT 1/8 NPT	27	KTTR ○○○○□ -16 KTTXR ○○○○□ -16F	TT32R6000 TTX32R6000	-	No Tools Available		
1/4 NPT 3/8 NPT	18	KTNR ○○○○□ -16 KTNSR ○○○○□ -16	-	16ER18NPT	PSH Sleeve (See J26)	HPTR06005-60-005 HPTR07507-60-005	-
1/2 NPT 3/4 NPT	14	KTNR ○○○○□ -16 KTNSR ○○○○□ -16	-	16ER14NPT	PSH Sleeve (See J26)	HPTR07507-60-005	-
1/2 NPT	14	KTNR ○○○○□ -16 KTNSR ○○○○□ -16	-	16ER14NPT	No Tools Available		
3/4 NPT					SINR2016S-16	-	16IR14NPT
1 NPT	11.5	KTNR ○○○○□ -16 KTNSR ○○○○□ -16	-	16ER11.5NPT	SINR2420S-16		
1 1/4 NPT					CINR3025S-16		
1 1/2 NPT 2 NPT					CINR3732S-16	-	16IR11.5NPT

• Application of NPTF Thread

NPTF is the thread for sealing pipes without using any sealing material.

Thread symbol is similar to NPT but the Tolerance is different from that of NPT, therefore the above Inserts are not available for NPTF.

## 30°Trapezoidal: Tr

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

Nominal Thread	Pitch (mm)	External Thread			Internal Thread			Bore Dia.
		Toolholder	Insert		Toolholder	Insert		
			Partial Profile	Full Profile		Partial Profile	Full Profile	
Tr 16X2 Tr 18X2 Tr 20X2	2	No Tools Available			No Tools Available	-	-	14.00 16.00 18.00
Tr 22X3 Tr 24X3 Tr 26X3	3	KTNR ○○○○□ -16 KTNSR ○○○○□ -16	16ER200TR	-	No Tools Available	-	-	19.00 21.00 23.00
Tr 28X3 Tr 30X3 Tr 32X3	3				SINR2016S-16	16IR300TR	-	25.00 27.00 29.00
Tr 34X3 Tr 36X3 Tr 38X3 Tr 40X3					SINR2420S-16	16IR300TR	-	31.00 33.00 35.00 37.00
Tr 42X3 Tr 44X3 Tr 46X3 Tr 48X3 Tr 50X3 Tr 52X3 Tr 55X3 Tr 60X3 Tr 65X3		3	16ER300TR	-	CINR3025S-16	16IR300TR	-	39.00 41.00 43.00 45.00 47.00 49.00 52.00 57.00 62.00
Tr 70X4 Tr 75X4 Tr 80X4 Tr 90X4 Tr 95X4 Tr 100X4 Tr 105X4 Tr 110X4	4	KTNR ○○○○□ -22	22ER400TR	-	CINR3732S-22	22IR400TR	-	66.00 71.00 76.00 86.00 91.00 96.00 101.00 106.00

• TM Thread

TM Thread (old JIS 30°Trapezoidal Thread) has been discontinued. But if the "Nominal Dia. X Pitch" is the same, the above Tr Thread can be used.

• TW Thread

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

J



Threading

# Applicable Toolholders & Inserts (Internal)

## Metric Coarse Thread: M

Nominal Thread	Pitch (mm)	Internal Thread			Bore Dia.
		Toolholder	Insert		
			Partial Profile	Full Profile	
M1 • • • M3	0.25	No Tools Available	—	—	0.73
M4	0.7				2.46
M5	0.8				3.24
M6	1.0				4.13
M7	1.0				4.92
M8	1.0	—	HPTR04504-60 / VNTR045-11		5.92
M8	1.25	—	HPTR06005-60 / VNTR060-11		6.65
M9	1.25	SINR0612S-06E	06IR60005	—	7.65
M10	1.5	SINR0816S-08E	08IR60007	—	8.38
M11	1.5	SINR0816S-08E	08IR60007	—	9.38
M12	1.75	SINR0816S-08E	08IR60007	—	10.11
M16	2.0	SINR1216S-11E	—	11IR200ISO	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	SINR2016S-16	Table 4	16IR300ISO-OO	20.75
M27	3.0	SINR2016S-16	Table 4	16IR300ISO-OO	23.75
M30	3.5	SINR2420S-22	22IRN60	22IR350ISO	26.21
M33	3.5	SINR2420S-22		22IR350ISO	29.21
M36	4.0	CINR3025S-22		22IR400ISO	31.67
M39	4.0	CINR3025S-22		22IR400ISO	34.67
M42	4.5	CINR3732S-22		22IR450ISO	37.19
M45	4.5	CINR3732S-22	22IR450ISO	40.19	
M48	5.0	CINR3732S-22	22IR500ISO	42.59	
M52	5.0	CINR3732S-22	22IR500ISO	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)	Internal Thread			Bore Dia.
		Toolholder	Insert		
			Partial Profile	Full Profile	
M17X1.5	1.5	SINR1516S-11	11IRA60	11IR150ISO-OO	15.38
M17X1.0	1.0		11IR60005	11IR100ISO-OO	15.92
M18X2.0	2.0	SINR1216S-11E	—	11IR200ISO	15.84
M18X1.5	1.5	SINR1516S-11	11IRA60	11IR150ISO-OO	16.38
M18X1.0	1.0		11IR60005	11IR100ISO-OO	16.92
M20X2.0	2.0	—	—	11IR200ISO	17.84
M20X1.5	1.5	SINR1516S-11	11IRA60	11IR150ISO-OO	18.38
M20X1.0	1.0		11IR60005	11IR100ISO-OO	18.92
M22X2.0	2.0	SINR2016S-16 <small>(Additional machining required)</small>	Table1	16IR200ISO-OO	19.84
M22X1.5	1.5	SINR2016S-16	Table2	16IR150ISO-OO	20.38
M22X1.0	1.0		Table3	16IR100ISO-OO	20.92
M24X2.0	2.0	SINR2016S-16	Table1	16IR200ISO-OO	21.84
M24X1.5	1.5		Table2	16IR150ISO-OO	22.38
M24X1.0	1.0		Table3	16IR100ISO-OO	22.92
M25X2.0	2.0	SINR2016S-16	Table1	16IR200ISO-OO	22.84
M25X1.5	1.5		Table2	16IR150ISO-OO	23.38
M25X1.0	1.0		Table3	16IR100ISO-OO	23.92
M26X1.5	1.5	SINR2420S-16	Table2	16IR150ISO-OO	24.38
M27X2.0	2.0	SINR2420S-16	Table1	16IR200ISO-OO	24.84
M27X1.5	1.5		Table2	16IR150ISO-OO	25.38
M27X1.0	1.0		Table3	16IR100ISO-OO	25.92
M28X2.0	2.0	SINR2420S-16	Table1	16IR200ISO-OO	25.84
M28X1.5	1.5		Table2	16IR150ISO-OO	26.38
M28X1.0	1.0		Table3	16IR100ISO-OO	26.92
M30X3.0	3.0	SINR2420S-22	—	22IR300ISO	26.75
M30X2.0	2.0	SINR2420S-16	Table4	16IR300ISO-OO	27.84
M30X1.5	1.5	SINR2420S-16	Table1	16IR200ISO-OO	27.84
M30X1.0	1.0		Table2	16IR150ISO-OO	28.38
M30X1.0	1.0		Table3	16IR100ISO-OO	28.92
M32X2.0	2.0	SINR2420S-16	Table1	16IR200ISO-OO	29.84
M32X1.5	1.5	CINR3025S-16	Table2	16IR150ISO-OO	30.38
M33X3.0	3.0	SINR2420S-22	—	22IR300ISO	29.75
M33X2.0	2.0	SINR2420S-16	Table4	16IR300ISO-OO	29.75
M33X1.5	1.5	CINR3025S-16	Table1	16IR200ISO-OO	30.84
M33X1.5	1.5		Table2	16IR150ISO-OO	31.38
M35X1.5	1.5	CINR3025S-16	Table2	16IR150ISO-OO	33.38
M36X3.0	3.0	CINR3025S-22	—	22IR300ISO	32.75
M36X2.0	2.0	CINR3025S-16	Table4	16IR300ISO-OO	32.75
M36X1.5	1.5	CINR3025S-16	Table1	16IR200ISO-OO	33.84
M36X1.5	1.5		Table2	16IR150ISO-OO	34.38
M38X1.5	1.5	CINR3025S-16	Table2	16IR150ISO-OO	36.38
M39X3.0	3.0	CINR3025S-22	—	22IR300ISO	35.75
M39X2.0	2.0	CINR3025S-16	Table4	16IR300ISO-OO	35.75
M39X1.5	1.5	CINR3025S-16	Table1	16IR200ISO-OO	36.84
M39X1.5	1.5	CINR3732S-16	Table2	16IR150ISO-OO	37.38
M40X3.0	3.0	CINR3025S-22	—	22IR300ISO	36.75
M40X2.0	2.0	CINR3025S-16	Table4	16IR300ISO-OO	36.75
M40X1.5	1.5	CINR3732S-16	Table1	16IR200ISO-OO	37.84
M40X1.5	1.5	—	Table2	16IR150ISO-OO	38.38
M42X4.0	4.0	CINR3732S-22	22IRN60	22IR400ISO	37.67
M42X3.0	3.0	CINR3025S-16	—	22IR300ISO	38.75
M42X3.0	3.0		Table4	16IR300ISO-OO	38.75
M42X2.0	2.0	CINR3732S-16	Table1	16IR200ISO-OO	39.84
M42X1.5	1.5		Table2	16IR150ISO-OO	40.38
M45X4.0	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

Table1 (P=2mm)

16IRG60 16IRAG60 16IR6001(-TS)
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Table2 (P=1.5mm)

16IRA60 16IRAG60 16IR6001(-TS)
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Table3 (P=1.0mm)

16IRA60 16IRAG60
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Table4 (P=3mm)

16IRG60 16IRAG60
---------------------

## Metric Fine Thread: M

Part 1

Nominal Thread	Pitch (mm)	Internal Thread			Bore Dia.
		Toolholder	Insert		
			Partial Profile	Full Profile	
M 1×0.2 • • • M 5.5×0.5	0.2	No Tools Available	—	—	0.78
M 6×0.75	0.75				5.19
M 7×0.75	0.75				6.20
M 8×1.0	1.0				6.92
M 8×0.75	0.75				7.19
M 9×1.0	1.0	—	HPTR07507-60 / VNTR060-11		7.92
M 9×0.75	0.75	—	HPTR07507-60 / VNTR060-11		
M10×1.25	1.25	—	HPTR07507-60 / VNTR060-11		8.65
M10×1.0	1.0	—	HPTR07507-60 / VNTR060-11		
M10×0.75	0.75	—	HPTR07507-60 / VNTR060-11		9.19
M11×1.0	1.0	—	HPTR07507-60 / VNTR060-11		
M11×0.75	0.75	—	HPTR07507-60 / VNTR060-11		10.19
M12×1.5	1.5	SINR0816S-08E	08IR60007	—	
M12×1.25	1.25	SINR1216S-11E	11IRA60	11IR150ISO-OO	12.38
M12×1.0	1.0		11IR60005	11IR125ISO-OO	12.65
M14×1.5	1.5	SINR1216S-11E	11IRA60	11IR150ISO-OO	13.38
M14×1.0	1.0		11IR60005	11IR100ISO-OO	12.92
M15×1.5	1.5	SINR1216S-11E	11IRA60	11IR150ISO-OO	13.38
M15×1.0	1.0		11IR60005	11IR100ISO-OO	13.92
M16×1.5	1.5	SINR1216S-11E	11IRA60	11IR150ISO-OO	14.38
M16×1.0	1.0		11IR60005	11IR100ISO-OO	14.92

• Above shows the usage example of applicable Toolholder / Insert.

## Unified Coarse Thread: UNC

Nominal Thread	TPI	Internal Thread			Bore Dia.
		Toolholder	Insert		
			Partial Profile	Full Profile	
2-56 UNC	56	No Tools Available	—	—	1.69
•	•				
•	•				
10-24 UNC	24				3.68
1/4-20 UNC	20	—	HPTR04504-60 / VNTR045-11	—	4.98
5/16-18 UNC	18	—	HPTR06005-60 / VNTR060-11	—	6.41
3/8-16 UNC	16	—	HPTR07507-60-005	—	7.81
7/16-14 UNC	14	No Tools Available	—	—	9.15
1/2-13 UNC	13				10.58
9/16-12 UNC	12				12.00
5/8-11 UNC	11				13.38
3/4-10 UNC	10				16.30
7/8-9 UNC	9	* 3/8-16 UNC and over cannot be machined, because no inserts are available for the TPI.	—	—	19.17
•	•				
•	•				
•	•				

## Unified Fine Thread: UNF

Nominal Thread	TPI	Internal Thread			Bore Dia.
		Toolholder	Insert		
			Partial Profile	Full Profile	
0-80 UNF	80	No Tools Available	—	—	1.18
•	•				
10-32 UNF	32				3.97
1/4-28 UNF	28	—	HPTR04504-60 / VNTR045-11	—	5.37
5/16-24 UNF	24	—	HPTR06005-60 / VNTR060-11	—	6.79
		SINR0612S-06E	06IR60005	—	
3/8-24 UNF	24	—	HPTR06005-60 / VNTR060-11	—	8.38
		SINR0612S-06E	06IR60005	—	
7/16-20 UNF	20	SINR0816S-08E	08IR60007	—	9.74
1/2-20 UNF	20	SINR0816S-08E	08IR60007	—	11.33
9/16-18 UNF	18	SINR1216S-11E	11IRA60	—	12.76
5/8-18 UNF	18		11IR60005	—	14.35
3/4-16 UNF	16	SINR1516S-11	11IRA60	—	17.33
7/8-14 UNF	14	SINR2016S-16	16IR60005	16IR14UN(-TF)	20.26
					23.10
1 -12 UNF	12	SINR2016S-16	16IRAG60	16IR12UN(-TF)	26.28
1 1/8-12 UNF	12	SINR2420S-16	16IRG60		29.46
1 1/4-12 UNF	12	SINR2420S-16	16IR6001(-TS)		32.63
1 3/8-12 UNF	12	CINR3025S-16	—		36.81
1 1/2-12 UNF	12	CINR3025S-16	—	—	36.81

## Whitworth Coarse Thread: W

Nominal Thread	TPI	Internal Thread			Bore Dia.
		Toolholder	Insert		
			Partial Profile	Full Profile	
W 1/4	20	No Tools Available	—	—	4.91
W 5/16	18				6.34
W 3/8	16				7.73
W 7/16	14				9.06
W 1/2	12				10.30
W 9/16	12				11.89
W 5/8	11				13.26
W 3/4	10				16.17
W 7/8	9	19.03			
W 1	8	SINR2016S-16	16IRAG55	—	21.80
W 1 1/8	7	SINR2420S-22	22IRN55	—	24.47
					27.64
W 1 3/8	6	CINR3025S-22	22IRN55	—	30.13
W 1 1/2	6				33.30
W 1 5/8	5				35.52
W 1 3/4	5				38.69
W 1 7/8	4 1/2	* Because the toolholder does not fit to the pre-drilled hole or the insert does not match to the TPI, machining is not possible.	—	—	41.23
W 2					44.41
W 2 1/4	4	—	—	—	49.96

## Whitworth Fine Thread: W

Nominal Thread	TPI	Internal Thread			Bore Dia.	
		Toolholder	Insert			
			Partial Profile	Full Profile		
W9.5 TPI 24	24	SINR0816S-08E	08IR5501	—	8.30	
W10 TPI 24		—	HPTR06005-55		—	8.80
W10.5 TPI 24			—		—	9.30
W9.5 TPI 20	20	SINR0816S-08E	08IR5501	—	8.06	
W10 TPI 20					8.56	
W10.5 TPI 20					9.06	
W11 TPI 20		—	HPTR06005-55	HPTR08007-55	9.56	
W11.5 TPI 20					10.06	
W12 TPI 20					10.56	
W12.5 TPI 20	20	SINR1216S-11E	11IR55005	—	11.06	
W13 TPI 20					11.56	
W13.5 TPI 20					12.06	
W11 TPI 18	18	—	HPTR08007-55-010	—	9.40	
W11.5 TPI 18					9.90	
W12 TPI 18					10.40	
W12.5 TPI 18					10.90	
W14 TPI 18	18	SINR1216S-11E	11IRA55	—	12.40	
W14.5 TPI 18					12.90	
W15 TPI 18					13.40	
W16 TPI 18					14.40	
W13 TPI 16	16	No Tools Available			11.20	
W13.5 TPI 16		11.70				
W14 TPI 16	16	SINR1216S-11E	11IRA55	—	12.20	
W14.5 TPI 16					12.70	
W15 TPI 16					13.20	
W17 TPI 16					15.20	
W18 TPI 16					16.20	
W19 TPI 16					17.20	
W20 TPI 16					18.20	
W16 TPI 14					14	SINR1216S-11E
W17 TPI 14	14.94					
W18 TPI 14	14	SINR1516S-11	11IR55005	—	15.94	
W21 TPI 14					18.94	
W22 TPI 14	14	SINR2016S-16	16IRAG55	(16IR14W-TF)	20.94	
W23 TPI 14					21.94	
W24 TPI 14					22.94	
W25 TPI 14					23.94	
W26 TPI 14					—	
W26 TPI 14					—	
W19 TPI 12	12	No Tools Available			16.60	
W20 TPI 12		17.60				
W21 TPI 12		18.60				
W22 TPI 12		19.60				
W28 TPI 12		12	SINR2016S-16	—	25.60	
W30 TPI 12					27.60	
W32 TPI 12					29.60	
W34 TPI 12		12	CINR3025S-16	16IRAG55	—	31.60
W35 TPI 12						32.60
W36 TPI 12						33.60
W38 TPI 12						35.60
W40 TPI 12		12	CINR3732S-16	16IR5501	—	37.60
W42 TPI 12	39.60					
W44 TPI 12	41.60					
W45 TPI 12	42.60					
W46 TPI 12	43.60					
W48 TPI 12	45.60					
W50 TPI 12	47.60					
•	•					
•	•					
•	•					
•	•					
W23 TPI 10	10	SINR2016S-16	—	—	20.12	
W24 TPI 10					21.12	
W25 TPI 10					22.12	
W26 TPI 10					23.12	
W28 TPI 9	9	SINR2420S-16	16IRAG55	—	24.80	
W30 TPI 9					26.80	
W32 TPI 9					28.80	
W34 TPI 8	8	CINR3025S-16	16IR5501	—	30.40	
W35 TPI 8					31.40	
W36 TPI 8					32.40	
W38 TPI 8					34.40	
W40 TPI 8					36.40	
W42 TPI 8					38.40	
W44 TPI 7	7	CINR3732S-22	22IRN55	—	39.89	
W45 TPI 7					40.89	
W46 TPI 7					41.89	
W48 TPI 7					43.89	
W50 TPI 7					45.89	
W52 TPI 7					47.89	
W55 TPI 6	6	CINR3732S-22	22IRN55	—	50.20	
W58 TPI 6					53.20	
W60 TPI 6					55.20	
W62 TPI 6					57.20	
•					•	
W72 TPI 6					67.20	
W75 TPI 5	5	CINR3732S-22	22IRN55	—	69.24	
•					•	
•					•	
W105 TPI 5	5	CINR3732S-22	22IRN55	—	99.24	
•					•	
W110 TPI 4	4	* For 4 and more TPI Whitworth Fine Thread cannot be machined because the insert does not match to the TPI.	—	—	102.8	
•					•	

• Above shows the usage example of applicable Toolholder / Insert.



Threading

# Threading Methods

## External Threading (R-hand Thread / L-hand Thread)

External Threading				
R-hand Thread			L-hand Thread	
Toolholder	R-hand		Toolholder	L-hand
Insert	R-hand		Insert	L-hand
The direction of spindle revolution			M03	The direction of spindle revolution
M03			M04	
Toolholder	L-hand		Toolholder	R-hand
Insert	L-hand		Insert	R-hand
The direction of spindle revolution			M03	The direction of spindle revolution
M03			M04	
Toolholder	R-hand		Toolholder	L-hand
Insert	R-hand		Insert	L-hand
The direction of spindle revolution			M04	The direction of spindle revolution
M04			M03	
Toolholder	L-hand		Toolholder	R-hand
Insert	L-hand		Insert	R-hand
The direction of spindle revolution			M04	The direction of spindle revolution
M04			M03	

\* These tables are based on KTN / KTNS / KTT / KTTX type Toolholder.

## Internal Threading (R-hand Thread / L-hand Thread)

Internal Threading					
R-hand Thread			L-hand Thread		
	Toolholder	R-hand		Toolholder	L-hand
	Insert	R-hand		Insert	L-hand
	The direction of spindle revolution			M03	The direction of spindle revolution
M03			M04		
	Toolholder	L-hand		Toolholder	R-hand
	Insert	L-hand		Insert	R-hand
	The direction of spindle revolution			M04	The direction of spindle revolution
M04			M03		

\* These tables are based on SIN / CIN type Toolholder.

For KITG type (for large internal threading), L-hand Insert for R-hand Toolholder, R-hand Insert for L-hand Toolholder.

## Internal threading tool holder and the method of cutting “External Thread”

External Threading					
R-hand Thread			L-hand Thread		
Toolholder	L-hand		Toolholder	R-hand	
Insert	L-hand		Insert	R-hand	
The direction of spindle revolution	M03		The direction of spindle revolution	M04	
Toolholder	R-hand		Toolholder	L-hand	
Insert	R-hand		Insert	L-hand	
The direction of spindle revolution	M04		The direction of spindle revolution	M03	

· Use Inserts with Partial Profile.

## Infeed Methods

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

# Thread Types & Basic Profile

## Thread Types & Basic Profile / Applicable Toolholders & Inserts

	Basic Profile	Symbol (Previous Symbol)	Type	Applicable Insert	Applicable Toolholder
Metric		<b>M</b>  <b>e.g.)</b> <b>M30</b>	External	○○ E%L○○○ ISO 16E%L○○○ ISO-TF 16E%L○○○ M02 16E%L60 ○○ (-TS)	KTN%L○○○○□-○○ KTNSR ○○○○□-16
			External	TT43E%L○○○ M TT ○○ %L60 ○○ TTX32%L60 ○○	KTT%L○○○○□-○○ KTTX%L○○○○□-16F, S ○○□-KTTX%L16
			Internal	○○ I%L○○○ ISO ○○ I%L○○○ ISO-TF ○○ I%L60 ○○ (○)(-TS)	SIN%L○○○○ S- ○○ (E) CIN%L○○○○ S- ○○
			Internal	TT ○○ %R 60 ○○ TPGB11 ○○○○ (○)	KITG%L○○○○ T- ○○ S ○○□-STWP%L11- ○○ (E)
Unified		<b>UN</b> <b>UNC</b> <b>UNF</b> <b>UNEF</b>  <b>e.g.)</b> <b>3/4 -16 UNF</b>	External	○○ E%L○○○ UN-TF 16E%L60 ○○ (-TS)	KTN%L○○○○□-○○ KTNS%L○○○○□-16
			External	TT ○○ %L60 ○○ TTX32%L60 ○○	KTT%L○○○○□-○○ KTTX%L○○○○□-16F, S ○○□-KTTX%L16
			Internal	○○ I%L○○○ UN-TF ○○ I%L60 ○○ (○)(-TS)	SIN%L○○○○ S- ○○ (E) CIN%L○○○○ S- ○○
			Internal	TT ○○ %60 ○○ TPGB11 ○○○○ (○)	KITG%L○○○○ T- ○○ S ○○□-STWP%L11- ○○ (E)
Parallel Pipe		<b>External: G (PF)</b> <b>Internal: G (PF)</b> <b>Rp (PS)</b>  <b>e.g.)</b> <b>G3/4 (PF3/4)</b>	External	○○ E%L○○○ W 16E%L○○○ W-TF 16E%L55 ○○	KTN%L○○○○□-○○ KTNSR ○○○○□-16
			External	TT ○○ %L55 ○○ TTX32%L55 ○○	KTT%L○○○○□-○○ KTTX%L○○○○□-16F, S ○○□-KTTX%L16
			Internal	○○ I%L○○○ W ○○ I%L○○○ W-TF ○○ I%L55 ○○ (○)	SIN%L○○○○ S- ○○ (E) CIN%L○○○○ S- ○○
			Internal	TT ○○ %55 ○○	KITG%L○○○○ T- ○○
Whitworth		<b>W</b>  <b>e.g.)</b> <b>W3/8</b>	External	○○ E%L○○○ W 16E%L○○○ W-TF 16E%L55 ○○	KTN%L○○○○□-○○ KTNS%L○○○○□-16
			External	TT ○○ %L55 ○○ TTX32%L55 ○○	KTT%L○○○○□-○○ KTTX%L○○○○□-16F, S ○○□-KTTX%L16
			Internal	○○ I%L○○○ W ○○ I%L○○○ W-TF ○○ I%L55 ○○ (○)	SIN%L○○○○ S- ○○ (E) CIN%L○○○○ S- ○○
			Internal	TT ○○ %55 ○○	KITG%L○○○○ T- ○○
Tapered Pipe		<b>External: R (PT)</b> <b>(BSPT)</b> <b>Internal: Rc (PT)</b> <b>(BSPT)</b>  <b>e.g.)</b> <b>R1/2 (PT1/2)</b>	External	○○ E%L○○○ PT 16E%L○○○ PT-TS	KTN%L○○○○□-○○ KTNS%L○○○○□-16
			External	TT ○○ %L55 ○○ * TTX32%L55 ○○ *	KTT%L○○○○□-○○ KTTX%L○○○○□-16F, S ○○□-KTTX%L16
			Internal	○○ I%L○○○ PT ○○ I%L○○○ PT-TF	SIN%L○○○○ S- ○○ (E) CIN%L○○○○ S- ○○
			Internal	TT ○○ %55 ○○ *	KITG%L○○○○ T- ○○
American National Tapered Pipe		<b>NPT</b>  <b>e.g.)</b> <b>3/8 -18 NPT</b>	External	○○ E%L○○○ NPT	KTN%L○○○○□-○○ KTNS%L○○○○□-16
			Internal	○○ I%L○○○ NPT	SIN%L○○○○ S- ○○ CIN%L○○○○ S- ○○
Trapezoidal 30°		<b>Tr</b>  <b>e.g.)</b> <b>Tr 26x3</b>	External	○○ E%L○○○ Tr	KTN%L○○○○□-○○ KTNS%L○○○○□-16
			Internal	○○ I%L○○○ Tr	SIN%L○○○○ S- ○○ CIN%L○○○○ S- ○○

\* For the case when the thread root's corner-R(rε) can be smaller than the standard.