

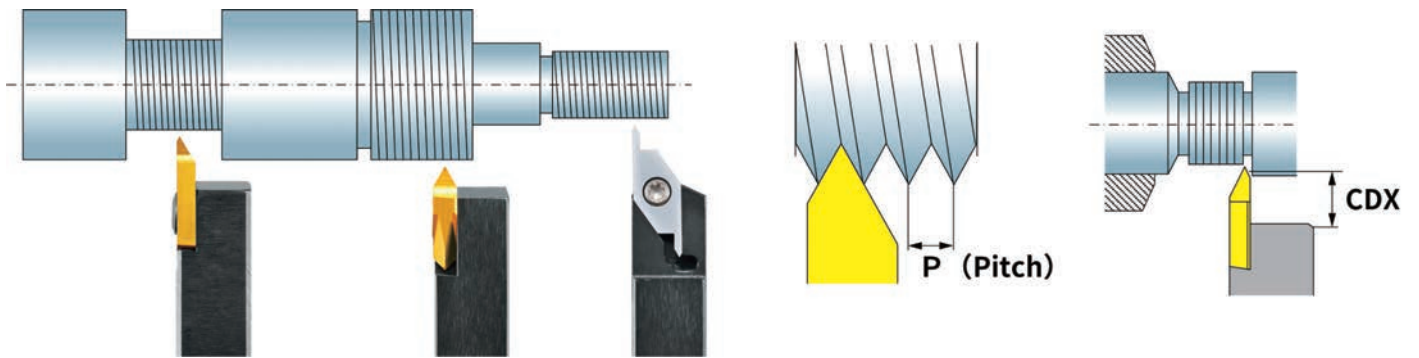




# Threading

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# Product Lines

## External Thread

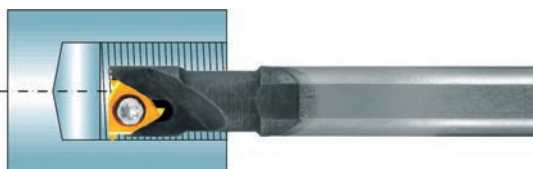




Insert	CSV <b>→U14</b>	TTPS <b>→U15</b>
	CSV	CTPS
Holder	 →U12	 →U15
Thread Angle	60°	60°
Pitch	0.2 - 0.5mm	0.2 - 1.5mm
CDX	3.0mm	5.0mm

Thread Whirling
 →U28
Insert : Shapes are special
Highly efficient single pass machining

Insert	TTP <b>→U19</b>				TTMH32 <b>→U23</b>		
	TTP-OH3/OH2	TTP	DS-TTP	CH-TTP	STTN	DS-STT	NTTB
Holder	 →U16 Coolant through	 →U16,U17	 →U18 DS	 →U18	 →U21	 →U22 DS	 →U21
Thread Angle	60°/55°				60°		
Pitch	0.2 - 2.0mm				0.8 - 3.0mm		
CDX	5.5mm				4.0mm	3.0mm	4.0mm

## Internal Thread



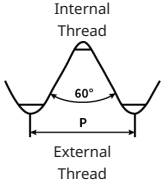
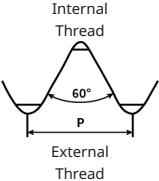
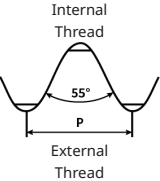
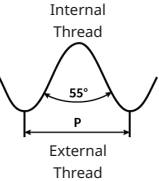
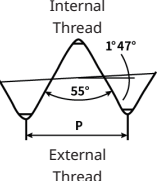
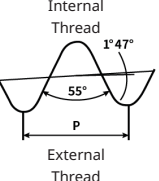


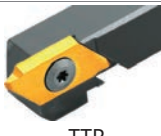



Insert	SBT <b>→U26</b>	TMN <b>→U28</b>
	NBH	TGC / HN
Holder	 →U24	 →U27
Thread Angle	60°	60°
Pitch	0.5 - 1.75mm	0.4 - 0.75mm
CDX	0.6 - 1.8mm	0.7 - 1.0mm

# Recommended Cutting Conditions

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels
		Inconel Hastelloy MP35N	Ti-6Al-4V	ASTM F-75	Hard to cut	Free cutting	SCr420 SCM435	S10C S45C
Grade	1st choice	VM1		VM1 / ZM3		QM3		
	2nd choice	ZM3		QM3		VM1 / ZM3		
Cutting Speed (m/min)		20 40 65	30 55 80	40 70 100	45 90 180	45 90 150		

※Unless your machine is equipped with high speed threading program, please set the feed rate to 2000mm/min or lower to prevent making incomplete threads

## Tools and Thread Standards

Thread Type		ISO Metric	American Unified	Whitworth	Parallel Pipe	American Tapered Pipe	Tapered Pipe
		M	UNC UNE	W	G (PF)	NPT	R (PT)
							
<b>Thread Angle</b>	60°	60°	55°	55°	60°	55°	
<b>Pitch</b>	mm	TPI	TPI	TPI	TPI	TPI	
External Thread	 CSVT	0.2 - 0.5	80 - 56	-	-	-	-
	 TTPS	0.2 - 1.5	80 - 18	-	-	(18)	-
	 TTP	0.2 - 2.0	80 - 13	40/24/20/18/16	(28/19)	(18/14)	(28/19)
	 TTMH	0.8 - 3.0	24 - 9	-	-	18/14/11.5	-
Internal Thread	 SBT	0.5 - 1.75	36 - 16	-	-	(18)	-
	 TGC/HN	0.4 - 0.75	56 - 36	-	-	-	-

# General Information

## TTP.. series/Insert

Right Hand Toolholders				Left Hand Toolholders			
Guide bushing side		Sub spindle side / Part shoulder		Guide bushing side		Sub spindle side / Part shoulder	
Toolholder	TTPR	Toolholder	TTPR	Toolholder	TTPL	Toolholder	TTPL
Insert	TTP..FR..A	Insert	TTP..FR..B	Insert	TTP..FL..B	Insert	TTP..FL..A
<p>Common tooling often used when the thread goes to the end of the part. The right hand A type insert can machine a thread close to the guide bushing. The space indicated by the arrow can be narrow.</p>		<p>The right hand B type insert is often used when the thread is located in the middle or towards the end of the part; up to a shoulder. Using the right-hand B type, the tip of the threading insert is closer to the sub-spindle side. The space indicated by the arrow can be narrow. Such as working up to a shoulder.</p>		<p>By using a left hand holder and insert, the insert edge position provides sufficient cutting distance from the guide bushing.</p> <p>The left-hand operation of A and B type inserts is reversed from right-hand version.</p>			

- For left-hand operation, the selection of A and B type inserts is reversed.(Guide bush side is B, and sub-spindle side is A.)
- In addition, if you do not want to retract the machined workpiece to the guide bushing, you may select the left hand holder. (Burrs protrude on the outside diameter, scratching the guide bush.)
- For A and B inserts, the cutting edge length is designed to be 0.4mm or 0.8mm and the pitch is 0.2 to 0.75 or 0.5 to 1.25.
- A and B type inserts are best applied when either entering or exiting near a shoulder.

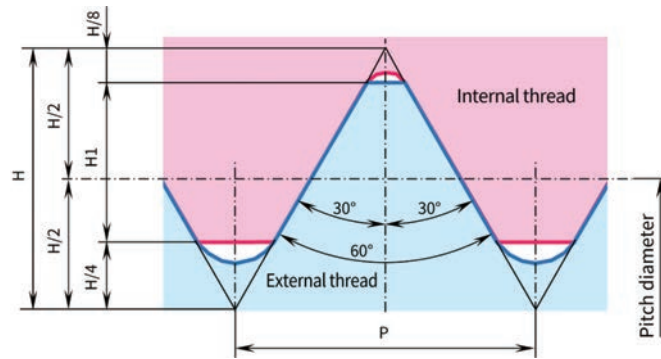
## Infeed Threading Method

	Radial Infeed	Flank Infeed	Modified Flank Infeed	Incremental Infeed
Features				
Advantage	<ul style="list-style-type: none"> <li>• Most popular and easiest method</li> <li>• Easy to change parameter</li> <li>• Uniform wear on both sides of insert</li> </ul>	<ul style="list-style-type: none"> <li>• 2nd most popular and easy method</li> <li>• Effective for larger pitch and gummy material thanks to lower cutting force</li> <li>• Excellent chip evacuation</li> </ul>	<ul style="list-style-type: none"> <li>• Reduce flank wear on right side</li> <li>• Effective for larger pitch and gummy material thanks to lower cutting force</li> <li>• Excellent chip evacuation</li> </ul>	<ul style="list-style-type: none"> <li>• Uniform flank wear</li> <li>• Effective for larger pitch and gummy material thanks to lower cutting force</li> </ul>
Disadvantage	<ul style="list-style-type: none"> <li>• Chip evacuation</li> <li>• Vibration due to higher cutting force</li> <li>• Ineffective for large pitch threading</li> </ul>	<ul style="list-style-type: none"> <li>• Larger flank wear on right side of the insert</li> <li>• Difficult to change cutting depth per cut</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Difficult to program</li> <li>• Difficult to change cutting depth per cut</li> </ul>	<ul style="list-style-type: none"> <li>• Difficult to program</li> <li>• Difficult to change cutting depth per cut</li> <li>• Chip evacuation</li> </ul>



# Tools and Thread Standards

## ISO Metric (M)



### External thread

Coarse	Fine	Applicable inserts			
		CSV T	TTP S	TTP	TTMH
	M1×0.2	CSV T11F <sup>R</sup> / <sub>L</sub> P60-035 <sup>A</sup> / <sub>B</sub>	TTP S60F <sup>R</sup> / <sub>L</sub> 4 <sup>A</sup> / <sub>B</sub>	TTP60F <sup>R</sup> / <sub>L</sub> 4 <sup>A</sup> / <sub>B</sub> (S)	-
M1×0.25	M2×0.25	CSV T11F <sup>R</sup> / <sub>L</sub> P60-035 <sup>A</sup> / <sub>B</sub>	TTP S60F <sup>R</sup> / <sub>L</sub> 4 <sup>A</sup> / <sub>B</sub>	TTP60F <sup>R</sup> / <sub>L</sub> 4 <sup>A</sup> / <sub>B</sub> (S)	-
	M3×0.35	CSV T11F <sup>R</sup> / <sub>L</sub> P60-035 <sup>A</sup> / <sub>B</sub>	TTP S60F <sup>R</sup> / <sub>L</sub> 4 <sup>A</sup> / <sub>B</sub>	TTP60F <sup>R</sup> / <sub>L</sub> 4 <sup>A</sup> / <sub>B</sub> (S)	-
M2×0.4		CSV T11F <sup>R</sup> / <sub>L</sub> P60-035 <sup>A</sup> / <sub>B</sub>	TTP S60F <sup>R</sup> / <sub>L</sub> 8 <sup>A</sup> / <sub>B</sub>	TTP60F <sup>R</sup> / <sub>L</sub> 8 <sup>A</sup> / <sub>B</sub> (S)	-
M3×0.5	M4×0.5	CSV T11F <sup>R</sup> / <sub>L</sub> P60-035 <sup>A</sup> / <sub>B</sub>	TTP S60F <sup>R</sup> / <sub>L</sub> 8 <sup>A</sup> / <sub>B</sub>	TTP60F <sup>R</sup> / <sub>L</sub> 8 <sup>A</sup> / <sub>B</sub> (S)	-
M4×0.7		-	TTP S60F <sup>R</sup> / <sub>L</sub> 8 <sup>A</sup> / <sub>B</sub>	TTP60F <sup>R</sup> / <sub>L</sub> 8 <sup>A</sup> / <sub>B</sub> (S)	-
	M6×0.75	-	TTP S60F <sup>R</sup> / <sub>L</sub> 8 <sup>A</sup> / <sub>B</sub>	TTP60F <sup>R</sup> / <sub>L</sub> 8 <sup>A</sup> / <sub>B</sub> (S)	-
M5×0.8		-	TTP S60F <sup>R</sup> / <sub>L</sub> -N	TTP60F <sup>R</sup> / <sub>L</sub> -N	TTMH3260R010
M6×1.0		-	TTP S60F <sup>R</sup> / <sub>L</sub> -N	TTP60F <sup>R</sup> / <sub>L</sub> -N	TTMH3260R010
M8×1.25		-	TTP S60F <sup>R</sup> / <sub>L</sub> -N	TTP60F <sup>R</sup> / <sub>L</sub> -N	TTMH3260R015
M10×1.5	M12×1.5	-	-	-	TTMH3260R020
M12×1.75		-	-	-	TTMH3260R020
M16×2.0	M20×2.0	-	-	-	TTMH3260R025
M20×2.5		-	-	-	TTMH3260R025
M24×3.0	M30×3.0	-	-	-	TTMH3260R025

### Internal thread

Coarse	Fine	Applicable inserts
	M3×0.35	SBT025M3R
M2×0.4		-
M3×0.5		SBT025M3R
	M4×0.5	SBT030M4R(B)
M4×0.7		SBT030M4R(B)
	M6×0.75	SBT040M6RB
M5×0.8		SBT035M5RB
M6×1.0		SBT040M6RB
M8×1.25		SBT050M8RB
M10×1.5	M12×1.5	SBT060M10RB
M12×1.75		SBT060M10RB

# Recommended Depth of Cut (mm) and number of passes

## ISO Metric (M)

### External thread

#### CSV T

Item Number	Edge radius	Pitch	Total DOC	No. of pass	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
CSV T11FR/LP60-035A(B)	0.03 MAX	0.20	0.25	4	0.08	0.07	0.06	0.04																	
		0.25	0.32	5	0.09	0.07	0.07	0.05	0.04																
		0.35	0.48	6	0.12	0.10	0.09	0.07	0.06	0.04															
		0.40	0.55	6	0.15	0.12	0.10	0.08	0.06	0.04															
		0.50	0.70	7	0.16	0.14	0.12	0.10	0.08	0.06	0.04														

#### TTP/TTPS

Item Number	Edge radius	Pitch	Total DOC	No. of pass	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
TTP60FR/L2A/B TTP(S)60FR/L4A/B	0.05 Max Flat	0.20	0.22	4	0.07	0.06	0.05	0.04																
		0.25	0.29	5	0.08	0.07	0.06	0.04	0.04															
		0.35	0.44	5	0.14	0.11	0.09	0.06	0.04															
TTP(S)60FR/L8A/B	R0.05	0.40	0.50	6	0.13	0.10	0.09	0.08	0.06	0.04														
		0.50	0.66	6	0.20	0.16	0.12	0.08	0.06	0.04														
		0.70	0.96	7	0.22	0.20	0.18	0.14	0.10	0.08	0.04													
		0.75	1.04	8	0.22	0.20	0.20	0.14	0.10	0.08	0.06	0.04												
		0.80	1.01	8	0.25	0.20	0.16	0.12	0.10	0.08	0.06	0.04												
TTP(S)60FR/L-N	R0.1	1.00	1.32	8	0.30	0.24	0.20	0.18	0.16	0.12	0.08	0.04												
		1.25	1.69	9	0.31	0.30	0.30	0.24	0.18	0.14	0.10	0.08	0.04											
TTPFR/L-N02	R0.20	1.50	1.87	10	0.33	0.32	0.28	0.24	0.20	0.16	0.12	0.10	0.08	0.04										
		1.75	2.25	11	0.36	0.35	0.32	0.28	0.24	0.20	0.16	0.12	0.10	0.08	0.04									
		2.00	2.63	12	0.36	0.34	0.32	0.30	0.28	0.26	0.22	0.18	0.14	0.12	0.07	0.04								

#### TTMH

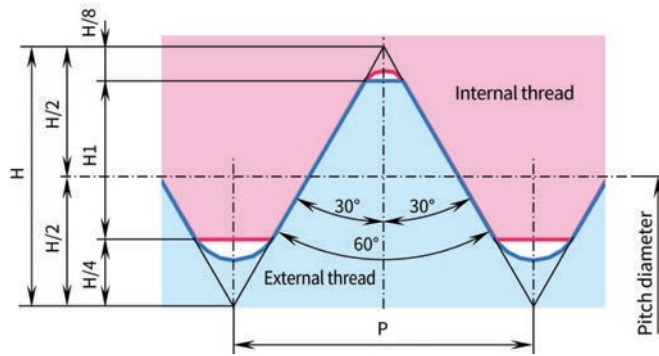
Item Number	Edge radius	Pitch	Total DOC	No. of pass	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
TTMH3260R010	R0.1	0.8	1.01	8	0.25	0.20	0.16	0.12	0.10	0.08	0.06	0.04												
		1.0	1.32	8	0.30	0.24	0.20	0.18	0.16	0.12	0.08	0.04												
TTMH3260R015	R0.15	1.3	1.59	9	0.33	0.30	0.26	0.20	0.16	0.12	0.10	0.08	0.04											
		1.5	1.90	10	0.36	0.32	0.28	0.24	0.20	0.16	0.12	0.10	0.08	0.04										
TTMH3260R020	R0.20	1.8	2.25	11	0.36	0.35	0.32	0.28	0.24	0.20	0.16	0.12	0.10	0.08	0.04									
		2.0	2.53	12	0.36	0.36	0.32	0.30	0.28	0.24	0.20	0.16	0.12	0.09	0.06	0.04								
		2.5	3.29	14	0.45	0.40	0.40	0.36	0.32	0.28	0.24	0.20	0.16	0.14	0.12	0.10	0.08	0.04						
TTMH3260R025	R0.25	3.0	4.07	15	0.50	0.50	0.45	0.40	0.36	0.32	0.30	0.28	0.24	0.20	0.18	0.12	0.10	0.08	0.04					

### Internal thread

#### SBT

Item Number	Edge radius	Pitch	Total DOC	No. of pass	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
SBT025M3R	0.05 MAX	0.35	0.37	6	0.11	0.09	0.07	0.05	0.03	0.02														
		0.50	0.56	7	0.12	0.12	0.1	0.08	0.07	0.05	0.02													
SBT030M4R(B)	Flat	0.70	0.82	9	0.14	0.14	0.12	0.12	0.1	0.08	0.06	0.04	0.02											
SBT035M5RB		0.80	0.95	10	0.14	0.14	0.14	0.12	0.12	0.1	0.08	0.06	0.03	0.02										
SBT040M6RB	R0.05	1.00	1.20	12	0.14	0.14	0.14	0.12	0.12	0.12	0.12	0.1	0.08	0.06	0.04	0.02								
SBT050M8RB		1.25	1.52	15	0.14	0.14	0.14	0.12	0.12	0.12	0.12	0.12	0.1	0.1	0.1	0.08	0.06	0.04	0.02					
SBT060M10RB		1.50	1.85	18	0.15	0.14	0.14	0.14	0.12	0.12	0.12	0.12	0.12	0.1	0.1	0.1	0.1	0.08	0.08	0.06	0.04	0.02		
		1.75	2.17	20	0.15	0.14	0.14	0.14	0.14	0.12	0.12	0.12	0.12	0.12	0.12	0.1	0.1	0.1	0.1	0.08	0.08	0.08	0.06	0.04

# Tools and Thread Standards | American Unified UNC/UNF



## External thread

Coarse (UNC)		Fine (UNF)		Pitch (mm)	Applicable inserts		
Thread type	(Reference)	Thread type	(Reference)	(Reference)	CSVT	TTP/TTPS	TTMH
		No.0-80 UNF	0.0600-80 UNF	0.3175	CSVT11FR/LP60-035A/B	TTP(S)6FR/L4A/B	-
		No.1-72 UNF	0.0730-72 UNF	0.3528	CSVT11FR/LP60-035A/B	TTP(S)6FR/L4A/B	-
No.1-64 UNC	0.0730-64 UNC	No.2-64 UNF	0.0860-64 UNF	0.3969	CSVT11FR/LP60-035A/B	TTP(S)6FR/L4A/B	-
No.2-56 UNC	0.0860-56 UNC	No.3-56 UNF	0.0990-56 UNF	0.4536	CSVT11FR/LP60-035A/B	TTP(S)60FR/L8A/B	-
No.3-48 UNC	0.0990-48 UNC	No.4-48 UNF	0.1120-48 UNF	0.5292	CSVT11FR/LP60-035A/B	TTP(S)60FR/L8A/B	-
		No.5-44 UNF	0.1250-44 UNF	0.5773	-	TTP(S)60FR/L8A/B	-
No.440 UNC	0.1120-40 UNC	No.6-40 UNF	0.1380-40 UNF	0.6350	-	TTP(S)60FR/L8A/B	-
No.5-40 UNC	0.1250-40 UNC			0.6350	-	TTP(S)60FR/L8A/B	-
		No.8-36 UNF	0.1640-36 UNF	0.7056	-	TTP(S)60FR/L8A/B	-
No.6-32 UNC	0.1380-32 UNC	No.10-32 UNF	0.1900-32 UNF	0.7938	-	TTP(S)60FR/L-N(S)	TTMH3260R010
No.8-32 UNC	0.1640-32 UNC			0.7938	-	TTP(S)60FR/L-N(S)	TTMH3260R010
		No.12-28 UNF	0.2160-28 UNF	0.9071	-	TTP(S)60FR/L-N(S)	TTMH3260R010
		1/4-28 UNF	0.2500-28 UNF	0.9071	-	TTP(S)60FR/L-N(S)	TTMH3260R010
No.10-24 UNC	0.1900-24 UNC	5/16-24 UNF	0.3125-24 UNF	1.0583	-	TTP(S)60FR/L-N(S)	TTMH3260R010
No.12-24 UNC	0.2160-24 UNC	3/8-24 UNF	0.3750-24 UNF	1.0583	-	TTP(S)60FR/L-N(S)	TTMH3260R010
1/4-20 UNC	0.2500-20 UNC	7/16-20 UNF	0.4375-20 UNF	1.2700	-	TTP(S)60FR/L-N(S)	TTMH3260R015
		1/2-20 UNF	0.5000-20 UNF	1.2700	-	TTP(S)60FR/L-N(S)	TTMH3260R015
5/16-18 UNC	0.3125-18 UNC	9/16-18 UNF	0.5625-18 UNF	1.4111	-	TTP(S)60FR/L-N(S)	TTMH3260R015
		5/8-18 UNF	0.6250-18 UNF	1.4111	-	TTP(S)60FR/L-N(S)	TTMH3260R015
3/8-16 UNC	0.3750-16 UNC	3/4-16 UNF	0.7500-16 UNF	1.5875	-	TTP60FR/L -N02	TTMH3260R020
7/16-14 UNC	0.4375-14 UNC	7/8-14 UNF	0.8750-14 UNF	1.8143	-	TTP60FR/L -N02	TTMH3260R020
1/2-13 UNC	0.5000-13 UNC			1.9538	-	TTP60FR/L -N02	TTMH3260R020
9/16-12 UNC	0.5625-12 UNC	1-12 UNF	1.0000-12 UNF	2.1167	-	TTP60FR/L -N02	TTMH3260R025
		11/8-12 UNF	1.1250-12 UNF	2.1167	-	TTP60FR/L -N02	TTMH3260R025
		11/4-12 UNF	1.2500-12 UNF	2.1167	-	TTP60FR/L -N02	TTMH3260R025
		13/8-12 UNF	1.3750-12 UNF	2.1167	-	TTP60FR/L -N02	TTMH3260R025
		11/2-12 UNF	1.5000-12 UNF	2.1167	-	TTP60FR/L -N02	TTMH3260R025
5/8-11 UNC	0.6250-11 UNC			2.3091	-	-	TTMH3260R025
3/4-10 UNC	0.7500-10 UNC			2.5400	-	-	TTMH3260R025
7/8-9 UNC	0.8750-9 UNC			2.8222	-	-	TTMH3260R025

## Internal thread

Coarse (UNC)		Fine (UNF)		Pitch (mm)	Pilot Bore Dia.	Applicable inserts
Thread type	(Reference)	Thread type	(Reference)	(Reference)		
		No.8-36 UNF	0.1640-36 UNF	0.7056	3.51	SBT030M4R(B)
No.8-32 UNC	0.1640-32 UNC			0.7938	3.42	SBT030M4R(B)
		No.10-32 UNF	0.1900-32 UNF	0.7938	4.07	SBT035M5RB
		No.12-28 UNF	0.2160-28 UNF	0.9071	4.61	SBT040M6RB
		1/4-28 UNF	0.2500-28 UNF	0.9071	5.47	SBT040M6RB
No.10-24 UNC	0.1900-24 UNC			1.0583	3.83	SBT035M5RB
No.12-24 UNC	0.2160-24 UNC			1.0583	4.47	SBT035M5RB
		5/16-24 UNF	0.3125-24 UNF	1.0583	6.91	SBT050M8RB
		3/8-24 UNF	0.3750-24 UNF	1.0583	8.51	SBT060M10RB
1/4-20 UNC	0.2500-20 UNC			1.2700	5.12	SBT040M6RB
		7/16-20 UNF	0.4375-20 UNF	1.2700	9.88	SBT060M10RB
		1/2-20 UNF	0.5000-20 UNF	1.2700	11.47	SBT060M10RB
5/16-18 UNC	0.3125-18 UNC			1.4111	6.57	SBT050M8RB
		9/16-18 UNF	0.5625-18 UNF	1.4111	12.9	SBT060M10RB
		5/8-18 UNF	0.6250-18 UNF	1.4111	14.5	SBT060M10RB
3/8-16 UNC	0.3750-16 UNC			1.5875	7.98	SBT060M10RB
		3/4-16 UNF	0.7500-16 UNF	1.5875	17.5	SBT060M10RB



# Recommended Depth of Cut (mm) and number of passes American Unified UNC/UNF

## External thread

### CSV T

Item Number	Edge radius	TPI	Total DOC	No. of pass	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
CSV T11FRP60-035A(B)	0.03 Max	80	0.43	6	0.10	0.10	0.08	0.06	0.05	0.04																
		72	0.48	6	0.12	0.10	0.09	0.07	0.06	0.04																
		64	0.55	6	0.14	0.13	0.10	0.08	0.06	0.04																
		56	0.63	7	0.14	0.12	0.10	0.09	0.08	0.06	0.04															
		48	0.75	7	0.16	0.16	0.14	0.11	0.08	0.06	0.04															

### TTP/TTPS

Item Number	Edge radius	TPI	Total DOC	No. of pass	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
TTPS60FR/L2A(B)	0.05 Max Flat	80	0.39	5	0.11	0.10	0.08	0.06	0.04																		
		72	0.45	5	0.13	0.13	0.09	0.06	0.04																		
TTP(S)60FR/L4A(B)	R0.05	64	0.51	6	0.13	0.11	0.10	0.07	0.06	0.04																	
		56	0.59	6	0.16	0.14	0.11	0.08	0.06	0.04																	
TTP(S)60FR/L8A(B)	R0.05	48	0.70	6	0.20	0.16	0.14	0.09	0.07	0.04																	
		44	0.77	7	0.20	0.16	0.13	0.10	0.08	0.06	0.04																
		40	0.86	7	0.20	0.18	0.16	0.12	0.10	0.06	0.04																
TTP(S)60FR/L -N	R0.1	36	0.97	8	0.20	0.18	0.16	0.14	0.11	0.08	0.06	0.04															
		32	1.00	8	0.24	0.20	0.16	0.12	0.10	0.08	0.06	0.04															
		28	1.17	8	0.26	0.23	0.19	0.15	0.12	0.10	0.08	0.04															
		24	1.40	9	0.28	0.24	0.22	0.18	0.14	0.12	0.10	0.08	0.04														
TTP60FR/L -N02	R0.2	20	1.72	9	0.32	0.29	0.27	0.24	0.20	0.16	0.12	0.08	0.04														
		18	1.94	10	0.34	0.30	0.28	0.26	0.22	0.18	0.14	0.10	0.08	0.04													
		16	2.01	10	0.35	0.34	0.30	0.26	0.22	0.18	0.14	0.10	0.08	0.04													
		14	2.35	11	0.36	0.35	0.32	0.30	0.26	0.22	0.18	0.14	0.10	0.08	0.04												
		13	2.56	12	0.36	0.34	0.32	0.30	0.26	0.22	0.20	0.18	0.16	0.10	0.08	0.04											
		12	2.81	13	0.36	0.35	0.32	0.30	0.28	0.26	0.24	0.20	0.16	0.12	0.10	0.08	0.04										

### TTMH

Item Number	Edge radius	TPI	Total DOC	No. of pass	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
TTMH3260R010	R0.1	32	1.00	8	0.24	0.20	0.12	0.12	0.10	0.08	0.06	0.04														
		28	1.17	8	0.26	0.23	0.15	0.15	0.12	0.10	0.08	0.04														
		24	1.40	9	0.28	0.24	0.18	0.18	0.14	0.12	0.10	0.08	0.04													
TTMH3260R015	R0.15	20	1.62	9	0.32	0.28	0.20	0.20	0.18	0.16	0.12	0.08	0.04													
		18	1.84	10	0.32	0.30	0.24	0.24	0.20	0.16	0.12	0.10	0.08	0.04												
TTMH3260R020	R0.2	16	2.01	10	0.35	0.34	0.26	0.26	0.22	0.18	0.14	0.10	0.08	0.04												
		14	2.35	11	0.36	0.35	0.30	0.30	0.26	0.22	0.18	0.14	0.10	0.08	0.04											
		13	2.56	12	0.36	0.34	0.30	0.30	0.26	0.22	0.20	0.18	0.16	0.10	0.08	0.04										
TTMH3260R025	R0.25	12	2.71	12	0.36	0.35	0.31	0.51	0.29	0.25	0.22	0.20	0.16	0.12	0.08	0.04										
		11	3.00	13	0.40	0.36	0.30	0.30	0.28	0.26	0.24	0.22	0.20	0.16	0.12	0.08	0.04									
		10	3.35	14	0.43	0.40	0.36	0.36	0.32	0.28	0.24	0.20	0.18	0.16	0.14	0.12	0.08	0.04								
		9	3.78	15	0.45	0.43	0.39	0.39	0.36	0.32	0.28	0.24	0.20	0.18	0.16	0.14	0.10	0.08	0.04							

## Internal thread

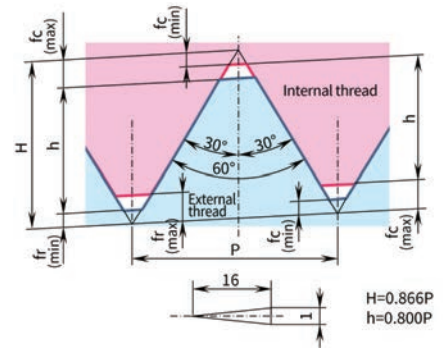
### SBT

Item Number	Edge radius	TPI	Total DOC	No. of pass	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
SBT030M4R(B)	0.05 Max Flat	36	0.83	9	0.14	0.14	0.12	0.11	0.10	0.08	0.06	0.04	0.02												
SBT030M4R(B) SBT035M5RB	0.05 Max Flat	32	0.94	10	0.14	0.14	0.13	0.12	0.11	0.10	0.08	0.06	0.04	0.02											
SBT040M6RB	R0.05	28	1.08	12	0.14	0.14	0.12	0.12	0.11	0.10	0.09	0.08	0.07	0.05	0.04	0.02									
SBT035M5RB	0.05 Max Flat	24	1.29	13	0.14	0.14	0.14	0.12	0.12	0.12	0.12	0.10	0.09	0.08	0.06	0.04	0.02	0.02							
SBT050M8RB SBT060M10RB	R0.05	24	1.27	13	0.14	0.14	0.14	0.12	0.12	0.12	0.10	0.10	0.09	0.08	0.06	0.04	0.02	0.02							
SBT060M10RB	R0.05	20	1.55	15	0.14	0.14	0.14	0.14	0.12	0.12	0.12	0.12	0.10	0.10	0.10	0.09	0.06	0.06	0.02						
SBT050M8RB SBT060M10RB	R0.05	18	1.73	17	0.14	0.14	0.14	0.14	0.12	0.12	0.12	0.12	0.10	0.10	0.10	0.10	0.09	0.09	0.06	0.04	0.02				
SBT060M10RB	R0.05	16	1.96	19	0.14	0.14	0.14	0.14	0.12	0.12	0.12	0.12	0.12	0.10	0.10	0.10	0.10	0.10	0.10	0.08	0.06	0.04	0.02		

# Tools and Thread Standards

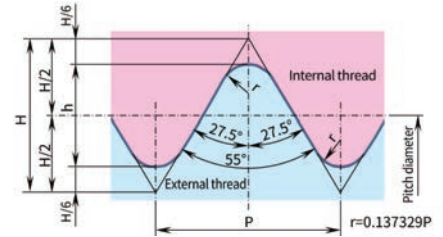
## American Tapered Pipe NPT

Coarse	(Reference)	Pitch(mm) (Reference)	Applicable inserts
NPT1/16	27	0.941	TTP(S)60F <sup>R</sup> / <sub>L</sub> 8 <sup>A</sup> / <sub>B</sub>
NPT1/8	27	0.941	
NPT1/4	18	1.411	
NPT3/8	18	1.411	



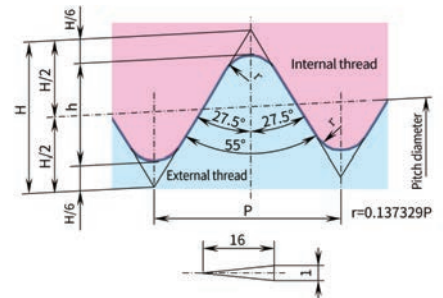
## Parallel Pipe G/BSPP

Coarse	(Reference)	Pitch(mm) (Reference)	Applicable inserts
G1/16	28	0.9071	TTP55F <sup>R</sup> / <sub>L</sub> 8 <sup>A</sup> / <sub>B</sub>
G1/8	28	0.9071	
G1/4	19	1.3368	
G3/8	19	1.3368	



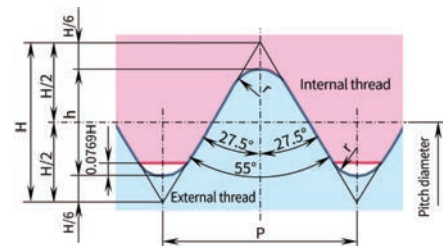
## Tapered Pipe R/BSPT

Coarse	(Reference)	Pitch(mm) (Reference)	Applicable inserts
R(PT)1/16	28	0.9071	TTP55F <sup>R</sup> / <sub>L</sub> 8 <sup>A</sup> / <sub>B</sub>
R(PT)1/8	28	0.9071	
R(PT)1/4	19	1.3368	
R(PT)1/8	19	1.3368	



## Whitworth BSW

Coarse	(Reference)	Pitch(mm) (Reference)	Applicable inserts
W1/8	40	0.64	TTP55F <sup>R</sup> / <sub>L</sub> 8 <sup>A</sup> / <sub>B</sub>
W3/16	24	1.06	
W1/4	20	1.27	
W5/16	18	1.41	
W3/8	16	1.59	



Threading

# Recommended Depth of Cut (mm) and number of passes

## American Tapered Pipe NPT

Item Number	Edge radius	Coarse	TPI	Total DOC	No. of pass	1	2	3	4	5	6	7	8	9	10
TTP(S)60F <sup>R</sup> / <sub>L</sub> 8 <sup>A</sup> / <sub>B</sub>	R0.05	NPT <sup>1</sup> / <sub>16</sub>	27	0.64	6	0.18	0.16	0.12	0.08	0.06	0.04				
		NPT <sup>1</sup> / <sub>8</sub>	27	0.64	6	0.18	0.16	0.12	0.08	0.06	0.04				
		NPT <sup>1</sup> / <sub>4</sub>	18	1.28	8	0.26	0.24	0.20	0.18	0.16	0.12	0.08	0.04		
		NPT <sup>3</sup> / <sub>8</sub>	18	1.28	8	0.26	0.24	0.20	0.18	0.16	0.12	0.08	0.04		

## Parallel Pipe G/BSPP

Item Number	Edge radius	Coarse	TPI	Total DOC	No. of pass	1	2	3	4	5	6	7	8	9	10
TTP55F <sup>R</sup> / <sub>L</sub> 8 <sup>A</sup> / <sub>B</sub>	R0.05	G <sup>1</sup> / <sub>16</sub>	28	0.67	6	0.2	0.16	0.12	0.09	0.06	0.04				
		G <sup>1</sup> / <sub>8</sub>	28	0.67	6	0.2	0.16	0.12	0.09	0.06	0.04				
		G <sup>1</sup> / <sub>4</sub>	19	1.01	8	0.25	0.20	0.16	0.12	0.10	0.08	0.06	0.04		
		G <sup>3</sup> / <sub>8</sub>	19	1.01	8	0.25	0.20	0.16	0.12	0.10	0.08	0.06	0.04		

## Tapered Pipe R/BSPT

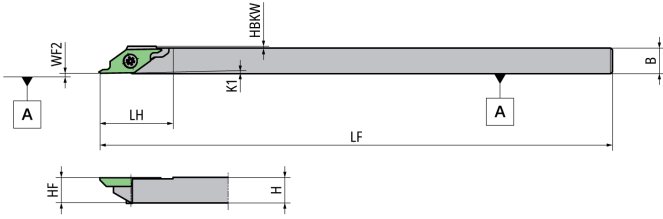
Item Number	Edge radius	Coarse	TPI	Total DOC	No. of pass	1	2	3	4	5	6	7	8	9	10
TTP55F <sup>R</sup> / <sub>L</sub> 8 <sup>A</sup> / <sub>B</sub>	R0.05	R(PT) <sup>1</sup> / <sub>16</sub>	28	0.67	6	0.20	0.16	0.12	0.09	0.06	0.04				
		R(PT) <sup>1</sup> / <sub>8</sub>	28	0.67	6	0.20	0.16	0.12	0.09	0.06	0.04				
		R(PT) <sup>1</sup> / <sub>4</sub>	19	1.01	8	0.25	0.20	0.16	0.12	0.10	0.08	0.06	0.04		
		R(PT) <sup>3</sup> / <sub>8</sub>	19	1.01	8	0.25	0.20	0.16	0.12	0.10	0.08	0.06	0.04		

## Whitworth BSW

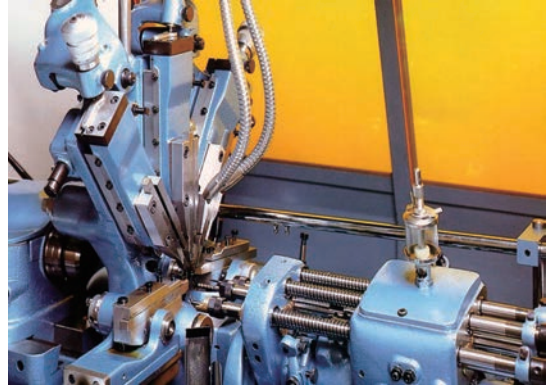
Item Number	Edge radius	Coarse	TPI	Total DOC	No. of pass	1	2	3	4	5	6	7	8	9	10
TTP55F <sup>R</sup> / <sub>L</sub> 8 <sup>A</sup> / <sub>B</sub>	R0.05	W <sup>1</sup> / <sub>8</sub>	40	0.45	5	0.13	0.13	0.09	0.06	0.04					
		W <sup>3</sup> / <sub>16</sub>	24	0.79	7	0.2	0.16	0.14	0.11	0.08	0.06	0.04			
		W <sup>1</sup> / <sub>4</sub>	20	0.96	8	0.2	0.18	0.16	0.14	0.1	0.08	0.06	0.04		
		W <sup>5</sup> / <sub>16</sub>	18	1.07	8	0.25	0.22	0.18	0.14	0.1	0.08	0.06	0.04		
		W <sup>3</sup> / <sub>8</sub>	16	1.21	8	0.26	0.23	0.2	0.16	0.13	0.11	0.08	0.04		

# External thread CSVT.. series/Toolholder

## CSV [91°] For Cam-style machine



● Diagram shows right-hand tool

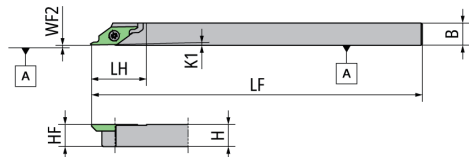


EDP	Item Number	Stock	Hand	B mm	H mm	HBKW mm	HF mm	K1 °	LF mm	LH mm	WF2 mm	Insert Gage
5303169	<b>CSV07</b>	●	R	7	7	0.5	7	1	140	20	0.1	CSVF../CSVB../CSVC.. CSVG../CSVT..
5492962	<b>CSV07GX</b>	●	R	7	7	0.5	7	1	85	20	0.1	CSVF../CSVB../CSVC.. CSVG../CSVT..
5303151	<b>CSV08</b>	●	R	8	8	0	8	1	140	20	0.1	CSVF../CSVB../CSVC.. CSVG../CSVT..
5492954	<b>CSV08GX</b>	●	R	8	8	0	8	1	85	20	0.1	CSVF../CSVB../CSVC.. CSVG../CSVT..
5303136	<b>CSV095</b>	●	R	9.5	9.5	0	9.5	1	140	20	0.1	CSVF../CSVB../CSVC.. CSVG../CSVT..
5303144	<b>CSV10</b>	●	R	10	10	0	10	1	140	20	0.1	CSVF../CSVB../CSVC.. CSVG../CSVT..
5327929	<b>CSV12</b>	●	R	12	12	0	12	1	140	20	0.1	CSVF../CSVB../CSVC.. CSVG../CSVT..
5474770	<b>CSV12GX</b>	●	R	12	12	0	12	1	85	20	0.1	CSVF../CSVB../CSVC.. CSVG../CSVT..
5303193	<b>CSVL07</b>	●	L	7	7	0.5	7	1	140	20	0.1	CSVF../CSVB../CSVC.. CSVG../CSVT..
5303201	<b>CSVL08</b>	●	L	8	8	0	8	1	140	20	0.1	CSVF../CSVB../CSVC.. CSVG../CSVT..
5303177	<b>CSVL10</b>	●	L	10	10	0	10	1	140	20	0.1	CSVF../CSVB../CSVC.. CSVG../CSVT..

## Spare Parts

Item Number	Clamp screw	Wrench (for Clamp screw)
<b>CSV07</b>	LRIS-2.5*7	CLR-15S
<b>CSV07GX</b>	LRIS-2.5*7	CLR-15S
<b>CSV08</b>	LRIS-2.5*7	CLR-15S
<b>CSV08GX</b>	LRIS-2.5*7	CLR-15S
<b>CSV095</b>	LRIS-2.5*7	CLR-15S
<b>CSV10</b>	LRIS-2.5*7	CLR-15S
<b>CSV12</b>	LRIS-2.5*7	CLR-15S
<b>CSV12GX</b>	LRIS-2.5*7	CLR-15S
<b>CSVL07</b>	LRIS-2.5*7	CLR-15S
<b>CSVL08</b>	LRIS-2.5*7	CLR-15S
<b>CSVL10</b>	LRIS-2.5*7	CLR-15S

## CSV-NC [91°] For Gang-style machine



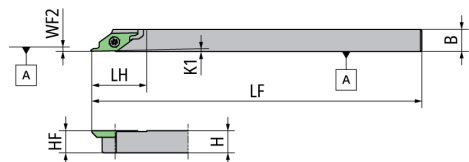
● Diagram shows right-hand tool

EDP	Item Number	Stock	Hand	B mm	H mm	HF mm	K1 °	LF mm	LH mm	WF2 mm	Insert Gage
5514062	CSVR08NC	●	R	8	8	8	1	120	20	0.1	CSVF../CSVB../CSVC.. CSVG../CSVT..
5563010	CSVR10GXNC	●	R	10	10	10	1	85	20	0.1	CSVF../CSVB../CSVC.. CSVG../CSVT..
5477492	CSVR10NC	●	R	10	10	10	1	120	20	0.1	CSVF../CSVB../CSVC.. CSVG../CSVT..
5477534	CSVR12NC	●	R	12	12	12	1	120	20	0.1	CSVF../CSVB../CSVC.. CSVG../CSVT..
5514070	CSVL08NC	●	L	8	8	8	1	120	20	0.1	CSVF../CSVB../CSVC.. CSVG../CSVT..
5477542	CSVL10NC	●	L	10	10	10	1	120	20	0.1	CSVF../CSVB../CSVC.. CSVG../CSVT..
5477500	CSVL12NC	●	L	12	12	12	1	120	20	0.1	CSVF../CSVB../CSVC.. CSVG../CSVT..

## Spare Parts

Item Number	Clamp screw	Wrench (for Clamp screw)
CSVR08NC	LRIS-2.5*7	CLR-15S
CSVR10GXNC	LRIS-2.5*7	CLR-15S
CSVR10NC	LRIS-2.5*7	CLR-15S
CSVR12NC	LRIS-2.5*7	CLR-15S
CSVL08NC	LRIS-2.5*7	CLR-15S
CSVL10NC	LRIS-2.5*7	CLR-15S
CSVL12NC	LRIS-2.5*7	CLR-15S

## CSV-NC-F [91°] For Gang-style machine



● Diagram shows right-hand tool

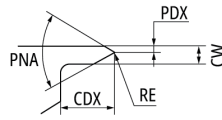
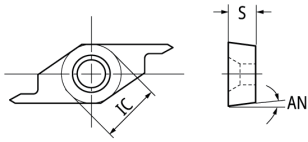
EDP	Item Number	Stock	Hand	B mm	H mm	HBKW mm	HF mm	K1 °	LF mm	LH mm	WF2 mm	Insert Gage
5789615	CSVR08NC-F	●	R	8	8	0	8	1	120	20	0-0.1	CSVF../CSVB../CSVC.. CSVG../CSVT..

## Spare Parts

Item Number	Clamp screw	Wrench (for Clamp screw)
CSVR08NC-F	LRIS-2.5*7	CLR-15S

# CSV T.. series/Inserts Carbide

## CSV T-A

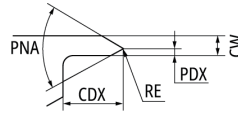
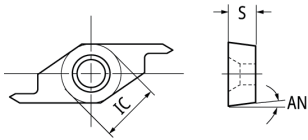


● Diagram shows right-hand tool  
All angles shown are obtained when insert is set in the holder.



Item Number	Hand	Chip-breaker	Pitch mm	AN °	CDX mm	CW mm	EPSR °	IC mm	PDX mm	PNA °	RE mm	S mm	Carbide		
													PVD QM3	Uncoated VM1 ZM3 KM1	
CSV T11FRP60-035A	M R	No	0.2-0.5	7	3	1	35	6.35	0.35	60	0.03MAX	2.38	●		
CSV T11FLP60-035A	M L	No	0.2-0.5	7	3	1	35	6.35	0.35	60	0.03MAX	2.38	●		

## CSV T-B



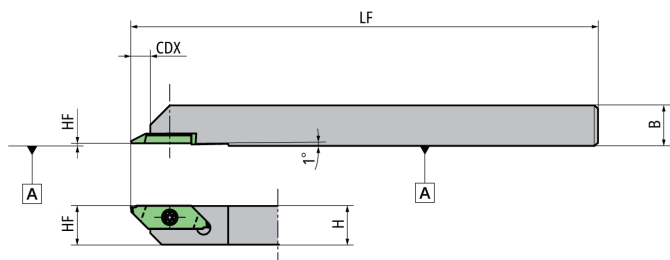
● Diagram shows right-hand tool  
All angles shown are obtained when insert is set in the holder.



Item Number	Hand	Chip-breaker	Pitch mm	AN °	CDX mm	CW mm	EPSR °	IC mm	PDX mm	PNA °	RE mm	S mm	Carbide		
													PVD QM3	Uncoated VM1 ZM3 KM1	
CSV T11FRP60-035B	M R	No	0.2-0.5	7	3	1	35	6.35	0.35	60	0.03MAX	2.38	●		
CSV T11FLP60-035B	M L	No	0.2-0.5	7	3	1	35	6.35	0.35	60	0.03MAX	2.38	●		

# External thread CTPS.. series/Toolholder

## CTPS



● Diagram shows right-hand tool



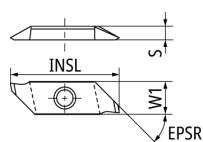
EDP	Item Number	Stock	Hand	B mm	CDX mm	H mm	HF mm	K1 °	LF mm	WF2 mm	Insert Gage
5346572	CTPSR10	●	R	10	5	10	10	1	120	0	TBPS../CTPS.. GTPS../TTPS..
5397187	CTPSR12	●	R	12	5	12	12	1	120	0	TBPS../CTPS.. GTPS../TTPS..

## Spare Parts

Item Number	Clamp screw	Wrench (for Clamp screw)
CTPSR10	LRIS-2.5*7	CLR-15S
CTPSR12	LRIS-2.5*7	CLR-15S

# TTPS.. series/Inserts Carbide

## TTPS



● Diagram shows right-hand tool  
All angles shown are obtained when insert is set in the holder.

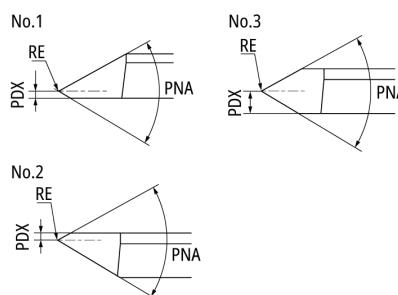
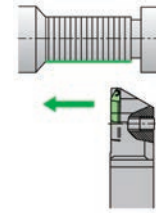
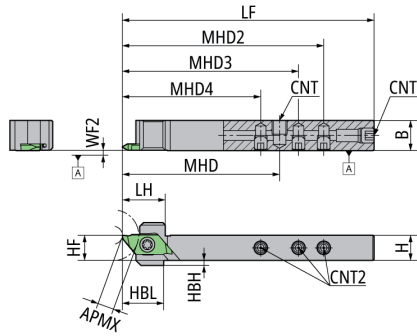


Figure	Item Number	Hand	Chip-breaker	Pitch mm	EPSR °	INSL mm	PDX mm	PNA °	RE mm	S mm	W1 mm	Carbide			Uncoated KM1
												PVD QM3	VM1	ZM3	
1	TTPS60FR4A	R	Yes	0.2-0.75	45	20	0.4	60	0.05MAX Flat	2.5	6	●	●		
1	TTPS60FR8A	R	Yes	0.5-1.25	45	20	0.8	60	0.05	2.5	6	●	●		
2	TTPS60FR4B	R	Yes	0.2-0.75	45	20	0.4	60	0.05MAX Flat	2.5	6	●	●		
2	TTPS60FR8B	R	Yes	0.5-1.25	45	20	0.8	60	0.05	2.5	6	●	●		
3	TTPS60FR-N	R	Yes	1-1.5	45	20	1.25	60	0.1	2.5	6	●	●		

# External thread TTP.. series/Toolholder

## TTP-OH3 Coolant through (direct connect compatible)



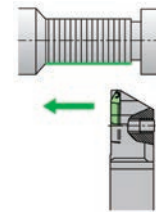
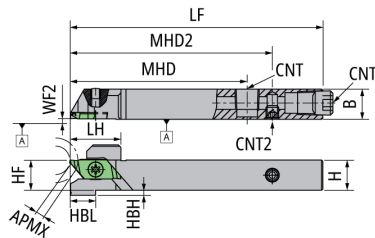
• Diagram shows right-hand tool

EDP	Item Number	Stock	Hand	APMX mm	B mm	CNT	CNT2	CUTDIA mm	H mm	HBH mm	HBL mm	HF mm	LF mm	LH mm	MHD mm	MHD2 mm	MHD3 mm	MHD4 mm	WF2 mm	Insert Gage
5117775	TTPR1012H-OH3	● ●	R	6.5	12	M6*1	M5	16	10	2	16.5	10	100	17.15	62.5	80	70	55	0	TTP..
5117817	TTPL1012H-OH3	● ●	L	6.5	12	M6*1	M5	16	10	2	16.5	10	100	17.15	62.5	80	70	55	0	TTP..

## Spare Parts

Item Number	Clamp screw	Screw (for CNT)	Screw (for CNT2)	Wrench (for Clamp screw)	Wrench (for CNT2)
TTPR1012H-OH3	LRIS-4*12PW	SS0605SC	SS0505SC	CLR-15S	LW-2.5
TTPL1012H-OH3	LRIS-4*12PW	SS0605SC	SS0505SC	CLR-15S	LW-2.5

## TTP-OH2 Coolant through (direct connect compatible)



• Diagram shows right-hand tool

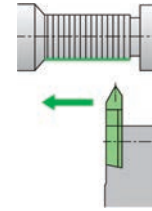
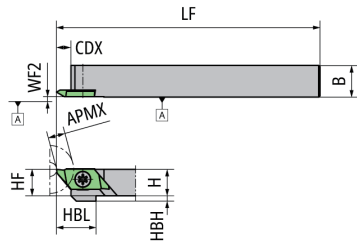
EDP	Item Number	Stock	Hand	APMX mm	B mm	CNT	CNT2	CUTDIA mm	H mm	HBH mm	HBL mm	HF mm	LF mm	LH mm	MHD mm	MHD2 mm	WF2 mm	Insert Gage
5061882	TTPR12H-OH2	● ●	R	5.5	12	Rc1/8	M5	18	12	2	10	12	100	20	70	80	0.2	TTP..
5062229	TTPR16X-OH2	● ●	R	5.5	16	Rc1/8	M5	18	16	-	-	16	120	19.5	70	100	0.2	TTP..
5061890	TTPL12H-OH2	● ●	L	5.5	12	Rc1/8	M5	18	12	2	10	12	100	20	70	80	0.2	TTP..
5062237	TTPL16X-OH2	● ●	L	5.5	16	Rc1/8	M5	18	16	-	-	16	120	19.5	70	100	0.2	TTP..

## Spare Parts

Item Number	Clamp screw	Screw (for CNT)	Screw (for CNT2)	Wrench (for Clamp screw)	Wrench (for CNT2)
TTPR12H-OH2	LRIS-4*12PW	SPR1/8	SS0505SC	CLR-15S	LW-2.5
TTPR16X-OH2	LRIS-4*12PW	SPR1/8	SS0505SC	CLR-15S	LW-2.5
TTPL12H-OH2	LRIS-4*12PW	SPR1/8	SS0505SC	CLR-15S	LW-2.5
TTPL16X-OH2	LRIS-4*12PW	SPR1/8	SS0505SC	CLR-15S	LW-2.5



## TTP



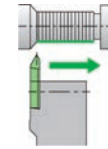
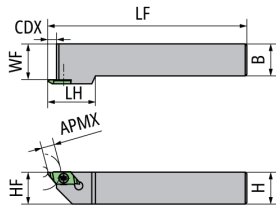
· Diagram shows right-hand tool

EDP	Item Number	Stock	Hand	APMX mm	B mm	CDX mm	H mm	HBH mm	HBL mm	HF mm	LF mm	WF2 mm	Insert Gage
5146238	<b>TTPR08</b>	●	R	6.5	10	7	8	4	15	8	120	0.2	TTP..
5145693	<b>TTPR10</b>	●	R	6.5	10	7	10	2	15	10	120	0.2	TTP..
5145701	<b>TTPR12</b>	●	R	6.5	12	7	12	-	-	12	120	0.2	TTP..
5459854	<b>TTPR12GX</b>	●	R	6.5	12	7	12	-	-	12	85	0.2	TTP..
5191234	<b>TTPR16</b>	●	R	6.5	16	7	16	-	-	16	120	0.2	TTP..
5459862	<b>TTPR16H</b>	●	R	6.5	16	7	16	-	-	16	100	0.2	TTP..
5459573	<b>TTPR20F</b>	●	R	6.5	20	7	20	-	-	20	80	0.2	TTP..
5146220	<b>TTPL08</b>	●	L	6.5	10	7	8	4	15	8	120	0.2	TTP..
5145685	<b>TTPL10</b>	●	L	6.5	10	7	10	2	15	10	120	0.2	TTP..
5145719	<b>TTPL12</b>	●	L	6.5	12	7	12	-	-	12	120	0.2	TTP..
5503024	<b>TTPL12GX</b>	●	L	6.5	12	7	12	-	-	12	85	0.2	TTP..
5267190	<b>TTPL16</b>	●	L	6.5	16	7	16	-	-	16	120	0.2	TTP..
5459870	<b>TTPL16H</b>	●	L	6.5	16	7	16	-	-	16	100	0.2	TTP..
5459581	<b>TTPL20F</b>	●	L	6.5	20	7	20	-	-	20	80	0.2	TTP..

## Spare Parts

Item Number	Clamp screw	Wrench (for Clamp screw)
<b>TTPR08</b>	LRIS-4*10PW	CLR-15S
<b>TTPR10</b>	LRIS-4*10PW	CLR-15S
<b>TTPR12</b>	LRIS-4*12PW	CLR-15S
<b>TTPR12GX</b>	LRIS-4*12PW	CLR-15S
<b>TTPR16</b>	LRIS-4*12PW	CLR-15S
<b>TTPR16H</b>	LRIS-4*12PW	CLR-15S
<b>TTPR20F</b>	LRIS-4*10	LLR-25S-20*65
<b>TTPL08</b>	LRIS-4*10PW	CLR-15S
<b>TTPL10</b>	LRIS-4*10PW	CLR-15S
<b>TTPL12</b>	LRIS-4*12PW	CLR-15S
<b>TTPL12GX</b>	LRIS-4*12PW	CLR-15S
<b>TTPL16</b>	LRIS-4*12PW	CLR-15S
<b>TTPL16H</b>	LRIS-4*12PW	CLR-15S
<b>TTPL20F</b>	LRIS-4*10	LLR-25S-20*65

## TTP-K (M)



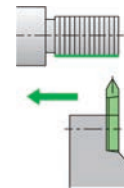
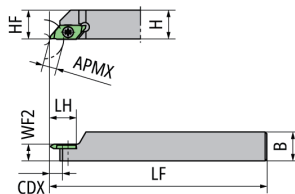
• Diagram shows right-hand tool

EDP	Item Number	Stock	Hand	APMX mm	B mm	CDX mm	H mm	HF mm	LF mm	LH mm	WF mm	Insert Gage
5989959	TTPR20K-25	●	R	6.5	20	5.5	20	20	125	30	25	TTP..
5989975	TTPR25M-30	●	R	6.5	25	5.5	25	25	150	30	30	TTP..
5989942	TTPL20K-25	●	L	6.5	20	5.5	20	20	125	30	25	TTP..
5989967	TTPL25M-30	●	L	6.5	25	5.5	25	25	150	30	30	TTP..

## Spare Parts

Item Number	Clamp screw	Wrench (for Clamp screw)
TTPR20K-25	LRIS-4*10	LLR-25S
TTPR25M-30	LRIS-4*10	LLR-25S
TTPL20K-25	LRIS-4*10	LLR-25S
TTPL25M-30	LRIS-4*10	LLR-25S

## TTP-F Shifted



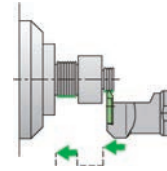
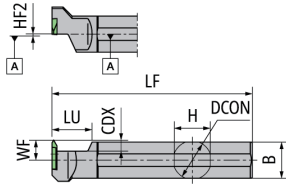
• Diagram shows left-hand tool

EDP	Item Number	Stock	Hand	APMX mm	B mm	CDX mm	H mm	HF mm	LF mm	LH mm	WF mm	WF2 mm	Insert Gage
5978150	TTPL12-F06	●	L	6.5	12	5.5	12	12	120	16	7.25	-	TTP..
5978168	TTPL16-F08	●	L	6.5	16	5.5	16	16	120	16	9.25	-	TTP..

## Spare Parts

Item Number	Clamp screw	Wrench (for Clamp screw)
TTPL12-F06	LRIS-4*6	LLR-25S
TTPL16-F08	LRIS-4*6	LLR-25S

## DS-TTP DS Toolholders



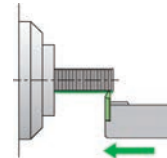
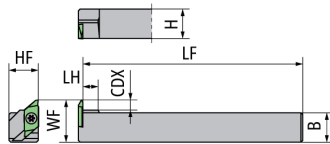
· Diagram shows left-hand tool  
NOTE: Use a right-handed (R) insert.

EDP	Item Number	Stock	Hand	B mm	CDX mm	DCON mm	H mm	HF2 mm	LF mm	LU mm	WF mm	Insert Gage
5782149	DS-TTPL16F	●	L	15	5.5	16	15	0	80	20	10	TTP..
5278270	DS-TTPL19	●	L	18	5.5	19.05	18	0	120	20	10	TTP..
5278296	DS-TTPL20	●	L	19	5.5	20	19	0	120	20	10	TTP..
5324033	DS-TTPL22	●	L	21	5.5	22	21	0	120	20	10	TTP..
5317151	DS-TTPL25	●	L	24	5.5	25.4	24	0	150	20	10	TTP..
5830641	DS-TTPL25-MET	●	L	24	5.5	25	24	0	150	20	10	TTP..

## Spare Parts

Item Number	Clamp screw	Wrench (for Clamp screw)
DS-TTPL16F	LRIS-4*10	LLR-25S-20*65
DS-TTPL19	LRIS-4*10	LLR-25S-20*65
DS-TTPL20	LRIS-4*10	LLR-25S-20*65
DS-TTPL22	LRIS-4*10	LLR-25S-20*65
DS-TTPL25	LRIS-4*10	LLR-25S-20*65
DS-TTPL25-MET	LRIS-4*10	LLR-25S-20*65

## CH-TTP for horizontal gang style tool post



· Diagram shows left-hand tool  
NOTE: Use a right-handed (R) insert.

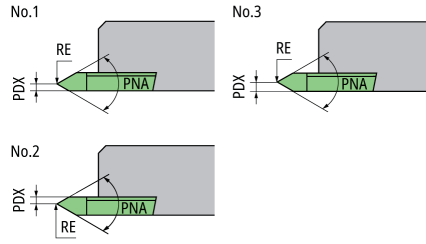
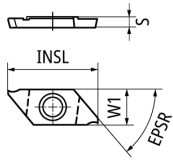
EDP	Item Number	Stock	Hand	B mm	CDX mm	H mm	HF mm	LF mm	LH mm	WF mm	Insert Gage
5885090	CH-TTPL16	●	L	16	5.5	16	16	120	9	23	TTP..
5885108	CH-TTPL20	●	L	20	5.5	20	20	120	9	27	TTP..

## Spare Parts

Item Number	Clamp screw	Wrench (for Clamp screw)
CH-TTPL16	LRIS-4*10	LLR-25S
CH-TTPL20	LRIS-4*10	LLR-25S

# TTP.. series/Inserts Carbide

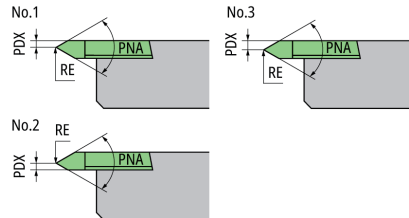
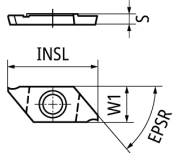
## TTP-R



● Diagram shows right-hand tool

Figure	Item Number	Hand	Chip-breaker	Pitch mm	TPI inch	PDX mm	PNA °	RE mm	Carbide			
									Q M3	VM1	Z M3	Uncoated KM1
1	TTP60FR2A	R	Yes	0.2-0.35	-	0.2	60	0.05MAX Flat			●	
1	TTP60FR4A	R	Yes	0.2-0.75	-	0.4	60	0.05MAX Flat	●		●	
1	TTP60FR4AS	M	Yes	0.2-0.75	-	0.4	60	0.05MAX Flat				●
1	TTP60FR8A	R	Yes	0.4-1.25	-	0.8	60	(R.002)	●		●	
1	TTP60FR8AS	M	Yes	0.4-1.25	-	0.8	60	(R.002)				●
1	TTP55FR8A	R	Yes	-	48	0.8	55	(R.002)			●	
2	TTP60FR2B	R	Yes	0.2-0.35	-	0.2	60	0.05MAX Flat			●	
2	TTP60FR4B	R	Yes	0.2-0.75	-	0.4	60	0.05MAX Flat	●		●	
2	TTP60FR4BS	M	Yes	0.2-0.75	-	0.4	60	0.05MAX Flat				●
2	TTP60FR8B	R	Yes	0.4-1.25	-	0.8	60	(R.002)	●		●	
2	TTP60FR8BS	M	Yes	0.4-1.25	-	0.8	60	(R.002)				●
2	TTP55FR8B	R	Yes	-	48	0.8	55	(R.002)			●	
3	TTP60FR-N	R	Yes	1-1.5	-	1.25	60	(R.004)	●		●	
3	TTP60FR-N02	R	Yes	1.5-2	-	1.25	60	(R.008)	●		●	
3	TTP60FR-NS	M	Yes	1-1.5	-	1.25	60	(R.004)				●

## TTP-L



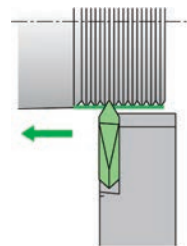
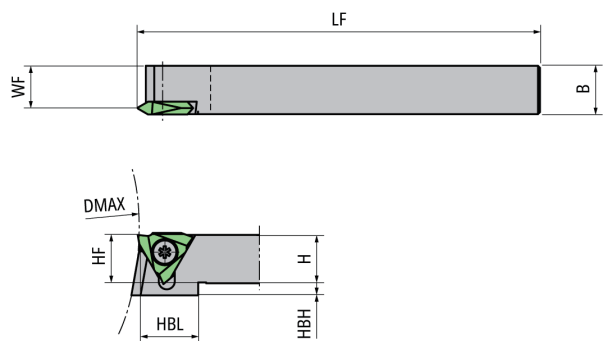
● Diagram shows left-hand tool

Figure	Item Number	Hand	Chip-breaker	Pitch mm	TPI inch	PDX mm	PNA °	RE mm	Carbide			
									Q M3	VM1	Z M3	Uncoated KM1
1	TTP60FL2A	L	Yes	0.2-0.35	-	0.2	60	0.05MAX Flat			●	
1	TTP60FL4A	L	Yes	0.2-0.75	-	0.4	60	0.05MAX Flat	●		●	
1	TTP60FL4AS	M	Yes	0.2-0.75	-	0.4	60	0.05MAX Flat				●
1	TTP60FL8A	L	Yes	0.4-1.25	-	0.8	60	(R.002)	●		●	
1	TTP60FL8AS	M	Yes	0.4-1.25	-	0.8	60	(R.002)				●
1	TTP55FL8A	L	Yes	-	48	0.8	55	(R.002)			●	
2	TTP60FL2B	L	Yes	0.2-0.35	-	0.2	60	0.05MAX Flat			●	
2	TTP60FL4B	L	Yes	0.2-0.75	-	0.4	60	0.05MAX Flat	●		●	
2	TTP60FL4BS	M	Yes	0.2-0.75	-	0.4	60	0.05MAX Flat				●
2	TTP60FL8B	L	Yes	0.4-1.25	-	0.8	60	(R.002)	●		●	
2	TTP60FL8BS	M	Yes	0.4-1.25	-	0.8	60	(R.002)				●
2	TTP55FL8B	L	Yes	-	48	0.8	55	(R.002)			●	
3	TTP60FL-N	L	Yes	1-1.5	-	1.25	60	(R.004)	●		●	
3	TTP60FL-N02	L	Yes	1.5-2	-	1.25	60	(R.008)	●		●	
3	TTP60FL-NS	M	Yes	1-1.5	-	1.25	60	(R.004)				●

# External thread

## TTMH.. series/Toolholder

### STTN



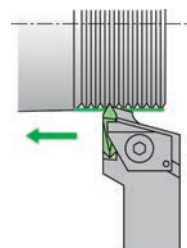
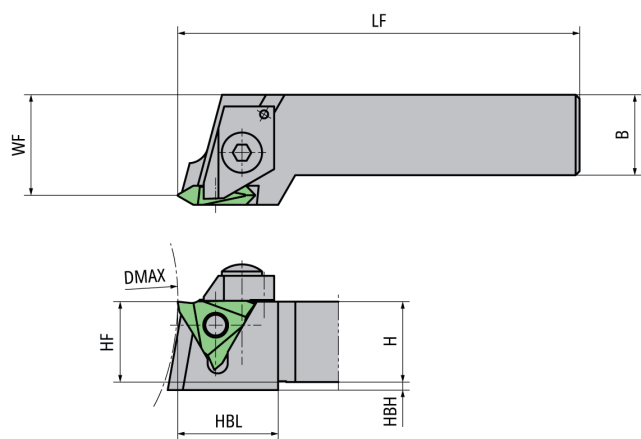
● Diagram shows right-hand tool

EDP	Item Number	Stock	Hand	B mm	DMAX mm	H mm	HBH mm	HBL mm	HF mm	LF mm	WF mm	Insert Gage
5630405	STTNR101032	●	R	10	120	10	5	15	10	80	8.5	TTMH32..
5827662	STTNR121232	●	R	12	120	12	5	15	12	80	10.5	TTMH32..
5834817	STTNR121232-K	●	R	12	120	12	5	15	12	125	10.5	TTMH32..

### Spare Parts

Item Number	Clamp screw	Wrench (for Clamp screw)
STTNR101032	LR-S-4*9	RLR-20S
STTNR121232	LR-S-4*9	RLR-20S
STTNR121232-K	LR-S-4*9	RLR-20S

### NTTB



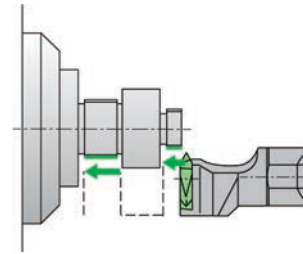
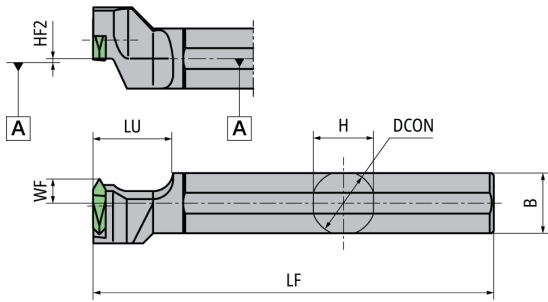
● Diagram shows right-hand tool

EDP	Item Number	Stock	Hand	B mm	DMAX mm	H mm	HBH mm	HF mm	LF mm	WF mm	Insert Gage
5262530	NTTBR161632	●	R	16	120	16	4	16	120	20	TTMH32..
5262548	NTTBR202032	●	R	20	120	20	-	20	140	25	TTMH32..

### Spare Parts

Item Number	Clamp	Clamp screw	Spring	Wrench (for Clamp screw)
NTTBR161632	CPR5	AOS-5*25	ASG-5	LW-2.5
NTTBR202032	CPR5	AOS-5*25	ASG-5	LW-2.5

## DS-STT DS Toolholders



● Diagram shows left-hand tool  
NOTE: Use a right-handed (R) insert.

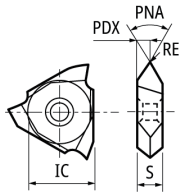
EDP	Item Number	Stock	Hand	B mm	DCON mm	H mm	HF2 mm	LF mm	LU mm	WF mm	Insert Gage
5348552	DS-STTL14F	●	L	13	14	13	0	80	20	6	TTMH32..
5348099	DS-STTL15H	●	L	15	15.875	15	0	100	20	6	TTMH32..
5341508	DS-STTL16X	●	L	15	16	15	0	95	20	6	TTMH32..

## Spare Parts

Item Number	Clamp screw	Wrench (for Clamp screw)
DS-STTL14F	LR-S-4*9	RLR-20S
DS-STTL15H	LR-S-4*9	RLR-20S
DS-STTL16X	LR-S-4*9	RLR-20S

# TTMH.. series/Inserts Carbide

## TTMH



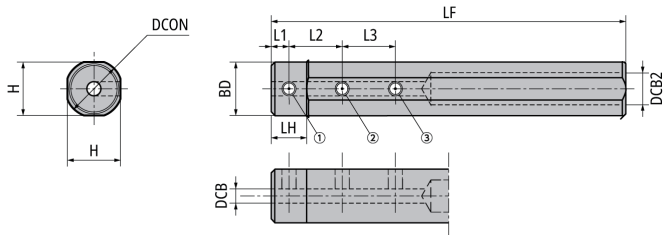
● Diagram shows right-hand tool

Item Number	Hand	Chip-breaker	Pitch mm	GAN °	IC mm	PDX mm	PNA °	RE mm	S mm	Carbide			Uncoated KM1
										QM3	VM1	ZM3	
TTMH3260R010	R	Yes	0.8-3	6	9.525	1.59	60	0.1	3.18			●	
TTMH3260R015	R	Yes	1-3	6	9.525	1.59	60	0.15	3.18			●	
TTMH3260R020	R	Yes	1.5-3	6	9.525	1.59	60	0.2	3.18			●	

# Internal Thread | STICK DUO

## SBT.. series/Sleeve

■ NBH Shank diameter  $\varnothing 15.875 - \varnothing 19.05$



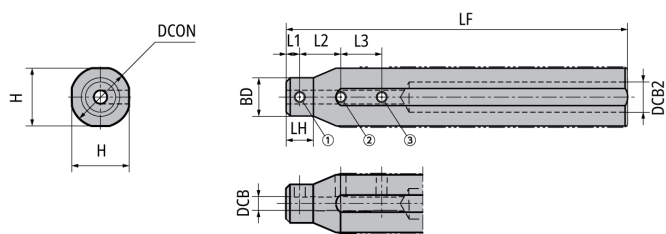
EDP	Item Number	Stock	Hand	BD mm	DCB mm	DCB2 mm	DCON mm	H mm	LF mm	LH mm	L1 mm	L2 mm	L3 mm	InsertBar Gage
5702915	NBH02515H	●	N	15	2.5	9	15.875	15	100	10	5	10	-	SBF../SHF.. SBT../SSP..
5631411	NBH03015H	●	N	15	3	9	15.875	15	100	10	5	10	10	SBF../SHF../SBB.. SBG../SBT../SSP..
5586110	NBH03515H	●	N	15	3.5	9	15.875	15	100	10	5	10	10	SBF../SHF.. SBT../SSP..
5586128	NBH04015H	●	N	15	4	9	15.875	15	100	10	5	15	15	SBF../SHF../SBB.. SBG../SBT../SSP..
5585989	NBH05015H	●	N	15	5	9	15.875	15	100	10	5	15	15	SBF../SHF.. SBG../SBT../SSP..
5585971	NBH06015H	●	N	15	6	9	15.875	15	100	10	5	20	20	SBF../SHF.. SBG../SFG../SBT../SSP..
5702899	NBH02516H	●	N	15	2.5	9	16	15	100	10	5	10	-	SBF../SHF.. SBT../SSP..
5631437	NBH03016H	●	N	15	3	9	16	15	100	10	5	10	10	SBF../SHF../SBB.. SBG../SBT../SSP..
5586102	NBH03516H	●	N	15	3.5	9	16	15	100	10	5	10	10	SBF../SHF.. SBT../SSP..
5586094	NBH04016H	●	N	15	4	9	16	15	100	10	5	15	15	SBF../SHF../SBB.. SBG../SBT../SSP..
5586078	NBH05016H	●	N	15	5	9	16	15	100	10	5	15	15	SBF../SHF.. SBG../SBT../SSP..
5586060	NBH06016H	●	N	15	6	9	16	15	100	10	5	20	20	SBF../SHF.. SBG../SFG../SBT../SSP..
5702907	NBH02519K	●	N	18	2.5	11	19.05	18	125	10	5	10	-	SBF../SHF.. SBT../SSP..
5631452	NBH03019K	●	N	18	3	11	19.05	18	125	10	5	10	10	SBF../SHF../SBB.. SBG../SBT../SSP..
5586045	NBH03519K	●	N	18	3.5	11	19.05	18	125	10	5	10	10	SBF../SHF.. SBT../SSP..
5586037	NBH04019K	●	N	18	4	11	19.05	18	125	10	5	15	15	SBF../SHF../SBB.. SBG../SBT../SSP..
5586011	NBH05019K	●	N	18	5	11	19.05	18	125	10	5	15	15	SBF../SHF.. SBG../SBT../SSP..
5586003	NBH06019K	●	N	18	6	11	19.05	18	125	10	5	20	20	SBF../SHF.. SBG../SFG../SBT../SSP..

## Spare Parts

Item Number	Clamp screw			Wrench (for Clamp screw)
	①	②	③	
NBH02515H	SS0406F	SS0406F	-	LW-2
NBH03015H	SS0404F	SS0404F	SS0404F	LW-2
NBH03515H	SS0404F	SS0404F	SS0404F	LW-2
NBH04015H	SS0404F	SS0404F	SS0404F	LW-2
NBH05015H	SS0404F	SS0404F	SS0404F	LW-2
NBH06015H	SS0404F	SS0404F	SS0404F	LW-2
NBH02516H	SS0406F	SS0406F	-	LW-2
NBH03016H	SS0404F	SS0404F	SS0404F	LW-2
NBH03516H	SS0404F	SS0404F	SS0404F	LW-2
NBH04016H	SS0404F	SS0404F	SS0404F	LW-2
NBH05016H	SS0404F	SS0404F	SS0404F	LW-2
NBH06016H	SS0404F	SS0404F	SS0404F	LW-2
NBH02519K	SS0408F	SS0408F	-	LW-2
NBH03019K	SS0406F	SS0406F	SS0406F	LW-2
NBH03519K	SS0406F	SS0406F	SS0406F	LW-2
NBH04019K	SS0406F	SS0406F	SS0406F	LW-2
NBH05019K	SS0406F	SS0406F	SS0406F	LW-2
NBH06019K	SS0406F	SS0406F	SS0406F	LW-2



## NBH Shank diameter $\varphi 20 - \varphi 32$



EDP	Item Number	Stock	Hand	BD mm	DCB mm	DCB2 mm	DCON mm	H mm	LF mm	LH mm	L1 mm	L2 mm	L3 mm	InsertBar Gage	
5702881	NBH02520K	●	N	11	2.5	11	20	19	125	10	5	10	-	SBF./SHF..	SBT./SSP..
5631478	NBH03020K	●	N	12	3	11	20	19	125	10	5	10	10	SBF./SHF./SBB..	SBG./SBT./SSP..
5586201	NBH03520K	●	N	12	3.5	11	20	19	125	10	5	10	10	SBF./SHF..	SBT./SSP..
5586185	NBH04020K	●	N	13	4	11	20	19	125	10	5	15	15	SBF./SHF./SBB..	SBG./SBT./SSP..
5586169	NBH05020K	●	N	14	5	11	20	19	125	10	5	15	15	SBF./SHF..	SBG./SBT./SSP..
5586151	NBH06020K	●	N	15	6	11	20	19	125	10	5	20	20	SBF./SHF..	SBG./SFG./SBT./SSP..
5702873	NBH02522K	●	N	11	2.5	11	22	21	125	10	5	10	-	SBF./SHF..	SBT./SSP..
5631494	NBH03022K	●	N	12	3	11	22	21	125	10	5	10	10	SBF./SHF./SBB..	SBG./SBT./SSP..
5586326	NBH03522K	●	N	12	3.5	11	22	21	125	10	5	10	10	SBF./SHF..	SBT./SSP..
5586318	NBH04022K	●	N	13	4	11	22	21	125	10	5	15	15	SBF./SHF./SBB..	SBG./SBT./SSP..
5586292	NBH05022K	●	N	14	5	11	22	21	125	10	5	15	15	SBF./SHF..	SBG./SBT./SSP..
5586284	NBH06022K	●	N	15	6	11	22	21	125	10	5	20	20	SBF./SHF..	SBG./SFG./SBT./SSP..
5702857	NBH02523K	●	N	11	2.5	11	23	21	125	10	5	10	-	SBF./SHF..	SBT./SSP..
5631528	NBH03023K	●	N	12	3	11	23	21	125	10	5	10	10	SBF./SHF./SBB..	SBG./SBT./SSP..
5586250	NBH03523K	●	N	12	3.5	11	23	21	125	10	5	10	10	SBF./SHF..	SBT./SSP..
5651336	NBH04023K	●	N	13	4	11	23	21	125	10	5	15	15	SBF./SHF./SBB..	SBG./SBT./SSP..
5631536	NBH05023K	●	N	14	5	11	23	21	125	10	5	15	15	SBF./SHF..	SBG./SBT./SSP..
5704283	NBH02525K-MET	●	N	11	2.5	11	25	24	125	10	5	10	-	SBF./SHF..	SBT./SSP..
5631593	NBH03025K-MET	●	N	12	3	11	25	24	125	10	5	10	10	SBF./SHF./SBB..	SBG./SBT./SSP..
5631601	NBH03525K-MET	●	N	12	3.5	11	25	24	125	10	5	10	10	SBF./SHF..	SBT./SSP..
5651328	NBH04025K-MET	●	N	13	4	11	25	24	125	10	5	15	15	SBF./SHF./SBB..	SBG./SBT./SSP..
5631627	NBH05025K-MET	●	N	14	5	11	25	24	125	10	5	15	15	SBF./SHF..	SBG./SBT./SSP..
5631635	NBH06025K-MET	●	N	15	6	11	25	24	125	10	5	20	20	SBF./SHF..	SBG./SFG./SBT./SSP..
5702865	NBH02525K	●	N	11	2.5	11	25.4	24	125	10	5	10	-	SBF./SHF..	SBT./SSP..
5631684	NBH03025K	●	N	12	3	11	25.4	24	125	10	5	10	10	SBF./SHF./SBB..	SBG./SBT./SSP..
5586235	NBH03525K	●	N	12	3.5	11	25.4	24	125	10	5	10	10	SBF./SHF..	SBT./SSP..
5586383	NBH04025K	●	N	13	4	11	25.4	24	125	10	5	15	15	SBF./SHF./SBB..	SBG./SBT./SSP..
5586367	NBH05025K	●	N	14	5	11	25.4	24	125	10	5	15	15	SBF./SHF..	SBG./SBT./SSP..
5586359	NBH06025K	●	N	15	6	11	25.4	24	125	10	5	20	20	SBF./SHF..	SBG./SFG./SBT./SSP..
5939483	NBH05032K	●	N	14	5	11	32	30	125	10	5	15	15	SBF./SHF..	SBG./SBT./SSP..
5939491	NBH06032K	●	N	15	6	11	32	30	125	10	5	20	20	SBF./SHF..	SBG./SFG./SBT./SSP..

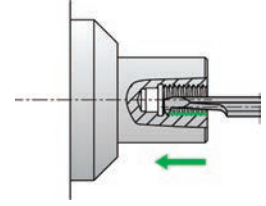
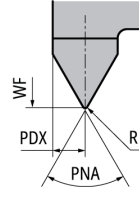
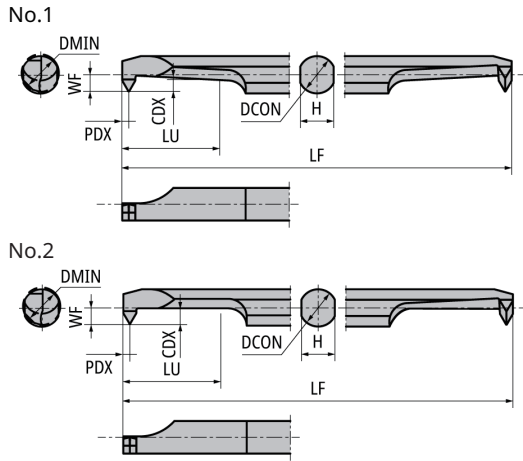
## Spare Parts

Item Number	Clamp screw			Wrench (for Clamp screw)
	①	②	③	
NBH02520K	SS0404F	SS0404F	-	LW-2
NBH03020K	SS0404F	SS0404F	SS0406F	LW-2
NBH03520K	SS0404F	SS0404F	SS0406F	LW-2
NBH04020K	SS0404F	SS0406F	SS0406F	LW-2
NBH05020K	SS0404F	SS0406F	SS0406F	LW-2
NBH06020K	SS0404F	SS0406F	SS0406F	LW-2
NBH02522K	SS0404F	SS0406F	-	LW-2
NBH03022K	SS0404F	SS0406F	SS0408F	LW-2
NBH03522K	SS0404F	SS0406F	SS0406F	LW-2
NBH04022K	SS0404F	SS0406F	SS0406F	LW-2
NBH05022K	SS0404F	SS0406F	SS0406F	LW-2
NBH06022K	SS0404F	SS0406F	SS0406F	LW-2
NBH02523K	SS0404F	SS0406F	-	LW-2
NBH03023K	SS0404F	SS0406F	SS0408F	LW-2
NBH03523K	SS0404F	SS0406F	SS0406F	LW-2
NBH04023K	SS0404F	SS0406F	SS0406F	LW-2
NBH05023K	SS0404F	SS0406F	SS0406F	LW-2
NBH02525K-MET	SS0404F	SS0406F	-	LW-2
NBH03025K-MET	SS0404F	SS0406F	SS0408F	LW-2
NBH03525K-MET	SS0404F	SS0406F	SS0408F	LW-2
NBH04025K-MET	SS0404F	SS0408F	SS0408F	LW-2
NBH05025K-MET	SS0404F	SS0408F	SS0408F	LW-2
NBH06025K-MET	SS0404F	SS0408F	SS0408F	LW-2
NBH02525K	SS0404F	SS0406F	-	LW-2
NBH03025K	SS0404F	SS0406F	SS0408F	LW-2
NBH03525K	SS0404F	SS0406F	SS0408F	LW-2
NBH04025K	SS0404F	SS0408F	SS0408F	LW-2
NBH05025K	SS0404F	SS0408F	SS0408F	LW-2
NBH06025K	SS0404F	SS0408F	SS0408F	LW-2
NBH05032K	SS0404F	SS0408F	SS0408F	LW-2
NBH06032K	SS0404F	SS0408F	SS0408F	LW-2

# STICK DUO

## SBT.. series/Insert bar Carbide

### SBT

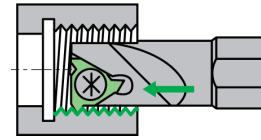
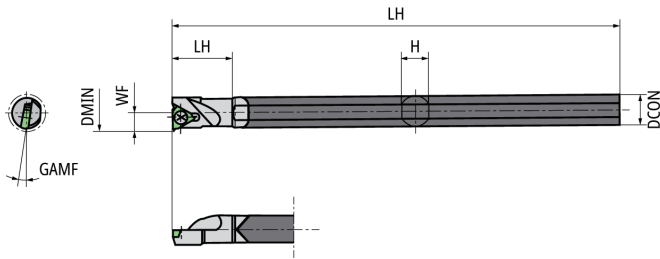


- Diagram shows right-hand tool
- No.1: Eccentric tapered shape

Figure	Item Number	Hand	Chip-breaker	DMIN	Pitch	CDX	DCON	H	LF	LU	PDX	PNA	RE	WF	Carbide		
															Q M3	V M1	Z M3
				mm	mm	mm	mm	mm	mm	mm	mm	°	mm	mm			
1	SBT025M3R	R	No	2.5	0.5	0.6	2.5	2.3	50	5.4	0.4	60	0.05MAX Flat	1.1		●	
1	SBT030M4R	R	No	3	0.5-0.8	0.8	3	2.7	50	7.5	0.5	60	0.05MAX Flat	1.3		●	
1	SBT030M4RB	R	Yes	3	0.5-0.8	0.8	3	2.7	50	7.5	0.5	60	0.05MAX Flat	1.3		●	
1	SBT035M5RB	R	Yes	3.5	0.5-1	1	3.5	3.2	60	8.5	0.55	60	0.05MAX Flat	1.55		●	
1	SBT040M6RB	R	Yes	4	0.75-1.25	1.2	4	3.6	60	10.5	0.7	60	0.05	1.8		●	
2	SBT050M8RB	R	Yes	5	0.75-1.5	1.5	5	4.5	70	15.8	0.8	60	0.05	2.3		●	
2	SBT060M10RB	R	Yes	6	0.75-1.75	1.8	6	5.4	80	18.4	0.95	60	0.05	2.8		●	

# Internal Thread TMN.. series/Toolholder

## TGC Carbide shank



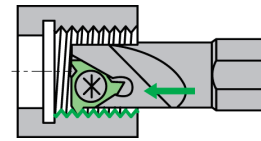
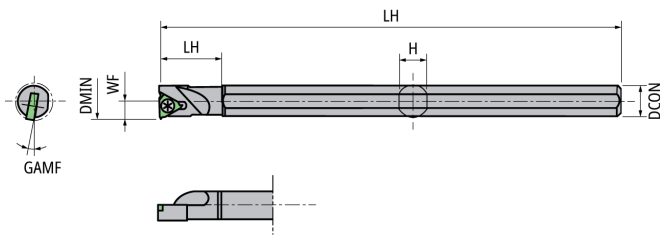
● Diagram shows right-hand tool

EDP	Item Number	Stock	Hand	DCON mm	DMIN mm	GAMF °	H mm	LF mm	LH mm	WF mm	Insert Gage
5455092	TGC10T06H161R	●	R	6	8	10	5.5	100	13	3.8	TMN06..
5455084	TGC10T08K162R	●	R	8	10	10	7	125	17	4.7	TMN08..
5455076	TGC10T10M163R	●	R	10	12	10	9	150	20	6	TMN09..

## Spare Parts

Item Number	Clamp screw	Wrench (for Clamp screw)
TGC10T06H161R	LR-S-2*4.4	CLR-13S
TGC10T08K162R	LR-S-2*5.5	CLR-13S
TGC10T10M163R	LRIS-2.2*6	CLR-13S

## HN Steel shank



● Diagram shows right-hand tool

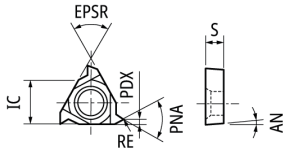
EDP	Item Number	Stock	Hand	DCON mm	DMIN mm	GAMF °	H mm	LF mm	LH mm	WF mm	Insert Gage
5845177	HN59Z-0028	●	R	6	8	10	5.5	100	13	3.8	TMN06..
5845193	HN59Z-0029	●	R	8	10	10	7	125	17	4.7	TMN08..
5845185	HN59Z-0030	●	R	10	12	10	9	150	20	6	TMN09..

## Spare Parts

Item Number	Clamp screw	Wrench (for Clamp screw)
HN59Z-0028	LR-S-2*4.4	CLR-13S
HN59Z-0029	LR-S-2*5.5	CLR-13S
HN59Z-0030	LRIS-2.2*6	CLR-13S

# TMN.. series/Inserts Carbide

## TMN



● Diagram shows right-hand tool

Item Number	Hand	Chip-breaker	Pitch mm	AN °	EPSR °	IC mm	PDX mm	PNA °	RE mm	S mm	Carbide			Uncoated KM1
											QM3	VM1	ZM3	
TMN06FR03	R	Yes	0.4-0.75	7	60	3.97	0.5	60	0.03	1.59			●	
TMN08FR03	R	Yes	0.4-0.75	7	60	4.76	0.5	60	0.03	2.38			●	
TMN09FR03	R	Yes	0.4-0.75	7	60	5.56	0.5	60	0.03	2.38			●	



For high-efficiency thread cutting | Swiss CNC lathes

# Thread Whirling





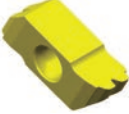
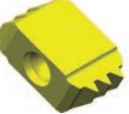
High productivity for precision screw manufacturing, like implant screws and bone screws

Ideal for medical screw thread forms that are becoming more complex

Single pass thread forming reduces cycle time

## Features

- NTK's insert design technology creates precise inserts matching even the most complex thread forms
- Sharp cutting edges and PVD coated inserts generate superior surface finishes and achieves long tool life

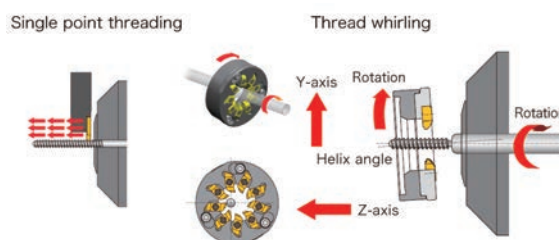
	Double-lead threads	Triple-lead threads
Work	Bone screw	Worm screw
Work material	Ti-6Al-4V ELI	brass
Workpiece		
Insert shape		
Major Dia.	$\varphi 4.0$	$\varphi 7.0$
Minor Dia.	$\varphi 2.4$	$\varphi 4.7$
Lead [Pitch×No. of Lead]	3.42mm	4.9mm

Machining multi-lead thread forms has many process requirements.

So it is important to contact us to discuss: mechanical specifications, spindle specifications, insert specifications, tooling specifications.

## Thread whirling process vs. single point threading

In thread whirling, the whirling head is tilted to a specific helix angle, the cutter is rotated at high speed, the bar stock (c axis) is rotated at a low speed, and the pitch (z axis) is the feed. The inserts shear the material which enables single pass thread forming.



## Special Item Capability

- Even though almost all bone screw shapes are special, NTK thread whirling inserts can make the correct shape of thread the first time, without any redesign or remanufacturing
- The combination of a sharp cutting edge and PVD coating achieves an excellent finish and long tool life.

## Instructions

1. Refer to our chart and find your machine and spindle model. Select the suitable whirling cutter.
2. Submit the machine, spindle model information, workpiece drawing, material, and bar stock diameter to NTK. NTK calculates the lead angle and insert geometry from the work drawing and manufactures a dedicated insert.
3. Set the whirling cutter at the specified lead angle and set the cutting conditions.

## Recommended Cutting Conditions

Conditions / No. of teeth		9	6	4	
Main spindle	min-1	10-40	10-25	7-15	Faster RPM reduces machining time
Whirling cutter	min-1	1500-4000			
Feed Rate		Same as thread lead = pitch			
Bar stock	mm	-φ10	-φ10	-φ8	
Work Material		Ti-6Al-4V EL / SUS316 / 17-4PH / Titanium / brass			

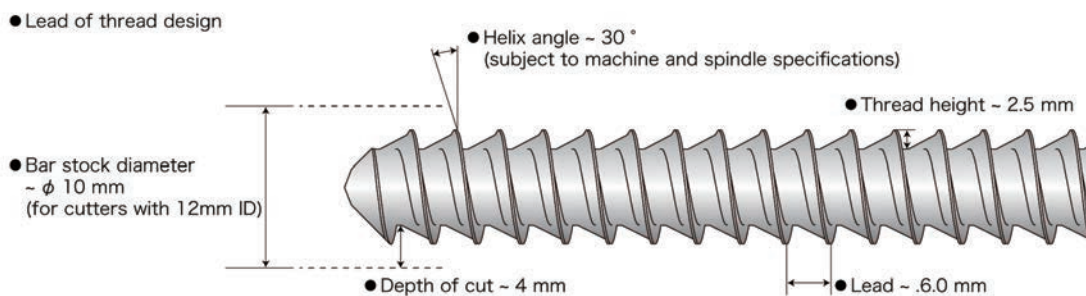
Formula for calculating thread whirling process time

$$T \text{ (Seconds)} = \frac{60 \times \text{Thread length}}{\text{Main spindle rpm} \times \text{Feed rate (Thread lead)}}$$

Ex.) Double lead / 50mm length / 2mm lead (2 × 1mm pitch) / 30 rpm

$$T \text{ (Seconds)} = \frac{60 \times 50\text{mm}}{30\text{rpm} \times 2\text{mm}} = 40 \text{ Seconds}$$

## Applicable Thread Geometry (Approximated)



The geometries shown above are approximated and could vary by actual applications

## Double-lead Bone Screw Process Example

1. 1st thread whirl at taper area
2. Rotate the bar 180° and whirl the 2nd thread on same area as 1
3. Thread whirl the straight section
4. To obtain two exits on the screw, back up half a lead (one pitch) and rotate 180 degrees. Additional machining is performed at the exit.

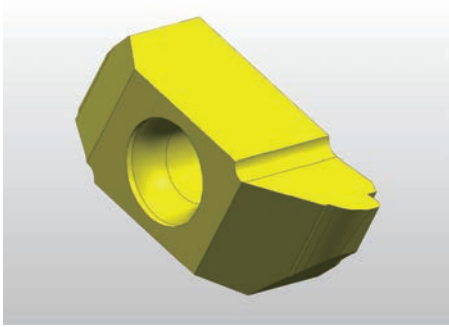


## Basic Insert Grade : ZM3

ZM3 is the common grade for NTK thread whirling

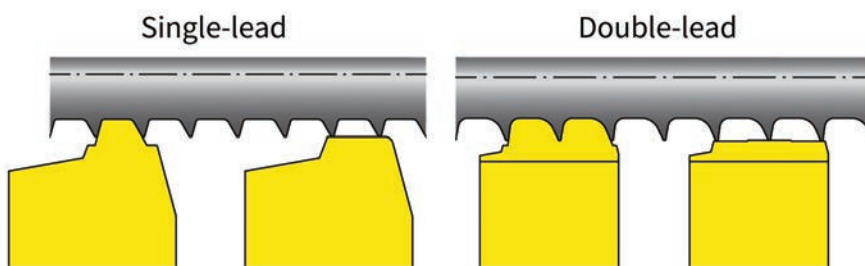
ZM3 offers excellent surface finish

NTK can make inserts with other coatings to meet customers demands



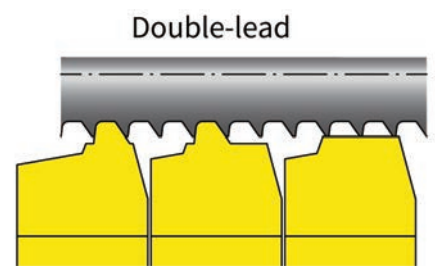
## NTK Thread Machining Examples

For absolute flat on OD



Two insert combination brings absolute flat on OD to meet drawing specifications.

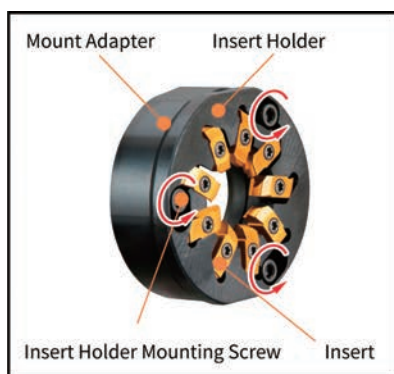
For tiny thread



NTK's Thread Whirling system can machine small diameter multi-lead screws to spec, with lower tool pressure, by using several types of specially designed and accurately ground inserts on the cutter.

## NTK's Unique Attachment System

NTK's whirling insert holder can be attached and detached without removing mounting screws



① Loosen the Mounting Screws




② Rotate the Insert Holder 10 degrees




③ Detach the Insert Holder without removing the Mounting Screws



## Application Examples

Double-lead Bone Screw			
Work Material : Ti -6Al-4v ELI			
Bar Stock Dia.	φ9.5	Number of start	2
Major Dia.	φ4.0	Helix Angle	28.5°
Minor Dia.	φ2.5	Hand of thread	Right
Cutting condition			
Main Spindle Speed (rpm)	15	Speed of whirling cutter (rpm)	3,500
Lead = Feed (mm/rev)	5.5	Result	OK
NTK Thread Whirling	Dramatically improved productivity		
Competitor's Thread Whirling	 Cannot complete with single pass. Requires feeding stock multiple times and two passes for threading each time.		
NTK thread whirling succeeded in double lead screw machining when one of the major thread whirling suppliers has failed many times.			

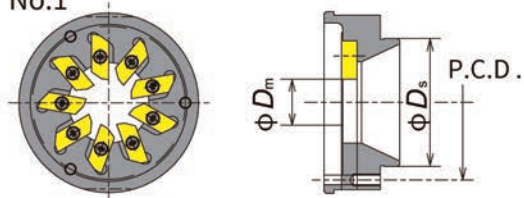
Single-lead Bone Screw			
Work Material : 316SS			
Bar Stock Dia.	φ8.0	Number of start	1
Major Dia.	φ3.45	Helix Angle	7.5°
Minor Dia.	φ2.67	Hand of thread	Right
Cutting condition			
Main Spindle Speed (rpm)	23	Speed of whirling cutter (rpm)	2,000
Pitch = Feed (mm/rev)	1.24	Result	OK
NTK Thread Whirling	2600 pcs		
Competitor's Thread Whirling	 1000 pcs		
Some thread whirling manufacturers offer 6-teeth or 12-teeth systems, too many teeth cause chip packing issues and more tool pressure. Fewer teeth means greater cycle time. NTK concluded that 9-teeth is the best configuration. Our customers can run 1.5 times faster and get longer tool life.			

Triple-lead Worm Gear			
Work Material : Brass			
Bar Stock Dia.	φ8.0	Number of start	3
Major Dia.	φ7.0	Helix Angle	14.6°
Minor Dia.	φ4.7	Hand of thread	Left
Cutting condition			
Main Spindle Speed (rpm)	20	Speed of whirling cutter (rpm)	3,500
Lead = Feed (mm/rev)	4.8	Result	OK
Multi-lead threads, common in the Worm Gear industry are made by a forming or cutting process. The large helix angle is difficult to machine with single-point threading. NTK now makes thread whirling inserts for multi-lead threads. Cycle time is reduced with a one pass process and thread form dimensions are stable with the low tool pressure.			

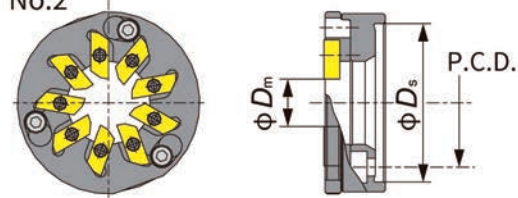


# Thread Whirling System

No.1

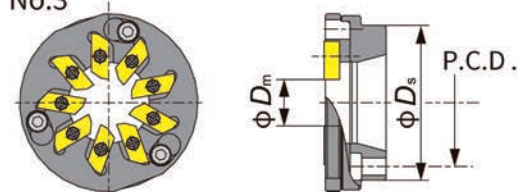


No.2



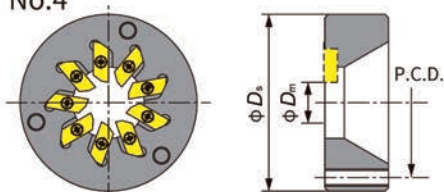
Quick-change

No.3

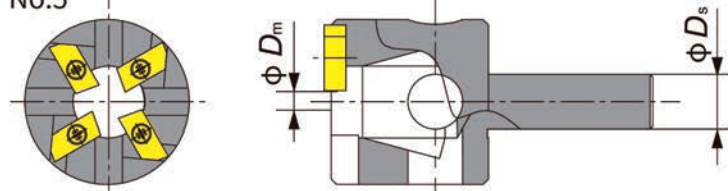


Quick-change

No.4

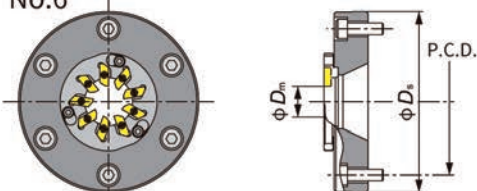


No.5



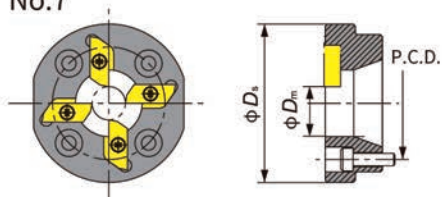
Guideline: Raw material diameter up to φ6, machinable up to length 18mm  
(Contact CKD for further information)

No.6

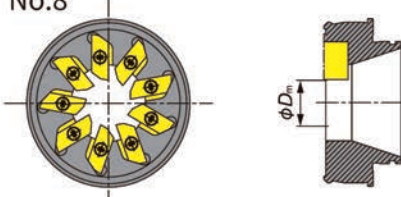


Quick-change

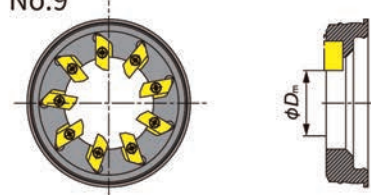
No.7



No.8



No.9



## Spare Insert Holder (Cartridge)

Item number	No. of tooth	φDm (mm)	Compatible cutters
TWC6HP2	6	12	No.2, No.3※
TWC9HP2	9	12	No.2, No.3※
TWC9HP2-D16	9	12	No.6※

※Cannot be used for TWC9TS20550P2, TWC9TO12050P2-D18 and TWC9HA22594P2

Note(s): Note: Insert holder comes with insert screws and wrench Insert holder mounting screw is not included

## Spare Parts

Description		Item number
Insert Screw	for 4mm thick inserts	FSI17-2.2×6.0
	for 6.5mm thick inserts	FSI24-2.2×7.9
Wrench		T-07
Insert Holder Mounting Bolt		CS0309-TW

Machine make	Model	Location	Spindle make	Spindle model	Helix angle	No.	NTK Whirling cutter	Stock	No. of tooth	φDm (mm)	φDs	P.C.D.	Mount adapter bolt																						
CITIZEN	M <sub>32</sub> -VII	Gang	CITIZEN	BTW-4000	0°- 15°	1	TWC9C0746HP1	●	9	φ12	φ46	φ35	M3																						
	120/L20E/L20X L32/L32X	Gang		BTW-3000 BTW-3100	0°- 15°																														
	D25	Gang		CITIZEN	BTW-3100	0°- 15°	1	TWC9C1040HP1 TWC6C1040HP1 TWC9C1040HP1-D16	● ● ●	9 6 9	φ12 φ12 φ16	φ33	φ40	M3 (Provided with spindle)																					
	L32X				BTW-6000	±25°																													
	L20X				BTW-5000	±25°																													
	M16					0°- 15°																													
	A20				BTW-2000	±25°																													
	A32					BTW-1000									±25°																				
	L20/L20X				±25°										+20°- -25°																				
	L32/L32X														±25°																				
	M20				Gang	CITIZEN									CITIZEN	LTRO170 LTR0128/LTRO168 MSW105 KSW110	±15°	2	TWC9C1037P2	●	9	φ12	φ37	φ30.5	CS0310 (M3)										
	M32																									Turret	CITIZEN	LTRO183	±15°	2	TWC9J1040P2	●	9	φ12	φ40
	C32	Gang		CITIZEN																															
	L20																									Turret	CITIZEN	LTRO169	±15°	2	TWC9P1340P2	●	9	φ12	φ40
	M20/32	Gang	PCM	GSW-101																															
	M20/32																									Turret	PCM	LSW-101-L20	±10°	2	TWC9P1340P2	●	9	φ12	φ40
	K16	Attachment	PCM	NSW-101			±10°	2	TWC9P1340P2	●	9	φ12	φ40	φ32.5																					
	L20																									Gang	PCM	KSW-101	±10°	2	TWC9P1340P2	●	9	φ12	φ40
	M20/16	Turret	PCM	KSW-101			±10°	2	TWC9P1340P2	●	9	φ12	φ40	φ32.5																					
	M20/M32																									Attachment	PCM	KSW-101	±10°	2	TWC9P1340P2	●	9	φ12	φ40
STAR	SW-12	Attachment	STAR	10159	±20°	7	TWC4S1433HP1	●	4	φ8	φ38	φ27	CS0310 (M3)																						
	ECAS-12/20			54178	±10°																														
	SB-20R			0M171	-20°- 0°																														
	SR-20J/20RIII 20RIV/32JII			68172	-20°- 0°																														
	ECAS-20T	Turret		STAR	59172	±20°	3	TWC9S1640P2	●	9	φ12	φ40	φ33	CS041485 (M4)																					
	ECAS-32T				58171										±20°																				
	SR-38	Attachment			10172										±10°																				
	ST-38				43156										±20°																				
	SV-12	Turret			45172	±10°																													
	SV-20/SV-20R				42173	±10°																													
	SV-32				43172	±10°																													
	SV-38R				43156	±20°																													
TSUGAMI	BH20/BH38		Turret		TSUGAMI	3263-Y481									±10°	3	TWC9TS2252P2	●	9	φ12	φ52	φ42	CS0515 (M5)												
	B038T					3263-Y2481									±10°									3	TWC9TS2252P2	●	9	φ12	φ52	φ42	CS0515 (M5)				
	BS20	Attachment	TSUGAMI			3214-Y1371									±10°	3	TWC9TS20550P2	●	9	φ16	φ50	φ40	CS0515 (M5)												
	SS20/SS26/SS32 B0265/B0266-II B0325/B0326-II B0265/B0266(V)-III B0325/B0326(V)-III BW269Z/BW329Z					3268-Y451									0°-10°									4	TWC9TS2244HP1 TWC9TS1944HP1 TWC9TS1644HP1 TWC9TS1044HP1	● ● ● ●	9 9 9 9	φ12 φ12 φ12 φ12	φ52 φ52 φ52 φ52	φ44 φ44 φ44 φ44	φ44 φ44 φ44 φ44	CS0520 (M5) CS0520 (M5) CS0515 (M5) CS0515 (M5)			
	S205/S206			3281-Y451		0°-25°																													
	S205/S206-II			3281-Y2451		0°-30°																													
	B0123/124/126-II B0203/204/205/205-III/206-II			3220-Y6541																															
	SS20/SS26/SS32			Attachment		TSUGAMI	3268-Y271	0°-15°	4	TWC9TS1952P2BK TWC9TS1652P2BK	● ●	9 9	φ12 φ12	φ52 φ52	φ38 φ38	φ38 φ38	CS0515 (M5) CS0515 (M5)																		
	SS207/SS267/SS327							-										Using B-axis	0°-15°	5	TWC4TS3010HP1	●	4	φ7	φ10	For single- corner inserts only									
	SS267/SS327-III			Attachment			TSUGAMI	TSUGAMI	3293-Y3031	0°-15°	4	TWC9TS1944HP1	● ●	9 9	φ12 φ12	φ52 φ52	φ44 φ44	CS0520 (M5) CS0520 (M5)																	

Machine make	Model	Location	Spindle make	Spindle model	Helix angle	No.	NTK Whirling cutter	Stock	No. of tooth	φDm (mm)	φDs	P.C.D.	Mount adapter bolt
TORNOS	DECO 10/10a	Attachment	TORNOS	224-1900	±15°	4	TWC6TO11542HP1	●	6	φ12	φ42	φ32	CS0410 (M4)
	Evo DECO 10/10			242-1900									
	DECO 13a/13e			226-1900									
	Evo DECO 16/10			243-1900	±15°	3	TWC9TO10540P2	●	9	φ12	φ40	φ31	CS0410 (M4)
	Swiss ST26			246-1900									
	DECO 20a			223-1900									
	DECO 26a			225-1900	±25°	3	TWC9TO12050P2-D18	●	9	φ18	φ50	φ40	CS0410 (M4)
	Sigma 20			234-2750									
	Sigma 32			236-2750									
HASEGAWA	JS-1W	-	HASEGAWA	-	0° -20°	6	TWC9HA22594P2	●	9	φ16	φ94	φ76	CS0620 (M6)
Various Machines	-	-	WTO	42BJ	-22°	8	TWC9WT42BJ20D12RH	●	9	φ12	-	-	-
	-	-		54BJ	30°	9	TWC9WT54BJ30D12RH	●	9	φ12	-	-	-
	-	-			30°	9	TWC9WT54BJ25D22RH	●	9	φ12	-	-	-

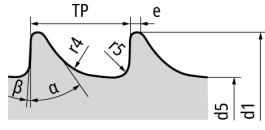
※Screws for insert-thickness 4.0/6.0mm are supplied with the cutter body.  
Use screws for the thickness of the insert you are using.

# Standard Thread Whirling Inserts (two-sided) for Medical ISO Style Threads

## TWC.. series/Inserts Carbide

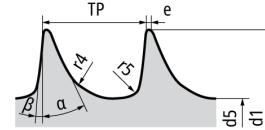
### ISO5835

No.1



ISO5835 HA

No.2



ISO5835 HB

● Must use Thread whirling cutters with 12mm  $\phi$ Dm dimension

Figure	Item Number	Hand	Chip-breaker	ISO Standard	Pitch	d1	d5	e	r4	r5	$\alpha$	$\beta$	Carbide			
													PVD		Uncoated	
					mm	mm	mm	mm	mm	mm	mm	mm	QM3	VM1	ZM3	KM1
1	TW5835-HA1.5-D12	R	Yes	HA1.5	0.5	1.5	1.1	0.1	0.3	0.1	35	3			●	
1	TW5835-HA2.0-D12	R	Yes	HA2.0	0.6	2	1.3	0.1	0.4	0.1	35	3			●	
1	TW5835-HA2.7-D12	R	Yes	HA2.7	1	2.7	1.9	0.1	0.6	0.2	35	3			●	
1	TW5835-HA3.5-D12	R	Yes	HA3.5	1.25	3.5	2.4	0.1	0.8	0.2	35	3			●	
1	TW5835-HA4.0-D12	R	Yes	HA4.0	1.5	4	2.9	0.1	0.8	0.2	35	3			●	
1	TW5835-HA4.5-D12	R	Yes	HA4.5	1.75	4.5	3	0.1	1	0.3	35	3			●	
1	TW5835-HA5.0-D12	R	Yes	HA5.0	1.75	5	3.5	0.1	1	0.3	35	3			●	
2	TW5835-HB4.0-D12	R	Yes	HB4.0	1.75	4	1.9	0.1	0.8	0.3	25	5			●	
2	TW5835-HB6.5-D12	R	Yes	HB6.5	2.75	6.5	3	0.2	1.2	0.8	25	5			●	