

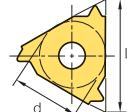
D

Threading Code System

Threading holder code system

E R H 10 (N) - 11 (C)

1 2 3 4 5 6 7
Holder type Hand of insert Name Height of shank Shim Insert size (mm) Clamping system

1 Holder type E R H 10 (N) - 11 (C)	4 Height of shank E R H 10 (N) - 11 (C)	6 Insert size (mm) E R H 10 (N) - 11 (C)
E: For External I: For Internal	- External 8, 10, 12, 16, 20, 25, 32, 40, 50 - Internal 10, 12, 13, 16, 20, 25, 32, 49, 50, 60	11: d = 6.35 16: d = 9.525 22: d = 12.7 27: d = 15.875
2 Hand of insert E R H 10 (N) - 11 (C)	<small>* Refer to the specification for shank diameter information</small>	
R: Right handed L: Left handed		
3 Name E R H 10 (N) - 11 (C)	5 Shim E R H 10 (N) - 11 (C)	7 Clamping system E R H 10 (N) - 11 (C)
H: Holder	No code: Shim required N: No shim required	No code: Screw on system C: Clamp on system

Threading insert code system

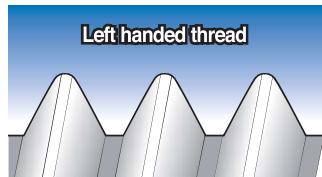
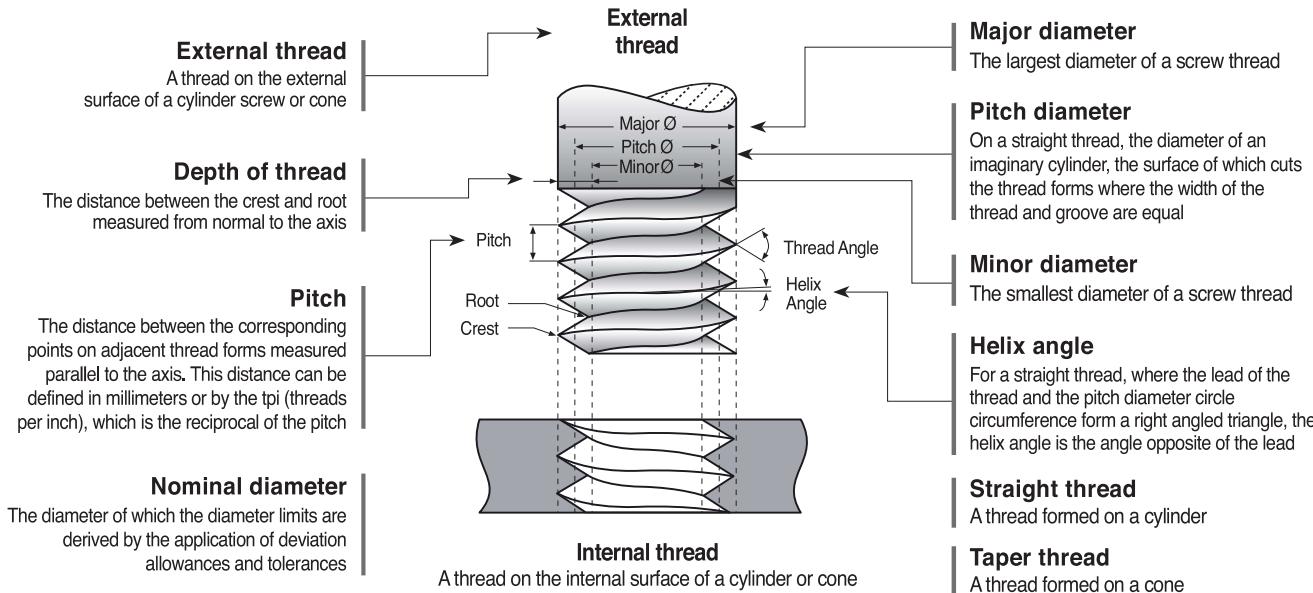
E R M 16 - 1.5 ISO

1 2 3 4 5 6
Insert type Hand of insert Chip breaker Insert size (mm) Pitch Type

1 Insert type E R M 16 - 1.5 ISO	4 Insert size (mm) E R M 16 - 1.5 ISO	6 Type E R M 16 - 1.5 ISO																																
E: External thread I: Internal thread	11: d = 6.35 16: d = 9.525 22: d = 12.7 27: d = 15.875	Partial profile 60° Partial Profile 55° ISO Metric (Full Profile) American UN (Full Profile) UN, UNC, UNF, UNEF Whitworth (Full Profile) BSW, BSF, BSP British Standard Pipe thread (Full Profile) BSPT National Pipe Thread (Full Profile) NPT National Pipe Threads-Dryseal (Full Profile) NPTF Round DIN 405 Trapez DIN 103 American ACME Stub ACME UNJ American Buttress British Buttress Metric Buttress-Sagengewinde API API Buttress Casing API Round Casing & Tubing EL-Extreme Line Casing																																
2 Hand of insert E R M 16 - 1.5 ISO																																		
R: Right handed L: Left handed																																		
3 Chip breaker E R M 16 - 1.5 ISO	5 Pitch E R M 16 - 1.5 ISO																																	
M: With chip breaker	<table border="1"> <thead> <tr> <th colspan="2">Full profile</th> <th colspan="2">Partial profile</th> </tr> <tr> <th>mm</th> <th>tpi</th> <th>mm</th> <th>tpi</th> </tr> </thead> <tbody> <tr> <td>0.35-6.0</td> <td>72-3</td> <td>A</td> <td>0.5-1.5</td> </tr> <tr> <td></td> <td></td> <td>AG</td> <td>0.5-3.0</td> </tr> <tr> <td></td> <td></td> <td>G</td> <td>1.75-3.0</td> </tr> <tr> <td></td> <td></td> <td>N</td> <td>3.5-5.0</td> </tr> <tr> <td></td> <td></td> <td>Q</td> <td>5.5-6.0</td> </tr> <tr> <td></td> <td></td> <td></td> <td>4.5-4</td> </tr> </tbody> </table>	Full profile		Partial profile		mm	tpi	mm	tpi	0.35-6.0	72-3	A	0.5-1.5			AG	0.5-3.0			G	1.75-3.0			N	3.5-5.0			Q	5.5-6.0				4.5-4	
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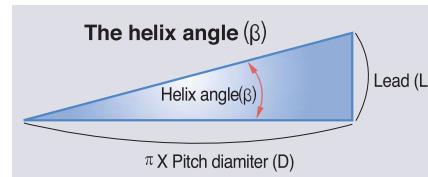
Special features



A thread which, when viewed axially, winds in a counter clockwise and receding direction. All left handed threads are designated LH



A thread which, when viewed axially, winds in a clockwise and receding direction. Threads are always right handed unless they are specified

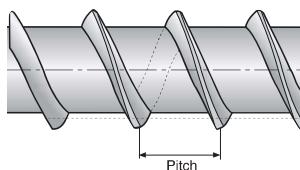


For a straight thread, where the lead of the thread and the pitch diameter circle circumference form a right angled triangle, the helix angle is the angle opposite of the lead

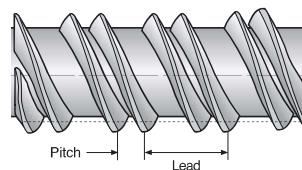
Machining a multi-start thread

- A thread in which the lead is an integral multiple, greater than one, of the pitch. A multi-start thread permits a more rapid advance without a coarser (larger) thread form

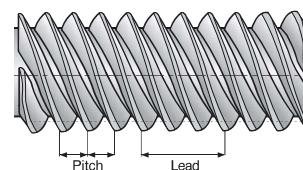
First start machined



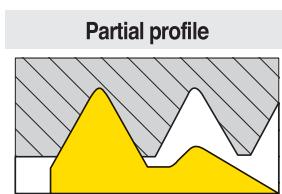
Second start machined



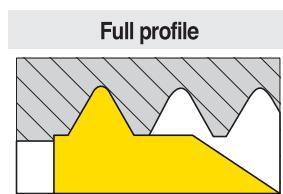
Third start machined (Final, 3 starts thread)



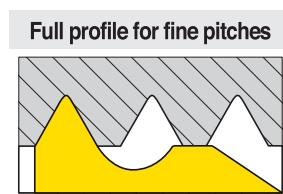
Insert profile style



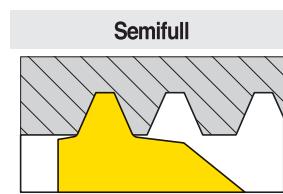
The V partial profile insert cuts without topping the outer diameter of the thread. The same insert can be used for a range of different thread pitches which have a common thread angle



The full profile insert will form a complete thread profile including the crest. For every thread pitch and standard, a separate insert is required



The full profile for Fine Pitches will form a complete thread. The topping of the outer diameter is generated by second tooth



The Semi profile insert will form a complete thread including crest radius but without topping the outer diameter. Mainly used for trapezoidal profiles

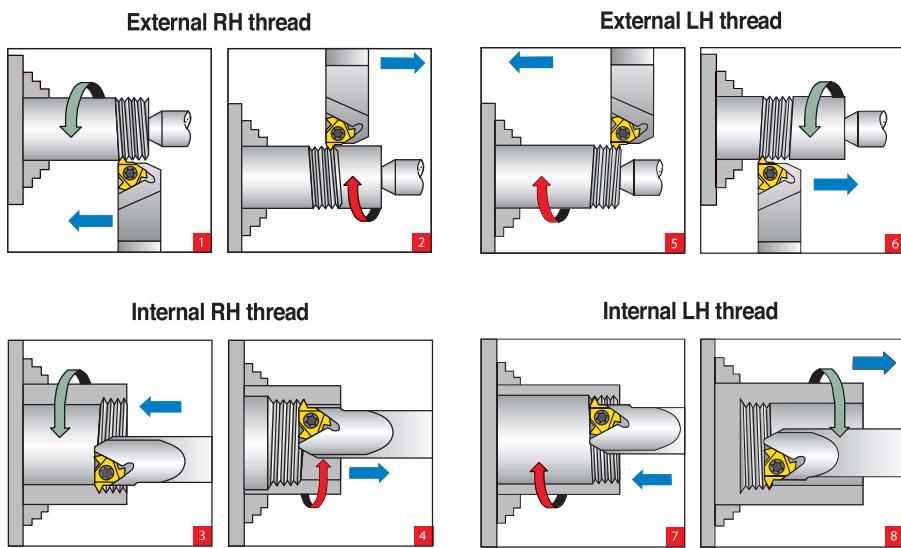


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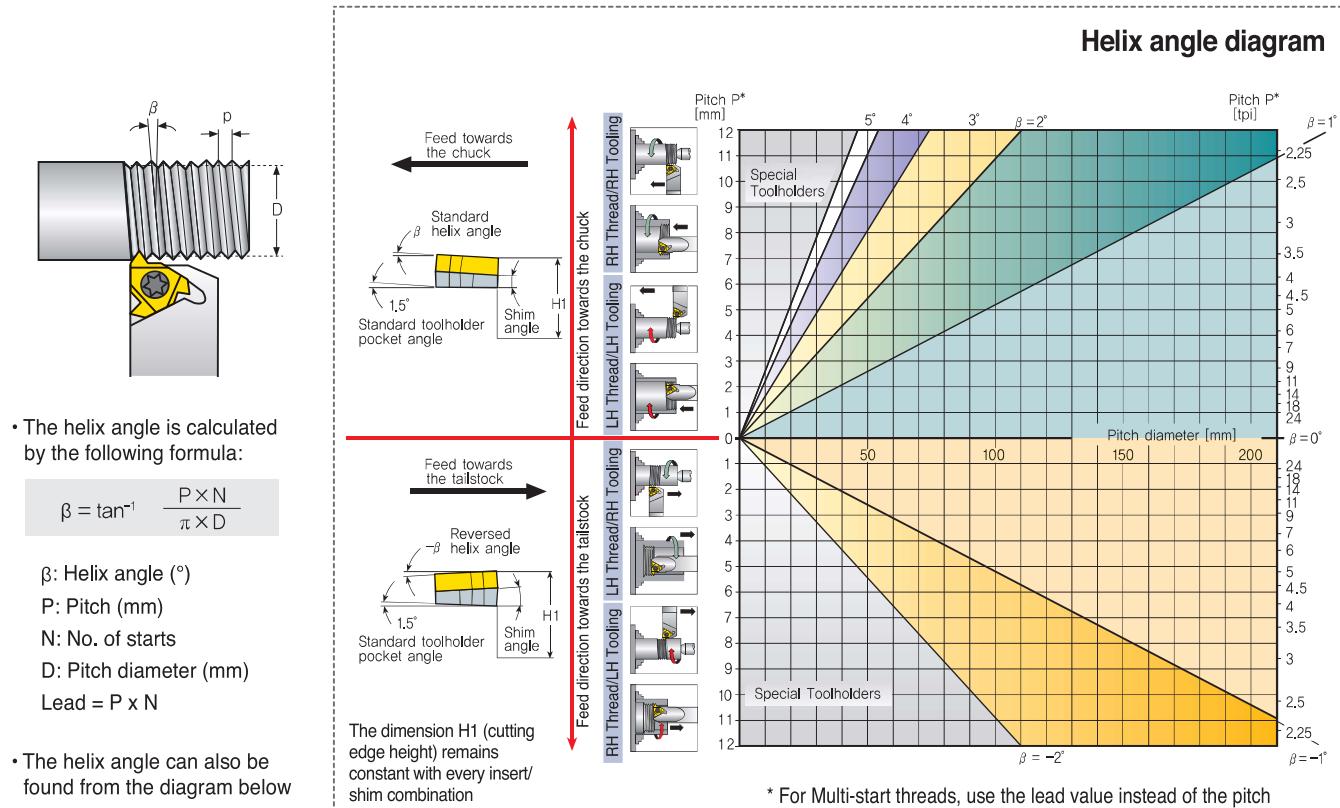
Technical Information for Threading

Thread turning method

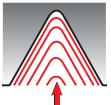
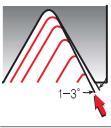
Thread	Inserts & Tool holder	Rotation	Feed direction	Helix method	Drawing no.
Right Hand External	EX RH	Counter clockwise	Towards chuck	Regular	1
	EX LH	Clockwise	From chuck	Reversed	2
Right Hand Internal	IN RH	Counter clockwise	Towards chuck	Regular	3
	IN LH	Clockwise	From chuck	Reversed	4
Left Hand External	EX LH	Clockwise	Towards chuck	Regular	5
	EX RH	Counter clockwise	From chuck	Reversed	6
Left Hand Internal	IN LH	Clockwise	Towards chuck	Regular	7
	IN RH	Counter clockwise	From chuck	Reversed	8



Calculating the helix angle (β)



Thread infeed method

Infeed	Application
	Radial infeed <ul style="list-style-type: none"> When the pitch is smaller than 16 tpi For material with short chips For work with hardened material Radial infeed is the simplest and quickest method. The feed is perpendicular to the turning axis, and both flanks of the insert perform the cutting operation. Radial infeed is recommended in 3 cases.
	Flank infeed (modified) <ul style="list-style-type: none"> When the thread pitch is greater than 16 tpi. Using the radial method, the effective cutting edge length is too large, resulting in chatter, for TRAPEZ and ACME. The radial method results in three cutting edges, making chip flow very difficult Flank infeed is recommended in the following cases
	Alternate flank infeed <ul style="list-style-type: none"> This method divides the load equally on both flanks, resulting in equal wear along the cutting edges Alternate flank infeed requires more complicated programming, and is not available on all lathes Use of the alternate flank method is recommended especially in large pitches and for materials with long chips

Shim

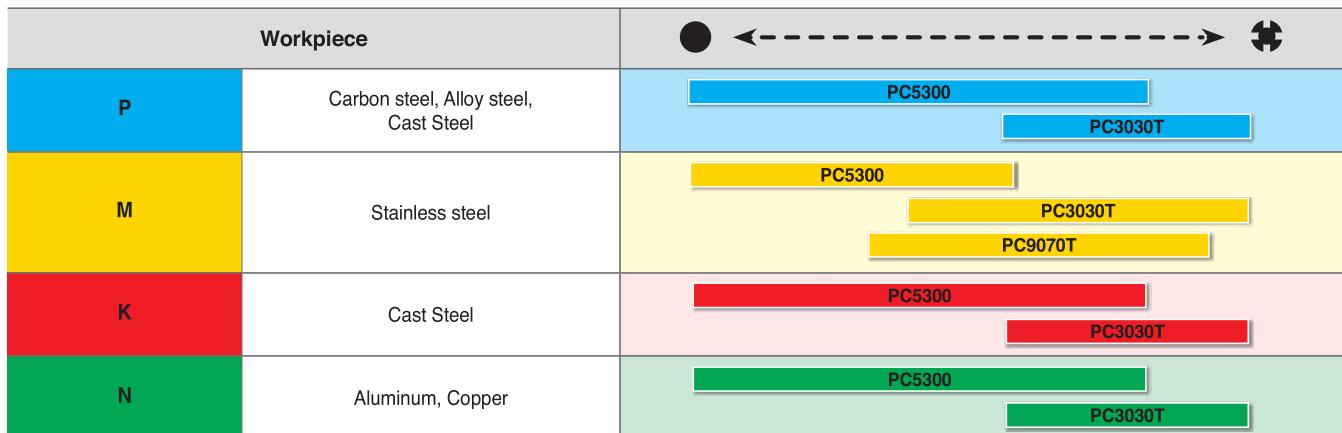
Standard shim	ATE (External) 	ATI (Through) 	Helix angle 1.5°	Insert size	d	9.525		12.7		15.875	
				L		16		22		27	
				Holder		ER(L)H	IR(L)H	ER(L)H	IR(L)H	ER(L)H	IR(L)H
				Ordering code		ATE16	ATI16	ATE22	ATI22	ATE27	ATI27

※ Standard shim has lead angle 1.5°

Application grade

Grade	Features				Available insert type	
PC5300	Universal grade	<ul style="list-style-type: none"> For chip breaker type only Stable machining on a wide application due to fine-grained carbide substrate with balanced heat resistance and toughness Excellent wear resistance and oxidation resistance due to AlTiN coating film Outstanding performance on high speed machining 				ERM/IRM (Insert with Chip breaker)
PC3030T	Specialized grade for threading inserts	<ul style="list-style-type: none"> A tough sub-micron substrate with TiAlN coating provides good fracture toughness and excellent wear resistance Outstanding performance on STS and hard to cut materials 				ER/IR (Ground insert)
PC9070T	Specialized grade for threading inserts	<ul style="list-style-type: none"> Strong wear resistance in stainless machining thanks to multilayer PVD coatings 				E/IR (Ground insert)

Application range



D

Technical Information for Threading

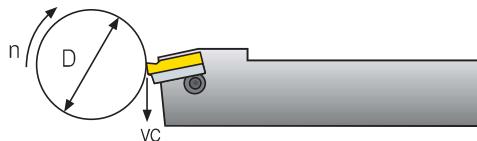
Recommended cutting speed as per workpiece (vc)

Workpiece			Hardness brinell (HB)	vc (m/min)		
				PC3030T	PC9070T	PC5300
P	Carbon steel	Low carbon (C=0.1-0.25 %)	125	115~190		110~190
		Medium carbon (C=0.25-0.55 %)	150	100~175		100~165
		High carbon (C=0.55-0.85 %)	170	90~155		90~155
	Low alloy steel	Non-hardened	180	100~180		100~180
		Hardened	275	75~140		75~140
		Hardened	350	70~135		70~135
	High alloy steel	Annealed	200	80~120		80~120
		Hardened	325	50~100		50~100
	Cast steel	Low alloy	200	70~130		70~130
		High alloy	225	60~120		60~120
M	Stainless steel ferritic	Non-hardened	200	70~130	70~150	70~130
		Hardened	330	50~95	60~125	50~95
	Stainless steel austenitic	Austenitic	180	80~120	90~160	80~120
		Super austenitic	200	30~100	40~120	30~100
	Stainless steel cast ferritic	Non-hardened	200	90~120	90~150	90~120
		Hardened	330	65~110	65~120	65~110
	Stainless steel cast austenitic	Austenitic	200	85~110	85~120	85~110
		Hardened	330	60~100	60~110	60~100
	High temperature alloy	Annealed (Iron based)	200	45~60		45~60
		Aged (Iron based)	280	30~50		30~50
		Annealed (Nickel or Cobalt based)	250	20~30		20~30
		Aged (Nickel or Cobalt based)	350	15~25		15~25
K	Titanium alloy	99.5% pure Titanium	400Rm	140~170		140~170
		Titanium alloy	1050Rm	50~70		50~70
	Extra hard steel	Hardened & tempered	55HRC	45~60		45~60
	Malleable cast iron	Ferritic (short chips)	130	70~120		70~120
		Pearlitic (long chips)	230	70~120		70~120
N	Gray cast iron	Low tensile strength	180	70~130		70~130
		High tensile strength	260	60~100		60~100
	Nodular SG iron	Ferritic	160	125~160		125~160
		Pearlitic	260	90~120		90~120
	Aluminum alloy wrought	Non-aging	60	100~250		100~250
		Aged	100	80~180		80~180
N	Aluminum alloy	Cast	75	200~400		200~400
		Cast & aged	90	200~280		200~280
		Cast Si 13-22%	130	60~150		60~180
	Copper and copper alloy	Brass	90	80~120		80~210
		Bronze and non-leaded copper	100	80~120		80~210

Calculation of n [RPM]

$$n = \frac{vc \times 1000}{\pi \times D}$$

$$vc = \frac{\pi \times D \times n}{1000}$$



n: Revolution Per Minute [min⁻¹]

vc: Cutting Speed [m/min]

D: Workpiece Diameter [mm]

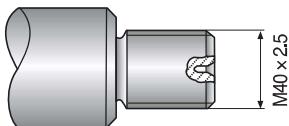
Number of passes

Pitch	mm	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	8.00
	tpi	48	32	24	20	16	14	12	10	8	7	6	5.5	5	4.5	4	3
No. of passes		4~6	4~7	4~8	5~9	6~10	7~12	7~12	8~14	9~16	10~18	11~18	11~19	12~20	12~20	12~20	15~24

* One cutting depth is calculated by total cutting depth divided into machining times
ex) ER16-1.5ISO, hmin 0.92: If 10 times machining, one cutting depth is 0.092 (0.92/10)



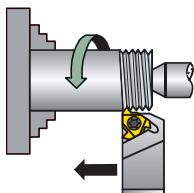
Step by step thread turning



Application

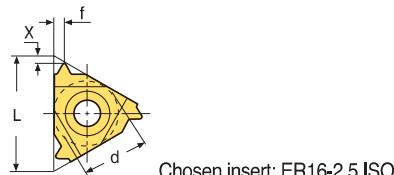
- Thread: External right hand ISO metric M40x2.5
- Material: 4140 (25 HRC)

1 Choose the thread turning method



Feed direction towards the chuck was chosen
Therefore an external right hand insert and an external right hand holder will be used

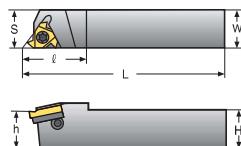
2 Choose the insert size



Chosen insert: ER16-2.5 ISO

Insert size	Pitch	Ordering code	Shim	Tool holder
d	mm	RH (Right Hand)	RH (Right Hand)	
9,525	2.5	ER16-2.5ISO	ATE16	ERH□□-16

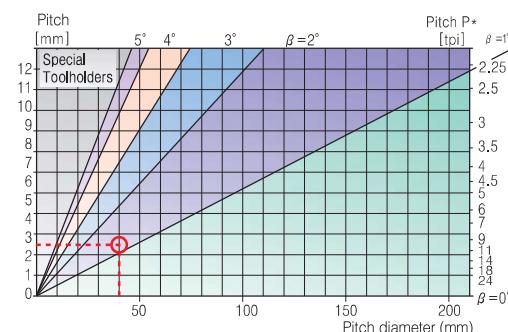
3 Choose the tool holder



Chosen tool holder: ERH 25-16

Insert size	Ordering code	Dimensions (mm)			
d	RH (Right Hand)	H=h	W	S	L
9,525	ERH25-16	25	25	25	153,6

4 Determine the helix angle



From the table, using a pitch of 2.5 mm (10 tpi) and a workpiece diameter of 40 mm (1.57"), we find the helix angle to be 1.5°

5 Choose the correct shim

Resultant Helix angle		1.5°
Insert size	d	9,525
	L	16
Ordering code		ATE16

6 Choose the carbide grade and cutting speed

Workpiece		HB	vc (m/min)
P	Low alloy steel (alloying elements ≤ 5%)	PC3030T	
	Non-hardened	180	85~145
	Hardened	275	75~140
	Hardened	350	70~135

- Carbide grade chosen: PC3030T
- Cutting speed: 140 m/min

7 Determine the number of passes

Pitch	mm	1.50	1.75	2.00	2.50	3.00	3.50	4.00
tpi	16	14	12	10	8	7	6	
No. of passes	6~10	7~12	7~12	8~14	9~16	10~18	11~18	

- Carbide grade chosen: PC3030T
- Cutting speed: 140 m/min

8 Summary

Thread type	ISO M40 x 2.5 External right hand
1. Feed direction	Towards the chuck
2. Insert and grade	ER16-2.5ISO, PC3030T
3. Tool holder	ERH25-16
4. Helix angle	1.5°
5. Shim	ATE16
6. Cutting speed	140 m/min
7. Number of passes	10



D

Technical Information for Threading

● Cutting condition depending on

Workpiece	Material type			Coolant	Coolant type	
	Material dimension					
	Diameter and length chipflow character					
	Material hardness					
Thread application	External or internal		Holders	Holder cross section area		
	Profile shape			Holder overhang		
	Surface finish			Through coolant option		
Machine	Machine stability		Insert	Shank type: Carbide, alloy		
	Max. RPM			Carbide implant grade		P M K
	Clamping system stability			Profile shape: Pitch and depth		
				Nose radius		R
				Chip breaker style		

● Trouble shooting

Problem	Possible cause	Solution
	Increased flank wear Cutting speed too high Depth of cut too low/too many passes Unsuitable carbide grade Insufficient cooling	Reduce cutting speed/use coated insert Increase the depth of cut per pass Use a coated carbide grade Increase coolant flow rate
	Uneven cutting edge wear Incorrect helix angle Wrong infeed method	Choose the correct shim Use the alternating flank infeed method
	Extreme plastic deformation Depth of cut too large Insufficient cooling Cutting speed too high Unsuitable carbide grade Nose radius too small	Decrease depth of cut/ increase number of passes Increase coolant flow rate Reduce cutting speed Use a tougher carbide Use an insert with a larger radius, if possible
	Cutting edge breakage Depth of cut too large Extreme plastic deformation Insufficient cooling Unsuitable carbide grade Instability	Decrease depth of cut/ increase number of passes. Use a tougher carbide Increase flow rate and/ or correct flow direction Use a tougher carbide Check stability of the system
	Built-up edge Incorrect cutting speed Unsuitable carbide grade	Change the cutting speed Use a coated carbide
	Thread profile is too shallow The tool is not at the workpiece axis height Insert is not machining the thread crest Worn insert	Change tool height Measure the workpiece diameter Change the cutting edge sooner
	Poor surface quality Too low cutting speed Wrong shim Flank infeed method is not appropriate	Increase cutting speed Choose correct shim Use the alternate flank or radial infeed method



Threading insert with chip breaker

- Features**
- Economical insert
 - Good toughness and high accuracy as ground type inserts
 - Exclusive insert design improves chip control
 - New grade for general application of various kinds of workpieces

Type	Ground insert		Insert with a chip breaker			
C/B Code	None		None		U	
Designation	ER16-1.5ISO		ERM16-1.5ISO		ERM16-1.5ISO-U	
Machining	External	Internal	External	Internal	External	Internal
Insert Shape						
Chip Shape						
Class	P, M, K, N, S		P, M, K		P, M, K	
Application	G-Class		M-Class		M-Class	
Features	<ul style="list-style-type: none"> Groove-shaped chip breaker with superior chip evacuation lowers cutting load Enables high precision machining Applicable for machining of various shapes of threads Applicable for machining of various workpieces 		<ul style="list-style-type: none"> Unique 3 dimensional chip breaker improves machinability with good chip control Excellent cutting edge treatment technology ensures high precision sharp cutting edge 		<ul style="list-style-type: none"> Groove-shaped chip breaker with superior chip evacuation lowers cutting load Reduces machining pass by 10~30% Excellent cutting edge treatment achieves high precision sharp cutting edge 	

Application examples

KORLOY		ERM16-1.5ISO [PC3030T]	IRM16-2.0ISO [PC3030T]
Competitor tools		ER16-1.5ISO [A-Maker]	IR16-2.0ISO [B-Maker]
Workpiece	Material	SCM440	STS304
	Figure		
Cutting condition	Cutting speed (m/min)	63	120
	Pass	8	9
	Machining	Radial infeed	Radial infeed
	Pitch	1.5	2.0
Coolant		Wet	Wet
Result		<p>Tool life/corner 50 30 10 0 PC3030T Competitor A</p> <p>Increased tool life with good chip breaking</p>	<p>Tool life/corner 15 12 9 3 0 PC3030T Competitor B</p> <p>Prevention outbreak damage of insert due to smooth chip control</p>



D

Thread Insert

Partial profile 60°

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch		Dimensions (mm)					Picture
							(mm)	(tpi)	d	L	r	x	f	
External	ER 11-A60	● ●	EL 11-A60	●	0.5~1.5	48~16	6.35	11	0.05	0.8	0.9			
	16-A60	● ●		●	0.5~1.5	48~16	9.525	16	0.05	0.8	0.9			
	16-G60	●		●	1.75~3.0	14~8	9.525	16	0.27	1.2	1.7			
	16-AG60	● ●		●	0.5~3.0	48~8	9.525	16	0.08	1.2	1.7			
	22-N60	● ●		●	3.5~5.0	7~5	12.7	22	0.53	1.7	2.5			
	27-Q60	● ●		●	5.5~6.0	4.5~4	15.875	27	0.64	2.1	3.1			
Internal	IR 11-A60	● ●	IL 11-A60	● ●	0.5~1.5	48~16	6.35	11	0.05	0.8	0.9			
	16-A60	●		●	0.5~1.5	48~16	9.525	16	0.05	0.8	0.9			
	16-G60	●		●	1.75~3.0	14~8	9.525	16	0.16	1.2	1.7			
	16-AG60	● ●		●	0.5~3.0	48~8	9.525	16	0.05	1.2	1.7			
	22-N60	● ●		●	3.5~5.0	7~5	12.7	22	0.30	1.7	2.5			
	27-Q60	● ●		●	5.5~6.0	4.5~4	15.875	27	0.30	1.8	2.7			

➔ Applicable holders D31, D32

● : Stock item

Partial profile 60° (M chip breaker)

Type	Designation (Right)	PC3030T	PC5300	Designation (Left)	PC3030T	Pitch		Dimensions (mm)					Picture
						(mm)	(tpi)	d	L	r	x	f	
External	ERM 16-A60	●				0.5~1.5	48~16	9.525	16	0.08	0.8	0.9	
	16-G60	●				1.75~3.0	14~8	9.525	16	0.27	1.2	1.7	
	16-AG60	●				0.5~3.0	48~8	9.525	16	0.08	1.2	1.7	
	22-N60	●				3.5~5.0	7~5	12.7	22	0.53	1.7	2.5	
Internal	IRM 11-A60	●				0.5~1.5	48~16	6.35	11	0.08	0.8	0.9	
	16-A60	●				0.5~1.5	48~16	9.525	16	0.08	0.8	0.9	
	16-G60	●				1.75~3.0	14~8	9.525	16	0.12	1.2	1.7	
	16-AG60	●				0.5~3.0	48~8	9.525	16	0.08	1.2	1.7	
	22-N60	●				3.5~5.0	7~5	12.7	22	0.30	1.7	2.5	

➔ Applicable holders D31, D32

● : Stock item

Partial profile 60° (U chip breaker)

Type	Designation (Right)	PC3030T	PC5300	Designation (Left)	PC3030T	Pitch		Dimensions (mm)					Picture
						(mm)	(tpi)	d	L	r	x	f	
External	ERM 16-AG60-U					0.5~3.0	48~8	9.525	16	0.08	1.2	1.7	
Internal	IRM 16-AG60-U					0.5~3.0	48~8	9.525	16	0.08	1.2	1.7	

➔ Applicable holders D31, D32

● : Stock item



Partial profile 55°

Type	Designation (Right)	PC3030T	PC3070T	Designation (Left)	PC3030T	PC3070T	Pitch		Dimensions (mm)					Picture
							(mm)	(tpi)	d	L	r	x	f	
External	ER 11-A55	●	EL 11-A55		0.5~1.5	48~16	6.35	11	0.05	0.8	0.9			
	16-A55	●		16-A55	0.5~1.5	48~16	9.525	16	0.05	0.8	0.9			
	16-G55	●		16-G55	1.75~3.0	14~8	9.525	16	0.21	1.2	1.7			
	16-AG55	●		16-AG55	0.5~3.0	48~8	9.525	16	0.07	1.2	1.7			
	22-N55	●		22-N55	3.5~5.0	7~5	12.7	22	0.43	1.7	2.5			
	27-Q55			27-Q55	5.5~6.0	4.5~4	15.875	27	0.60	2.0	2.9			
Internal	IR 11-A55	●	IL 11-A55	●	0.5~1.5	48~16	6.35	11	0.05	0.8	0.9			
	16-A55	●		16-A55	0.5~1.5	48~16	9.525	16	0.05	0.8	0.9			
	16-G55	●		16-G55	1.75~3.0	14~8	9.525	16	0.21	1.2	1.7			
	16-AG55	●		16-AG55	0.5~3.0	48~8	9.525	16	0.07	1.2	1.7			
	22-N55	●		22-N55	3.5~5.0	7~5	12.7	22	0.43	1.7	2.5			
	27-Q55			27-Q55	5.5~6.0	4.5~4	15.875	27	0.60	2.0	2.9			

➔ Applicable holders D31, D32

● : Stock item

Partial profile 55° (M chip breaker)

Type	Designation (Right)	PC3030T	PC3500	Designation (Left)	PC3030T	Pitch		Dimensions (mm)					Picture
						(mm)	(tpi)	d	L	r	x	f	
External	ERM 16-A55	●			0.5~1.5	48~16	9.525	16	0.08	0.8	0.9		
	16-G55	●			1.75~3.0	14~8	9.525	16	0.21	1.2	1.7		
	16-AG55	●			0.5~3.0	48~8	9.525	16	0.07	1.2	1.7		
	22-N55	●			3.5~5.0	7~5	12.7	22	0.43	1.7	2.5		
Internal	IRM 11-A55	●			0.5~1.5	48~16	6.35	11	0.08	0.8	0.9		
	16-A55	●			0.5~1.5	48~16	9.525	16	0.05	0.8	0.9		
	16-G55				1.75~3.0	14~8	9.525	16	0.08	1.2	1.7		
	16-AG55	●			0.5~3.0	48~8	9.525	16	0.08	1.2	1.7		
	22-N55	●			3.5~5.0	7~5	12.7	22	0.43	1.7	2.5		

➔ Applicable holders D31, D32

● : Stock item

Partial profile 55° (U chip breaker)

Type	Designation (Right)	PC3030T	PC5300	Designation (Left)	PC3030T	Pitch		Dimensions (mm)					Picture
						(mm)	(tpi)	d	L	r	x	f	
External	ERM 16-AG55-U				0.5~3.0	48~8	9.525	16	0.07	1.2	1.7		
Internal	IRM 16-AG55-U				0.5~3.0	48~8	9.525	16	0.08	1.2	1.7		

➔ Applicable holders D31, D32

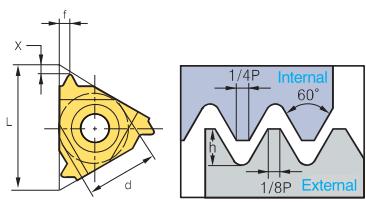
● : Stock item



D

Thread Insert

ISO Metric

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch (mm)	Dimensions (mm)					Picture
								d	L	hmin	X	f	
External	ER 11-0.35ISO	●		EL 11-0.35ISO			0.35	6.35	11	0.21	0.8	0.4	
	11-0.4ISO	●		11-0.4ISO			0.4	6.35	11	0.25	0.7	0.4	
	11-0.45ISO	●		11-0.45ISO			0.45	6.35	11	0.28	0.7	0.4	
	11-0.5ISO	●		11-0.5ISO			0.5	6.35	11	0.31	0.6	0.4	
	11-0.6ISO	●		11-0.6ISO			0.6	6.35	11	0.37	0.6	0.6	
	11-0.7ISO	●		11-0.7ISO			0.7	6.35	11	0.43	0.6	0.6	
	11-0.75ISO			11-0.75ISO			0.75	6.35	11	0.46	0.6	0.6	
	11-0.8ISO	●		11-0.8ISO			0.8	6.35	11	0.49	0.6	0.6	
	11-1.0ISO	●		11-1.0ISO			1.0	6.35	11	0.61	0.7	0.7	
	11-1.25ISO	● ●		11-1.25ISO			1.25	6.35	11	0.77	0.8	0.9	
	11-1.5ISO	●		11-1.5ISO	●		1.5	6.35	11	0.92	0.8	1.0	
	11-1.75ISO	●		11-1.75ISO			1.75	6.35	11	1.07	0.8	1.1	
	16-0.35ISO			16-0.35ISO			0.35	9.525	16	0.21	0.8	0.4	
	16-0.4ISO			16-0.4ISO			0.4	9.525	16	0.25	0.7	0.4	
	16-0.45ISO	●		16-0.45ISO			0.45	9.525	16	0.28	0.7	0.4	
	16-0.5ISO	●		16-0.5ISO	●		0.5	9.525	16	0.31	0.6	0.4	
	16-0.6ISO	●		16-0.6ISO			0.6	9.525	16	0.37	0.6	0.6	
	16-0.7ISO	●		16-0.7ISO			0.7	9.525	16	0.43	0.6	0.6	
	16-0.75ISO	●		16-0.75ISO			0.75	9.525	16	0.46	0.6	0.6	
	16-0.8ISO	● ●		16-0.8ISO			0.8	9.525	16	0.49	0.6	0.6	
	16-1.0ISO	● ●		16-1.0ISO	●		1.0	9.525	16	0.61	0.7	0.7	
	16-1.25ISO	● ●		16-1.25ISO	●		1.25	9.525	16	0.77	0.8	0.9	
	16-1.5ISO	● ●		16-1.5ISO	●		1.5	9.525	16	0.92	0.8	1.0	
	16-1.75ISO	● ●		16-1.75ISO			1.75	9.525	16	1.07	0.9	1.2	
	16-2.0ISO	● ●		16-2.0ISO	●		2.0	9.525	16	1.23	1.0	1.3	
	16-2.5ISO			16-2.5ISO			2.5	9.525	16	1.53	1.1	1.5	
	16-3.0ISO	● ●		16-3.0ISO	●		3.0	9.525	16	1.84	1.2	1.6	
	22-3.5ISO	● ●		22-3.5ISO			3.5	12.7	22	2.15	1.6	2.3	
	22-4.0ISO	● ●		22-4.0ISO	●		4.0	12.7	22	2.45	1.6	2.3	
	22-4.5ISO	● ●		22-4.5ISO			4.5	12.7	22	2.78	1.7	2.4	
	22-5.0ISO	● ●		22-5.0ISO	●		5.0	12.7	22	3.07	1.7	2.5	
	27-5.5ISO			27-5.5ISO			5.5	15.875	27	3.37	1.9	2.7	
	27-6.0ISO	● ●		27-6.0ISO			6.0	15.875	27	3.68	2.0	2.9	

② Applicable holders D31

● : Stock item

**D**

Threading

ISO Metric (M chip breaker)

Type	Designation (Right)	PC3030T	PC5300	Designation (Left)	PC3030T	Pitch (mm)	Dimensions (mm)					Picture
							d	L	hmin	X	f	
External	ERM 16-1.0ISO	●				1.0	9.525	16	0.61	0.7	0.7	
	16-1.25ISO					1.25	9.525	16	0.77	0.8	0.9	
	16-1.5ISO	●				1.5	9.525	16	0.93	0.8	1.0	
	16-1.75ISO	●				1.75	9.525	16	1.09	0.9	1.2	
	16-2.0ISO	●				2.0	9.525	16	1.25	1.0	1.3	
	16-2.5ISO	●				2.5	9.525	16	1.55	1.1	1.5	
	16-3.0ISO	●				3.0	9.525	16	1.87	1.2	1.6	

② Applicable holders D31

● : Stock item

ISO Metric (U chip breaker)

Type	Designation (Right)	PC3030T	PC5300	Designation (Left)	PC3030T	Pitch (mm)	Dimensions (mm)					Picture
							d	L	hmin	X	f	
External	ERM 16-1.5ISO-U					1.5	9.525	16	0.93	0.8	1.0	
	16-2.0ISO-U					2.0	9.525	16	1.25	1.0	1.3	

② Applicable holders D31

● : Stock item

D

Thread Insert

ISO Metric

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch	Dimensions (mm)					Picture
							(mm)	d	L	hmin	X	f	
Internal	IR 11-0.35ISO	●		IL 11-0.35ISO			0.35	6.35	11	0.20	0.8	0.3	
	11-0.4ISO	●		11-0.4ISO			0.4	6.35	11	0.23	0.8	0.4	
	11-0.45ISO	●		11-0.45ISO			0.45	6.35	11	0.26	0.8	0.4	
	11-0.5ISO	●		11-0.5ISO	●		0.5	6.35	11	0.29	0.6	0.4	
	11-0.6ISO	●		11-0.6ISO			0.6	6.35	11	0.35	0.6	0.6	
	11-0.7ISO	●		11-0.7ISO			0.7	6.35	11	0.40	0.6	0.6	
	11-0.75ISO	●		11-0.75ISO	●		0.75	6.35	11	0.43	0.6	0.6	
	11-0.8ISO			11-0.8ISO			0.8	6.35	11	0.46	0.6	0.6	
	11-1.0ISO	● ●		11-1.0ISO			1.0	6.35	11	0.58	0.6	0.7	
	11-1.25ISO	● ● ●		11-1.25ISO	●		1.25	6.35	11	0.72	0.8	0.9	
	11-1.5ISO	● ● ●		11-1.5ISO	● ●		1.5	6.35	11	0.87	0.8	1.0	
	11-1.75ISO			11-1.75ISO			1.75	6.35	11	1.01	0.9	1.1	
	11-2.0ISO	● ● ●		11-2.0ISO	●		2.0	6.35	11	1.15	0.9	1.1	
	11-2.5ISO	●		11-2.5ISO	●		2.5	6.35	11	1.44	0.8	1.1	
	16-0.35ISO	●		16-0.35ISO			0.35	9.525	16	0.20	0.8	0.3	
	16-0.4ISO	●		16-0.4ISO			0.4	9.525	16	0.23	0.8	0.4	
	16-0.45ISO	●		16-0.45ISO			0.45	9.525	16	0.26	0.8	0.4	
	16-0.5ISO	●		16-0.5ISO			0.5	9.525	16	0.29	0.6	0.4	
	16-0.6ISO			16-0.6ISO			0.6	9.525	16	0.35	0.6	0.6	
	16-0.7ISO			16-0.7ISO			0.7	9.525	16	0.40	0.6	0.6	
	16-0.75ISO	●		16-0.75ISO			0.75	9.525	16	0.43	0.6	0.6	
	16-0.8ISO	●		16-0.8ISO			0.8	9.525	16	0.46	0.6	0.6	
	16-1.0ISO	● ●		16-1.0ISO			1.0	9.525	16	0.58	0.6	0.7	
	16-1.25ISO	● ● ●		16-1.25ISO			1.25	9.525	16	0.72	0.8	0.9	
	16-1.5ISO	● ● ●		16-1.5ISO	●		1.5	9.525	16	0.87	0.8	1.0	
	16-1.75ISO	● ● ●		16-1.75ISO			1.75	9.525	16	1.01	0.9	1.2	
	16-2.0ISO	● ● ●		16-2.0ISO	●		2.0	9.525	16	1.15	1.0	1.3	
	16-2.5ISO	● ● ●		16-2.5ISO	●		2.5	9.525	16	1.44	1.1	1.5	
	16-3.0ISO	● ● ●		16-3.0ISO	●		3.0	9.525	16	1.73	1.1	1.5	
	22-3.5ISO	● ● ●		22-3.5ISO			3.5	12.7	22	2.02	1.6	2.3	
	22-4.0ISO	● ● ●		22-4.0ISO	●		4.0	12.7	22	2.31	1.6	2.3	
	22-4.5ISO	● ● ●		22-4.5ISO			4.5	12.7	22	2.60	1.6	2.4	
	22-5.0ISO	● ● ●		22-5.0ISO			5.0	12.7	22	2.89	1.6	2.3	
	27-5.5ISO	●		27-5.5ISO			5.5	15.875	27	3.17	1.6	2.3	
	27-6.0ISO	●		27-6.0ISO			6.0	15.875	27	3.46	1.8	2.5	

Applicable holders D32

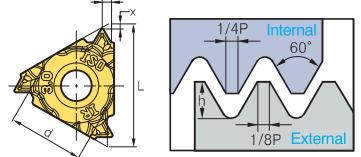
● : Stock item



D

Threading

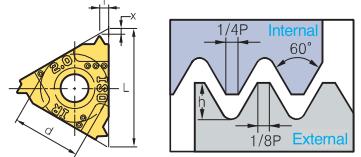
ISO Metric (M chip breaker)

Type	Designation (Right)	PC3030T	PC5300	Designation (Left)	PC3030T	Pitch (mm)	Dimensions (mm)					Picture
							d	L	hmin	X	f	
Internal	IRM 11-1.5ISO	●				1.5	6.35	11	0.85	0.8	1.0	
	16-1.0ISO	●				1.0	9.525	16	0.58	0.6	0.7	
	16-1.25ISO					1.25	9.525	16	0.72	0.8	0.9	
	16-1.5ISO	●				1.5	9.525	16	0.85	0.8	1.0	
	16-1.75ISO					1.75	9.525	16	1.01	0.9	1.2	
	16-2.0ISO	●				2.0	9.525	16	1.12	1.0	1.3	
	16-2.5ISO	●				2.5	9.525	16	1.44	1.1	1.5	
	16-3.0ISO	●				3.0	9.525	16	1.69	1.1	1.5	

② Applicable holders D32

● : Stock item

ISO Metric (U chip breaker)

Type	Designation (Right)	PC3030T	PC5300	Designation (Left)	PC3030T	Pitch (mm)	Dimensions (mm)					
							d	L	hmin	X	f	
Internal	IRM 16-1.5ISO-U					1.5	9.525	16	0.85	0.8	1.0	
	16-2.0ISO-U					2.0	9.525	16	1.12	1.0	1.3	

② Applicable holders D32

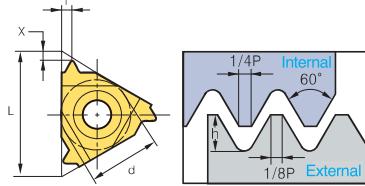
● : Stock item



D

Thread Insert

American UN (UN, UNC, UNF, UNEF, UNS)

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch	Dimensions (mm)					Picture
							(tpi)	d	L	hmin	X	f	
External	ER 11-72UN	●		EL 11-72UN			72	6.35	11	0.22	0.8	0.4	
	11-64UN	●		11-64UN			64	6.35	11	0.24	0.8	0.4	
	11-56UN	●		11-56UN			56	6.35	11	0.28	0.7	0.4	
	11-48UN	●		11-48UN			48	6.35	11	0.32	0.6	0.6	
	11-44UN	●		11-44UN			44	6.35	11	0.35	0.6	0.6	
	11-40UN	●		11-40UN			40	6.35	11	0.39	0.6	0.6	
	11-36UN	●		11-36UN			36	6.35	11	0.43	0.6	0.6	
	11-32UN	●		11-32UN			32	6.35	11	0.49	0.6	0.6	
	11-28UN	●		11-28UN			28	6.35	11	0.56	0.6	0.7	
	11-27UN	●		11-27UN			27	6.35	11	0.58	0.7	0.8	
	11-24UN	●		11-24UN			24	6.35	11	0.65	0.7	0.8	
	11-20UN	●		11-20UN			20	6.35	11	0.78	0.8	0.9	
	11-18UN	●		11-18UN			18	6.35	11	0.87	0.8	1.0	
	11-16UN	●		11-16UN			16	6.35	11	0.97	0.9	1.1	
	11-14UN	●		11-14UN			14	6.35	11	1.11	0.9	1.1	
	16-72UN			16-72UN			72	9.525	16	0.22	0.8	0.4	
	16-64UN			16-64UN			64	9.525	16	0.24	0.8	0.4	
	16-56UN			16-56UN			56	9.525	16	0.28	0.7	0.4	
	16-48UN			16-48UN			48	9.525	16	0.32	0.6	0.6	
	16-44UN			16-44UN			44	9.525	16	0.35	0.6	0.6	
	16-40UN			16-40UN			40	9.525	16	0.39	0.6	0.6	
	16-36UN			16-36UN			36	9.525	16	0.43	0.6	0.6	
	16-32UN	●		16-32UN			32	9.525	16	0.49	0.6	0.6	
	16-28UN	●		16-28UN			28	9.525	16	0.56	0.6	0.7	
	16-27UN	●		16-27UN			27	9.525	16	0.58	0.7	0.8	
	16-24UN	● ●		16-24UN			24	9.525	16	0.65	0.7	0.8	
	16-20UN	● ●		16-20UN			20	9.525	16	0.78	0.8	0.9	
	16-18UN	● ● ●		16-18UN	●		18	9.525	16	0.87	0.8	1.0	
	16-16UN	● ● ●		16-16UN	●		16	9.525	16	0.97	0.9	1.1	
	16-14UN	● ● ●		16-14UN			14	9.525	16	1.11	1.0	1.2	
	16-13UN			16-13UN			13	9.525	16	1.20	1.0	1.3	
	16-12UN	● ●		16-12UN			12	9.525	16	1.30	1.1	1.4	
	16-11.5UN			16-11.5UN			11.5	9.525	16	1.35	1.1	1.5	
	16-11UN	● ●		16-11UN			11	9.525	16	1.42	1.1	1.5	
	16-10UN	● ● ●		16-10UN			10	9.525	16	1.56	1.1	1.5	
	16-9UN	●		16-9UN			9	9.525	16	1.73	1.2	1.7	
	16-8UN	● ● ●		16-8UN			8	9.525	16	1.95	1.2	1.6	
	22-7UN			22-7UN			7	12.7	22	2.22	1.6	2.3	
	22-6UN			22-6UN			6	12.7	22	2.60	1.6	2.3	
	22-5UN	●		22-5UN			5	12.7	22	3.12	1.7	2.5	
	27-4.5UN			27-4.5UN			4.5	15.875	27	3.46	1.9	2.7	
	27-4UN			27-4UN			4	15.875	27	3.89	2.1	3.0	

Applicable holders D31

● : Stock item

**D**

Threading

American UN (UN, UNC, UNF, UNEF, UNS)

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch	Dimensions (mm)					Picture
							(tpi)	d	L	hmin	X	f	
Internal	IR 11-72UN			IL 11-72UN			72	6.35	11	0.20	0.8	0.3	
	11-64UN			11-64UN			64	6.35	11	0.23	0.8	0.4	
	11-56UN			11-56UN			56	6.35	11	0.26	0.7	0.4	
	11-48UN			11-48UN			48	6.35	11	0.31	0.6	0.6	
	11-44UN			11-44UN			44	6.35	11	0.33	0.6	0.6	
	11-40UN			11-40UN			40	6.35	11	0.37	0.6	0.6	
	11-36UN			11-36UN			36	6.35	11	0.41	0.6	0.6	
	11-32UN			11-32UN			32	6.35	11	0.46	0.6	0.6	
	11-28UN			11-28UN			28	6.35	11	0.52	0.6	0.7	
	11-27UN			11-27UN			27	6.35	11	0.54	0.7	0.8	
	11-24UN			11-24UN			24	6.35	11	0.61	0.7	0.8	
	11-20UN	●		11-20UN			20	6.35	11	0.73	0.8	0.9	
	11-18UN	●		11-18UN			18	6.35	11	0.81	0.8	1.0	
	11-16UN	●		11-16UN			16	6.35	11	0.92	0.9	1.1	
	11-14UN	●		11-14UN			14	6.35	11	1.05	0.9	1.1	
	11-12UN	●		11-12UN			12	6.35	11	1.22	0.8	1.1	
	11-11UN	●		11-11UN			11	6.35	11	1.33	0.8	1.1	
	16-72UN			16-72UN			72	9.525	16	0.20	0.8	0.3	
	16-64UN			16-64UN			64	9.525	16	0.23	0.8	0.4	
	16-56UN			16-56UN			56	9.525	16	0.26	0.7	0.4	
	16-48UN			16-48UN			48	9.525	16	0.31	0.6	0.6	
	16-44UN			16-44UN			44	9.525	16	0.33	0.6	0.6	
	16-40UN			16-40UN			40	9.525	16	0.37	0.6	0.6	
	16-36UN			16-36UN			36	9.525	16	0.41	0.6	0.6	
	16-32UN			16-32UN			32	9.525	16	0.51	0.6	0.6	
	16-28UN	●		16-28UN			28	9.525	16	0.52	0.6	0.7	
	16-27UN			16-27UN			27	9.525	16	0.54	0.7	0.8	
	16-24UN			16-24UN			24	9.525	16	0.61	0.7	0.8	
	16-20UN	●		16-20UN			20	9.525	16	0.73	0.8	0.9	
	16-18UN	●	●	16-18UN			18	9.525	16	0.81	0.8	1.0	
	16-16UN	●	●	16-16UN			16	9.525	16	0.92	0.9	1.1	
	16-14UN	●		16-14UN			14	9.525	16	1.05	0.9	1.2	
	16-13UN			16-13UN			13	9.525	16	1.13	1.0	1.3	
	16-12UN	●	●	16-12UN			12	9.525	16	1.22	1.1	1.4	
	16-11.5UN	●		16-11.5UN			11.5	9.525	16	1.28	1.1	1.5	
	16-11UN	●	●	16-11UN			11	9.525	16	1.33	1.1	1.5	
	16-10UN	●		16-10UN			10	9.525	16	1.47	1.1	1.5	
	16-9UN		●	16-9UN			9	9.525	16	1.63	1.2	1.7	
	16-8UN	●	●	16-8UN			8	9.525	16	1.83	1.2	1.5	
	22-7UN			22-7UN			7	12.7	22	2.09	1.6	2.3	
	22-6UN			22-6UN			6	12.7	22	2.44	1.6	2.3	
	22-5UN			22-5UN			5	12.7	22	2.93	1.7	2.3	
	27-4.5UN			27-4.5UN			4.5	15.875	27	3.26	1.9	2.4	
	27-4UN			27-4UN			4	15.875	27	3.67	2.1	2.7	

Applicable holders D32

● : Stock item



D

Thread Insert

Whitworth (BSW, BSF, BSP, BSB)

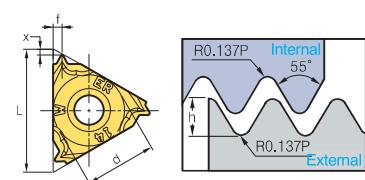
Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch	Dimensions (mm)					Picture
							(tpi)	d	L	hmin	X	f	
External	ER 11-72W	●		EL 11-72W			72	6.35	11	0.23	0.7	0.4	
	11-60W	●		11-60W			60	6.35	11	0.27	0.7	0.4	
	11-56W	●		11-56W			56	6.35	11	0.29	0.7	0.4	
	11-48W	●		11-48W			48	6.35	11	0.34	0.6	0.6	
	11-40W	●		11-40W			40	6.35	11	0.41	0.6	0.6	
	11-36W	●		11-36W			36	6.35	11	0.45	0.6	0.6	
	11-32W	●		11-32W			32	6.35	11	0.51	0.6	0.6	
	11-28W	●		11-28W			28	6.35	11	0.58	0.6	0.7	
	11-26W	●		11-26W			26	6.35	11	0.63	0.7	0.8	
	11-24W	●		11-24W			24	6.35	11	0.68	0.7	0.8	
	11-22W	●		11-22W			22	6.35	11	0.74	0.8	0.9	
	11-20W	●		11-20W			20	6.35	11	0.81	0.8	0.9	
	11-19W	●		11-19W			19	6.35	11	0.86	0.8	1.0	
	11-18W	●		11-18W			18	6.35	11	0.90	0.8	1.0	
	11-16W	●		11-16W			16	6.35	11	1.02	0.9	1.1	
	11-14W	●		11-14W	●		14	6.35	11	1.16	1.0	1.2	
	16-72W	●		16-72W			72	9.525	16	0.23	0.7	0.4	
	16-60W	●		16-60W			60	9.525	16	0.27	0.7	0.4	
	16-56W	●		16-56W			56	9.525	16	0.29	0.7	0.4	
	16-48W	●		16-48W			48	9.525	16	0.34	0.6	0.6	
	16-40W	●		16-40W			40	9.525	16	0.41	0.6	0.6	
	16-36W	●		16-36W			36	9.525	16	0.45	0.6	0.6	
	16-32W	●		16-32W			32	9.525	16	0.51	0.6	0.6	
	16-30W	●		16-30W			30	9.525	16	0.55	0.6	0.7	
	16-28W	● ●		16-28W			28	9.525	16	0.58	0.6	0.7	
	16-26W			16-26W			26	9.525	16	0.63	0.7	0.8	
	16-24W	●		16-24W			24	9.525	16	0.68	0.7	0.8	
	16-22W	●		16-22W			22	9.525	16	0.74	0.8	0.9	
	16-20W	●		16-20W			20	9.525	16	0.81	0.8	0.9	
	16-19W	● ●		16-19W			19	9.525	16	0.86	0.8	1.0	
	16-18W	●		16-18W			18	9.525	16	0.90	0.8	1.0	
	16-16W	●		16-16W			16	9.525	16	1.02	0.9	1.1	
	16-14W	● ●		16-14W			14	9.525	16	1.16	1.0	1.2	
	16-12W	●		16-12W			12	9.525	16	1.36	1.1	1.4	
	16-11W	● ●		16-11W			11	9.525	16	1.48	1.1	1.5	
	16-10W	●		16-10W			10	9.525	16	1.63	1.1	1.5	
	16-9W	●		16-9W			9	9.525	16	1.81	1.2	1.7	
	16-8W	●		16-8W			8	9.525	16	2.03	1.2	1.5	
	22-7W	●		22-7W			7	12.7	22	3.32	1.6	2.3	
	22-6W	●		22-6W	●		6	12.7	22	2.71	1.6	2.3	
	22-5W	●		22-5W			5	12.7	22	3.25	1.7	2.4	
	27-4.5W	●		27-4.5W			4.5	15.875	27	3.61	1.8	2.6	
	27-4W			27-4W			4	15.875	27	4.07	2.0	2.9	

Applicable holders D31

● : Stock item



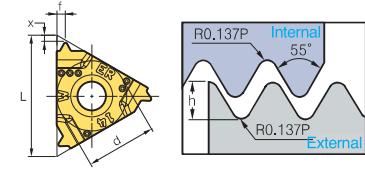
Whitworth (M chip breaker)

Type	Designation (Right)	PC3030T	PC5300	Designation (Left)	PC3030T	Pitch (tpi)	Dimensions (mm)					Picture
							d	L	hmin	X	f	
External	ERM 16-11W	●				14	9.525	16	1.16	1.0	1.2	
	16-14W	●				11	9.525	16	1.48	1.1	1.5	
	16-19W	●				19	9.525	16	0.86	0.8	1.0	

② Applicable holders D31

● : Stock item

Whitworth (U chip breaker)

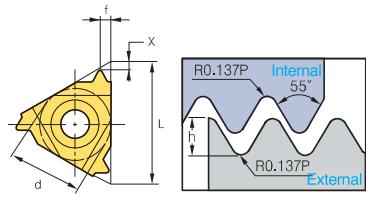
Type	Designation (Right)	PC3030T	PC5300	Designation (Left)	PC3030T	Pitch (tpi)	Dimensions (mm)					
							d	L	hmin	X	f	
External	ERM 16-14W-U					14	9.525	16	1.16	1.0	1.2	
	16-11W-U					11	9.525	16	1.48	1.1	1.5	

② Applicable holders D31

● : Stock item



Whitworth (BSW, BSF, BSP, BSB)

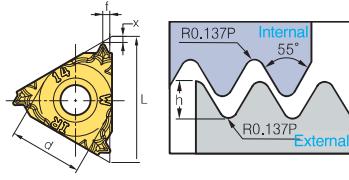
Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch (tpi)	Dimensions (mm)					Picture
								d	L	hmin	X	f	
IR	11-72W	●		IL	11-72W		72	6.35	11	0.23	0.7	0.4	
	11-60W	●			11-60W		60	6.35	11	0.27	0.7	0.4	
	11-56W	●			11-56W		56	6.35	11	0.29	0.7	0.4	
	11-48W	●			11-48W		48	6.35	11	0.34	0.6	0.6	
	11-40W	●			11-40W		40	6.35	11	0.41	0.6	0.6	
	11-36W	●			11-36W		36	6.35	11	0.45	0.6	0.6	
	11-32W	●			11-32W		32	6.35	11	0.51	0.6	0.6	
	11-28W	●			11-28W		28	6.35	11	0.58	0.6	0.7	
	11-26W	●			11-26W		26	6.35	11	0.63	0.7	0.8	
	11-24W	●			11-24W		24	6.35	11	0.68	0.7	0.8	
	11-22W	●			11-22W		22	6.35	11	0.74	0.8	0.9	
	11-20W				11-20W		20	6.35	11	0.81	0.8	0.9	
	11-19W	●	●		11-19W	●	19	6.35	11	0.86	0.8	1.0	
	11-18W	●			11-18W	●	18	6.35	11	0.90	0.8	1.0	
	11-16W	●			11-16W	●	16	6.35	11	1.02	0.9	1.1	
	11-14W	●			11-14W	●	14	6.35	11	1.16	0.9	1.1	
	11-12W	●			11-12W	●	12	6.35	11	1.32	0.9	1.2	
	16-72W	●			16-72W		72	9.525	16	0.23	0.7	0.4	
	16-60W	●			16-60W		60	9.525	16	0.27	0.7	0.4	
	16-56W	●			16-56W		56	9.525	16	0.29	0.7	0.4	
	16-48W	●			16-48W		48	9.525	16	0.34	0.6	0.6	
	16-40W	●			16-40W		40	9.525	16	0.41	0.6	0.6	
	16-36W	●			16-36W		36	9.525	16	0.45	0.6	0.6	
	16-32W	●			16-32W		32	9.525	16	0.51	0.6	0.6	
	16-30W	●			16-30W		30	9.525	16	0.55	0.6	0.7	
	16-28W	●			16-28W		28	9.525	16	0.58	0.6	0.7	
	16-26W	●			16-26W		26	9.525	16	0.63	0.7	0.8	
	16-24W	●			16-24W		24	9.525	16	0.68	0.7	0.8	
	16-22W	●			16-22W		22	9.525	16	0.74	0.8	0.9	
	16-20W	●			16-20W		20	9.525	16	0.81	0.8	0.9	
	16-19W	●			16-19W		19	9.525	16	0.86	0.8	1.0	
	16-18W	●			16-18W		18	9.525	16	0.90	0.8	1.0	
	16-16W	●			16-16W		16	9.525	16	1.02	0.9	1.1	
	16-14W	●	●		16-14W		14	9.525	16	1.16	1.0	1.2	
	16-12W	●			16-12W		12	9.525	16	1.36	1.1	1.4	
	16-11W	●	●		16-11W		11	9.525	16	1.48	1.1	1.5	
	16-10W	●			16-10W		10	9.525	16	1.63	1.1	1.5	
	16-9W	●			16-9W		9	9.525	16	1.81	1.2	1.7	
	16-8W	●			16-8W		8	9.525	16	2.03	1.2	1.5	
	22-7W				22-7W		7	12.7	22	3.32	1.6	2.3	
	22-6W	●			22-6W		6	12.7	22	2.71	1.6	2.3	
	22-5W	●			22-5W		5	12.7	22	3.25	1.7	2.4	
	27-4.5W	●			27-4.5W		4.5	15.875	27	3.61	1.8	2.6	
	27-4W	●			27-4W		4	15.875	27	4.07	2.0	2.9	

Applicable holders D32

● : Stock item



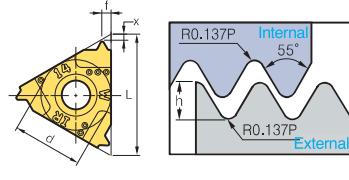
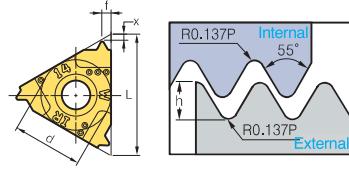
Whitworth (M chip breaker)

Type	Designation (Right)	PC3030T	PC5300	Designation (Left)	PC3030T	Pitch (tpi)	Dimensions (mm)					Picture
							d	L	hmin	X	f	
Internal	IRM 16-14W					14	9.525	16	1.16	1.0	1.2	
	16-11W	●				11	9.525	16	1.48	1.1	1.5	

② Applicable holders D32

● : Stock item

Whitworth (U chip breaker)

Type	Designation (Right)	PC3030T	PC5300	Designation (Left)	PC3030T	Pitch (tpi)	Dimensions (mm)					
							d	L	hmin	X	f	
Internal	IRM 16-14W-U					14	9.525	16	1.16	1.0	1.2	
	16-11W-U					11	9.525	16	1.48	1.1	1.5	

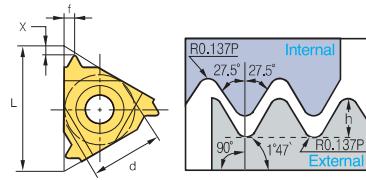
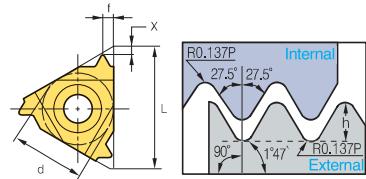
② Applicable holders D32

● : Stock item

D

Thread Insert

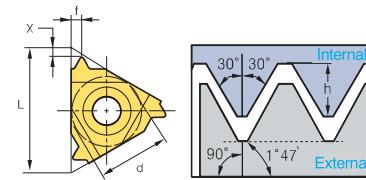
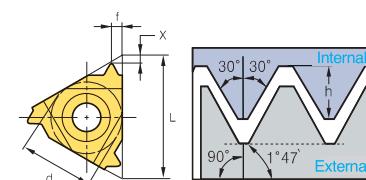
British Standard Pipe Thread (BSPT)

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch (tpi)	Dimensions (mm)					Picture
								d	L	hmin	X	f	
External	ER 11-28BSPT			EL 11-28BSPT			28	6.35	11	0.58	0.6	0.6	
	11-19BSPT			11-19BSPT			19	6.35	11	0.86	0.8	0.9	
	11-14BSPT			11-14BSPT			14	6.35	11	1.16	0.9	1.0	
	16-28BSPT			16-28BSPT			28	9.525	16	0.58	0.6	0.6	
	16-19BSPT	●	●	16-19BSPT			19	9.525	16	0.86	0.8	0.9	
	16-14BSPT	●	●	16-14BSPT			14	9.525	16	1.16	1.0	1.2	
	16-11BSPT	●	●	16-11BSPT			11	9.525	16	1.48	1.1	1.5	
Internal	IR 11-28BSPT			IL 11-28BSPT			28	6.35	11	0.58	0.6	0.6	
	11-19BSPT	●		11-19BSPT			19	6.35	11	0.86	0.8	0.9	
	11-14BSPT	●	●	11-14BSPT			14	6.35	11	1.16	0.9	1.0	
	16-28BSPT			16-28BSPT			28	9.525	16	0.58	0.6	0.6	
	16-19BSPT	●	●	16-19BSPT			19	9.525	16	0.86	0.8	0.9	
	16-14BSPT	●	●	16-14BSPT			14	9.525	16	1.16	1.0	1.2	
	16-11BSPT	●	●	16-11BSPT			11	9.525	16	1.48	1.1	1.5	

② Applicable holders D31, D32

● : Stock item

National Pipe Thread (NPT)

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch (tpi)	Dimensions (mm)					
								d	L	hmin	X	f	
External	ER 11-27NPT	●		EL 11-27NPT			27	6.35	11	0.66	0.7	0.8	
	11-18NPT	●		11-18NPT			18	6.35	11	1.01	0.8	1.0	
	11-14NPT	●		11-14NPT			14	6.35	11	1.33	0.8	1.0	
	16-27NPT	●		16-27NPT			27	9.525	16	0.66	0.7	0.8	
	16-18NPT	●	●	16-18NPT			18	9.525	16	1.01	0.8	1.0	
	16-14NPT	●	●	16-14NPT			14	9.525	16	1.33	0.9	1.2	
	16-11.5NPT	●		16-11.5NPT			11.5	9.525	16	1.64	1.1	1.5	
	16-8NPT	●		16-8NPT			8	9.525	16	2.42	1.3	1.8	
Internal	IR 11-27NPT	●		IL 11-27NPT			27	6.35	11	0.66	0.7	0.8	
	11-18NPT	●		11-18NPT			18	6.35	11	1.01	0.8	1.0	
	11-14NPT	●	●	11-14NPT	●		14	6.35	11	1.33	0.8	1.0	
	16-27NPT	●		16-27NPT			27	9.525	16	0.66	0.7	0.8	
	16-18NPT			16-18NPT			18	9.525	16	1.01	0.8	1.0	
	16-14NPT	●	●	16-14NPT			14	9.525	16	1.33	0.9	1.2	
	16-11.5NPT	●	●	16-11.5NPT	●		11.5	9.525	16	1.64	1.1	1.5	
	16-8NPT	●		16-8NPT	●		8	9.525	16	2.42	1.3	1.8	

② Applicable holders D31, D32

● : Stock item



D

Threading

National Pipe Threads-Dryseal (NPTF)

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch (tpi)	Dimensions (mm)					Picture
								d	L	hmin	X	f	
External	ER 11-27NPTF			EL 11-27NPTF			27	6.35	11	0.64	0.7	0.8	
	11-18NPTF			11-18NPTF			18	6.35	11	1.00	0.8	1.0	
	11-14NPTF			11-14NPTF			14	6.35	11	1.35	0.8	1.0	
	16-27NPTF			16-27NPTF			27	9.525	16	0.64	0.7	0.8	
	16-18NPTF	●		16-18NPTF			18	9.525	16	1.00	0.8	1.0	
	16-14NPTF			16-14NPTF			14	9.525	16	1.35	0.9	1.2	
	16-11.5NPTF			16-11.5NPTF			11.5	9.525	16	1.63	1.1	1.5	
	16-8NPTF			16-8NPTF	●		8	9.525	16	2.38	1.3	1.8	
Internal	IR 11-27NPTF			IL 11-27NPTF			27	6.35	11	0.64	0.7	0.8	
	11-18NPTF			11-18NPTF			18	6.35	11	1.00	0.8	1.0	
	11-14NPTF			11-14NPTF			14	6.35	11	1.35	0.8	1.0	
	16-27NPTF			16-27NPTF			27	9.525	16	0.64	0.7	0.8	
	16-18NPTF			16-18NPTF			18	9.525	16	1.00	0.8	1.0	
	16-14NPTF			16-14NPTF			14	9.525	16	1.35	0.9	1.2	
	16-11.5NPTF			16-11.5NPTF			11.5	9.525	16	1.63	1.1	1.5	
	16-8NPTF			16-8NPTF			8	9.525	16	2.38	1.3	1.8	

→ Applicable holders D31, D32

● : Stock item

Round DIN 405

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch (tpi)	Dimensions (mm)					Picture
								d	L	hmin	X	f	
External	ER 16-10RD			EL 16-10RD			10	9.525	16	1.27	1.1	1.2	
	16-8RD	●		16-8RD			8	9.525	16	1.59	1.4	1.3	
	16-6RD	●		16-6RD			6	9.525	16	2.12	1.5	1.7	
	22-6RD			22-6RD			6	12.7	22	2.12	1.5	1.7	
	22-4RD	●		22-4RD			4	12.7	22	3.18	2.2	2.3	
	27-4RD			27-4RD			4	15.875	27	3.18	2.2	2.3	
Internal	IR 16-10RD			IL 16-10RD			10	9.525	16	1.27	1.1	1.2	
	16-8RD			16-8RD			8	9.525	16	1.59	1.4	1.4	
	16-6RD	●		16-6RD			6	9.525	16	2.12	1.4	1.5	
	22-6RD			22-6RD			6	12.7	22	2.12	1.5	1.7	
	22-4RD	●		22-4RD			4	12.7	22	3.18	2.2	2.3	
	27-4RD			27-4RD			4	15.875	27	3.18	2.2	2.3	

→ Applicable holders D31, D32

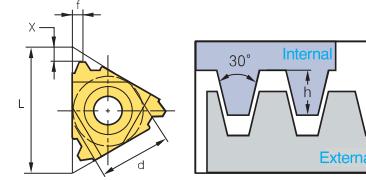
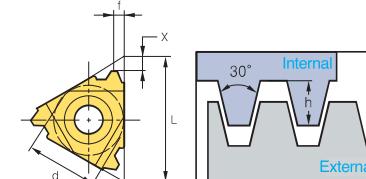
● : Stock item



D

Thread Insert

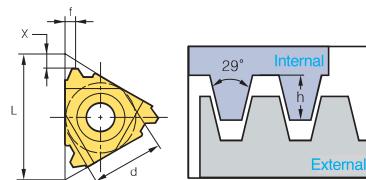
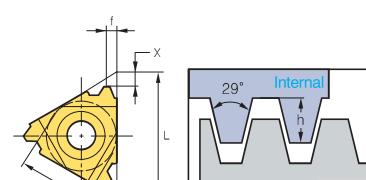
Trapez DIN 103 (TR)

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch	Dimensions (mm)					Picture
							(mm)	d	L	hmin	X	f	
External	ER 11-1.5TR	●		EL 11-1.5TR	●		1.5	6.35	11	0.90	0.8	0.9	
	16-1.5TR			16-1.5TR			1.5	9.525	16	0.90	1.0	1.1	
	16-2.0TR	●		16-2.0TR	●		2.0	9.525	16	1.25	1.1	1.3	
	16-3.0TR	●	●	16-3.0TR	●		3.0	9.525	16	1.75	1.3	1.5	
	22-4.0TR	●	●	22-4.0TR	●		4.0	12.7	22	2.25	1.7	1.9	
	22-5.0TR	●	●	22-5.0TR	●		5.0	12.7	22	2.75	2.1	2.5	
	27-6.0TR	●	●	27-6.0TR	●		6.0	15.875	27	3.50	2.3	2.7	
Internal	IR 11-1.5TR			IL 11-1.5TR	●		1.5	6.35	11	0.90	0.8	0.9	
	16-1.5TR	●		16-1.5TR	●		1.5	9.525	16	0.90	1.0	1.1	
	16-2.0TR	●		16-2.0TR	●		2.0	9.525	16	1.25	1.1	1.3	
	16-2.5TR	●		16-2.5TR	●		2.5	9.525	16	1.53	1.2	1.4	
	16-3.0TR	●		16-3.0TR	●		3.0	9.525	16	1.75	1.3	1.5	
	22-4.0TR	●	●	22-4.0TR	●		4.0	12.7	22	2.25	1.7	1.9	
	22-5.0TR	●	●	22-5.0TR			5.0	12.7	22	2.75	2.1	2.5	
	27-6.0TR	●	●	27-6.0TR	●		6.0	15.875	27	3.50	2.3	2.7	

➔ Applicable holders D31, D32

● : Stock item

American ACME (ACME)

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch	Dimensions (mm)					Picture
							(tpi)	d	L	hmin	X	f	
External	ER 11-16ACME			EL 11-16ACME			16	6.35	11	0.92	1.0	1.1	
	16-16ACME			16-16ACME			16	9.525	16	0.92	1.0	1.1	
	16-14ACME			16-14ACME			14	9.525	16	1.03	1.0	1.2	
	16-12ACME			16-12ACME			12	9.525	16	1.19	1.1	1.2	
	16-10ACME			16-10ACME			10	9.525	16	1.52	1.3	1.4	
	16-8ACME			16-8ACME			8	9.525	16	1.84	1.4	1.5	
	16-6ACME			16-6ACME			6	9.525	16	2.37	1.7	1.9	
	22-6ACME	●		22-6ACME	●		6	12.7	22	2.37	1.8	2.1	
	22-5ACME	●		22-5ACME	●		5	12.7	22	2.79	2.0	2.3	
	27-4ACME			27-4ACME			4	15.875	27	3.43	2.4	2.7	
Internal	IR 11-16ACME			IL 11-16ACME			16	6.35	11	0.92	0.9	0.9	
	16-16ACME			16-16ACME			16	9.525	16	0.92	1.0	1.1	
	16-14ACME			16-14ACME			14	9.525	16	1.03	1.1	1.2	
	16-12ACME			16-12ACME			12	9.525	16	1.19	1.2	1.3	
	16-10ACME	●		16-10ACME			10	9.525	16	1.52	1.2	1.3	
	16-8ACME	●		16-8ACME			8	9.525	16	1.84	1.4	1.5	
	16-6ACME			16-6ACME			6	9.525	16	2.37	1.7	1.9	
	22-6ACME	●		22-6ACME			6	12.7	22	2.37	1.8	2.1	
	22-5ACME	●		22-5ACME			5	12.7	22	2.79	2.0	2.3	
	27-4ACME	●		27-4ACME			4	15.875	27	3.43	2.3	2.6	

➔ Applicable holders D31, D32

● : Stock item



Stub ACME (STACME)

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch	Dimensions (mm)					Picture
							(tpi)	d	L	hmin	X	f	
External	ER 11-16STACME			EL 11-16STACME			16	6.35	11	0.60	1.0	1.0	
	16-16STACME			16-16STACME			16	9.525	16	0.60	1.0	1.0	
	16-14STACME			16-14STACME			14	9.525	16	0.67	1.1	1.1	
	16-12STACME			16-12STACME			12	9.525	16	0.76	1.2	1.2	
	16-10STACME			16-10STACME			10	9.525	16	1.02	1.2	1.3	
	16-8STACME			16-8STACME			8	9.525	16	1.21	1.4	1.5	
	16-6STACME			16-6STACME			6	9.525	16	1.52	1.7	1.8	
	22-6STACME			22-6STACME			6	12.7	22	1.52	1.7	1.8	
	22-5STACME			22-5STACME			5	12.7	22	1.78	2.1	2.3	
	27-4STACME			27-4STACME			4	15.875	27	2.16	2.3	2.4	
	27-3STACME			27-3STACME			3	15.875	27	2.79	2.9	2.9	
Internal	IR 11-16STACME			IL 11-16STACME			16	6.35	11	0.60	1.0	1.0	
	16-16STACME			16-16STACME			16	9.525	16	0.60	1.0	1.0	
	16-14STACME			16-14STACME			14	9.525	16	0.67	1.1	1.1	
	16-12STACME			16-12STACME			12	9.525	16	0.76	1.1	1.2	
	16-10STACME			16-10STACME			10	9.525	16	1.02	1.2	1.3	
	16-8STACME			16-8STACME			8	9.525	16	1.21	1.4	1.5	
	16-6STACME			16-6STACME			6	9.525	16	1.52	1.7	1.8	
	22-6STACME			22-6STACME			6	12.7	22	1.52	1.7	1.8	
	22-5STACME			22-5STACME			5	12.7	22	1.78	2.1	2.3	
	27-4STACME			27-4STACME			4	15.875	27	2.16	2.3	2.4	
	27-3STACME			27-3STACME			3	15.875	27	2.79	2.9	2.9	

☞ Applicable holders D31, D32

● : Stock item



D

Thread Insert

UNJ (Unified Constant Thread)

Type	Designation (Right)			Designation (Left)	PC3030T PC9070T	Pitch (tpi)	Dimensions (mm)					Picture
		PC3030T	PC9070T				d	L	hmin	X	f	
External	ER 11-48UNJ			EL 11-48UNJ		48	6.35	11	0.31	0.6	0.5	
	11-44UNJ			11-44UNJ		44	6.35	11	0.33	0.6	0.6	
	11-40UNJ			11-40UNJ		40	6.35	11	0.37	0.6	0.6	
	11-36UNJ			11-36UNJ		36	6.35	11	0.41	0.6	0.6	
	11-32UNJ			11-32UNJ		32	6.35	11	0.46	0.6	0.7	
	11-28UNJ			11-28UNJ		28	6.35	11	0.52	0.7	0.7	
	11-24UNJ	●		11-24UNJ		24	6.35	11	0.61	0.7	0.8	
	11-20UNJ			11-20UNJ		20	6.35	11	0.73	0.8	0.9	
	11-18UNJ			11-18UNJ		18	6.35	11	0.81	0.8	1.0	
	11-16UNJ			11-16UNJ		16	6.35	11	0.92	0.9	1.1	
	11-14UNJ			11-14UNJ		14	6.35	11	1.05	1.0	1.2	
	16-48UNJ			16-48UNJ		48	9.525	16	0.31	0.6	0.5	
	16-44UNJ			16-44UNJ		44	9.525	16	0.33	0.6	0.6	
	16-40UNJ			16-40UNJ		40	9.525	16	0.37	0.6	0.6	
	16-36UNJ			16-36UNJ		36	9.525	16	0.41	0.6	0.6	
	16-32UNJ	●		16-32UNJ		32	9.525	16	0.46	0.6	0.7	
	16-28UNJ	●		16-28UNJ		28	9.525	16	0.52	0.7	0.7	
	16-24UNJ	●		16-24UNJ		24	9.525	16	0.61	0.7	0.8	
	16-20UNJ	●		16-20UNJ		20	9.525	16	0.73	0.8	0.9	
	16-18UNJ			16-18UNJ		18	9.525	16	0.81	0.8	1.0	
	16-16UNJ	●		16-16UNJ		16	9.525	16	0.92	0.9	1.1	
	16-14UNJ			16-14UNJ		14	9.525	16	1.05	1.0	1.2	
	16-13UNJ			16-13UNJ		13	9.525	16	1.13	1.0	1.3	
	16-12UNJ	●		16-12UNJ		12	9.525	16	1.22	1.1	1.3	
	16-11UNJ			16-11UNJ		11	9.525	16	1.33	1.2	1.5	
	16-10UNJ	●		16-10UNJ		10	9.525	16	1.47	1.2	1.5	
	16-9UNJ			16-9UNJ		9	9.525	16	1.63	1.3	1.7	
	16-8UNJ			16-8UNJ		8	9.525	16	1.83	1.2	1.6	
	22-7UNJ			22-7UNJ		7	12.7	22	2.09	1.7	2.3	
	22-6UNJ			22-6UNJ		6	12.7	22	2.44	1.7	2.3	
	22-5UNJ			22-5UNJ		5	12.7	22	2.93	1.8	2.5	
	27-4.5UNJ			27-4.5UNJ		4.5	15.875	27	3.26	2.0	2.7	
	27-4UNJ			27-4UNJ		4	15.875	27	3.67	2.2	3.0	

➔ Applicable holders D31

● : Stock item



D

Threading

UNJ (Unified Constant Thread)

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch	Dimensions (mm)					Picture
							(tpi)	d	L	hmin	X	f	
Internal	IR 11-48UNJ			IL 11-48UNJ			48	6.35	11	0.28	0.6	0.5	
	11-44UNJ			11-44UNJ			44	6.35	11	0.30	0.6	0.6	
	11-40UNJ			11-40UNJ			40	6.35	11	0.33	0.6	0.6	
	11-36UNJ			11-36UNJ			36	6.35	11	0.37	0.6	0.6	
	11-32UNJ			11-32UNJ			32	6.35	11	0.42	0.6	0.7	
	11-28UNJ			11-28UNJ			28	6.35	11	0.47	0.7	0.7	
	11-24UNJ			11-24UNJ			24	6.35	11	0.55	0.7	0.8	
	11-20UNJ			11-20UNJ			20	6.35	11	0.66	0.8	0.9	
	11-18UNJ			11-18UNJ			18	6.35	11	0.74	0.8	1.0	
	11-16UNJ			11-16UNJ			16	6.35	11	0.83	0.9	1.1	
	11-14UNJ			11-14UNJ			14	9.525	11	0.95	1.0	1.2	
	16-48UNJ			16-48UNJ			48	9.525	16	0.28	0.6	0.5	
	16-44UNJ			16-44UNJ			44	9.525	16	0.30	0.6	0.6	
	16-40UNJ			16-40UNJ			40	9.525	16	0.33	0.6	0.6	
	16-36UNJ			16-36UNJ			36	9.525	16	0.37	0.6	0.6	
	16-32UNJ			16-32UNJ			32	9.525	16	0.42	0.6	0.7	
	16-28UNJ			16-28UNJ			28	9.525	16	0.47	0.7	0.7	
	16-24UNJ			16-24UNJ			24	9.525	16	0.55	0.7	0.8	
	16-20UNJ			16-20UNJ			20	9.525	16	0.66	0.8	0.9	
	16-18UNJ			16-18UNJ			18	9.555	16	0.74	0.8	1.0	
	16-16UNJ			16-16UNJ			16	9.525	16	0.83	0.9	1.1	
	16-14UNJ			16-14UNJ			14	9.525	16	0.95	1.0	1.2	
	16-13UNJ			16-13UNJ			13	9.525	16	1.02	1.0	1.3	
	16-12UNJ	●		16-12UNJ			12	9.525	16	1.11	1.1	1.3	
	16-11UNJ			16-11UNJ			11	9.525	16	1.21	1.2	1.5	
	16-10UNJ			16-10UNJ			10	9.525	16	1.33	1.2	1.5	
	16-9UNJ			16-9UNJ			9	9.525	16	1.48	1.3	1.7	
	16-8UNJ			16-8UNJ			8	9.525	16	1.66	1.2	1.6	
	22-7UNJ			22-7UNJ			7	12.7	22	1.90	1.7	2.3	
	22-6UNJ			22-6UNJ			6	12.7	22	2.21	1.7	2.3	
	22-5UNJ			22-5UNJ			5	12.7	22	2.66	1.8	2.5	
	27-4.5UNJ			27-4.5UNJ			4.5	15.875	27	2.95	2.0	2.7	
	27-4UNJ			27-4UNJ			4	15.875	27	3.32	2.2	3.0	

② Applicable holders D32

● : Stock item



D

Thread Insert

American Buttress (ABUT)

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch	Dimensions (mm)					Picture
							(tpi)	d	L	hmin	X	f	
External	ER 11-20ABUT			EL 11-20ABUT			20	6.35	11	0.84	1.0	1.4	
	11-16ABUT			11-16ABUT			16	6.35	11	1.05	1.3	1.9	
	16-20ABUT	●		16-20ABUT			20	9.525	16	0.84	1.0	1.4	
	16-16ABUT			16-16ABUT			16	9.525	16	1.05	1.3	1.9	
	16-12ABUT			16-12ABUT			12	9.525	16	1.40	1.4	2.0	
	16-10ABUT			16-10ABUT			10	9.525	16	1.68	1.5	2.3	
	22-8ABUT			22-8ABUT			8	12.7	22	2.10	2.0	3.2	
	22-6ABUT			22-6ABUT			6	12.7	22	2.80	2.2	3.5	
Internal	IR 11-20ABUT	●		IL 11-20ABUT			20	6.35	11	0.84	1.0	1.4	
	11-16ABUT			11-16ABUT			16	6.35	11	1.05	1.3	1.9	
	16-20ABUT	●		16-20ABUT			20	9.525	16	0.84	1.0	1.4	
	16-16ABUT			16-16ABUT			16	9.525	16	1.05	1.3	1.9	
	16-12ABUT	●		16-12ABUT			12	9.525	16	1.40	1.4	2.0	
	16-10ABUT	●		16-10ABUT			10	9.525	16	1.68	1.5	2.3	
	22-8ABUT			22-8ABUT			8	12.7	22	2.10	2.0	3.2	
	22-6ABUT			22-6ABUT			6	12.7	22	2.80	2.2	3.5	

→ Applicable holders D31, D32

● : Stock item

British Buttress (BBUT)

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch	Dimensions (mm)					Picture
							(tpi)	d	L	hmin	X	f	
External	ER 16-16BBUT	●		EL 16-16BBUT			16	9.525	16	0.80	1.1	1.6	
	16-12BBUT			16-12BBUT			12	9.525	16	1.07	1.4	2.1	
	16-10BBUT			16-10BBUT			10	9.525	16	1.28	1.4	2.2	
	16-8BBUT	●		16-8BBUT			8	9.525	16	1.61	1.6	2.5	
	22-8BBUT			22-8BBUT			8	12.7	22	1.61	1.6	2.5	
Internal	IR 16-16BBUT	●		IL 16-16BBUT			16	9.525	16	0.80	1.1	1.6	
	16-12BBUT			16-12BBUT			12	9.525	16	1.07	1.4	2.1	
	16-10BBUT			16-10BBUT			10	9.525	16	1.28	1.4	2.2	
	16-8BBUT			16-8BBUT			8	9.525	16	1.61	1.6	2.5	
	22-8BBUT			22-8BBUT			8	12.7	22	1.61	1.6	2.5	

→ Applicable holders D31, D32

● : Stock item



D

Threading

Metric Buttress (SAGE)

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch (mm)	Dimensions (mm)					Picture
								d	L	hmin	X	f	
External	ER 16-2.0SAGE			EL 16-2.0SAGE			2.0	9.525	16	1.74	1.47	2.08	
	22-2.0SAGE			22-2.0SAGE			2.0	12.7	22	1.74	1.47	2.08	
	22-3.0SAGE	●		22-3.0SAGE			3.0	12.7	22	2.60	1.79	2.60	
	27-4.0SAGE	●		27-4.0SAGE			4.0	15.875	27	3.55	1.93	3.20	
Internal	IR 16-2.0SAGE	●		IL 16-2.0SAGE			2.0	9.525	16	1.50	1.52	2.2	
	22-3.0SAGE			22-3.0SAGE			3.0	12.7	22	2.25	1.66	2.9	
	27-4.0SAGE	●		27-4.0SAGE			4.0	5/8	27	3.09	2.12	3.2	

② Applicable holders D31, D32

● : Stock item

API

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch (tpi)	Dimensions (mm)					Picture
								d	L	hmin	X	f	
External	ER 22-4API382	●		EL 22-4API382			4	12.7	22	3.09	2.1	2.8	
	22-4API383			22-4API383			4	12.7	22	3.08	2.1	2.8	
	22-4API502	●		22-4API502			4	12.7	22	3.75	2.0	2.9	
	22-4API503	●		22-4API503			4	12.7	22	3.74	2.0	2.9	
	22-5API403			22-5API403			5	12.7	22	2.99	1.8	2.6	
	22-6API551			22-6API551			6	12.7	22	1.41	2.6	2.0	
	27-4API382	●		27-4API382			4	15.875	27	3.09	2.1	2.8	
	27-4API383			27-4API383			4	15.875	27	3.08	2.1	2.8	
	27-4API502			27-4API502			4	15.875	27	3.75	2.1	3.1	
	27-4API503	●		27-4API503			4	15.875	27	3.74	2.1	3.1	
	27-5API403	●		27-5API403			5	15.875	27	2.99	1.9	2.7	
Internal	IR 22-4API382			IL 22-4API382			4	12.7	22	3.09	2.1	2.8	
	22-4API383			22-4API383			4	12.7	22	3.08	2.1	2.8	
	22-4API502	●		22-4API502			4	12.7	22	3.75	2.1	3.1	
	22-4API503			22-4API503			4	12.7	22	3.74	2.0	2.9	
	22-5API403	●		22-5API403			5	12.7	22	2.99	1.8	2.6	
	22-6API551	●		22-6API551			6	12.7	22	1.41	2.6	2.0	
	27-4API382			27-4API382			4	15.875	27	3.09	2.1	2.8	
	27-4API383	●		27-4API383			4	15.875	27	3.08	2.1	2.8	
	27-4API502	●		27-4API502			4	15.875	27	3.75	2.1	3.1	
	27-4API503	●		27-4API503			4	15.875	27	3.74	2.1	3.1	
	27-5API403	●		27-5API403			5	15.875	27	2.99	1.9	2.7	

② Applicable holders D31, D32

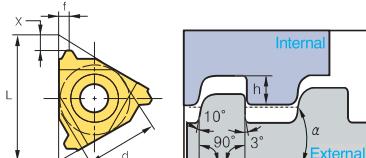
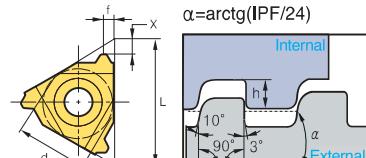
● : Stock item



D

Thread Insert

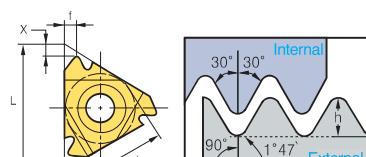
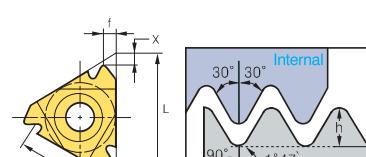
API Buttress Casing (BUT)

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch (tpi)	Dimensions (mm)					Picture	
								IPF	d	L	hmin	X		
External	ER 22-5BUT75	●		EL 22-5BUT75 22-5BUT1			5	0.75	12.7	22	1.55	3.1	1.9	
	22-5BUT1						5	1	12.7	22	1.55	3.1	1.9	
Internal	IR 22-5BUT75	●		IL 22-5BUT75 22-5BUT1			5	0.75	12.7	22	1.55	2.8	1.9	
	22-5BUT1	●					5	1	12.7	22	1.55	2.8	1.9	

④ Applicable holders D31, D32

● : Stock item

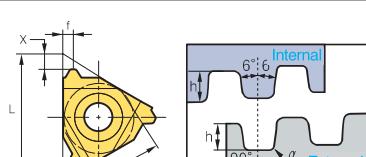
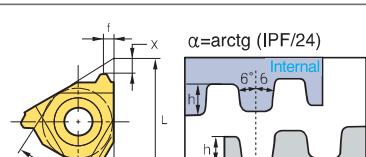
API Round Casing & Tubing (APIRD)

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch (tpi)	Dimensions (mm)					Picture
								d	L	hmin	X	f	
External	ER 16-10APIRD	●		EL 16-10APIRD 16-8APIRD			10	9.525	16	1.41	1.2	1.4	
	16-8APIRD	●					8	9.525	16	1.81	1.3	1.5	
Internal	IR 16-10APIRD	●		IL 16-10APIRD 16-8APIRD			10	9.525	16	1.41	1.2	1.4	
	16-8APIRD	●					8	9.525	16	1.81	1.3	1.5	

④ Applicable holders D31, D32

● : Stock item

Extreme Line Casing (EL)

Type	Designation (Right)	PC3030T	PC9070T	Designation (Left)	PC3030T	PC9070T	Pitch (tpi)	Dimensions (mm)					Picture	
								IPF	d	L	hmin	X		
External	ER 22-6EL15			EL 22-6EL15 22-5EL125			6	1.5	12.7	22	1.21	1.9	1.9	
	22-5EL125						5	1.25	12.7	22	1.71	2.3	2.4	
Internal	IR 22-6EL15			IL 22-6EL15 22-5EL125			6	1.5	12.7	22	1.39	1.8	1.9	
	22-5EL125						5	1.25	12.7	22	1.91	2.2	2.4	

④ Applicable holders D31, D32

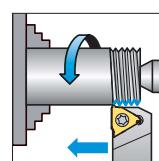
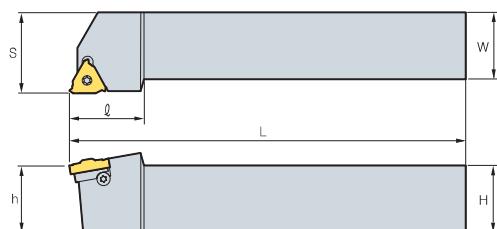
● : Stock item



D

Threading

ER(L)H (Screw on system)



Righthand drawing
(mm)

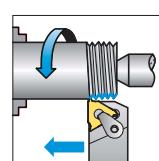
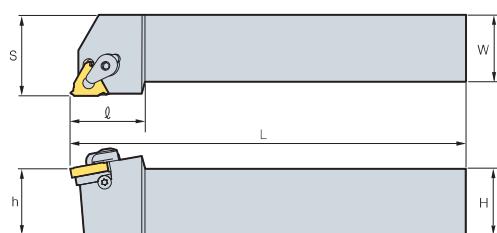
Designation	Inscribed circle	H	W	L	S	H	l	Insert screw	Shim screw	Screw RH	Screw LH	Wrench
ER(L)H	08N-11	6.35	8	8	136.4	11	8	17.5				
	10N-11	6.35	10	10	70.0	11	10	17.5	ST11N	-	-	-
	12N-11	6.35	12	12	80.0	12	12	17.5				
	12N-16	9.525	12	12	83.2	16	12	22	ST16N	-	-	-
	09-16	9.525	9.52	9.52	63.6	16	9.52	20.5				
	12-16	9.525	12	12	83.2	16	12	22	ST16	STA16	ATE16	ATI22
	16-16	9.525	16	16	100.0	16	16	20.5				
	20-16	9.525	20	20	128.6	20	20	30				
	25-16	9.525	25	25	153.6	25	25	30				
	32-16	9.525	32	32	173.6	32	32	30				
	25-22	12.7	25	25	155.7	25	25	36	ST22	STA22	ATE22	ATI22
	32-22	12.7	32	32	175.7	32	32	36				
	40-22	12.7	40	40	205.7	40	40	36				
	25-27	15.875	25	25	151.6	32	25	35	ST27	STA27	ATE27	ATI27
	32-27	15.875	32	32	176.6	32	32	40				
	40-27	15.875	40	40	206.6	40	40	40				
	50-27	15.875	50	50	256.6	50	50	40				

② Applicable inserts D10~D13, D16, D18, D19, D22, D23~D26

• Helix angle is 1.5° for all holders

• No shim needed for N type holder

ER(L)H-C (Clamp on system)



Righthand drawing
(mm)

Designation	Inscribed circle	H	W	L	S	H	l	Shim screw	Clamp	Screw RH	Screw LH	Wrench
ER(L)H	20-16C	9.525	20	20	128.6	20	20	30				
	25-16C	9.525	25	25	153.6	25	25	30	STA16	CTH16	ATE16	ATI16
	32-16C	9.525	32	32	173.6	32	32	30				
	25-22C	12.7	25	25	155.7	25	25	36	STA22	CTH22	ATE22	ATI22
	32-22C	12.7	32	32	175.7	32	32	36				
	40-22C	12.7	40	40	205.7	40	40	36				
	25-27C	15.875	25	25	151.6	25	25	35	STA27	CTH27	ATE27	ATI27
	32-27C	15.875	32	32	176.6	32	32	40				
	40-27C	15.875	40	40	206.6	40	40	40				
	50-27C	15.875	50	50	256.6	50	50	40				

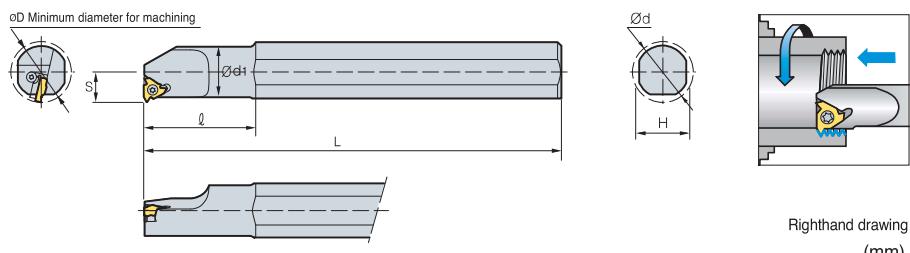
② Applicable inserts D10~D13, D16, D18, D19, D22, D23~D26

• Helix angle is 1.5° for all holders



D Internal Holder

IR(L)H (Screw on system)



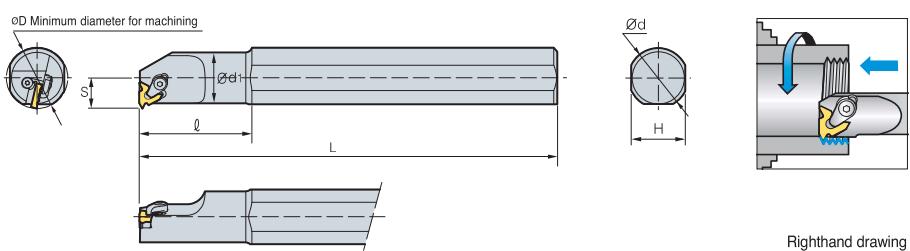
Designation		Inscribed circle	ØD	Ød	Ød1	H	L	S	l	Insert screw	Shim screw	Screw RH	Screw LH	Wrench
IR(L)H	10DN-11	6.35	13	10	10.0	9.5	100	7.3	-	ST11N	-	-	-	TW08P
	10N-11	6.35	13	20	10.0	18.0	180	7.3	25					
	13N-11	6.35	16	20	13.0	18.0	180	8.9	32					
	13N-16	9.525	17	20	12.7	18.0	180	10.3	32					
	16N-16	9.525	20	20	16.0	18.0	180	11.5	40					
	16DN-16	9.525	20	16	16.0	15.2	150	11.3	32					
	20-16	9.525	24	20	20.0	18.0	180	13.4	40					
	25-16	9.525	29	32	25.0	29.0	250	16.3	60					
	25D-16	9.525	29	25	24.5	22.6	200	16.1	45					
	32-16	9.525	36	32	32.0	29.0	250	19.6	60					
IR(L)H-C	40-16	9.525	44	40	40.0	36.0	300	23.8	60	ST16	STA16	ATI16	ATE16	TW10P
	20N-22	12.7	27	20	20.0	18.0	180	15.6	50					
	25-22	12.7	32	32	25.0	29.0	250	17.4	60					
	25D-22	12.7	32	25	24.6	22.6	200	17.2	45					
	32-22	12.7	39	32	32.0	29.0	250	21.5	60					
	40-22	12.7	47	40	40.0	36.0	300	25.8	60					
	32-27	15.875	40	32	32.0	29.0	250	22.4	60					
	40-27	15.875	48	40	40.0	36.0	300	26.4	60					
	50-27	15.875	58	50	50.0	45.0	350	31.4	75					
	60-27	15.875	69	60	60.0	54.0	400	36.4	75					

Applicable inserts D10, D11, D14, D15, D17, D20~D25, D27~D30

* Helix angle is 1.5° for all holders

* No shim needed for N type holder

IR(L)H-C (Clamp on system)



Designation		Inscribed circle	ØD	Ød	Ød1	H	L	S	l	Shim screw	Clamp	Screw RH	Screw LH	Wrench
IR(L)H-C	20-16C	9.525	24	20	20.0	18.0	180	13.4	50	STA16	CTH16	ATI16	ATE16	TW10P TW15P
	25-16C	9.525	29	32	25.0	28.0	250	16.3	60					
	25D-16C	9.525	29	25	24.6	22.6	200	16.1	45					
	32-16C	9.525	36	32	32.0	29.0	250	19.6	60					
	40-16C	9.525	44	40	40.0	36.0	300	23.8	60					
	25-22C	12.7	32	32	25.0	29.0	250	17.4	60					
	25D-22C	12.7	32	25	24.6	22.6	200	17.2	45					
	32-22C	12.7	39	32	32.0	29.0	250	21.5	60					
	40-22C	12.7	47	40	40.0	36.0	300	25.8	60					
	32-27C	15.875	40	32	32.0	29.0	250	22.4	60					
IR(L)H-C	40-27C	15.875	48	40	40.0	36.0	300	26.4	60	STA27	CTH27	ATI27	ATE27	TW25L
	50-27C	15.875	58	50	50.0	45.0	350	31.4	75					
	60-27C	15.875	69	60	60.5	54.0	400	36.4	75					

Applicable inserts D10, D11, D14, D15, D17, D20~D25, D27~D30

* Helix angle is 1.5° for all holders

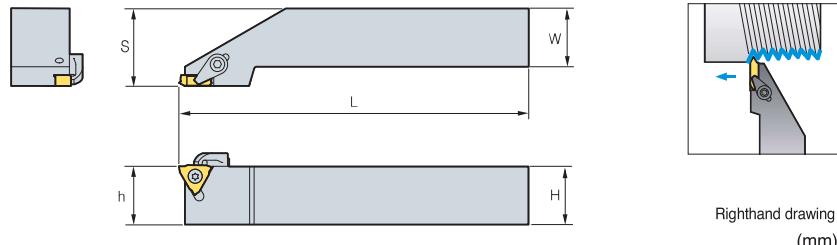


Threading

VTH



VETR



Designation		H=(h)	W	L	S	Insert	Clamp	Clamp screw	Screw	Wrench
VTH	2020R	20	20	125	26.4	VETR	CS6R1	DHA0617	FTKA03510	TW15P HW30L
	2525R	25	25	150	33.4					
	3225R	32	25	170	33.4					

Vertical type thread insert

Picture	Designation	Uncoated	Insert			Configuration
		ST10	Pitch (mm)	θ	f	
	VETR 080		0.8	60°	1.4	 d: 9.525 t: 4.76
		●	1.0	60°	1.4	
			1.25	60°	1.4	
		●	1.5	60°	1.2	
			1.75	60°	1.2	
		●	2.0	60°	1.2	
			2.5	60°	1.4	
		●	3.0	60°	1.6	
		●	0.8~1.5	60°	1.4	
		●	1.5~3.0	60°	1.6	

● : Stock item



D

Technical Information for Thread Milling

Thread milling holders code system

TM S R L 25 - 11

1 Insert style

2 Holder style

3 Hand

4 Shank type

5 Shank dia.

6 Cutting edge length

1	Insert style TM S R L 25 - 11
Thread Milling Holder	

3	Hand TM S R L 25 - 11
R: Right Hand L: Left Hand	

5	Shank dia. TM S R L 25 - 11
25: 25.0	

2	Holders style TM S R L 25 - 11
S: Shank Type	

4	Shank type TM S R L 25 - 11
None: Standard L: Long Type T: Taper Type	

6	Cutting edge length TM S R L 25 - 11
10: 10.4	22: 22
11: 11	27: 27
16: 16	38: 38.5

Thread milling inserts code system

TM 2 I 16 - 1.5 ISO

1 Insert style

2 Cutting edge

3 Type of insert

4 Cutting edge length

5 Pitch

6 Type

1	Insert style TM 2 I 16 - 1.5 ISO
Thread Milling Holder	

4	Cutting edge length TM 2 I 16 - 1.5 ISO
10: 10.4 11: 11 16: 16 22: 22 27: 27 38: 38.5	

6	Type TM 2 I 16 - 1.5 ISO
ISO Metric American UN (UNC, UNF, UNEF) UNJ Whit Worth (BSW, BSF, BSP, BSB) National Pipe Thread (NPT) National Pipe Thread (NPTF) British Standard Pipe Thread (BSPT)	

3	Type of insert TM 2 I 16 - 1.5 ISO
I: Internal E: External EI: External & Internal	

5	Pitch TM 2 I 16 - 1.5 ISO
mm: 0.5~6.0 tpi: 48~6	

**D**

Threading

Thread milling

• The right tool for the job

Small diameter type



Tool holder: TMSR **Insert:** TM L = 10.4 mm
For small bore diameters down to 9.5 mm

Standard type



Tool holder: TMSR **Insert:** TM2
For standard length threads

Long type



Tool holder: TMSR **Insert:** TM2
For long or remote threads

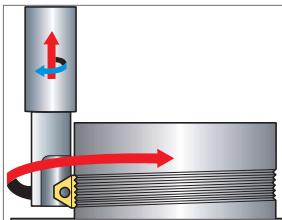
Tapered type



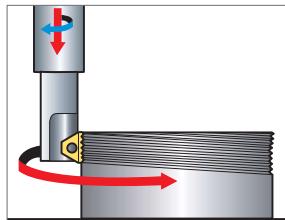
Tool holder: TMSR **Insert:** TM2 (BSPT, NPT, NPTF)
For standard length threads

• Thread milling methods

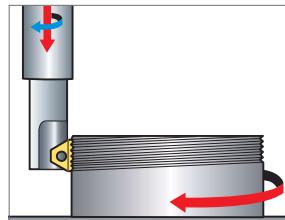
External threading



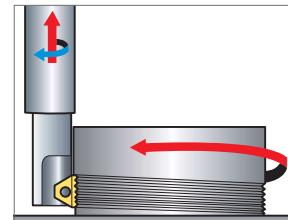
Right handed thread
conventional milling



Left handed thread
down milling

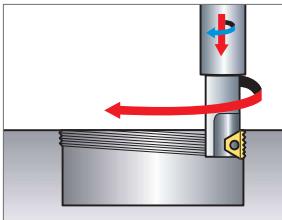


Right handed thread
down milling

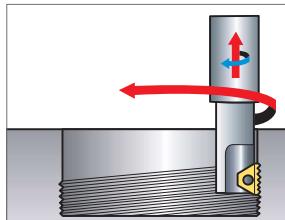


Left handed thread
conventional milling

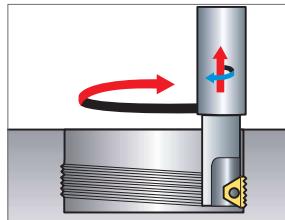
Internal threading



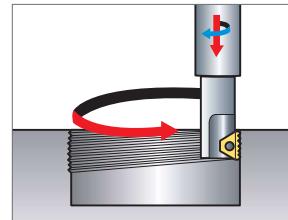
Right handed thread
down milling



Left handed thread
conventional milling



Right handed thread
conventional milling



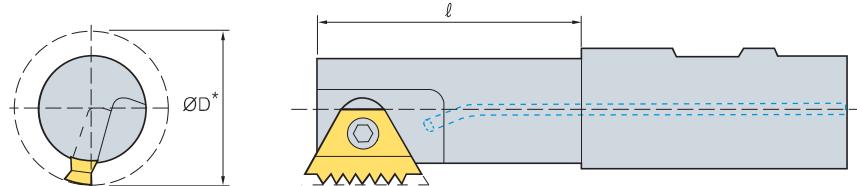
Left handed thread
down milling



D

Technical Information for Thread Milling

► Tooling recommendation for given internal thread specification



ISO

Pitch (mm)	Nominal dia. (mm)	Holder	Insert	ℓ-Tool holder overhang	D-Tool cutting dia.*	Min.Thread depth (Profile depth)
0.75	11	TMSR 12-10	TM2I 10-0.75ISO	12.0	9.0	0.43
	12-14	TMSR 12-10	TM2I 10-1.0ISO	12.0	9.0	
	15-18	TMSR 12-11	TM2I 11-1.0ISO	12.0	11.5	
	20	TMSR 16-16	TM2I 16-1.0ISO	22.0	17.0	0.58
	22	TMSR 20-22	TM2I 22-1.0ISO	29.0	19.0	
	24	TMSR 20-16	TM2I 16-1.0ISO	43.0	20.0	
	25-28	TMSRL 25-16	TM2I 16-1.0ISO	25.0	22.0	
1.0	14	TMSR 12-10	TM2I 10-1.25ISO	12.0	9.0	0.72
	14-15	TMSR 12-10	TM2I 10-1.5ISO	12.0	9.0	
	16-20	TMSR 12-11	TM2I 11-1.5ISO	12.0	11.5	
	22	TMSR 16-16	TM2I 16-1.5ISO	22.0	17.0	
	24	TMSR 20-22	TM2I 22-1.5ISO	29.0	19.0	0.87
	25-26	TMSR 20-16	TM2I 16-1.5ISO	43.0	20.0	
	27-30	TMSRL 25-16	TM2I 16-1.5ISO	25.0	22.0	
	35-42	TMSR 25-27	TM2I 27-1.5ISO	52.0	30.0	
	45	TMSR 32-27	TM2I 27-1.5ISO	58.0	37.0	
1.25	22	TMSRT 16-16	TM2I 16-2.0ISO	22.0	15.5	
	24	TMSR 16-16	TM2I 16-2.0ISO	22.0	17.0	
	25	TMSR 20-22	TM2I 22-2.0ISO	29.0	19.0	1.15
	27	TMSR 20-16	TM2I 16-2.0ISO	43.0	20.0	
	28-32	TMSRL 25-16	TM2I 16-2.0ISO	25.0	22.0	
	39-42	TMSR 25-27	TM2I 27-2.0ISO	52.0	30.0	
	45-48	TMSR 32-27	TM2I 27-2.0ISO	58.0	37.0	
2.0	42-48	TMSR 25-27	TM2I 27-3.0ISO	52.0	30.0	1.73
	50-52	TMSR 32-27	TM2I 27-3.0ISO	58.0	37.0	
3.0	45-52	TMSR 25-27	TM2I 27-4.0ISO	52.0	30.0	
	55	TMSR 32-38	TM2I 38-4.0ISO	55.0	35.0	2.31
	56-58	TMSR 32-27	TM2I 27-4.0ISO	58.0	37.0	
	60-65	TMSR 40-38	TM2I 38-4.0ISO	65.0	46.0	
5.0	48-52	TMSR 32-38	TM2I 38-5.0ISO	55.0	35.0	2.89
5.5	56	TMSR 32-38	TM2I 38-5.5ISO	55.0	35.0	3.17
	60	TMSR 40-38	TM2I 38-5.5ISO	65.0	46.0	
6.0	64-68	TMSR 40-38	TM2I 38-6.0ISO	65.0	46.0	3.46

• The recommended holder is the largest for the given thread specification

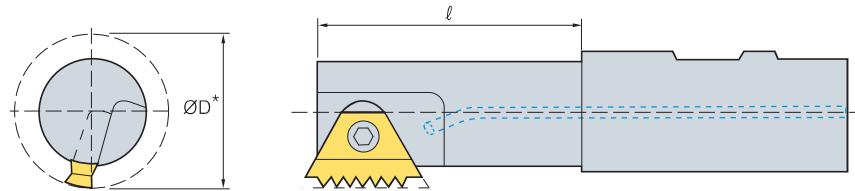
* Holder with smaller or equal cutting diameters (D2) can also be used



D

Threading

● Tooling recommendation for given internal thread specification



UN

Pitch (tpi)	Nominal dia. (inch)	Holder	Insert	ℓ-Tool holder overhang	D-Tool cutting dia.*	Min.Thread depth (Profile depth)
32	7/16-1/2	TMSR 12-10	TMI 10-32UN	12.0	9.0	0.46
	9/16-11/16	TMSR 12-11	TM2I 11-32UN	12.0	11.5	
	3/4-13/16	TMSR 16-16	TM2I 16-32UN	22.0	17.0	
	7/8-15/16	TMSR 20-16	TM2I 16-32UN	43.0	20.0	
	1	TMSR 25-16	TM2I 16-32UN	25.0	22.0	
28	7/16-1/2	TMSR 12-10	TMI 10-28UN	12.0	9.0	0.52
	9/16-3/4	TMSR 12-11	TM2I 11-28UN	12.0	11.5	
	13/16-7/8	TMSR 16-16	TM2I 16-28UN	22.0	17.0	
	15/16	TMSR 20-16	TM2I 16-28UN	43.0	20.0	
	1-1 1/8	TMSRL 25-16	TM2I 16-28UN	25.0	22.0	
24	9/16-11/16	TMSR 12-11	TM2I 11-24UN	12.0	11.5	0.61
20	1/2-9/16	TMSR 12-10	TMI 10-20UN	12.0	9.0	0.73
	5/8-13/16	TMSR 12-11	TM2I 11-20UN	12.0	11.5	
	7/8	TMSR 16-16	TM2I 16-20UN	22.0	17.0	
	15/16-1	TMSR 20-16	TM2I 16-20UN	43.0	20.0	
	1 1/16-1 1/8	TMSRL 25-16	TM2I 16-20UN	25.0	22.0	
	1 3/8-1 5/8	TMSR 25-27	TM2I 27-20UN	52.0	30.0	
	1 11/16-1 13/16	TMSR 32-27	TM2I 27-20UN	28.0	37.0	
18	5/8	TMSR 12-11	TM2I 11-18UN	12.0	11.5	0.81
	1 1/16-1 3/16	TMSRL 25-16	TM2I 16-18UN	25.0	22.0	
	1 7/16-1 5/8	TMSR 25-27	TM2I 27-18UN	52.0	30.0	
	1 11/16	TMSR 32-27	TM2I 27-18UN	58.0	37.0	
16	11/16-13/16	TMSR 12-11	TM2I 11-16UN	12.0	11.5	0.92
	7/8-15/16	TMSR 16-16	TM2I 16-16UN	22.0	17.0	
	1	TMSR 20-16	TM2I 16-16UN	43.0	20.0	
	1 1/16-1 3/16	TMSRL 25-16	TM2I 16-16UN	25.0	22.0	
	1 7/16-1 5/8	TMSR 25-27	TM2I 27-16UN	52.0	30.0	
	1 11/16-1 7/8	TMSR 32-27	TM2I 27-16UN	58.0	37.0	
14	7/8	TMSR 12-11	TM2I 11-14UN	12.0	11.5	1.05
12	7/8	TMSRT 16-16	TM2I 16-12UN	22.0	15.5	1.22
	15/16	TMSR 16-16	TM2I 16-12UN	22.0	17.0	
	1	TMSR 20-22	TM2I 22-12UN	29.0	19.0	
	1 1/16	TMSR 20-16	TM2I 16-12UN	43.0	20.0	
	1 1/8-1 1/4	TMSRL 25-16	TM2I 16-12UN	25.0	22.0	
	1 1/2-1 11/16	TMSR 25-27	TM2I 27-12UN	52.0	30.0	
	1 3/4-1 15/16	TMSR 32-27	TM2I 27-12UN	58.0	37.0	
8	1 11/16-1 15/16	TMSR 25-27	TM2I 27-8UN	52.0	30.0	1.83
	2-1 1/8	TMSR 32-27	TM2I 27-8UN	58.0	37.0	
6	2-2 1/8	TMSR 25-27	TM2I 27-6UN	52.0	30.0	2.44
	2 1/4	TMSR 32-27	TM2I 27-6UN	58.0	37.0	
	2 3/8-2 1/2	TMSR 40-38	TM2I 38-6UN	65.0	46.0	
4.5	2-2 1/4	TMSR 32-38	TM2I 38-4.5UN	55.0	35.0	3.26
4	2 1/2	TMSR 40-38	TM2I 38-4UN	65.0	46.0	3.67

* The recommended holder is the largest for the given thread specification

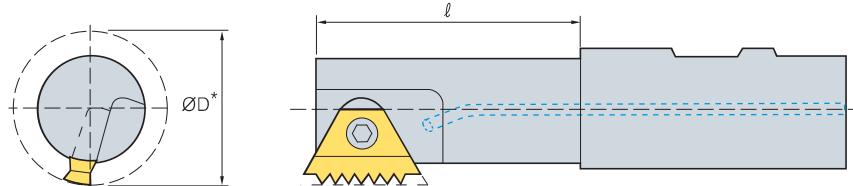
* Holder with smaller or equal cutting diameters (D2) can also be used



D

Technical Information for Thread Milling

► Tooling recommendation for given internal thread specification

**UNJ**

Pitch (tpi)	Nominal dia. (inch)	Holder	Insert	ℓ-Tool holder overhang	D-Tool cutting dia.*	Min.Thread depth (Profile depth)
24	9/16-11/16	TMSR 12-11	TM2I 11-24UNJ	12.0	11.5	0.55
20	1/2	TMSR 12-10	TM2I 10-20UNJ	12.0	9.0	0.66
	3/4-13/16	TMSR 12-11	TM2I 11-20UNJ	12.0	11.5	
	7/8	TMSR 16-16	TM2I 16-20UNJ	22.0	17.0	0.74
	15/16-1	TMSR 20-16	TM2I 16-20UNJ	43.0	20.0	
18	5/8	TMSR 12-11	TM2I 11-18UNJ	12.0	11.5	0.74
	1 1/16-1 3/16	TMSRL 25-16	TM2I 16-18UNJ	25.0	22.0	
16	11/16-13/16	TMSR 12-11	TM2I 11-16UNJ	12.0	11.5	0.83
	7/8-15/16	TMSR 16-16	TM2I 16-16UNJ	22.0	17.0	
	1	TMSR 20-16	TM2I 16-16UNJ	43.0	20.0	
	1 1/16-1 3/16	TMSRL 25-16	TM2I 16-16UNJ	25.0	22.0	
	1 7/16-1 5/8	TMSR 25-27	TM2I 27-16UNJ	52.0	30.0	
	1 11/16-1 7/8	TMSR 32-27	TM2I 27-16UNJ	58.0	37.0	
14	7/8	TMSR 12-11	TM2I 11-14UNJ	12.0	11.5	0.95
12	7/8	TMSRT 16-16	TM2I 16-12UNJ	22.0	15.5	1.11
	15/16-1	TMSR 16-16	TM2I 16-12UNJ	22.0	17.0	
	1 1/16	TMSR 20-16	TM2I 16-12UNJ	43.0	20.0	
	1 1/8-1 1/4	TMSRL 25-16	TM2I 16-12UNJ	25.0	22.0	
	1 1/2-1 11/16	TMSR 25-27	TM2I 27-12UNJ	52.0	30.0	
	1 3/4-1 15/16	TMSR 32-27	TM2I 27-12UNJ	58.0	37.0	

W

Pitch (tpi)	Nominal dia. (inch)	Holder	Insert	ℓ-Tool holder overhang	D-Tool cutting dia.*	Min.Thread depth (Profile depth)
26	1/2-9/16	TMSR 12-10	TMEI 10-26W	12.0	9.0	0.63
	5/8-3/4	TMSR 12-11	TM2EI 11-26 W	12.0	11.5	
	13/16-7/8	TMSR 16-16	TM2EI 16-26W	22.0	17.0	
	15/16-1	TMSR 20-16	TM2EI 16-26W	43.0	20.0	
	1 1/16-1 1/8	TMSRL 25-16	TM2EI 16-26W	25.0	22.0	
20	9/16	TMSR 12-10	TM2EI 10-20W	12.0	9.0	0.81
	5/8-13/16	TMSR 12-11	TM2EI 11-20W	12.0	11.5	
	7/8-15/16	TMSR 16-16	TM2EI 16-20W	22.0	17.0	
	1	TMSR 20-16	TM2EI 16-20W	43.0	20.0	
	1 1/16-1 3/16	TMSRL 25-16	TM2EI 16-20W	25.0	22.0	
16	13/16	TMSR 16-16	TM2EI 16-16W	22.0	15.5	1.02
	7/8-15/16	TMSR 16-16	TM2EI 16-16W	22.0	17.0	
	1-1 1/16	TMSR 20-16	TM2EI 16-16W	43.0	20.0	
	1 1/8-1 1/4	TMSRL 25-16	TM2EI 16-16W	25.0	22.0	
	1.4-1 5/8	TMSR 25-27	TM2EI 27-16W	52.0	30.0	
	1 3/4-1.9	TMSR 32-27	TM2EI 27-16W	28.0	37.0	
12	1 1/2-1 3/4	TMSR 25-27	TM2EI 27-12W	52.0	30.0	1.36
	1 7/8	TMSR 32-27	TM2EI 27-12W	58.0	37.0	
8	1 7/8-1.9	TMSR 25-27	TM2EI 27-8W	52.0	30.0	2.03
	2.1-2 1/8	TMSR 32-27	TM2EI 27-8W	58.0	37.0	
7	2	TMSR 25-27	TM2EI 27-7W	52.0	30.0	2.32
6	2.1-2 1/8	TMSR 25-27	TM2EI 27-6W	52.0	30.0	2.71
	2 1/4	TMSR 32-38	TM2EI 38-6W	55.0	35.0	
	2 3/8-2.6	TMSR 32-27	TM2EI 27-6W	58.0	37.0	
	2 5/8-2 3/4	TMSR 40-38	TM2EI 38-6W	65.0	46.0	
5	3	TMSR 40-38	TM2EI 38-5W	65.0	46.0	3.25
4.5	3 1/2	TMSR 40-38	TM2EI 38-4.5W	65.0	46.0	3.61

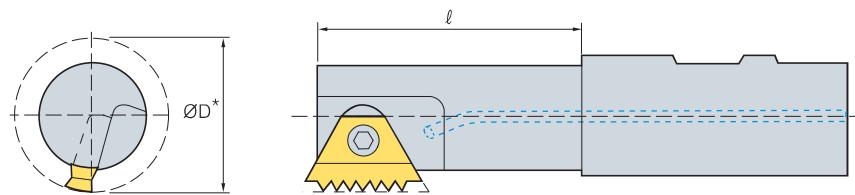
• The recommended holder is the largest for the given thread specification

* Holder with smaller or equal cutting diameters (D2) can also be used

**D****Threading**

► Tooling recommendation for given internal thread specification

BSPT



Pitch (tpi)	Nominal dia. (inch)	Holder	Insert	Ø-Tool holder overhang	D-Tool cutting dia.*	Min.Thread depth (Profile depth)
19	3/8	TMSR 21-11	TM2EI 11-19 BSPT	20.0	11.5	0.86
14	1/2-3/4	TMSRT 16-11	TM2EI 16-14 BSPT	22.0	15.5	1.16
11	1-1 1/4	TMSRT 20-16	TM2EI 16-11 BSPT	23.0	19.0	1.48
	1 1/2	TMSR 25-27	TM2EI 27-11 BSPT	52.0	30.0	
	2-6	TMSRT 32-27	TM2EI 27-11 BSPT	58.0	37.0	

NPT

Pitch (tpi)	Nominal dia. (inch)	Holder	Insert	Ø-Tool holder overhang	D-Tool cutting dia.*	Min.Thread depth (Profile depth)
14	1/2	TMSRT 16-16	TM2EI 16-14 NPT	22.0	15.5	1.33
	3/4	TMSRT 20-16	TM2EI 16-14 NPT	23.0	19.0	
11.5	1	TMSRT 20-16	TM2EI 16-11.5 NPT	23.0	19.0	1.64
	1 1/4	TMSR 25-27	TM2EI 27-11.5 NPT	52.0	30.0	
	1 1/2-2	TMSRT 32-27	TM2EI 27-11.5 NPT	58.0	37.0	
8	2 1/2	TMSRT 32-27	TM2EI 27-8 NPT	58.0	37.0	2.42
	3-24	TMSR 40-38	TM2EI 38-8 NPT	65.0	46.0	

NPTF

Pitch (tpi)	Nominal dia. (inch)	Holder	Insert	Ø-Tool holder overhang	D-Tool cutting dia.*	Min.Thread depth (Profile depth)
14	1/2	TMSRT 16-16	TM2EI 16-14 NPTF	22.0	15.5	1.35
	3/4	TMSRT 20-16	TM2EI 16-14 NPTF	23.0	19.0	
11.5	1	TMSRT 20-16	TM2EI 16-11.5 NPTF	23.0	19.0	1.63
	1 1/2	TMSR 25-27	TM2EI 27-11.5 NPTF	52.0	30.0	
	2	TMSRT 32-27	TM2EI 27-11.5 NPTF	58.0	37.0	
8	2 1/2	TMSRT 32-27	TM2EI 27-8 NPTF	58.0	37.0	2.38
	3	TMSR 40-38	TM2EI 38-8 NPTF	65.0	46.0	

• The recommended holder is the largest for the given thread specification

* Holder with smaller or equal cutting diameters (D2) can also be used



D

Technical Information for Thread Milling

► Minimum bore diameters for thread milling

Pitch	mm	0.5	0.6	0.7	0.75 0.80	0.9	1.0	1.25	1.5	1.75	2.0	-	2.5	3.0	3.5	4.0	4.5	5.0	5.5	-	6.0	-		
	tpi	48	44	36	32	28	26 24	20 19	18 16	14	13 12	11.5 11	10	9 8	7	6	-	5	-	4.5	-	4		
Holder designation	diameter	Minimum diameter for machining																						
TMSR 12-10	9.0	9.5	9.7	9.9	10.0	10.4	10.7	11.4	12.0															
TMSR 20-10	9.0	9.5	9.7	9.9	10.0	10.4	10.7	11.4	12.0															
TMSR 12-11	11.5	12.0	12.2	12.4	12.5	12.9	13.2	13.9	14.5	15.1														
TMSR 20-11	11.5	12.0	12.2	12.4	12.5	12.9	13.2	13.9	14.5	15.1														
TMSRL 25-11	11.5	12.0	12.2	12.4	12.5	12.9	13.2	13.9	14.5	15.1														
TMSRT 16-16	15.5	16.0	16.2	16.4	16.5	16.9	17.2	17.9	18.5	19.0	19.5	20.0												
TMSR 16-16	17.0	17.6	17.8	18.0	18.2	18.7	19.0	19.6	20.0	20.5	21.0	21.5												
TMSR 16-22	17.0	17.6	17.8	18.0	18.2	18.7	19.0	19.6	20.0	20.5	21.0	21.5												
TMSR 20-22	19.0	19.7	20.0	20.2	20.4	20.8	21.0	21.6	22.0	22.5	23.0	23.5												
TMSRT 20-16	19.0	19.7	20.0	20.2	20.4	20.8	21.0	21.6	22.0	22.5	23.0	23.5												
TMSR 20-16	20.0	20.7	21.0	21.2	21.4	21.8	22.0	22.6	23.0	23.5	24.0	24.5												
TMSRW 25-22	22.0	22.7	23.0	23.2	23.4	23.8	24.0	24.6	25.0	25.5	26.0	26.5												
TMSRL 25-22	22.0	22.7	23.0	23.2	23.4	23.8	24.0	24.6	25.0	25.5	26.0	26.5												
TMSRL 25-16	22.0	22.7	23.0	23.2	23.4	23.8	24.0	24.6	25.0	25.5	26.0	26.5												
TMSR 25-27	30.0	30.7	31.0	31.2	31.4	31.8	32.0	32.8	33.5	34.1	34.6	35.6	36.6	39.0	42.0	45.0	48.0							
TMSRL 25-27	30.0	30.7	31.0	31.2	31.4	31.8	32.0	32.8	33.5	34.1	34.6	35.6	36.6	39.0	42.0	45.0	48.0							
TMSR 32-38	35.0									38.5	39.1	39.6	40.6	42.0	44.0	47.0	50.0	53.4	42.5	50.0	44.6	57.5	56.6	
TMSR 32-27	37.0	38.0	38.2	38.4	38.6	39.1	39.5	40.4	41.0	41.5	42.0	43.0	44.0	46.5	49.0	52.0	55.5							
TMSRL 32-27	37.0	38.0	38.2	38.4	38.6	39.1	39.5	40.4	41.0	41.5	42.0	43.0	44.0	46.5	49.0	52.0	55.5							
TMSRT 32-27	37.0	38.0	38.2	38.4	38.6	39.1	39.5	40.0	41.0	41.5	42.0	43.0	44.0	46.5	49.0	52.0	55.5							
TMSR 40-38	46.0									49.5	50.1	50.6	51.6	53.0	55.0	55.2	55.6	55.0	52.5	54.0	54.5	57.5	56.6	
TMSRL 40-38	46.0									49.5	50.1	50.6	51.6	53.0	55.0	55.2	55.6	55.0	52.5	54.0	54.5	57.5	56.6	

- In order to perform a thread milling operation, a milling machine with three-axis control capability of helical interpolation is required
- Helical interpolation is a CNC function producing tool movement along a helical path. This helical motion combines circular movement in one plane with a simultaneous linear motion in a plane perpendicular to the first. For example, the path from point A to point B (Fig. A) on the envelope of the cylinder combines a circular movement in the x-y plane with a linear displacement in the z direction
- On most CNC systems this function can be executed in two different ways:

- GO2: Helical interpolation in a clockwise direction

- GO3: Helical interpolation in a counter-clockwise direction

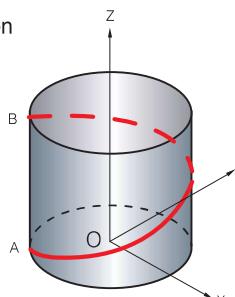


Fig. A

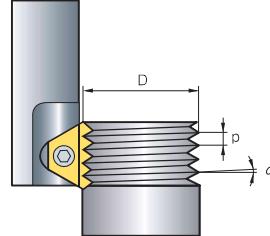


Fig. B

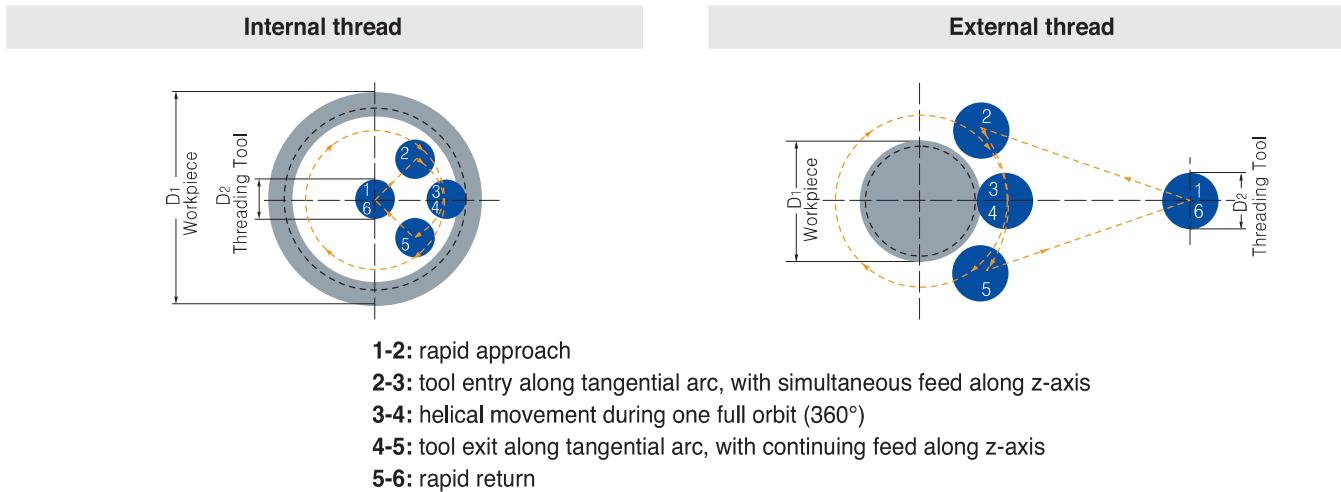
- The thread milling operation (Fig. B) consists of circular rotation of the tool around its own axis together with an orbiting motion along the bore or workpiece circumference. During one such orbit, the tool will shift vertically one pitch length. These movements combined with the insert geometry create the required thread form. There are three acceptable ways of approaching the workpiece with the tool to initiate production of the thread:

1. Tangential Arc Approach
2. Radial Approach
3. Tangential Line Approach



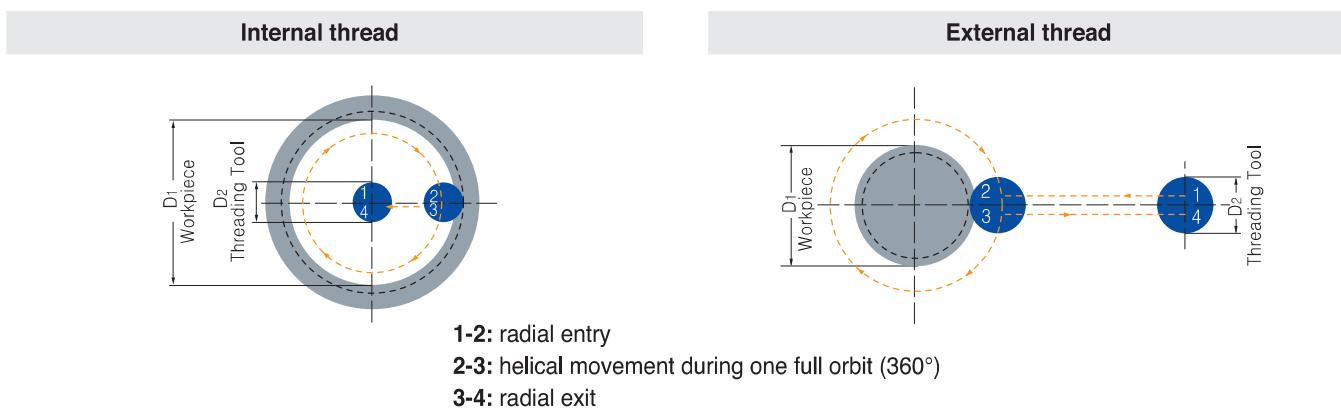
⌚ Tangential arc approach

- With this method, the tool enters and exits the workpiece smoothly. No marks are left on the workpiece and there is no vibration, even with harder materials. Although it requires slightly more complex programming than the radial approach (see below), this is the method recommended for machining the highest quality threads



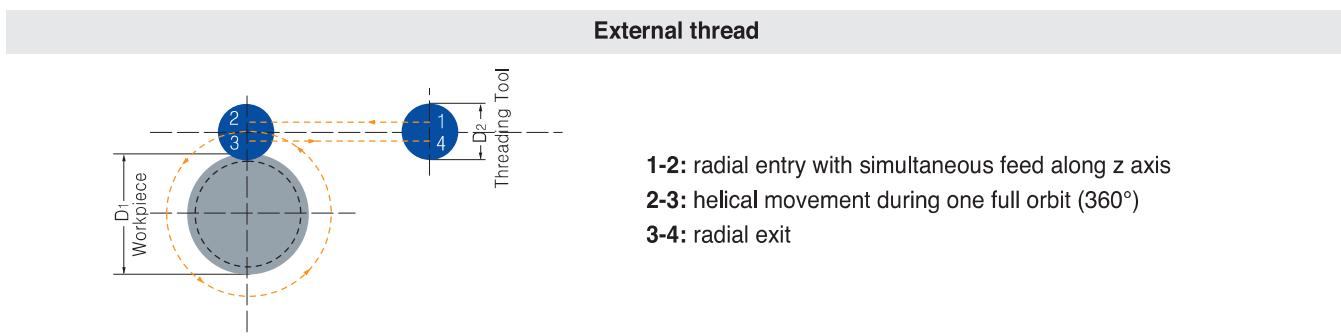
⌚ Radial approach

- This is the simplest method. There are two characteristics worth noting about the radial approach:
 - a small vertical mark may be left at the entry (and exit) point. This is of no significance to the thread itself
 - when using this method with very hard materials, there may be a tendency of the tool to vibrate as it approaches the full cutting depth
- Note: Radial feed during entry to the full profile depth should only be 1/3 of the subsequent circular feed



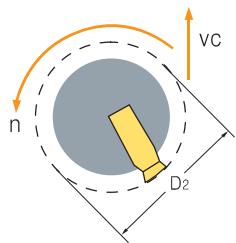
⌚ Tangential line approach

- This method is very simple, and has all of the advantages of the tangential arc method
However, it is applicable only with external threads



Preparing for the thread milling operation

Calculation of rotational velocity and feed at the cutting edge



$$n = \frac{vc \times 1000}{\pi \times D_2}$$

$$vc = \frac{n \times \pi \times D_2}{1000}$$

$$F_1 = n \times z \times f_n$$

n: Rotational Velocity (min^{-1})

vc: Cutting Speed (m/min)

D2: Tool holder Cutting Dia. (mm)

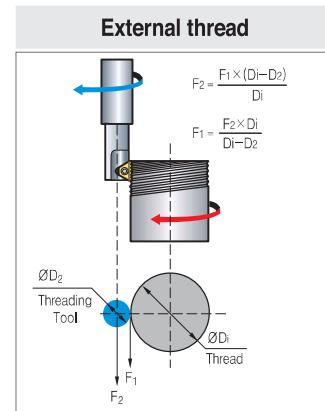
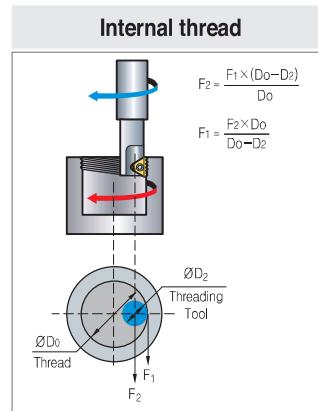
F1: Real Feed rate at the Cutting edges (mm/min)

z: No. of Cutting Edges

f_n: Feed per Rooth per Rotation (mm/rev)

Calculation of feed rates at the tool center line

- On most CNC machines, the feed rate required for programming is that of the center-line of the tool. When dealing with linear tool movement, the feed rate at the cutting edge and the center line are identical, but with circular tool movement this is not the case. The equations define the relationship between feed rates at the cutting edge and at the tool center line.



Grades and applications

- Grade: PC9570T
- Application: First Choice for steel and cast iron A tough sub-micron substrate with TiCN coating. Provides good fracture toughness and excellent wear resistance.

Trouble shooting

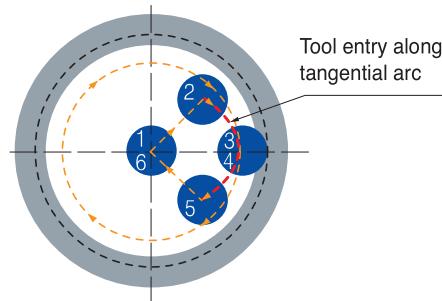
Problem	Possible	Solution
Increased insert flank wear	Cutting speed too high Chip is too thin Insufficient coolant	Reduce cutting speed/use coated insert Increase feed rate Increase coolant flow rate
Chipping of cutting edge	Chip is too thick Vibration	Reduce feed rate/Use the tangential arc method Increase RPM Check stability
Material built-up on the cutting edge	Incorrect cutting speed Unsuitable carbide grade	Change cutting speed Use a coated carbide grade
Chatter/vibration	Feed rate is too high Profile is too deep Thread length is too long	Reduce the feed. Execute two passes, each with increased cutting depth/ Execute two passes, each cutting only half the thread length Execute two passes, each cutting only half the thread length
Insufficient thread accuracy	Tool deflection	Reduce feed rate/Execute a "zero" cut

Recommended cutting condition

Workpiece		Hardness brinell (HB)	vc (m/min)		Feed fz (mm/t)	
			Grade PC9570T	PC9070M	Indexable insert	Solid endmill
P	Unalloyed steel	Low carbon (C+0.1-0.25%)	125	100~210	80~250	0.05~0.3 0.03~0.15
		Medium carbon (C = 0.25-0.55%)	150	100~180	80~230	0.05~0.25 0.03~0.1
		High carbon (C = 0.55-0.85%)	170	100~170	80~200	0.05~0.2 0.03~0.08
	Low alloy steel	Non-hardened	180	90~160	60~180	0.05~0.25 0.03~0.1
		Hardened	275	80~150	60~170	0.05~0.2 0.03~0.07
		Hardened	350	70~140	60~160	0.05~0.15 0.01~0.03
	High alloy steel	Annealed	200	60~130	40~100	0.05~0.2 0.03~0.05
		Hardened	325	70~110	30~80	0.05~0.1 0.01~0.03
M	Cast steel	Low alloy	200	100~170	80~250	0.05~0.15 0.03~0.1
		High alloy	225	70~120	60~170	0.05~0.1 0.01~0.03
	Stainless steel ferritic	Non-hardened	200	100~170	60~150	0.05~0.15 0.04~0.1
		Hardened	330	100~170	60~120	0.05~0.1 0.01~0.05
	Stainless steel Austenitic	Austenitic	180	70~140	60~140	0.05~0.15 0.04~0.1
		Super austenitic	200	70~140	60~130	0.05~0.1 0.04~0.1
	Stainless steel cast ferritic	Non-hardened	200	70~140	60~160	0.05~0.15 0.04~0.1
		Hardened	330	70~140	60~110	0.05~0.1 0.03~0.05
	Stainless steel cast austenitic	Austenitic	200	70~120	60~150	0.05~0.15 0.04~0.1
		Hardened	330	70~120	60~100	0.05~0.1 0.03~0.05
K	High temperature alloys	Annealed (Iron based)	200	20~45	30~60	0.05~0.1 0.04~0.1
		Aged (Iron based)	280	20~30	20~50	0.02~0.05 0.01~0.03
		Annealed (Nickel or Cobalt based)	250	15~20	15~35	0.02~0.05 0.01~0.03
		Aged (Nickel or Cobalt based)	350	10~15	15~30	0.02~0.05 0.01~0.03
	Titanium alloys	Pure 99.5 Ti	400Rm	70~140	40~80	0.02~0.05 0.03~0.05
		$\alpha+\beta$ alloys	1050Rm	20~50	20~50	0.02~0.05 0.03~0.05
	Extra hard steel	Hardened & tempered	55HRC	20~45	15~45	0.01~0.03 0.005~0.01
	Malleable cast iron	Ferritic (short chips)	130	60~130	70~160	0.02~0.08 0.01~0.03
		Pearlitic (long chips)	230	60~120	60~150	0.02~0.05 0.03~0.05
N	Grey cast iron	Low tensile strength	180	60~130	70~160	0.05~0.15 0.05~0.1
		High tensile strength	260	60~100	40~120	0.05~0.1 0.03~0.05
	Nodular SG iron	Ferritic	160	60~125	40~110	0.05~0.15 0.05~0.1
		Pearlitic	260	50~90	40~100	0.05~0.1 0.03~0.05
N	Aluminum alloys Wrought	Non-aging	60	100~250	200~300	0.1~0.4 0.1~0.25
		Aged	100	100~180	150~250	0.1~0.3 0.1~0.2
	Aluminum alloys	Cast	75	150~400	100~200	0.1~0.3 0.1~0.2
		Cast & aged	90	150~280	120~220	0.05~0.25 0.1~0.15
		Cast Si 13-22%	130	80~150	200~300	0.1~0.3 0.1~0.2
	Copper and copper alloys	Brass	90	120~210	200~300	0.1~0.3 0.1~0.25
		Bronze and non-leaded copper	100	120~210	150~250	0.05~0.25 0.1~0.2

Example

- At tool entry, set the Feed fz (mm/tooth) to 70% lower than the threading Feed
- Threading Feed: 0.3 (mm/t)
- Tool entry Feed: 0.09 (mm/t)

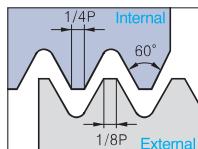
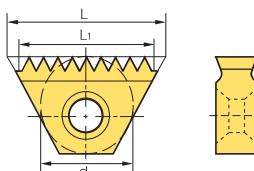


D

Thread Milling Inserts

ISO Metric

External/Internal



Defined by: R262 (DIN 13)

Tolerance class: 6g/6H

(mm)

Insert size		Pitch (mm)	Designation				L ₁	Tooth	Tool holder	
d	L		External	PC9570T	Internal	PC9570T				
6.0	10.4	0.5	-		TMI	10-0.5ISO	●	10.0	20	TMSR - 10
		0.75	-			10-0.75ISO		9.75	13	
		1.0	-			10-1.0ISO	●	9.0	9	
		1.25	-			10-1.25ISO		8.75	7	
		1.5	-			10-1.5ISO		9.0	6	
6.35	11	0.5	-		TM2I	11-0.5ISO		10.0	20	TMSR - 11
		0.75	11-0.75ISO			11-0.75ISO	●	10.5	14	
		1.0	11-1.0ISO			11-1.0ISO	●	10.0	10	
		1.25	11-1.25ISO			-		10.0	8	
		1.25	-			11-1.25ISO		8.75	7	
		1.5	11-1.5ISO			-		9.0	6	
		1.5	-			11-1.5ISO	●	10.5	7	
9.525	16	0.5	-		TM2I	16-0.5ISO		15.0	30	TMSR - 16
		0.75	16-0.75ISO			16-0.75ISO		15.0	20	
		0.8	-			16-0.8ISO		14.4	18	
		1.0	16-1.0ISO			-		14.0	14	
		1.0	-			16-1.0ISO	●	15.0	15	
		1.25	16-1.25ISO			16-1.25ISO		15.0	12	
		1.5	16-1.5ISO	●		16-1.5ISO	●	15.0	10	
		1.75	16-1.75ISO			16-1.75ISO		14.0	8	
		2.0	16-2.0ISO			16-2.0ISO	●	14.0	7	
		1.0	TM2E	22-1.0ISO	TM2I	22-1.0ISO		22.0	22	TMSR - 22
9.525B	22	1.25	TM2E	22-1.25ISO		22-1.25ISO		21.25	17	
		1.5	TM2E	22-1.5ISO		22-1.5ISO	●	21.0	14	
		1.75	TM2E	22-1.75ISO		22-1.75ISO		21.0	12	
		2.0	TM2E	22-2.0ISO		22-2.0ISO	●	22.0	11	
		1.0	TM2E	27-1.0ISO	TM2I	27-1.0ISO		26.0	26	TMSR - 27
15.875	27	1.25	TM2E	27-1.25ISO		27-1.25ISO		25.0	20	
		1.5	TM2E	27-1.5ISO		27-1.5ISO	●	25.5	17	
		1.75	TM2E	27-1.75ISO		27-1.75ISO		24.5	14	
		2.0	TM2E	27-2.0ISO		27-2.0ISO	●	24.0	12	
		2.5	TM2E	27-2.5ISO		27-2.5ISO		25.0	10	
		3.0	TM2E	27-3.0ISO		27-3.0ISO	●	24.0	8	
		3.5	TM2E	27-3.5ISO		27-3.5ISO		24.5	7	
		4.0	TM2E	27-4.0ISO		27-4.0ISO	●	24.0	6	
		4.5	TM2E	27-4.5ISO		27-4.5ISO		22.5	5	
		1.5	TM2E	38-1.5ISO	TM2I	38-1.5ISO		36.0	24	TMSR - 38
19.05B	38.5	2.0	TM2E	38-2.0ISO		38-2.0ISO		36.0	18	
		3.0	TM2E	38-3.0ISO		38-3.0ISO		36.0	12	
		4.0	TM2E	38-4.0ISO		38-4.0ISO		32.0	8	
		4.5	TM2E	38-4.5ISO		38-4.5ISO		31.5	7	
		5.0	TM2E	38-5.0ISO		38-5.0ISO		30.0	6	
		5.5	TM2E	38-5.5ISO		38-5.5ISO		33.0	6	
		6.0	TM2E	38-6.0ISO		38-6.0ISO		30.0	5	

Applicable holders D49

All inserts except TMI10 code have 2 cutting edges

● : Stock item

**D**

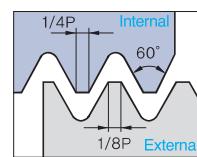
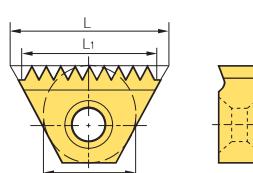
Threading

44

American UNC



External/Internal



Defined by: ANSI B1.1.74

Tolerance class: Class 2A/2B

(mm)

Insert size	Pitch (tpi)	Designation			L1	Tooth	Tool holder
		External	PC9570T	Internal			
6.0	10.4	32	TM1	10-32UN	9.53	12	TMSR - 10
		28		10-28UN	9.07	10	
		24		10-24UN	9.53	9	
		20		10-20UN	● 8.89	7	
		18		10-18UN	8.47	6	
		16		10-16UN	7.94	5	
6.35	11	48	TM2I	11-48UN	10.05	19	TMSR - 11
		40		11-40UN	10.16	16	
		32		11-32UN	10.32	13	
		28		11-28UN	9.98	11	
		27		11-27UN	10.35	11	
		24		11-24UN	9.53	9	
		20		11-20UN	10.16	8	
		18		11-18UN	● 9.88	7	
		16		11-16UN	9.53	6	
		14		11-14UN	9.07	5	
		40	TM2E	16-40UN	14.61	40	TMSR - 16
		32		16-32UN	15.08	32	
		28		16-28UN	14.51	28	
		27		16-27UN	14.11	27	
		24		16-24UN	14.82	24	
		20		16-20UN	13.97	20	
		18		16-18UN	14.11	18	
		16		16-16UN	● 14.29	16	
		14		16-14UN	14.51	14	
		13		16-13UN	13.68	13	
		12		16-12UN	● 14.82	12	
		11.5		16-11.5UN	13.25	11.5	
9.525	16	24	TM2E	22-24UN	21.16	20	TMSR - 16
		20		22-20UN	21.59	17	
		18		22-18UN	21.17	15	
		16		22-16UN	20.64	13	
		14		22-14UN	21.77	12	
		13		22-13UN	21.49	11	
		12		22-12UN	21.17	10	
		24	TM2E	27-24UN	25.40	24	TMSR - 22
		20		27-20UN	25.40	20	
		18		27-18UN	25.40	18	
		16		27-16UN	25.40	16	
		14		27-14UN	25.40	14	
		13		27-13UN	25.40	13	
		12		27-12UN	25.40	12	
		11.5		27-11.5UN	24.30	11	
15.875	27	11		27-11UN	25.40	11	
		10		27-10UN	-	22.86	TMSR - 27
		10		27-10UN	25.40	10	
		-		27-9UN	22.58	8	
		9		27-8UN	22.23	7	
		8		27-7UN	-	21.77	
		7		27-7UN	25.40	7	
		7		27-6UN	-	21.17	
		6		27-6UN	25.40	5	
		6		27-6UN	25.40	6	
19.05	38.5	6	TM2E	38-6UN	38.87	8	TMSR - 38
		5		38-5UN	30.48	6	
		4.5		38-4.5UN	33.87	6	
		4		38-4UN	31.75	5	

Applicable holders D49

All inserts except TM10 code have 2 cutting edges

● : Stock item

Threading

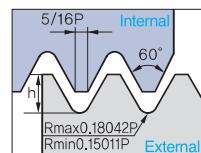
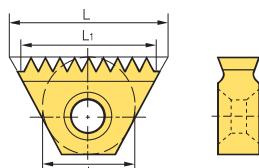


D

Thread Milling Inserts

UNJ(Unified Constant Thread)

External/Internal

Defined by: MIL-S-8879C
Tolerance class: 3A/3B

(mm)

Insert size		Pitch (tpi)	Designation				L1	Tooth	Tool holder
d	L		External	PC9570T	Internal	PC9570T			
6.0	10.4	24	TM2E	-	TM1	10-24UNJ	9.53	9	TMSR - 10
		20		-	TM1	10-20UNJ			
		18		-	TM1	10-18UNJ			
		16		-	TM1	10-16UNJ			
6.35	11	24	TM2E	11-24UNJ	TM2I	11-24UNJ	9.53	9	TMSR - 11
		20		11-20UNJ		11-20UNJ			
		18		-		11-18UNJ			
		16		11-16UNJ		11-16UNJ			
		14		11-14UNJ		11-14UNJ			
9.525	16	24	TM2E	16-24UNJ	TM2I	16-24UNJ	14.82	14	TMSR - 16
		20		16-20UNJ		16-20UNJ			
		18		16-18UNJ		16-18UNJ			
		16		16-16UNJ		16-16UNJ			
		14		16-14UNJ		16-14UNJ			
		13		16-13UNJ		-			
		12		16-12UNJ		16-12UNJ			
15.875	27	16	TM2E	27-16UNJ	TM2I	27-16UNJ	25.40	16	TMSR - 27
		12		27-12UNJ		27-12UNJ			
		11		27-11UNJ		27-11UNJ			

② Applicable holders D49

All inserts except TMI10 code have 2 cutting edges

● : Stock item

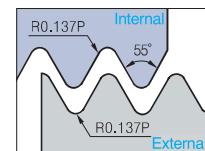
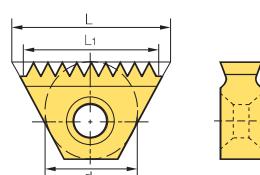


D

Threading

Whitworth (BSW, BSF, BSP, BSB)

External/Internal



BSW Defined by: B.S.84:1956, DIN 259, ISO228/1:1982

BSP Define by: B.S.2779:1956

Tolerance class: BSW-Medium class A, BSP-Medium class

(mm)

Insert size		Pitch (tpi)	Designation		PC9570T	L1	Tooth	Tool holder
d	L		External+Internal					
6.0	10.4	28	TMEI	10-28W		9.07	10	TMSR - 10
		26		10-26W		8.79	9	
		24		10-24W		9.53	9	
		20		10-20W		8.89	7	
		19		10-19W		9.36	7	
6.35	11	28	TM2EI	11-28W		9.98	11	TMSR - 11
		26		11-26W		9.77	10	
		24		11-24W		9.53	9	
		20		11-20W		10.16	8	
		19		11-19W		9.36	7	
		14		11-14W		9.07	5	
9.525	16	26	TM2EI	16-26W		14.65	15	TMSR - 16
		24		16-24W		14.82	14	
		20		16-20W		13.97	11	
		19		16-19W		14.71	11	
		18		16-18W		14.11	10	
		16		16-16W		14.29	9	
		14		16-14W		14.51	8	
		12		16-12W		14.82	7	
		11		16-11W	●	13.85	6	
		24		22-24W		21.17	20	
		20		22-20W		21.59	17	
		19		22-19W		21.39	16	
9.525B	22	18	TM2EI	22-18W		21.17	15	TMSR - 22
		16		22-16W		20.64	13	
		14		22-14W		21.77	12	
		12		22-12W		21.17	10	
		11		22-11W		20.78	9	
		16	TM2EI	27-16W		25.4	16	TMSR - 27
		14		27-14W		25.4	14	
15.875	27	12		27-12W		23.28	11	
		11		27-11W		23.09	10	
		10		27-10W		25.40	10	
		9		27-9W		22.58	8	
		8		27-8W		22.23	7	
		7		27-7W		21.77	6	
		6		27-6W		21.17	5	
		11	TM2EI	38-11W		34.64	15	TMSR - 38
		6		38-6W		33.87	8	
19.05B	38.5	5		38-5W		30.48	6	
		4.5		38-4.5W		33.87	6	
		-		38-15W		-	-	

Applicable holders D49

All inserts except TMI10 code have 2 cutting edges

● : Stock item

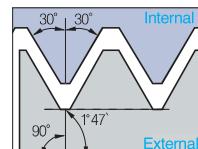
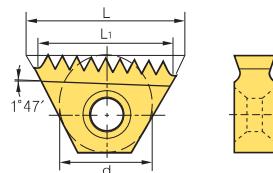
D

Thread Milling Inserts

NPT



External/Internal



Defined by: USAS B2.1:1968

Tolerance class: Standard NPT

(mm)

Insert size	Pitch (tpi)	Designation	PC9570T	L1	Tooth	Tool holder	
		External+Internal				RH	LH
9.525	16	18	TM2E 16-18NPT *		10	TMSRT - 16	TMSLT - 16
		14	TM2EI 16-14NPT		8		
		11.5	16-11.5NPT		6		
9.525B	22	14	TM2EI 22-14NPT		12	TMSRT - 22	TMSLT - 22
15.875	27	11.5	TM2EI 27-11.5NPT	●	11	TMSR - 27	TMSL - 27
		8	27-8NPT	●	7		
19.05B	38.5	11.5	TM2EI 38-11.5NPT		16	TMSR - 38	TMSL - 38
		8	38-8NPT		10		

④ Applicable holders D49

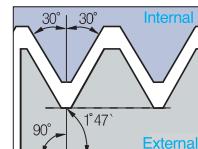
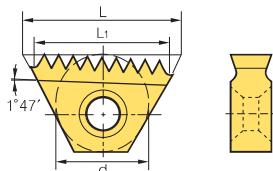
* TM2E16-18NPT is for external threading

● : Stock item

NPTF



External/Internal



Defined by: ANSI 1.20.3-1976

Tolerance class: Standard NPTF

(mm)

Insert size	Pitch (tpi)	Designation	PC9570T	L1	Tooth	Tool holder	
		External+Internal				RH	LH
9.525	16	14	TM2EI 16-14NPTF	●	8	TMSRT - 16	TMSLT - 16
		11.5	16-11.5NPTF		6		
9.525B	22	14	TM2EI 22-14NPTF		12	TMSRT - 22	TMSLT - 22
		11.5	22-11.5NPTF		9		
15.875	27	11.5	TM2EI 27-11.5NPTF		11	TMSR - 27	TMSL - 27
		8	27-8NPTF		7		
19.05B	38.5	11.5	TM2EI 38-11.5NPTF		16	TMSR - 38	TMSL - 38
		8	38-8NPTF		10		

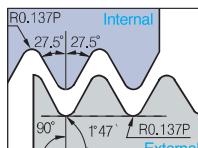
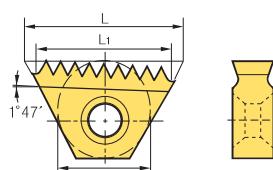
④ Applicable holders D49

● : Stock item

BSPT



External/Internal



Defined by: B.S 21:1985

Tolerance class: Standard BSPT

(mm)

Insert size	Pitch (tpi)	Designation	PC9570T	L1	Tooth	Tool holder	
		External+Internal				RH	LH
9.525	16	11	TM2EI 11-19BSPT		7	TMSR - 10	TMSL - 10
		14	TM2EI 16-14BSPT		8		
		11	16-11BSPT		6		
15.875	27	11	TM2EI 27-11BSPT		10	TMSR - 27	TMSL - 27

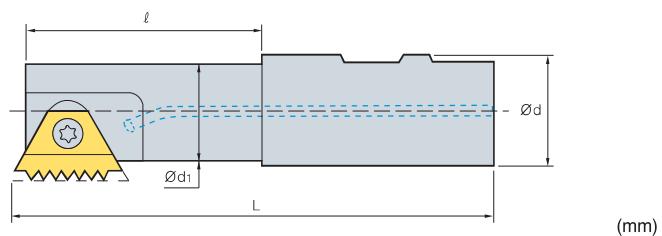
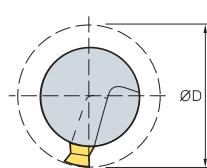
④ Applicable holders D49

● : Stock item



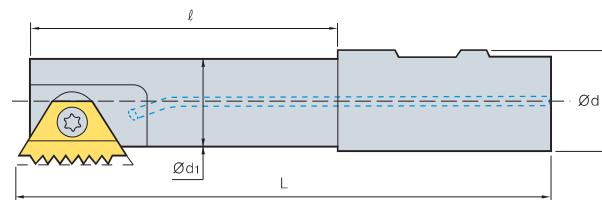
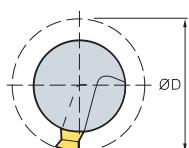
D

Threading

Standard Type

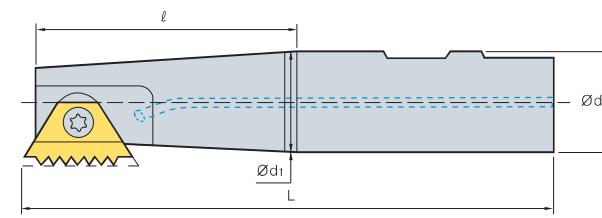
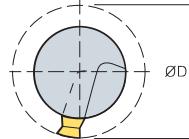
Insert size d	Designation	ØD	Ød	Ød1	l	L	Screw	Wrench
6.0	TMSR 12-10	9.0	12	6.8	12.0	69.0	STM10	TW07P
	20-10	9.0	20	6.8	17.0	84.0		
6.35	TMSR 12-11	11.5	12	8.9	12.0	70.0	STM11	TW08P
	20-11	11.5	20	8.9	20.0	85.0		
9.525	TMSR 16-16	17.0	16	13.6	22.0	90.0	STM1622	TW10P
	20-16	20.0	20	16.6	43.0	95.0		
9.525B	TMSR 16-22	17.0	16	13.5	29.0	79.5	STM1622	TW10P
	20-22	19.0	20	15.5	29.0	81.5		
	25-22	19.0	25	15.5	30.0	92.3		
15.875	TMSRW 25-22	22.0	25	18.5	30.0	90.8	STM27	TW25L
	TMSR 25-27	30.0	25	24.0	52.0	110.0		
	TMSL 25-27	30.0	25	24.0	52.0	110.0		
19.05	TMSR 32-27	37.0	32	31.0	58.0	120.0	STM38	TW30L
	TMSR 32-38	35.0	32	27.0	53.0	115.0		
19.05	TMSR 40-38	46.0	40	38.0	63.0	135.0		

④ Applicable inserts D44~48

Long Type

Insert size d	Designation	ØD	Ød	Ød1	l	L	Screw	Wrench
6.35	TMSRL 25-11	11.5	25	8.9	17.0	125.0	STM11	TW08P
	TMSRL 25-16	22.0	25	18.6	25.0	125.0		
9.525B	TMSRL 20-22	19.0	20	15.5	44.0	96.5	STM1622	TW10P
	25-22	22.0	25	18.6	63.5	125.0		
15.875	TMSRL 25-27	30.0	25	24.0	92.0	150.0	STM27	TW25L
	32-27	37.0	32	31.0	98.0	160.0		
19.05B	TMSRL 40-38	46.0	40	38.0	93.0	168.0	STM38	TW30L

④ Applicable inserts D44~48

Tapered Type

Insert size d	Designation	ØD	Ød	Ød1	l	L	Screw	Wrench
9.525	TMSRT 16-16	15.5	16	12.5	22.0	90.0	STM1622	TW10P
	20-16	19.0	20	15.0	23.0	85.0		
9.525B	TMSRT 16-22	17.0	16	13.5	29.0	79.5	STM1622	TW10P
	20-22	19.0	20	15.5	29.0	81.5		
15.875	TMSRT 32-27	37.0	32	31.0	58.0	120.0	STM27	TW25L

④ Applicable inserts D44~48

