

# *QuadThread*

for Thread Turning



**Scandinavian  
Tool Systems**

# Technical information

## External threading

### QuadThread inserts

Partial profile	10	Round DIN 405	17
ISO Metric (M)	11-12	Module	17
MJ	12	ACME	18
ISO Unified (UN)	13-14	STUB ACME	18
UNJ	14	NPSM	18
Whitworth (BSW, BSP)	15-16	NPT	19
BSPT	16	NPTF Dryseal	20
Pansarrohrgewinde (PG)	16	API RD	21
Trapezoidal DIN 103	17	API	21

### QuadThread toolholders

Small toolholders	22
Cassette-type toolholders	22
Standard cassettes	23
Extended cassettes	23
API cassettes	23
Small axial-type toolholders	24
Cassette-type axial toolholders	24
Blade cassettes	25
Drophead toolholders	25

## Internal threading

### QuadThread internal toolholders

Cassette-type toolholders	26
Internal standard cassettes	26
Internal API cassettes	26

## Price list

★ = Stock standard

☆ = Limited stock

QuadThread

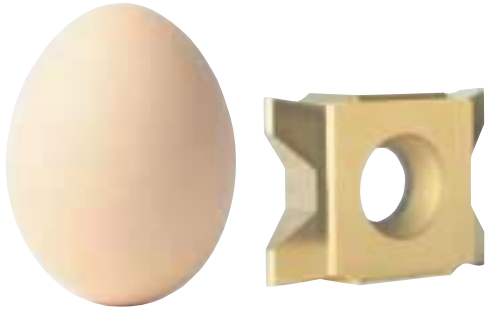
Inserts

External  
toolholders

Internal  
toolholders

Price list

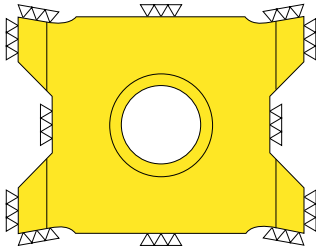
# QuadThread - threading the ingeniously simple way



QuadThread is an entirely new type of threading tool. Instead of the traditional horizontal triangular insert, we have set the insert upright and made it square.

The benefits are obvious:

1. The insert is much stronger.
2. The insert mounting can be made much more stable.
3. The insert has four cutting edges instead of three.

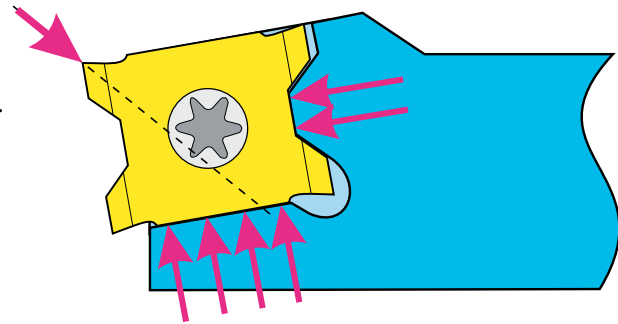


**QuadThread offers maximum indexing accuracy, with support points in the right places.**

The QuadThread system has very high indexing accuracy.

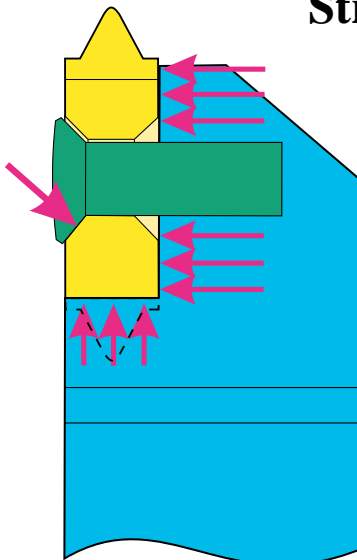
This is principally due to a combination of:

1. The insert being precision ground all round, including the locating surfaces.
2. Large machined surfaces in the insert seat absorb and distribute the cutting forces in an optimized way.
3. The insert is locked in position by means of a large, sturdy center screw.



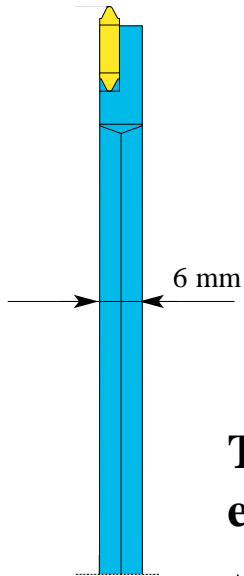
**The insert seat serves as a Vee block for the insert. The cutting forces are absorbed by large flat surfaces.**

## Strong and stable



The tool stability demands in threading are stricter than those in virtually any other machining operation. A very high axial load is applied at the instant when the insert enters the workpiece. But if a perfect thread is to be produced, the insert must remain immobile in its seat.

With the QuadThread, you are assured that the insert will be firmly secured in position. The center screw - which is located a little off center - draws the insert into the seat and also presses it onto the large rear support surface to ensure that the cutting forces will be securely absorbed.



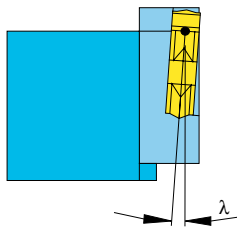
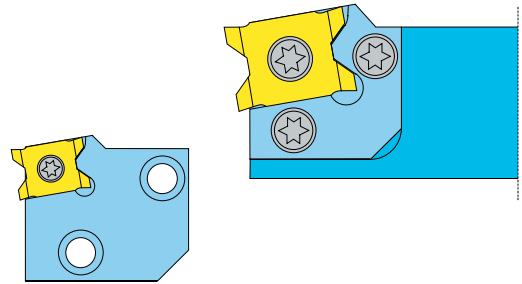
## The slender toolholders for breadth of range

The threading operation must often be carried out in confined spaces, such as at workpiece shoulders or close to the chuck in bar automatics. In these situations, you can use the "blade toolholder".

In view of the fact that the QuadThread insert is mounted upright, we can make the toolholder no more than 6 mm wide - with unimpaired stability. This is invaluable in confined spaces.

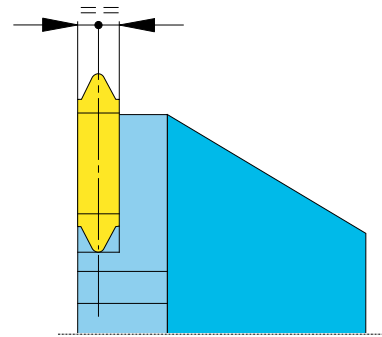
## The cassette system - economical and convenient

Another economical and convenient refinement of the QuadThread toolholders is the cassette system (from 16 x 16 mm upwards). You can use the same basic toolholder from 0.5 mm to 6.0 mm pitch. Only the cassette will then need to be changed for different pitches.



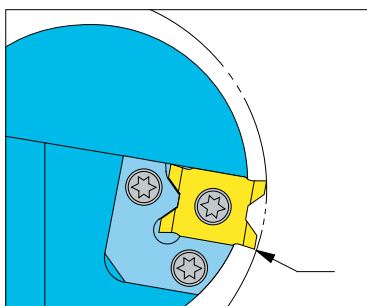
## Helix angles

The seat gives the insert a helix angle of 1.5° as standard. Almost all the threads we produce (90%) have a helix angle of between 0.5° and 2.0°, for which the standard angle can be used. But if you need other angles, we can accommodate those too.



## Same insert for right-hand and left-hand threads

A further economic and practical benefit of the QuadThread inserts is that they can be used, in most cases, for both the right-hand and left-hand threading.



## Also for internal threads

The QuadThread can also be used for internal threading of somewhat larger diameters - at least 52 mm for pitches up to 3 mm and 80 mm for pitches up to 6 mm.

N.B. In some cases, the thread profiles of internal and external thread systems are different. In the heading above every thread profile, particulars are always given of what the inserts can be used for.

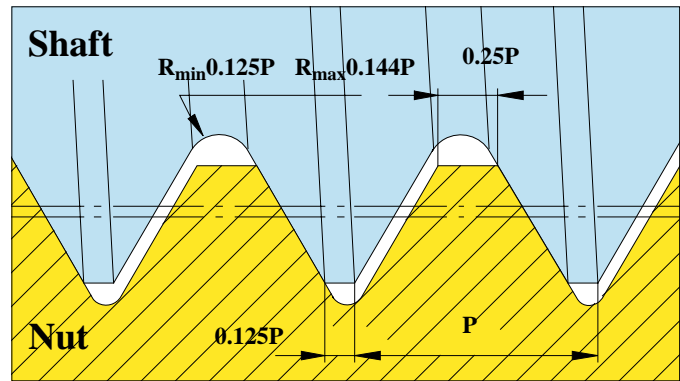
# Technical information

## THREADING TOLERANCES

All thread standards have dimensional tolerances to achieve the required fit between the shaft and the nut.

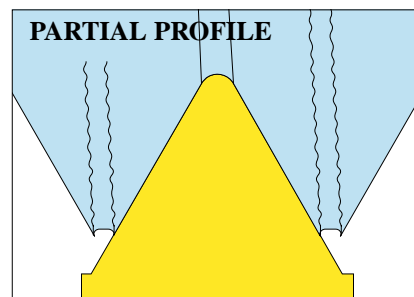
The shaft ( in most cases) has a larger root radius and closer tolerance than the nut, which is designed to prevent shaft breakage.

The standards for the ISO and UN (Unified) thread profiles are shown here.

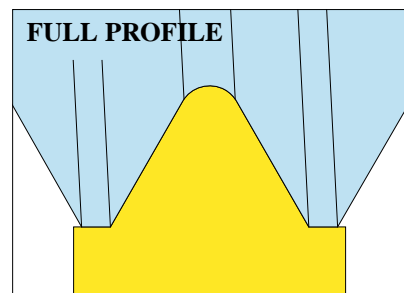


## PROFILES

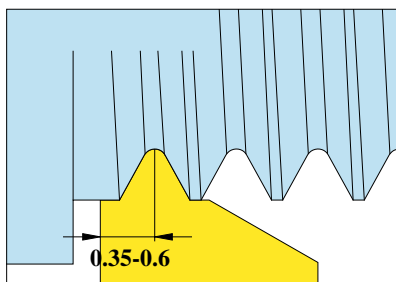
Partial profile inserts can be used for a variety of thread pitches and standards, providing the included angle is the same, however, incorrect nose radius on the insert can result in rejection of the component. This style of insert will not deburr the major diameter of the thread and will, therefore, require a secondary operation.



Full profile inserts are designed to produce the correct root radius and depth requirements for an individual pitch. Tool life and thread quality are always improved when selecting this style of insert, because the thread profile and depth is dedicated to that pitch, therefore, fewer passes are required to complete the thread.

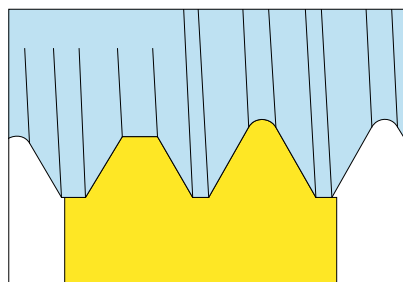


## WITH SMALL PITCHES

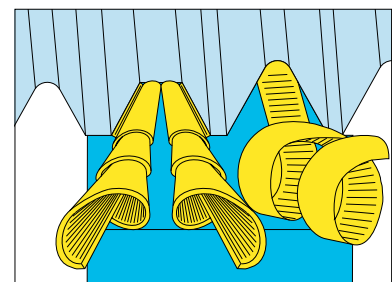


With this insert threading can be produced much closer to the shoulder. Available for pitches 1mm (24TPI) and finer, and also produced in partial and full profile styles.

## MULTI-TOOTH



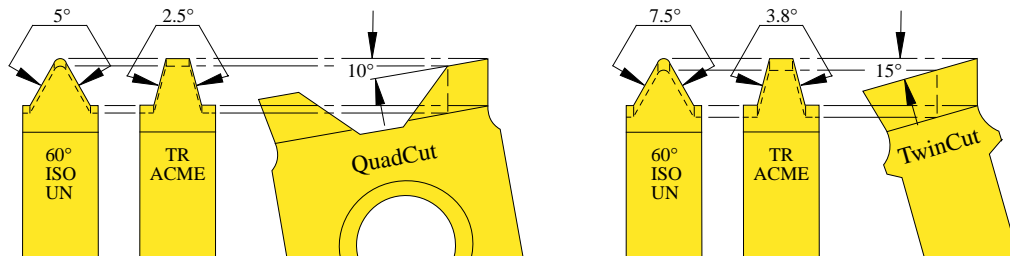
Threading cycle times can be reduced up to 50% with this style of insert, and tool life is greatly increased due to fewer passes. More HP is required when using this type of insert, therefore, a stable component and rigid set-up are necessary.



Chip control is much easier with this new insert geometry, chips are divided into 3 manageable portions. The first tooth cuts the flanks of the thread, and the following tooth generates the root radius.

# Technical information

## CLEARANCE ANGLES



The side clearance angles on QuadThread and TwinCut are generated by tipping the insert 10° and 15°, respectively. Note that the clearance angle is larger for ISO Metric, UN and Whitworth profiles than it is for Trapezoidal and ACME.

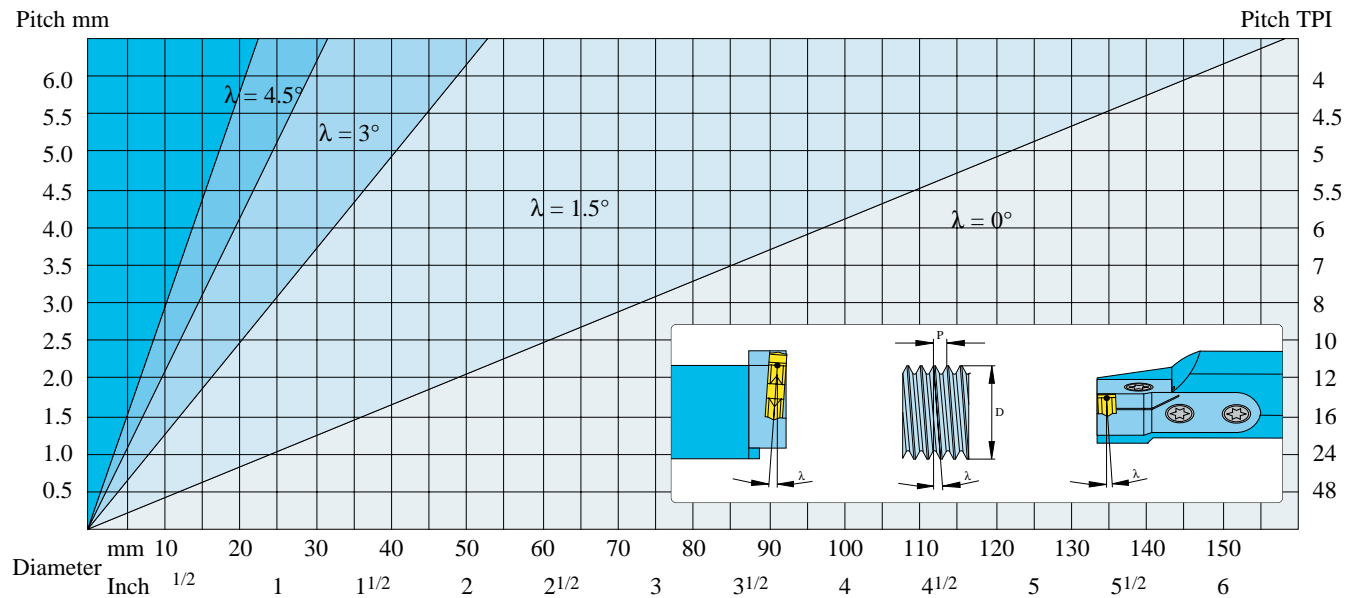
More care is required when selecting cassettes for Trapezoidal and ACME profiles, to ensure that the helix angle is as close as possible.

## HELIX ANGLES

Over 90% of all common profiles have a helix angle between 0.5° and 2°. We have chosen 1.5° as the standard angle for QuadThread and TwinCut tools, where no other angle is specified.

In the diagram below the helix angle ( $\lambda$ ) is shown as a function of the diameter (D) and the thread pitch (P).

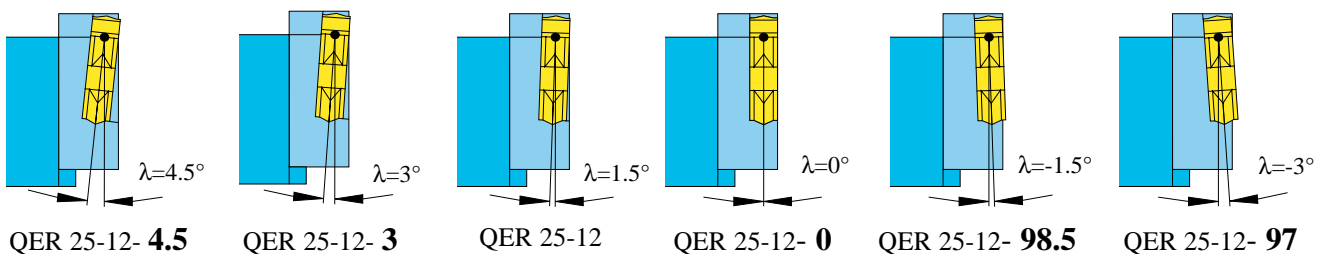
$$\tan \lambda = \frac{P}{\pi \times D}$$



## OTHER HELIX ANGLES

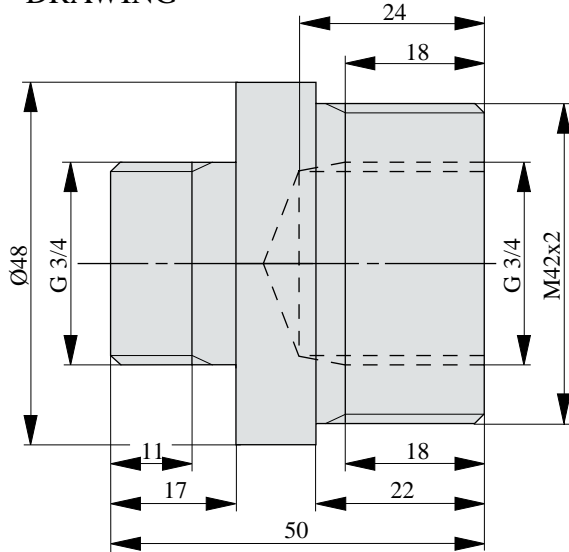
When threading Trapezoidal and ACME profiles, or when producing a left hand thread with a right hand toolholder, cassettes other than the standard may be required.

QuadThread and TwinCut cassettes are available in increments of 1,5° helix.

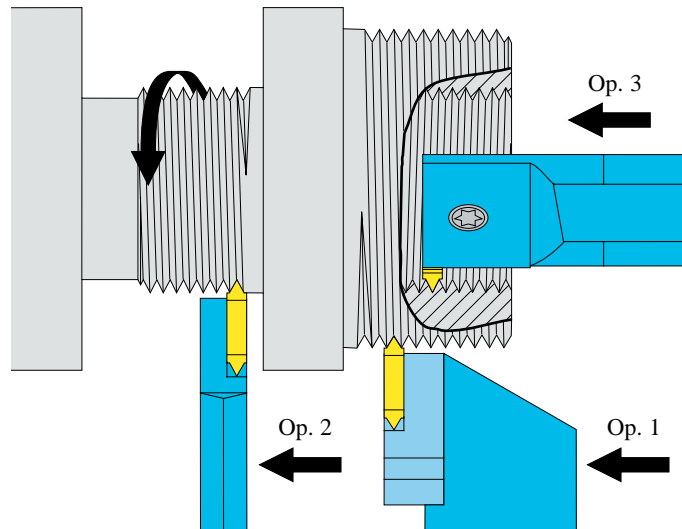


# How to produce a thread

DRAWING



THREADING OPERATIONS



## 1. CHOICE OF THREADING METHOD

In this example the machine is rotating in a counter-clockwise direction with tools moving from right to left. This method will produce a right hand thread.

## 2. CHOICE OF CARBIDE GRADE

The most suitable grade for stainless steel is K20C, because of its resistance to loose edge build-up. As this is an excellent all-round grade it will reduce your stock requirements.

## 3. CHOICE OF INSERT

Operation 1 See page 11. Choose **12E 2.0ISO K20C**

Operation 2 See page 15. Choose **12X 14W K20C**

Operation 3 See page 29. Choose **9N 14W K20C**

## 4. CHOICE OF HELIX ANGLE

See the diagram on page 5. All threads lie within the field for helix angle 1.5°.

Op. 1 Cassette with helix angle 1.5° should be used.

Op. 2 NOTE! Here a left-hand toolholder is used to make a right-hand thread. A cassette with negative helix angle must be used, i.e. 98.5.

Op. 3 Toolholder with helix angle 1.5° should be used.

## 5. CHOICE OF TOOLHOLDER AND CASSETTE

Op. 1 See page 22. The toolblock dimension is 25mm.

Choose cassette-type toolholder **QER 2525M-C25**.

For cassette see page 23. Holder shank is 25mm, insert is 12E and helix angle 1.5°. Choose cassette **QER 25-12**.

Op. 2 See page 25. A left-hand blade cassette is chosen with negative helix to make a right-hand thread.

A block for standard cut-off blade 32mm is available.

Use **QEL 3206D-12-98.5**

Op. 3 See page 34. The largest bar gives the best stability. Since the inner diameter is 24.2 mm for G 3/4, Ø20 is the largest bar which can be used. This is a solid bar.

The insert type is 9N and helix angle 1.5°.

Choose **QNR 0020M-9**

## 6. CHOICE OF INFEEED METHOD

See page 7. The material is long-chipping, and risk for cold hardening exists, so choice of correct infeed method is important. The machine is equipped with a G-function for alternating flank infeed, which should therefore be chosen.

## 7. CHOICE OF NUMBER OF PASSES

See the table on page 8. For the external threads use 7 passes and for the internal 10 passes, since the stability is lower. When programming the thread depth, see the respective catalog page for the thread form being used.

## 8. CHOICE OF CUTTING DATA

The table on page 8 shows that the carbide grade K20C can be run between 110-180m/min in stainless steel.

$$V = \frac{N \times \pi \times D}{1000} \quad V = \text{surface speed in m/min}$$

$$N = \text{spindle speed in rpm}$$

Op. 1 The lathe specifications show that  $N_{\max} = 2200$  rpm with pitch 2.0 and braking distance 2.5mm.

$$V_{\max} = \frac{2200 \times \pi \times 42}{1000} = 290\text{m/min} \quad \text{Choose } 180\text{m/min}$$

Op. 2 The lathe specifications show that  $N_{\max} = 950$  rpm with pitch 14 TPI and starting distance 4.5mm.

$$V_{\max} = \frac{950 \times \pi \times 24.2}{1000} = 72\text{m/min} \quad \text{Choose } 70\text{m/min}$$

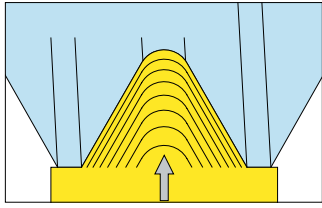
The low surface speed can give a problem with loose-edge buildup.

Op. 3 Here there is no problem with start or braking distance, so maximum spindle speed can be utilized. The lathe specifications give  $N_{\max} = 4400$  rpm with pitch 14 TPI.

$$V_{\max} = \frac{4400 \times \pi \times 24.2}{1000} = 335\text{ m/min} \quad \text{Choose } 180\text{m/min.}$$

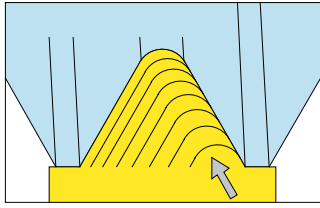
# Technical information

RADIAL INFEEED



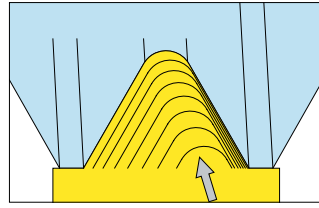
This is the most common method of in-feed on short chipping materials. On long chipping materials it is difficult to break or control the chip as it shears from the flanks of the thread. The high heat generated from this method of in-feed on the tool nose radius causes premature tool failure.

FLANK INFEEED



Angular in-feed programmed at the same angle as the thread flank. Although the heat generated from this method is greatly reduced, the rear flank of the insert removes very little material, which can cause work hardening in some materials, and unsatisfactory surface finish on the rear flank of the thread.

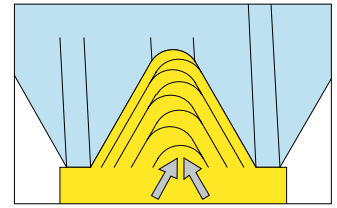
MODIFIED FLANK INFEEED



Angular in-feed modified to generate additional work by the trailing insert edge and still maintain a smooth chip flow with reduced heat at the tool nose. Highly recommended for most types of material, however, the in-feed angle should be reduced on more abrasive materials to prevent work hardening.

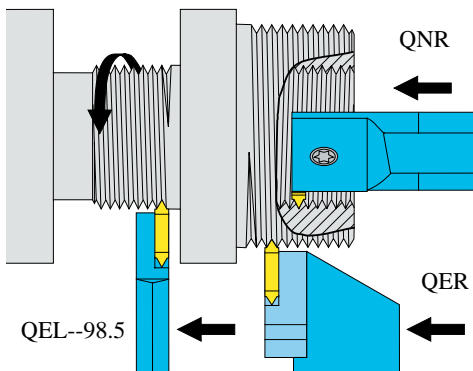
Recommended range 27-10°

ALTERNATING FLANK INFEEED

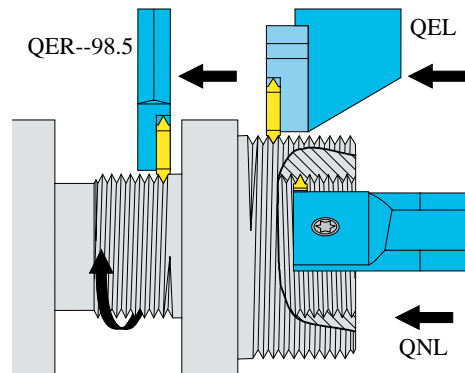


An excellent method for optimizing tool life. Many of the latest CNC machines offer this canned cycle sub-routines and its use is highly recommended for most materials. The one disadvantage is loss of chip control in certain applications.

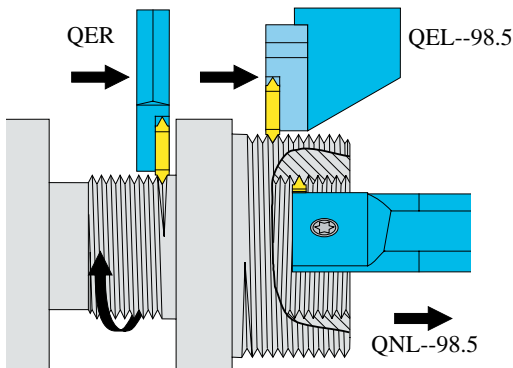
RIGHT-HAND THREAD  
COUNTER-CLOCKWISE ROTATION



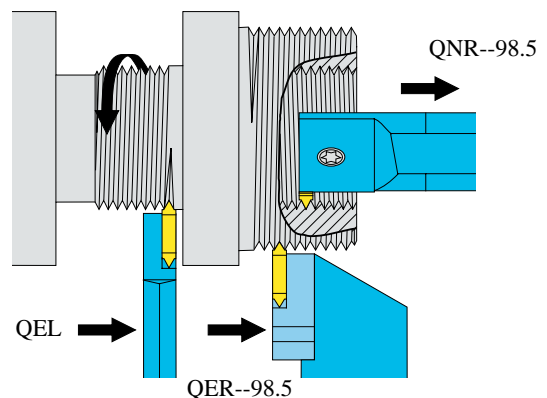
LEFT-HAND THREAD  
CLOCKWISE ROTATION



RIGHT-HAND THREAD  
CLOCKWISE ROTATION



LEFT-HAND THREAD  
COUNTER-CLOCKWISE ROTATION



# Technical Information

## CUTTING DATA

The table gives recommended cutting speeds in feet/min., for different materials and carbide grades.

Material	P30	T10 / K20	T10C / K20C	T10R / K20R	C20
Low-carbon steel $\leq 650\text{N/mm}^2$	260-390		590-720	690-820	590-1300
Carbon steel 650-850N/mm <sup>2</sup>	230-360		430-620	490-690	490-1150
Alloyed tool steel and heat-resistant steel	230-330		400-530	460-590	490-1150
Stainless steel	230-330	230-295	330-560	360-650	490-1150
Cast iron HB 180-250		230-295		420-560	
Non-ferrous materials		-1300		-1900	

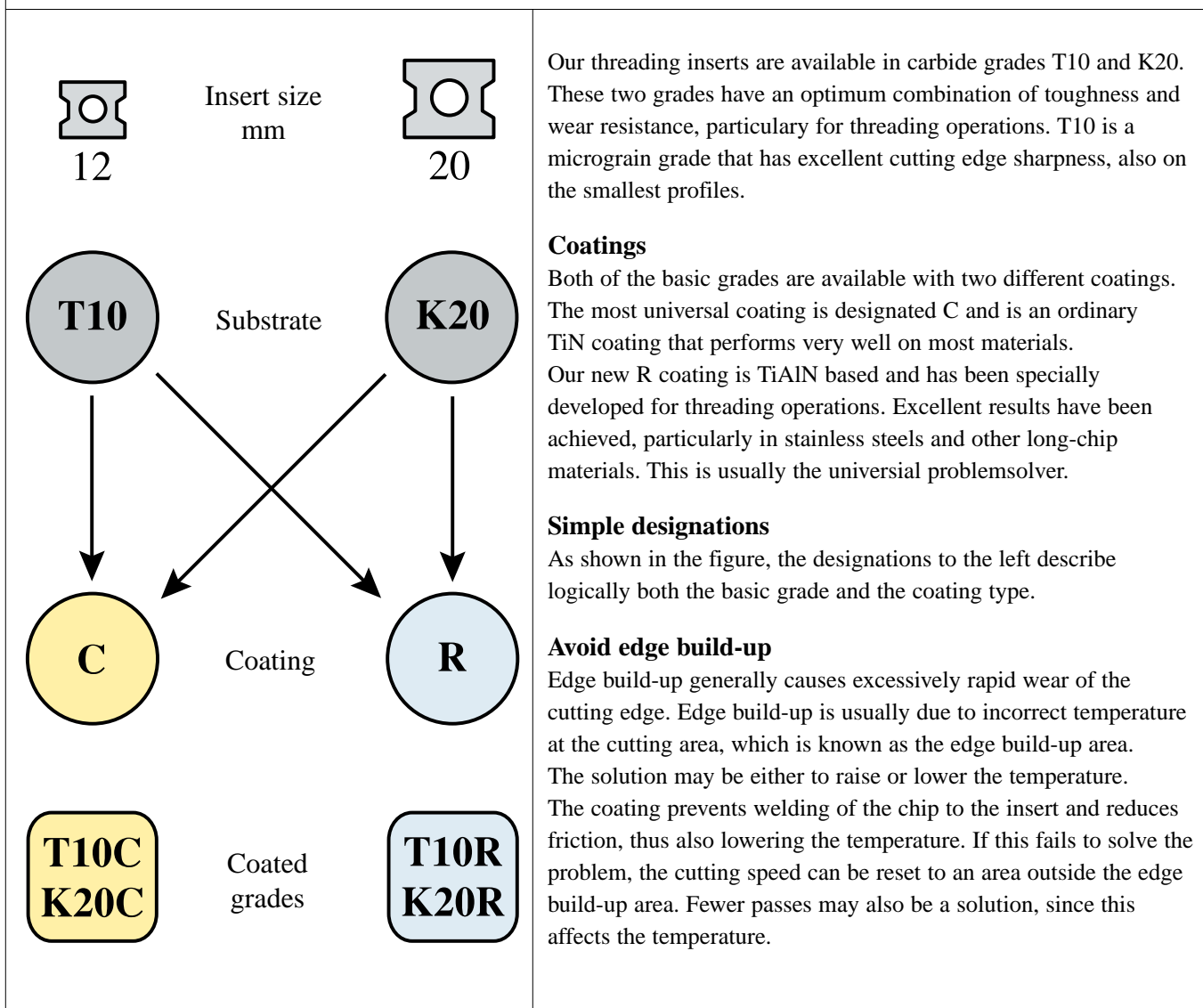
## NUMBER OF PASSES

The table gives only general recommendations. Many times fewer passes can be used, depending on material and setup.

Pitch mm	0.5	0.75	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
Pitch TPI	48	32	24	20	16	14	12	10	8	7	6	5.5	5	4.5	4
Nr. of passes	4-6	4-7	4-8	5-9	6-10	7-12	7-12	8-14	10-16	11-18	11-18	11-19	12-20	12-20	12-20

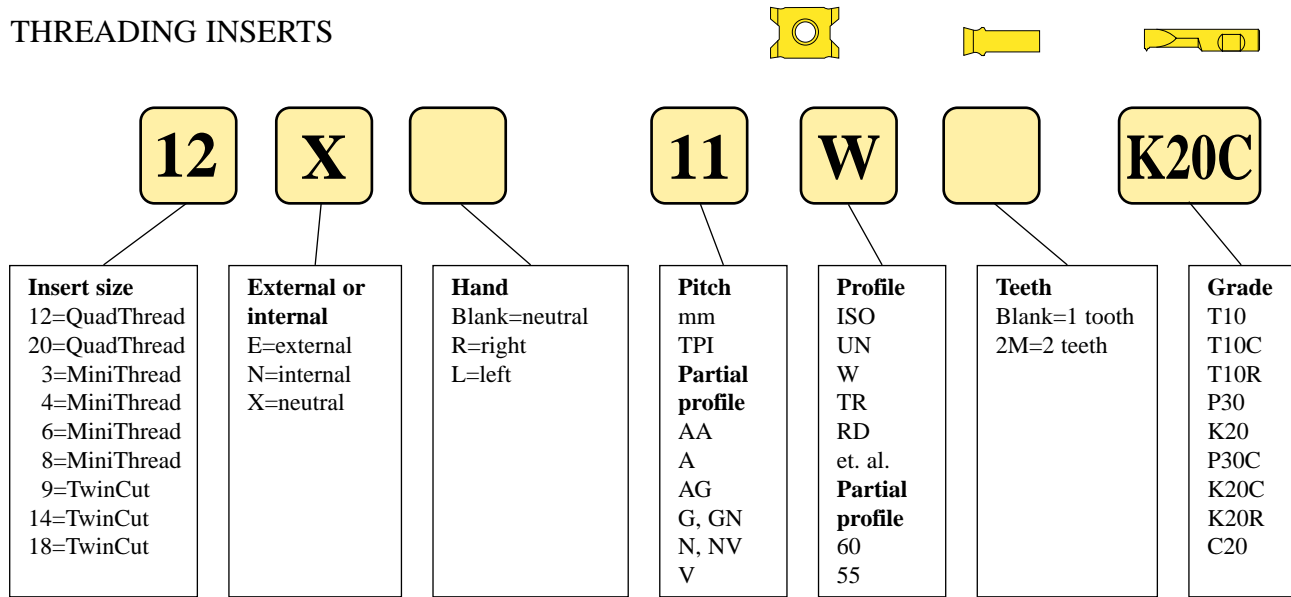
The above recommendations are for full profile UN, ISO and Withworth external forms. For Trapezoidal, ACME, NPT and internal profiles please contact your local STS distributor.

## CARBIDE GRADES

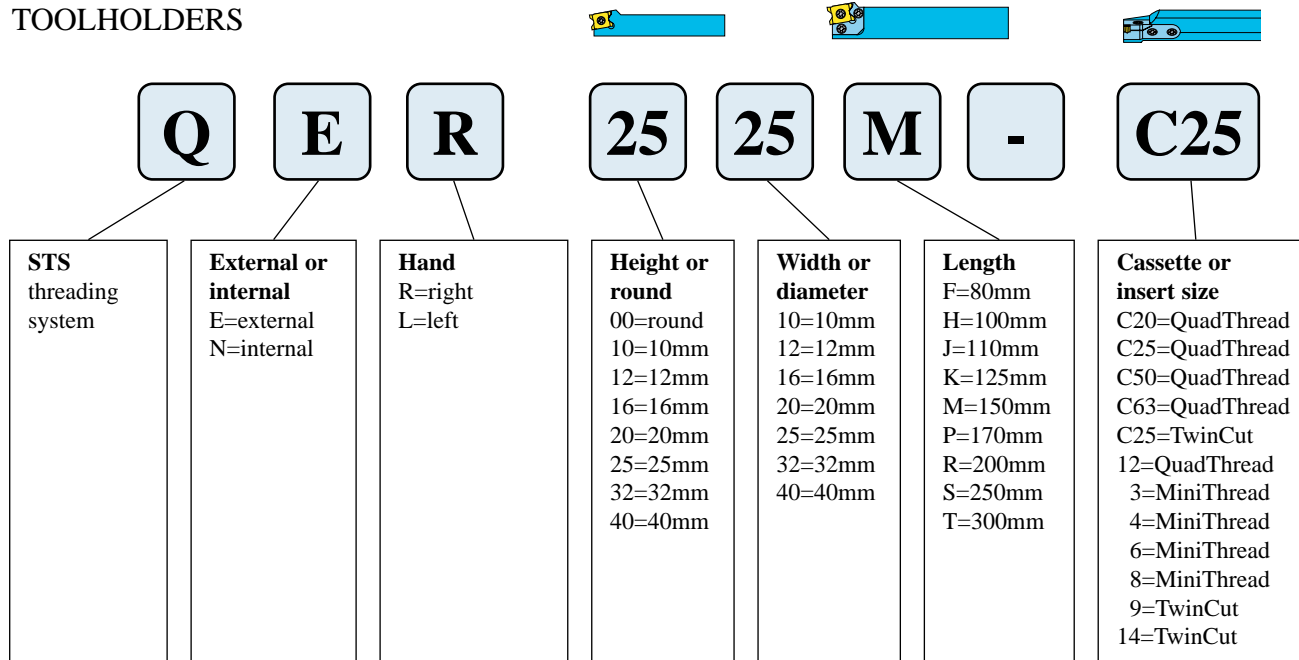


# Code keys

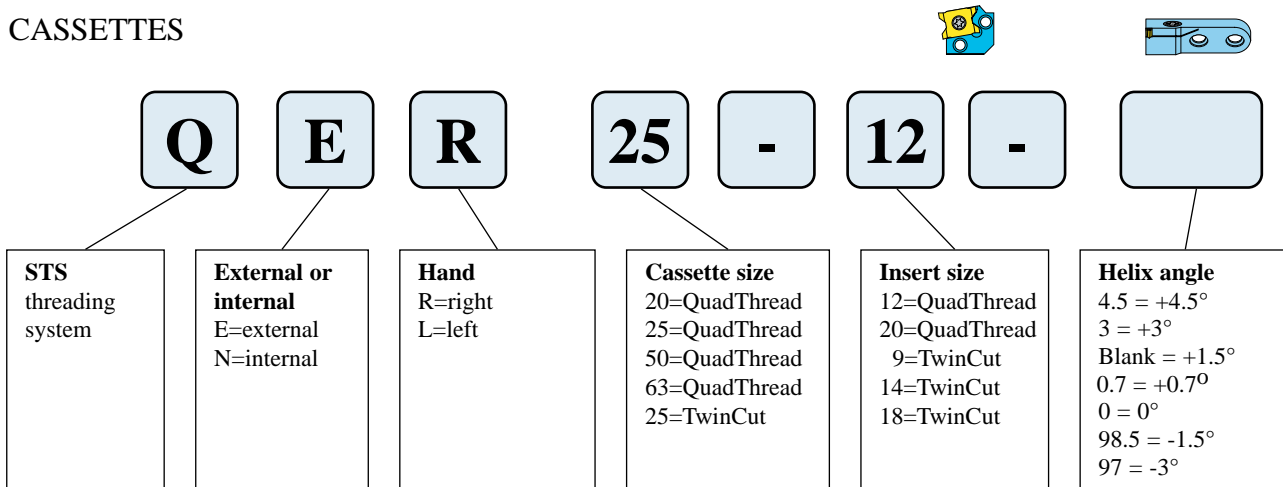
## THREADING INSERTS



## TOOLHOLDERS

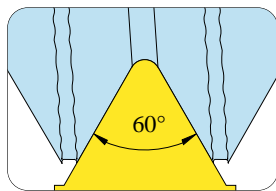


## CASSETTES

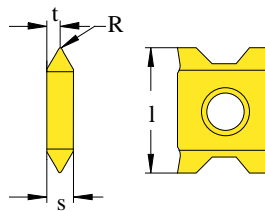




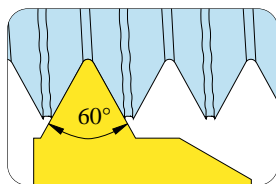
# QuadThread inserts



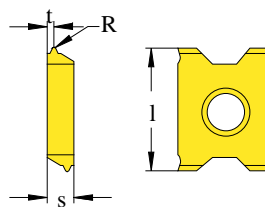
## Partial profile 60° EXTERNAL AND INTERNAL THREADING



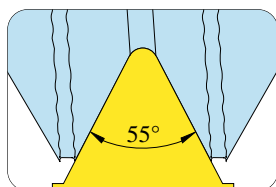
Pitch mm	TPI	Catalog number	Dimensions				Uncoated		Price- group	Coated		Cermet C20	Price- group	Coated	
			l	s	t	R	T10	K20		T10C	K20C			T10R	Price- group
0.5-2.0	48-12	<b>12X A60</b>	.472	.094	.047	.003	★		1	★		☆	11	☆	19
0.5-3.0	48-8	<b>AG60</b>	.472	.142	.071	.005	★		2	★		☆	12	☆	20
1.75-3.0	14-8	<b>G60</b>				.008	★			★		☆		☆	
3.5-5.0	7-5	<b>20X N60</b>	.787	.181	.091	.016		☆	5		★		15		
5.5-6.0	4.5-4	<b>V60</b>	.787	.268	.134	.031		☆	6		★		16		



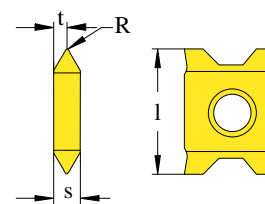
## Partial profile 60° EXTERNAL THREADING WITH SMALL PITCHES



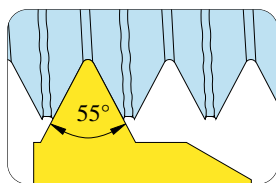
Pitch mm	TPI	Catalog number	Dimensions				Uncoated		Price- group	Coated		Price- group
			l	s	t	R	P30	P30C		K20C		
0.35-1.0	72-24	<b>12ER AA60</b>	.472	.094	.024	.002		☆	1	☆	★	11



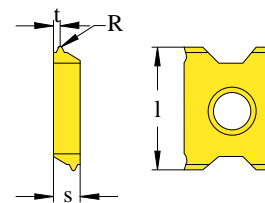
## Partial profile 55° EXTERNAL AND INTERNAL THREADING



Pitch mm	TPI	Catalog number	Dimensions				Uncoated		Price- group	Coated		Price- group
			l	s	t	R	T10	K20		T10C	K20C	
0.5-2.0	48-12	<b>12X A55</b>	.472	.094	.047	.003		☆	1	★		11
0.5-3.0	48-8	<b>AG55</b>	.472	.142	.071	.003	★		2	★		12
1.75-3.0	14-8	<b>G55</b>				.008		☆		☆		
3.5-5.0	7-5	<b>20X N55</b>	.787	.181	.091	.019		☆	5		☆	15
5.5-6.0	4.5-4	<b>V55</b>	.787	.268	.134	.029		☆	6		☆	16

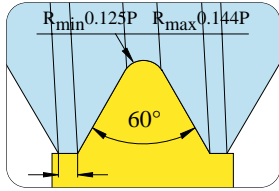


## Partial profile 55° EXTERNAL THREADING WITH SMALL PITCHES

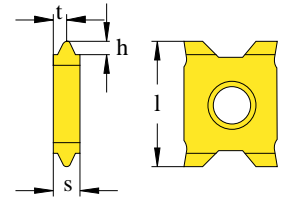


Pitch mm	TPI	Catalog number	Dimensions				Uncoated		Price- group	Coated		Price- group
			l	s	t	R	P30	P30C		K20C		
0.35-1.0	72-24	<b>12ER AA55</b>	.472	.094	.024	.002		☆	1	☆	☆	11

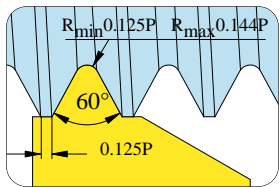
# QuadThread inserts



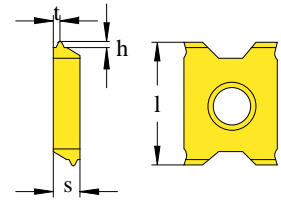
## ISO Metric (M) EXTERNAL THREADING



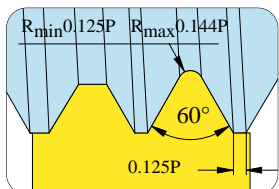
Pitch mm	Catalog number	Dimensions				Uncoated		Price-group	Coated		Cermet C20	Price-group	Coated P15A	Price-group
		l	s	t	h	T10	K20		T10C	K20C				
0.5	<b>12E 0.5ISO</b>	.472	.094	.047	.012	☆		1	☆			11		19
0.75	<b>0.75ISO</b>				.019	☆			☆					
1.0	<b>1.0ISO</b>				.025	☆			☆	☆			☆	
1.25	<b>1.25ISO</b>				.031	☆			☆				☆	
1.5	<b>1.5ISO</b>				.037	☆			☆	☆			☆	
1.75	<b>1.75ISO</b>				.043	☆			☆				☆	
2.0	<b>2.0ISO</b>				.049	☆			☆	☆			☆	
2.5	<b>2.5ISO</b>	.472	.142	.071	.061	☆		2	☆			12		20
3.0	<b>3.0ISO</b>				.074	☆			☆				☆	
3.5	<b>20E 3.5ISO</b>	.787	.181	.091	.086		☆	5		☆		15		
4.0	<b>4.0ISO</b>				.099		☆			☆				
4.5	<b>4.5ISO</b>	.787	.268	.134	.111		☆			☆				
5.0	<b>5.0ISO</b>				.123		☆	6		☆		16		
5.5	<b>5.5ISO</b>				.135		☆			☆				
6.0	<b>6.0ISO</b>				.148		☆			☆				



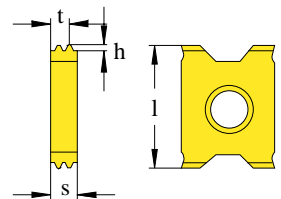
## ISO Metric (M) EXTERNAL THREADING WITH SMALL PITCHES



Pitch mm	Catalog number	Dimensions				Uncoated		Price-group	Coated		Price-group
		l	s	t	h	P30	K20		P30C	K20C	
0.35	<b>12ER 0.35ISO</b>	.472	.094	.016	.009					☆	11
0.4	<b>0.4ISO</b>				.010					☆	
0.45	<b>0.45ISO</b>				.011					☆	
0.5	<b>0.5ISO</b>				.012	☆		1		☆	
0.6	<b>0.6ISO</b>	.472	.094	.024	.015					☆	
0.7	<b>0.7ISO</b>				.017					☆	
0.75	<b>0.75ISO</b>				.019	☆				☆	
0.8	<b>0.8ISO</b>				.020					☆	
1.0	<b>1.0ISO</b>				.025	☆	☆			☆	☆



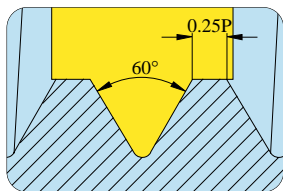
## ISO Metric (M) EXTERNAL THREADING MULTI-TOOTH



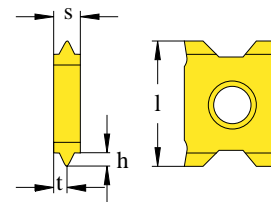
Pitch mm	Catalog number	Dimensions				No. teeth	Radial infeed per pass					Coated		Price-group
		l	s	t	h		1	2	3	4	5	T10C	K20C	
1.0	<b>12ER 1.0ISO2M</b>	.472	.094	.067	.025	2	0.24	0.21	0.18			☆		15
1.5	<b>1.5ISO2M</b>	.472	.142	.100	.037	2	0.43	0.30	0.21			☆		16
2.0	<b>20ER 2.0ISO2M</b>	.787	.181	.130	.049	2	0.57	0.40	0.28				☆	17
3.0	<b>3.0ISO2M</b>	.787	.268	.193	.074	2	0.61	0.52	0.42	0.32				18



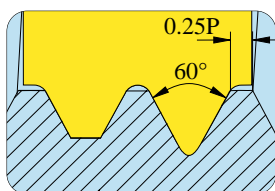
# QuadThread inserts



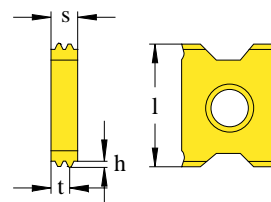
**ISO Metric (M)**  
INTERNAL THREADING



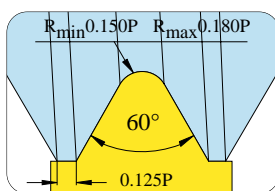
Pitch mm	Catalog number	Dimensions				Coated		Price- group
		l	s	t	h	T10C	K20C	
1.5	<b>12N 1.5ISO</b>	.472	.094	.047	.035	☆		11
2.0	<b>2.0ISO</b>				.046	☆		
3.0	<b>3.0ISO</b>	.472	.142	.071	.069	☆		12
4.0	<b>20N 4.0ISO</b>	.787	.181	.091	.092		★	15
5.0	<b>5.0ISO</b>	.787	.268	.134	.115		★	16
6.0	<b>6.0ISO</b>				.138		★	



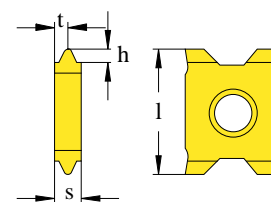
**ISO Metric (M)**  
INTERNAL THREADING  
MULTI-TOOTH



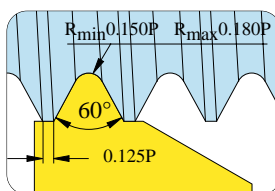
Pitch mm	Catalog number	Dimensions				No. teeth	Radial infeed per pass			Coated T10C	Price- group
		l	s	t	h		1	2	3		
1.5	<b>12NR 1.5ISO2M</b>	.472	.142	.100	.035	2	0.41	0.28	0.19	☆	16
2.0	<b>2.0ISO2M</b>			.100	.046	2	0.54	0.37	0.26	☆	



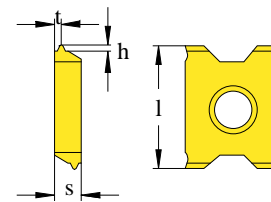
**MJ**  
EXTERNAL THREADING



Pitch mm	Catalog number	Dimensions				Coated T10C	Price- group
		l	s	t	h		
1.5	<b>12E 1.5MJ</b>	.472	.094	.047	.035	☆	13
2.0	<b>2.0MJ</b>				.047	☆	

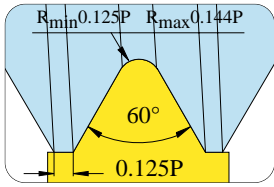


**MJ**  
EXTERNAL THREADING  
WITH SMALL PITCHES

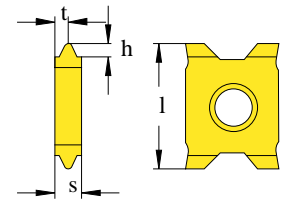


Pitch mm	Catalog number	Dimensions				Coated T10C	Price- group
		l	s	t	h		
1.0	<b>12ER 1.0MJ</b>	.472	.094	.024	.024		13

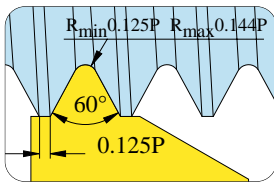
# QuadThread inserts



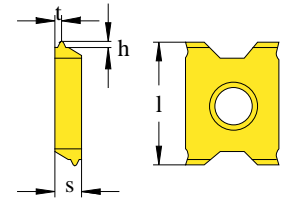
## ISO Unified (UN) EXTERNAL THREADING



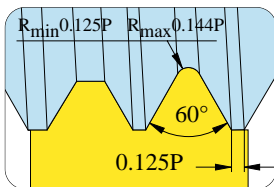
Pitch TPI	Catalog number	Dimensions				Uncoated		Price- group	Coated		Cermet C20	Price- group	Coated	
		l	s	t	h	T10	K20		T10C	K20C			T10R	Price- group
32	<b>12E 32UN</b>	.472	.094	.047	.020	☆		1	★			11		
28						☆			★					
24						☆			★					
20						☆			★					
18						☆			★					
16						☆			★					
14						☆			★					
13						☆			★					
12						☆			★					
11						☆			★					
10						<b>10UN</b>			.472					
9	☆	★												
8	☆	★												
7	☆	★												
6	<b>20E 7UN</b>	.787	.181	.091	.089			5				15		
5						☆			★					
4.5	<b>5UN</b>	.787	.268	.134	.125	☆		6	★			16		
4						☆			★					



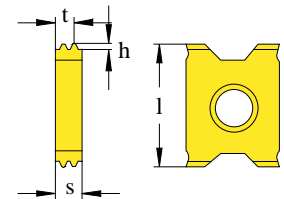
## ISO Unified (UN) EXTERNAL THREADING WITH SMALL PITCHES



Pitch TPI	Catalog number	Dimensions				Coated		Price- group					
		l	s	t	h	P30C	K20C						
72	<b>12ER 72UN</b>	.472	.094	.016	.009		★	11					
64						★							
56						★							
48						★							
44						★							
40						★							
36						★							
32						★							
28						★							
24						★							
48						<b>48UN</b>	.472		.094	.024	.013		★
44												★	
40												★	
36												★	
32												★	
28												★	
24	★												



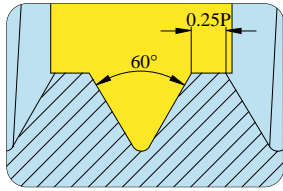
## ISO Unified (UN) EXTERNAL THREADING MULTI-TOOTH



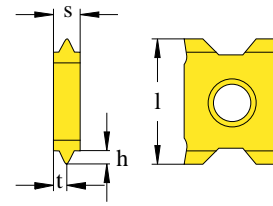
Pitch TPI	Catalog number	Dimensions				No. teeth	Radial infeed per pass				Coated		Price- group
		l	s	t	h		1	2	3	4	T10C	K20C	
16	<b>12ER 16UN2M</b>	.472	.142	.102	.039	2	0.45	0.32	0.22		☆	16	
12	<b>20ER 12UN2M</b>	.787	.181	.132	.052	2	0.60	0.43	0.30		☆	17	
8	<b>8UN2M</b>	.787	.268	.196	.078	2	0.65	0.55	0.45	0.34	☆	18	



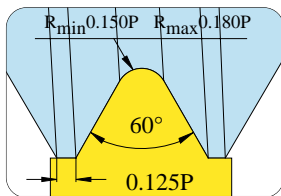
# QuadThread inserts



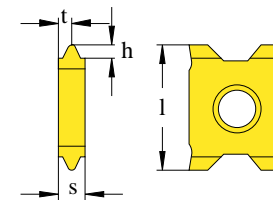
## ISO Unified (UN) INTERNAL THREADING



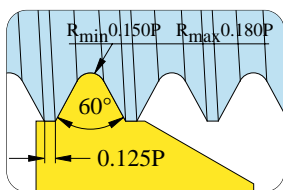
Pitch TPI	Catalog number	Dimensions				Coated		Price-group
		l	s	t	h	T10C	K20C	
18	<b>12N 18UN</b>	.472	.094	.047	.033	☆	11	
16					.037	★		
14						☆		
12						★		
10	<b>10UN</b>	.472	.142	.071	.059	☆	12	
8					.073	☆		
6	<b>20N 6UN</b>	.787	.181	.091	.098		15	
5					.117	☆		
4					.146	☆		



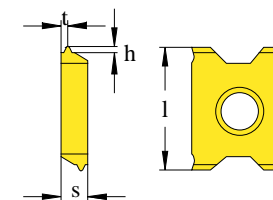
## UNJ EXTERNAL THREADING



Pitch TPI	Catalog number	Dimensions				Uncoated	Price-group	Coated	Price-group
		l	s	t	h	T10		T10C	
28	<b>12E 28UNJ</b>	.472	.094	.047	.021	☆	★	13	
24					.025	☆			
20					.030	☆			
18					.033	☆			
16					.037	☆			
14					.043	☆			
12					.050	☆			
10					.060	☆			
8	<b>8UNJ</b>	.472	.142	.071	.075	☆	★	14	



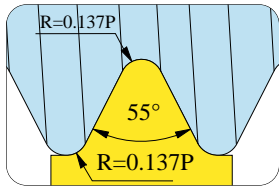
## UNJ EXTERNAL THREADING WITH SMALL PITCHES



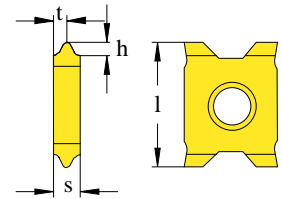
Pitch TPI	Catalog number	Dimensions				Coated		Price-group
		l	s	t	h	P30C	K20C	
32	<b>12ER 32UNJ</b>	.472	.094	.024	.019		13	
28					.021	★		
24					.025	★		

**UN Round** QuadCut UN profiles meet the requirements of tighter tolerances and rounded crests for UN Round profiles.

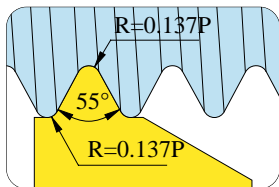
# QuadThread inserts



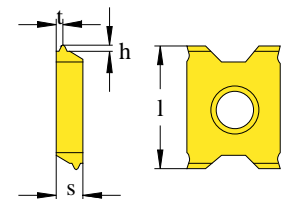
## Whitworth (BSW, BSP) EXTERNAL AND INTERNAL THREADING



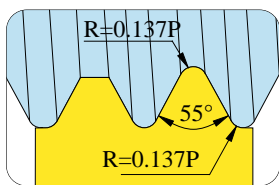
Pitch TPI	Catalog number	Dimensions				Uncoated		Price- group	Coated		Cermet C20	Price- group	Coated													
		l	s	t	h	T10	K20		T10C	K20C			T10R	Price- group												
28	<b>12X 28W</b>	.472	.094	.047	.023	☆	1					11														
24					.027	☆																				
22					.030	☆																				
20					.032	☆																				
19					.034	☆																				
18					.036	☆																				
16					.041	☆																				
14					.046	☆																				
12	<b>12W</b>	.472	.142	.071	.059	☆	2					12	☆	20												
11					.059	☆																				
10					.065	☆																				
9					.072	☆																				
8					.081	☆																				
7					<b>20X 7W</b>	.787									.181	.091	.093	☆	5					15		
6																	.108	☆								
5																	.130	☆								
4.5	.144	☆																								
4	<b>4W</b>	.787	.268	.134	.144	☆	6					16														
					.162	☆																				



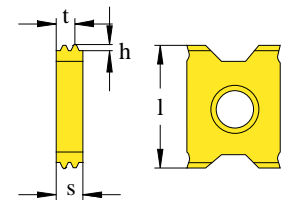
## Whitworth (BSW, BSP) EXTERNAL THREADING WITH SMALL PITCHES



Pitch TPI	Catalog number	Dimensions				Coated		Price- group
		l	s	t	h	P30C	K20C	
32	<b>12ER 32W</b>	.472	.094	.024	.020	☆	11	
28					.023	☆		
26					.025	☆		
24					.027	☆		



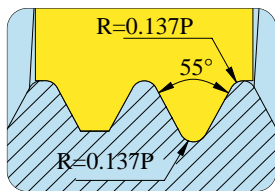
## Whitworth (BSW, BSP) EXTERNAL THREADING MULTI-TOOTH



Pitch TPI	Catalog number	Dimensions				No. teeth	Radial infeed per pass				Coated		Price- group
		l	s	t	h		1	2	3	4	T10C	K20C	
14	<b>12ER 14W2M</b>	.472	.142	.107	.046	2	0.55	0.38	0.25		★	16	
11	<b>20ER 11W2M</b>	.787	.181	.136	.059	2	0.55	0.38	0.32	0.25		★	17

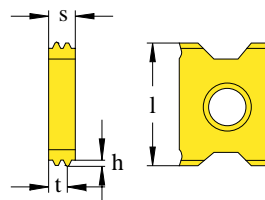


# QuadThread inserts

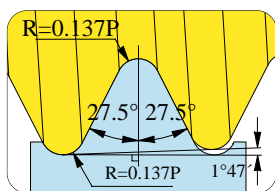


## Whitworth (BSW, BSP)

INTERNAL THREADING  
MULTI-TOOTH

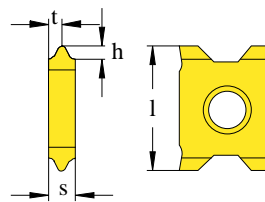


Pitch TPI	Catalog number	Dimensions				No. teeth	Radial infeed per pass				Coated		Price- group
		l	s	t	h		1	2	3	4	K20C		
11	<b>20NR 11W2M</b>	.787	.181	.136	.059	2	0.55	0.38	0.32	0.25	★	17	

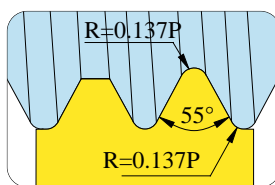


## BSPT

EXTERNAL AND INTERNAL THREADING

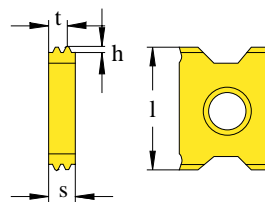


Pitch TPI	Catalog number	Dimensions				Coated T10C	Price- group
		l	s	t	h		
14	<b>12X 14BSPT</b>	.472	.142	.071	.048	☆	14
11	<b>11BSPT</b>				.061	☆	

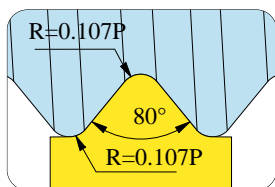


## BSPT

EXTERNAL THREADING  
MULTI-TOOTH

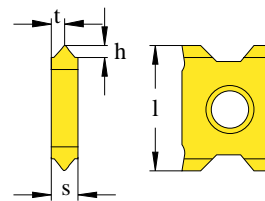


Pitch TPI	Catalog number	Dimensions				No. teeth	Radial infeed per pass				Coated		Price- group
		l	s	t	h		1	2	3	4	T10C	K20C	
14	<b>12ER 14BSPT2M</b>	.472	.142	.107	.048	2	0.56	0.39	0.26		★	16	
11	<b>20ER 11BSPT2M</b>	.787	.181	.136	.061	2	0.56	0.39	0.33	0.26	★	17	



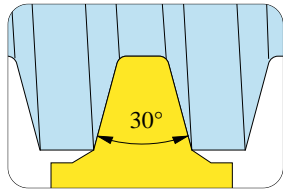
## Pansarrohrgewinde (PG)

EXTERNAL AND INTERNAL THREADING



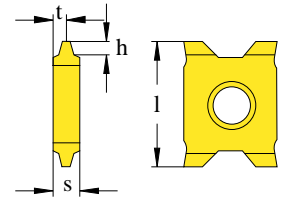
Pitch TPI	Catalog number	Dimensions				Coated T10C	Price- group
		l	s	t	h		
20	<b>12X 20PG</b>	.472	.094	.047	.024	☆	14
18	<b>18PG</b>				.026	☆	
16	<b>16PG</b>				.030	☆	

# QuadThread inserts

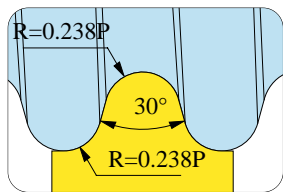


## Trapezoidal DIN 103

EXTERNAL AND INTERNAL THREADING

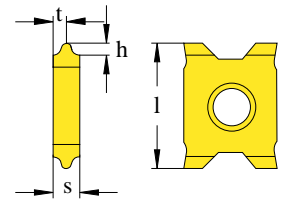


Pitch mm	Catalog number	Dimensions				Uncoated		Price- group	Coated		Price- group
		l	s	t	h	T10	K20		T10C	K20C	
1.5	<b>12X 1.5TR</b>	.472	.094	.047	.035	☆		3	☆		13
2.0	<b>2.0TR</b>				.049	☆			☆		
3.0	<b>3.0TR</b>	.472	.142	.071	.069	☆		4	☆		14
4.0	<b>20X 4.0TR</b>	.787	.181	.091	.089		☆	7		☆	17
5.0	<b>5.0TR</b>	.787	.268	.134	.108		☆	8		☆	18
6.0	<b>6.0TR</b>				.138		☆			☆	

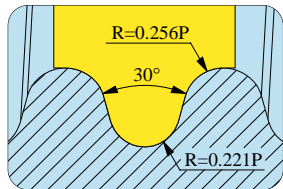


## Round DIN 405

EXTERNAL THREADING

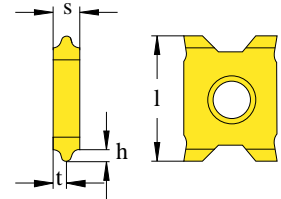


Pitch TPI	Catalog number	Dimensions				Uncoated		Price- group	Coated		Price- group
		l	s	t	h	T10	K20		T10C	K20C	
10	<b>12E 10RD</b>	.472	.142	.071	.050	☆		4	☆		14
8	<b>8RD</b>				.063	☆			☆		
6	<b>20E 6RD</b>	.787	.181	.091	.083		☆	5		☆	15
4	<b>4RD</b>	.787	.268	.134	.125		☆	8		☆	18

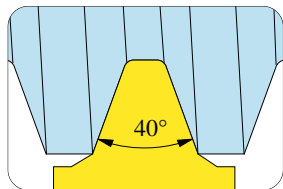


## Round DIN 405

INTERNAL THREADING

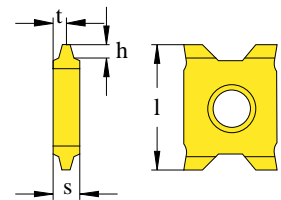


Pitch TPI	Catalog number	Dimensions				Uncoated		Price- group	Coated		Price- group
		l	s	t	h	K20			K20C		
6	<b>20N 6RD</b>	.787	.181	.091	.083	☆		5	☆		15
4	<b>4RD</b>	.787	.268	.134	.125	☆		8	☆		18



## Module

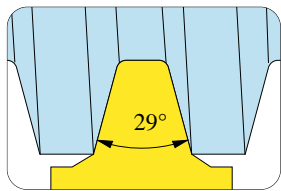
EXTERNAL THREADING



Pitch mm	Catalog number	Dimensions				Coated		Price- group
		l	s	t	h	T10C	K20C	
1.57	<b>12E 0.5MOD</b>	.472	.094	.047	.044	☆		13
2.36	<b>0.75MOD</b>	.472	.142	.071	.067	☆		14
3.14	<b>20E 1.0MOD</b>	.787	.181	.091	.089		☆	17
3.93	<b>1.25MOD</b>				.111		☆	
4.71	<b>1.5MOD</b>	.787	.268	.134	.133		☆	18
6.28	<b>2.0MOD</b>				.177		☆	

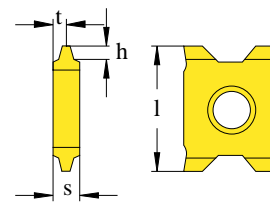


# QuadThread inserts

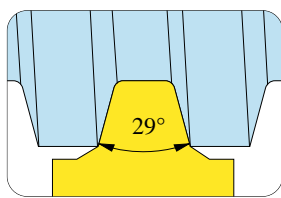


## ACME

EXTERNAL AND INTERNAL THREADING

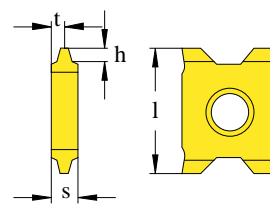


Pitch TPI	Catalog number	Dimensions				Uncoated		Price-group	Coated		Price-group
		l	s	t	h	T10	K20		T10C	K20C	
16	<b>12X 16ACME</b>	.472	.094	.047	.040	☆		3	★		13
14	<b>14ACME</b>				.044	☆			★		
12	<b>12ACME</b>				.052	☆			★		
10	<b>10ACME</b>	.472	.142	.071	.065	☆		4	★	14	
8	<b>8ACME</b>				.079	☆			★		
6	<b>20X 6ACME</b>	.787	.181	.091	.100		☆	7		★	17
5	<b>5ACME</b>	.787	.268	.134	.118		☆	8		★	18
4	<b>4ACME</b>				.143		☆			★	

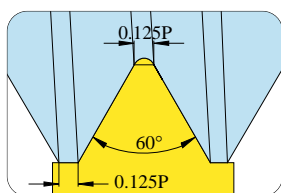


## STUB ACME

EXTERNAL AND INTERNAL THREADING

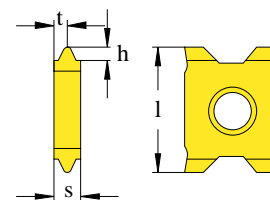


Pitch TPI	Catalog number	Dimensions				Uncoated		Price-group	Coated		Price-group
		l	s	t	h	T10	K20		T10C	K20C	
16	<b>12X 16STACME</b>	.472	.094	.047	.028	☆		3	★		13
14	<b>14STACME</b>				.030	☆			★		
12	<b>12STACME</b>				.035	☆			★		
10	<b>10STACME</b>	.472	.142	.071	.045	☆		4	★	14	
8	<b>8STACME</b>				.054	☆			★		
6	<b>20X 6STACME</b>	.787	.181	.091	.067		☆	7		★	17
5	<b>5STACME</b>	.787	.268	.134	.078		☆	8		★	18
4	<b>4STACME</b>				.093		☆			★	



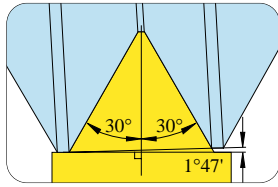
## NPSM

EXTERNAL THREADING



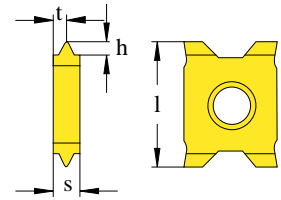
Pitch TPI	Catalog number	Dimensions				Coated		Price-group
		l	s	t	h	T10C	K20C	
27	<b>12E 27NPSM</b>	.472	.094	.047	.026			12
18	<b>18NPSM</b>				.038			
14	<b>14NPSM</b>				.049	☆		
11.5	<b>11.5NPSM</b>	.472	.142	.071	.060	☆		
8	<b>20E 8NPSM</b>	.787	.181	.091	.086		☆	15

# QuadThread inserts

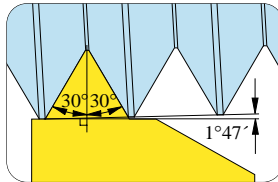


## NPT

EXTERNAL AND INTERNAL THREADING

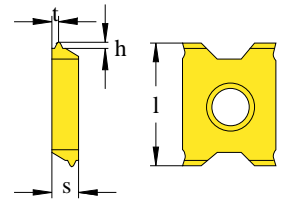


Pitch TPI	Catalog number	Dimensions				Uncoated		Price- group	Coated		Cermet C20	Price- group	Coated	
		l	s	t	h	T10	K20		T10C	K20C			T10R	Price- group
27	<b>12X 27NPT</b>	.472	.094	.047	.028	☆		2	★			12		
18	<b>18NPT</b>				.041	☆			★					
14	<b>14NPT</b>				.054	☆			★	☆			☆	19
11.5	<b>11.5NPT</b>	.472	.142	.071	.066	☆		3	★	☆		13	☆	20
8	<b>20X 8NPT</b>	.787	.181	.091	.096		☆	5			★	15		

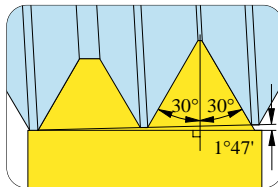


## NPT

EXTERNAL THREADING  
WITH SMALL PITCHES

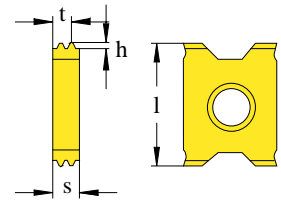


Pitch TPI	Catalog number	Dimensions				Uncoated		Price- group	Coated		Price- group
		l	s	t	h	P30	K20		P30C	K20C	
27	<b>12ER 27NPT</b>	.472	.094	.024	.028	☆		2	☆	☆	12

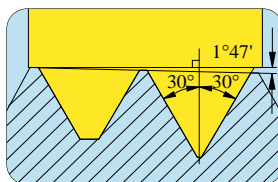


## NPT

EXTERNAL THREADING  
MULTI-TOOTH

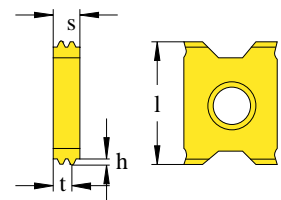


Pitch TPI	Catalog number	Dimensions				No. teeth	Radial infeed per pass				Coated K20C	Price- group
		l	s	t	h		1	2	3	4		
11.5	<b>20ER 11.5NPT2M</b>	.787	.181	.134	.066	2	0.60	0.45	0.38	0.25	☆	17
8	<b>8NPT2M</b>	.787	.268	.196	.096	2	0.75	0.70	0.70	0.28	☆	18



## NPT

INTERNAL THREADING  
MULTI-TOOTH

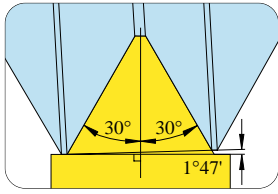


Pitch TPI	Catalog number	Dimensions				No. teeth	Radial infeed per pass				Coated K20C	Price- group
		l	s	t	h		1	2	3	4		
8	<b>20NR 8NPT2M</b>	.787	.268	.196	.096	2	0.75	0.70	0.70	0.28	☆	18

**Line Pipe** QuadCut tolerances for NPT even fit the tolerances for Line Pipe thread profile.

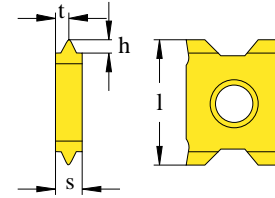


# QuadThread inserts

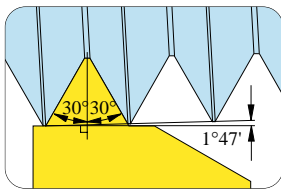


## NPTF Dryseal

EXTERNAL AND INTERNAL THREADING

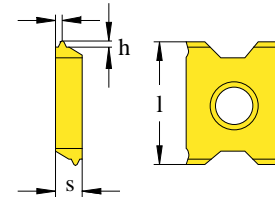


Pitch TPI	Catalog number	Dimensions				Uncoated		Price-group	Coated		Price-group
		l	s	t	h	T10	K20		T10C	K20C	
27	<b>12X 27NPTF</b>	.472	.094	.047	.026	☆		2	★		12
18	<b>18NPTF</b>				.040	☆			★		
14	<b>14NPTF</b>				.054	☆			★		
11.5	<b>11.5NPTF</b>	.472	.142	.071	.065	☆		3	★		13
8	<b>20X 8NPTF</b>	.787	.181	.091	.095		☆	5		★	15



## NPTF Dryseal

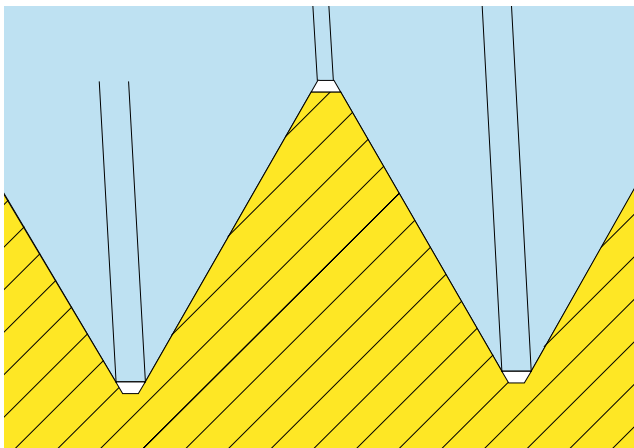
EXTERNAL THREADING WITH SMALL PITCHES



Pitch TPI	Catalog number	Dimensions				Uncoated		Price-group	Coated		Price-group
		l	s	t	h	P30	K20		P30C	K20C	
27	<b>12ER 27NPTF</b>	.472	.094	.024	.026	☆		2	☆	☆	12

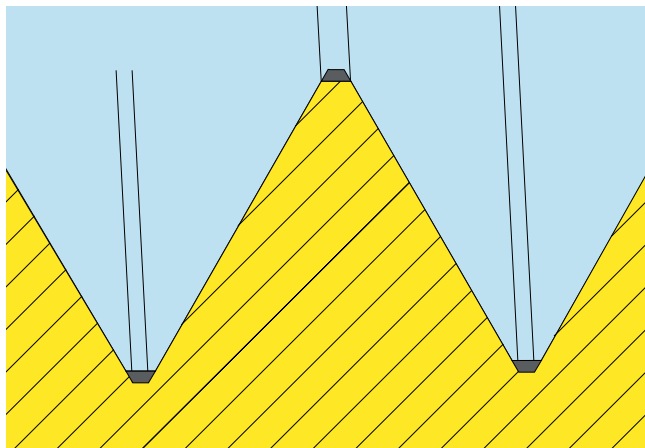
**WARNING!** Always determine if NPT or NPTF profile should be used.  
Be sure you use the right one.

### NPT, Line Pipe



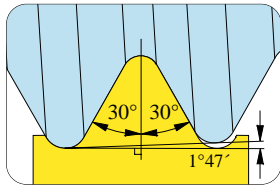
NPT and Line Pipe have clearance on the top and bottom of the thread. QuadThread NPT profiles also fit the tolerances for Line Pipe profiles.

### NPTF Dryseal



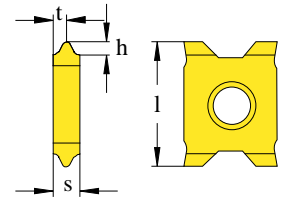
NPTF Dryseal gives a tight fit. This is accomplished when the pipe components are fitted together, as the top of the thread is deformed by the corresponding thread root

# QuadThread inserts

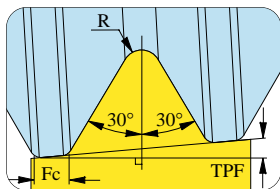


## API RD

EXTERNAL AND INTERNAL THREADING

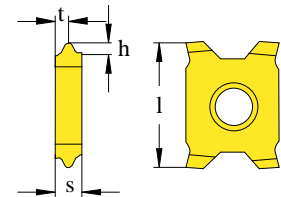


Pitch TPI	Catalog number	Dimensions				Uncoated		Price- group	Coated		Price- group
		l	s	t	h	T10	K20		T10C	K20C	
10	<b>12X 10APIRD</b>	.472	.142	.071	.057	☆		4	☆		14
8	<b>20X 8APIRD</b>	.787	.181	.091	.073		☆	5		☆	15

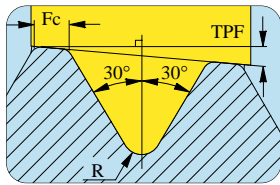


## API

EXTERNAL THREADING  
Cassette QER25-20API must be used

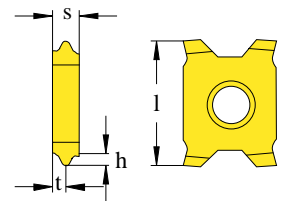


Pitch TPI	Catalog number	Dimensions							API Code	Coated K20C	Price- group
		l	s	t	h	R	Fc	TPF			
5	<b>20ER 5API404</b>	.787	.268	.134	.1178	.020	.040	3	V-0.040		18
4	<b>4API384</b>				.1214	.038	.065	3	V-0.038R		
4	<b>4API386</b>				.1218	.038	.065	2	V-0.038R		
4	<b>4API504</b>				.1473	.025	.050	3	V-0.050		
4	<b>4API506</b>				.1478	.025	.050	2	V-0.050		

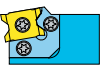


## API

INTERNAL THREADING  
Cassette QNR63-20API must be used

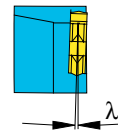
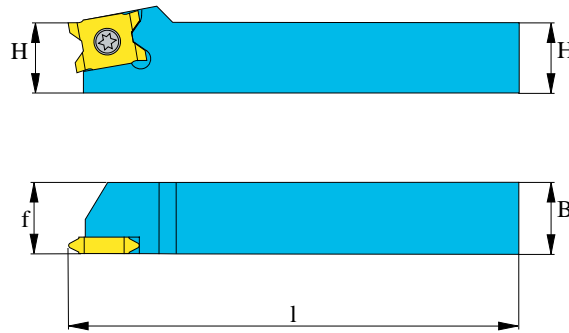
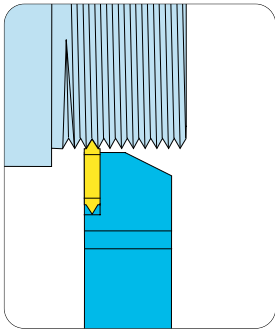


Pitch TPI	Catalog number	Dimensions							API Code	Coated K20C	Price- group
		l	s	t	h	R	Fc	TPF			
4	<b>20NR 4API384</b>	.787	.268	.134	.1214	.038	.065	3	V-0.038R		18
4	<b>4API386</b>				.1218	.038	.065	2	V-0.038R		
4	<b>4API504</b>				.1473	.025	.050	3	V-0.050		
4	<b>4API506</b>				.1478	.025	.050	2	V-0.050		



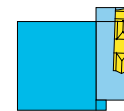
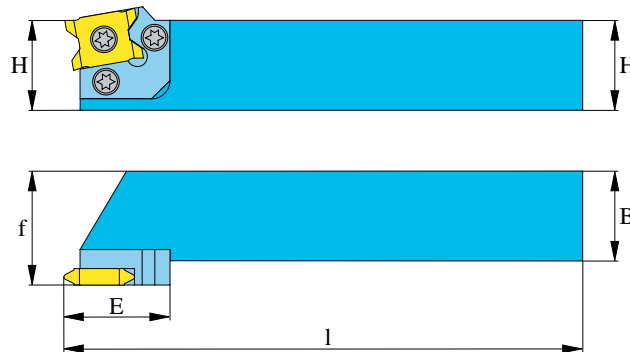
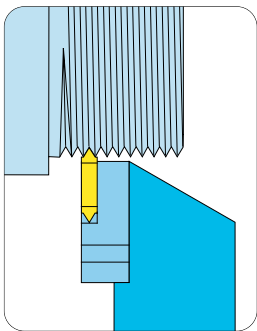
# QuadThread toolholders

## EXTERNAL TOOLHOLDERS



Catalog number	H/B	Dimensions			Insert	Stock standard (λ)					Price-group
		l	f	E		3	1.5	0	98.5	97	
<b>QER 0375 3-12</b> <b>0375 6-12</b> <b>050 3-12</b> <b>050 6-12</b>	.375	3.0	.50	.77	12...	☆	★	☆	☆	☆	26
	.375	6.0	.375	.77		☆	★	☆	☆	☆	
	.50	3.0	.625	.77		☆	★	☆	☆	☆	
	.50	6.0	.50	.77		☆	★	☆	☆	☆	
<b>QEL 0375 3-12</b> <b>0375 6-12</b> <b>050 3-12</b> <b>050 6-12</b>	.375	3.0	.50	.77	12...	☆	★	☆	☆	☆	26
	.375	6.0	.375	.77		☆	★	☆	☆	☆	
	.50	3.0	.625	.77		☆	★	☆	☆	☆	
	.50	6.0	.50	.77		☆	★	☆	☆	☆	

## CASSETTE-TYPE TOOLHOLDERS



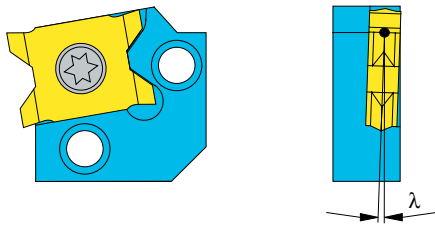
Catalog number	H/B	Dimensions			Cassettes		Stock standard	Price-group
		l	f	E	Insert 12...	Insert 20...		
<b>QER 0625 4-C20</b> <b>075 5-C20</b>	.625	4.0	.75	.89	QER 20-12	—	★	24
	.75	5.0	1.00	.89			★	24
<b>100 6-C25</b> <b>125 7-C25</b> <b>150 7-C25</b>	1.00	6.0	1.25	1.16	QER 25-12	QER 25-20	★	25
	1.25	7.0	1.50	1.16			★	28
	1.50	7.0	1.75	1.16			★	31
<b>QEL 0625 4-C20</b> <b>075- 5-C20</b>	.625	4.0	.75	.89	QEL 20-12	—	★	24
	.75	5.0	1.00	.89			★	24
<b>100 6-C25</b> <b>125 7-C25</b> <b>150 7-C25</b>	1.00	6.0	1.25	1.16	QEL 25-12	QEL 25-20	★	25
	1.25	7.0	1.50	1.16			★	28
	1.50	7.0	1.75	1.16			★	31

Toolholders delivered without cassette, to be ordered separately.

# QuadThread toolholders

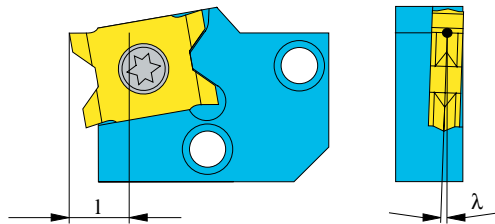


## STANDARD CASSETTES



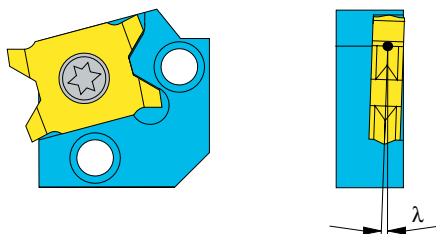
Catalog number	Insert	Stock standard (λ)						Price-group
		4.5	3	1.5	0	98.5	97	
<b>QER</b> 20-12 25-12 25-20	12...	☆	★	★	☆	★	☆	23
	12...	☆	★	★	☆	★	☆	
	20...	☆	★	★	☆	★	☆	
<b>QEL</b> 20-12 25-12 25-20	12...	☆	☆	★	☆	☆	☆	23
	12...	☆	☆	★	☆	☆	☆	
	20...	☆	☆	★	☆	☆	☆	

## EXTENDED CASSETTES



Catalog number	Insert	l	Stock stand. (λ)			Price-group
			1.5	0	98.5	
<b>QER</b> 20-12FL 25-12FL 25-20FL	12...	.24	★	☆	☆	25
	12...	.39	★	☆	☆	
	20...	.39	★	☆	☆	
<b>QEL</b> 20-12FL 25-12FL 25-20FL	12...	.24	☆	☆	☆	25
	12...	.39	☆	☆	☆	
	20...	.39	☆	☆	☆	

## API CASSETTES

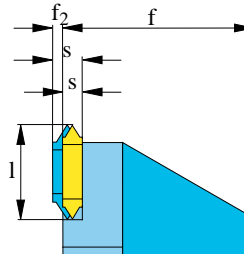


Catalog number	Insert	Stock standard (λ)			Price-group
		1.5	0	98.5	
<b>QER</b> 25-20API	20E	☆	☆		23
<b>QEL</b> 25-20API	20N	☆	☆		23

This cassette is used only for certain API inserts.

## f-DIMENSION

For some inserts the f-dimension is displaced according to the f<sub>2</sub>-dimension in the table.



Dimensions		
l	s	f <sub>2</sub>
.472	.094	0
.472	.142	.047
.787	.181	0
.787	.268	.087

Helix angle 1.5° is standard and does not need to be shown when ordering cassettes, for instance, QER 25-12

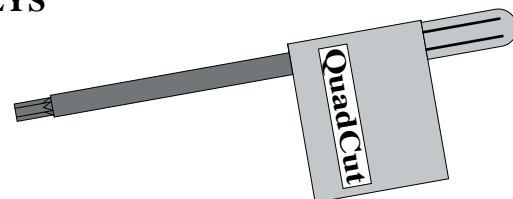
All other helix angles should be shown after the cassette catalog number, for instance, QER 25-12-98.5

## SCREWS

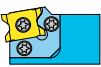


Catalog number	Used for	Price-group
<b>STS T9xM3</b>	Insert 12...	21
<b>STS T15xM5</b>	Insert 20... Cassettes	21

## KEYS

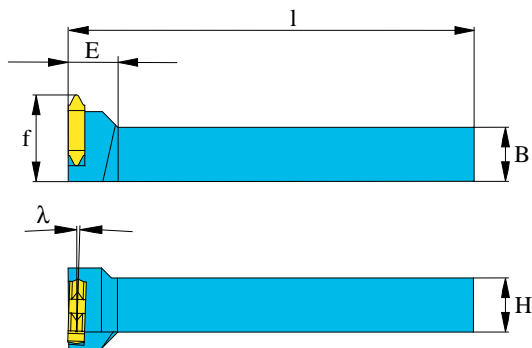
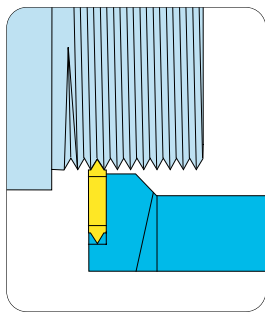


Catalog number	Used for	Price-group
<b>Torx T9</b>	STS T9xM3	22
<b>Torx T15</b>	STS T15xM5	22



# QuadThread toolholders

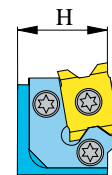
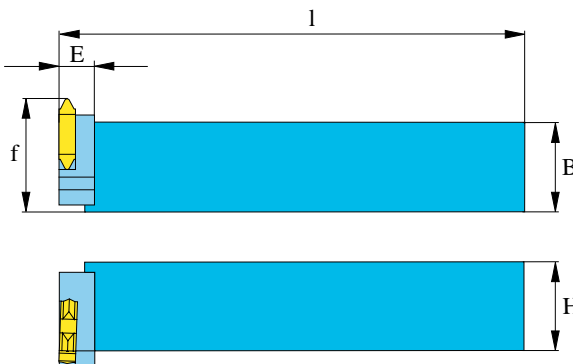
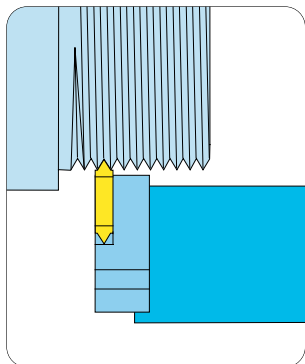
## SMALL AXIAL-TYPE TOOLHOLDERS



QER shown

Catalog number	H/B	Dimensions			Insert	Stock standard (λ)					Price-group
		l	f	E		3	1.5	0	98.5	97	
<b>QER 0375 3F-12</b> <b>050 3F-12</b>	.375	3.0	.63	.39	12...	☆	★	☆	☆	☆	26
	.50	3.0	.63	.39		☆	★	☆	☆	☆	
<b>QEL 0375 3F-12</b> <b>050 3F-12</b>	.375	3.0	.63	.39	12...	☆	★	☆	☆	☆	26
	.50	3.0	.63	.39		☆	★	☆	☆	☆	

## CASSETTE-TYPE AXIAL TOOLHOLDERS



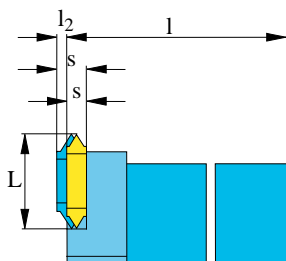
QER shown

Catalog number	H/B	Dimensions			Cassettes		Stock standard	Price-group
		l	f	E	Insert 12...	Insert 20...		
<b>QER 0625 4F-C20</b> <b>075 5F-C20</b>	.625	4.0	.95	.32	QER 20-12	—	☆	24
	.75	5.0	.95	.32			★	24
<b>100 6F-C25</b>	1.00	6.0	1.25	.40	QER 25-12	QER 25-20	★	25
<b>QEL 0625 4F-C20</b> <b>075 5F-C20</b>	.625	4.0	.95	.32	QEL 20-12	—	☆	24
	.75	5.0	.95	.32			☆	24
<b>100 6F-C25</b>	1.00	6.0	1.25	.40	QEL 25-12	QEL 25-20	☆	25

Toolholders delivered without cassette, to be ordered separately.

### I-DIMENSION

For some inserts the l-dimension is displaced according to the l<sub>2</sub>-dimension in the table.

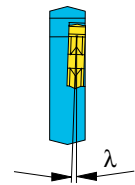
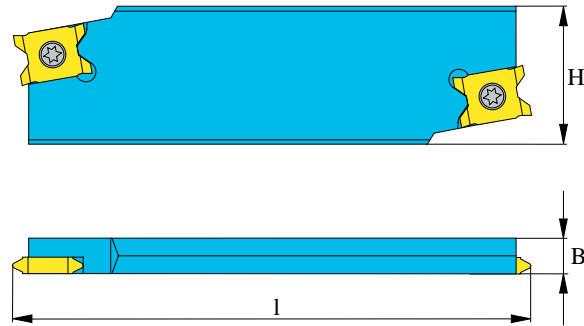
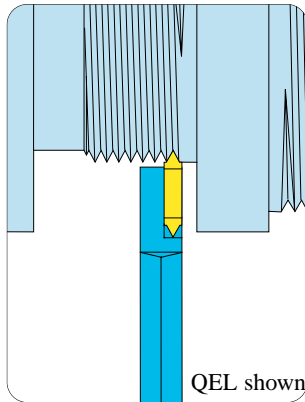


Dimensions		
L	s	l <sub>2</sub>
.472	.094	0
.472	.142	.047
.787	.181	0
.787	.268	.087

# QuadThread toolholders

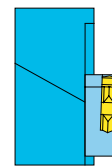
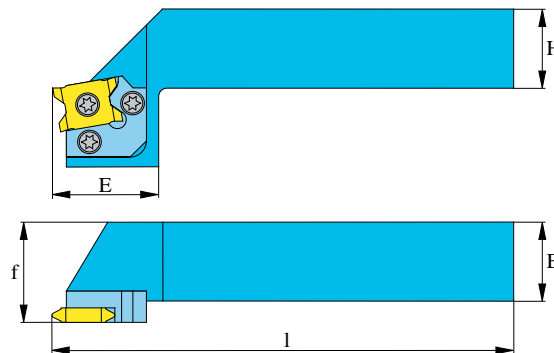
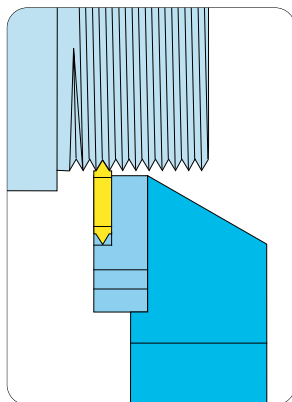


## BLADE CASSETTES TOOLHOLDER



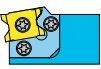
Catalog number	Dimensions			Insert	Stock standard ( $\lambda$ )			Price group
	H	l	B		1.5	0	98.5	
<b>QER 2606D-12</b>	1.02	3.94	.24	12...	★	☆	★	27
<b>3206D-12</b>	1.26	4.72	.24		★	☆	★	
<b>QEL 2606D-12</b>	1.02	3.94	.24	12...	★	☆	★	27
<b>3206D-12</b>	1.26	4.72	.24		★	☆	★	

## DROPHEAD TOOLHOLDERS



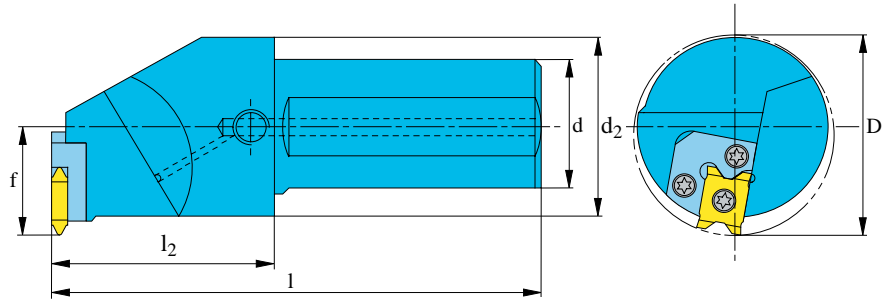
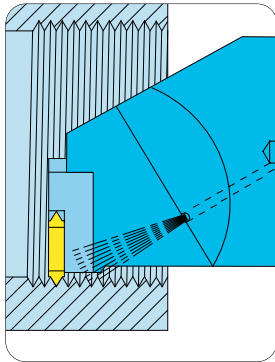
Catalog number	H/B	Dimensions			Cassettes		Stock standard	Price-group
		l	f	E	Insert 12...	Insert 20...		
<b>QER 075 5C-C20</b>	.75	5.0	1.00	1.02	QER 20-12	—	★	29
<b>100 6C-C25</b>	1.00	6.0	1.25	1.30	QER 25-12	QER 25-20	★	30
<b>125 7C-C25</b>	1.25	7.0	1.50	1.30			★	32
<b>QEL 075-5C-C20</b>	.75	5.0	1.00	1.02	QEL 20-12	—	☆	29
<b>100 6C-C25</b>	1.00	6.0	1.25	1.30	QEL 25-12	QEL 25-20	☆	30
<b>125 7C-C25</b>	1.25	7.0	1.50	1.30			☆	32

Toolholders delivered without cassette, to be ordered separately.



# QuadThread toolholders

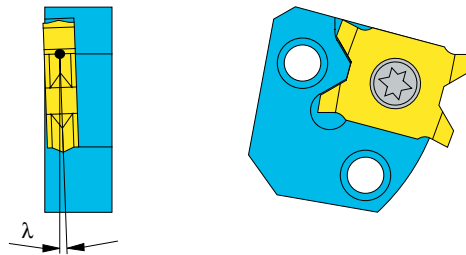
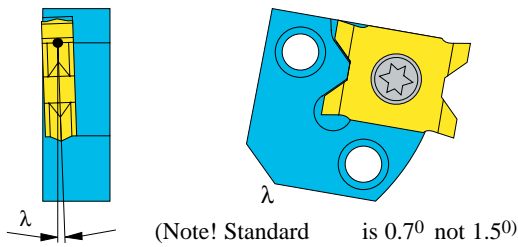
## CASSETTE-TYPE TOOLHOLDER



Catalog number	Dimensions						Cassettes		Stock standard	Price-group
	d <sub>2</sub>	d	l	l <sub>2</sub>	f	D	Insert 12...	Insert 20...		
<b>QNR 200/150 7-C50</b>	2.0	1.5	7.0	3.0	1.18	2.20			★	
<b>200 10-C50</b>	2.0	2.0	10.0	-	1.18	2.20	QNR 50-12	—	★	33
<b>250/150 8-C63</b>	2.5	1.5	8.0	4.0	1.48	3.15			★	
<b>250 12-C63</b>	2.5	2.5	12.0	-	1.48	3.15	QNR 63-12	QNR 63-20	★	34
<b>QNL 200/150 7-C50</b>	2.0	1.5	7.0	3.0	1.18	2.20			★	
<b>200 10-C50</b>	2.0	2.0	10.0	-	1.18	2.20			★	
<b>250/150 8-C63</b>	2.5	1.5	8.0	4.0	1.48	3.15	QNL 50-12	—	★	33
<b>250 12-C63</b>	2.5	2.5	12.0	-	1.48	3.15			★	

## INTERNAL STANDARD CASSETTES

## INTERNAL API CASSETTES



Catalog number	Insert	Stock standard (λ)			Price-group	Catalog number	Insert	Stock standard (λ)			Price-group
		0.7	0	98.5				1.5	0	98.5	
<b>QNR 50-12</b>	12...	★	☆	★	23	<b>QNR 63-20API</b>	20...	☆	☆	☆	23
<b>63-12</b>	12...	★	☆	★							
<b>63-20</b>	20...	★	☆	★							
<b>QNL 50-12</b>	12...	★	☆	★	23	<b>QNL 63-20API</b>	20...	☆	☆	☆	23
<b>63-12</b>	12...	★	☆	★							
<b>63-20</b>	20...	★	☆	★							

**NOTE!** The following profiles can be used for external and internal threading.

**WARNING!** ISO Metric and Unified have different profiles for external and internal thread.

Partial profile	Trapezoidal	NPT
Whitworth	ACME	NPTF
BSPT	STUB ACME	API RD



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