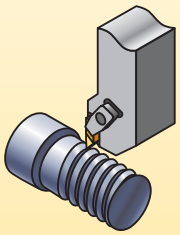
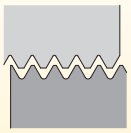
Threading

Top Notch™ External Threading



Square Shank Toolholder Sizes:
- Metric — 10–32mm

Fine Pitch

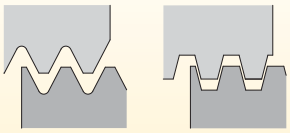


Cresting (Full Profile):
UN maximum TPI of 32
ISO minimum pitch of 1,5mm

**Partial Profile —
Flat Top (NTF and NTK):**
UN maximum TPI of 44
ISO minimum pitch of 0,6mm

**Partial Profile —
Chip Control (NT-K):**
UN maximum TPI of 36
ISO minimum pitch of 0,7mm

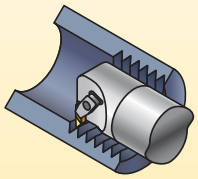
Coarse Pitch/Heavy Duty



Cresting (Full Profile):
UN minimum TPI of 7
ISO maximum pitch of 3mm

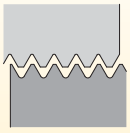
**Partial Profile —
Flat Top and Chip Control
(NT-C and NT-CK):**
UN minimum TPI of 4,5
ISO maximum pitch of 5,5mm

Top Notch Internal Threading



Boring Bar Diameters:
- Metric — 10–50mm
- Minimum bore — 11,5mm
- Steel

Fine Pitch

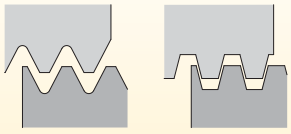


Cresting (Full Profile):
UN maximum TPI of 16
ISO minimum pitch of 1,5mm

**Partial Profile —
Flat Top (NT-1L, NTF and NTK):**
UN maximum TPI of 24
ISO minimum pitch of 1mm

**Partial Profile —
Chip Control (NT-K):**
UN maximum TPI of 20
ISO minimum pitch of 1,25mm

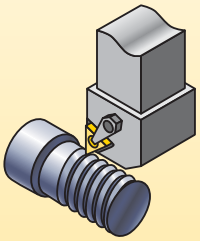
Coarse Pitch/Heavy Duty



Cresting (Full Profile):
UN minimum TPI of 8
ISO maximum pitch of 3mm

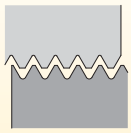
**Partial Profile —
Flat Top and Chip Control
(NT-C and NT-CK):**
UN minimum TPI of 4,5
ISO maximum pitch of 5,5mm

LT Laydown External Threading



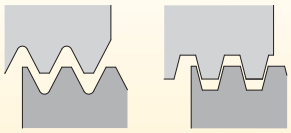
Square Shank Toolholder Sizes:
- Metric — 8–40mm available

Fine Pitch



Cresting (Full Profile) and Partial Profile:
UN maximum TPI of 48
ISO minimum pitch of 0,5mm

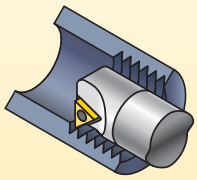
Coarse Pitch/Heavy Duty



Cresting (Full Profile):
UN minimum TPI of 8
ISO maximum pitch of 5mm

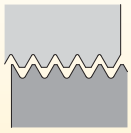
Partial Profile:
UN minimum TPI of 5
ISO maximum pitch of 5mm

LT Laydown Internal Threading



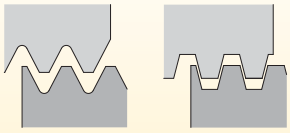
Boring Bar Diameters:
- Metric — 12–50mm
- Minimum bore — 13mm
- Steel and carbide

Fine Pitch



Cresting (Full Profile) and Partial Profile:
UN maximum TPI of 48
ISO minimum pitch of 0,5mm

Coarse Pitch/Heavy Duty



Cresting (Full Profile):
UN minimum TPI of 8
ISO maximum pitch of 5mm

Partial Profile:
UN minimum TPI of 5
ISO maximum pitch of 5mm

Top Notch™ Thread Tooling Is the Proven High-Productivity Threading Solution!

Primary Application

Top Notch Threading with Beyond™ Insert technology provides consistent tool performance and superior clamping thread to almost any operation. With the largest selection of grades and geometries in the industry, the Top Notch Threading system is a proven solution.

Features and Benefits

Choosing the Top Notch Threading System

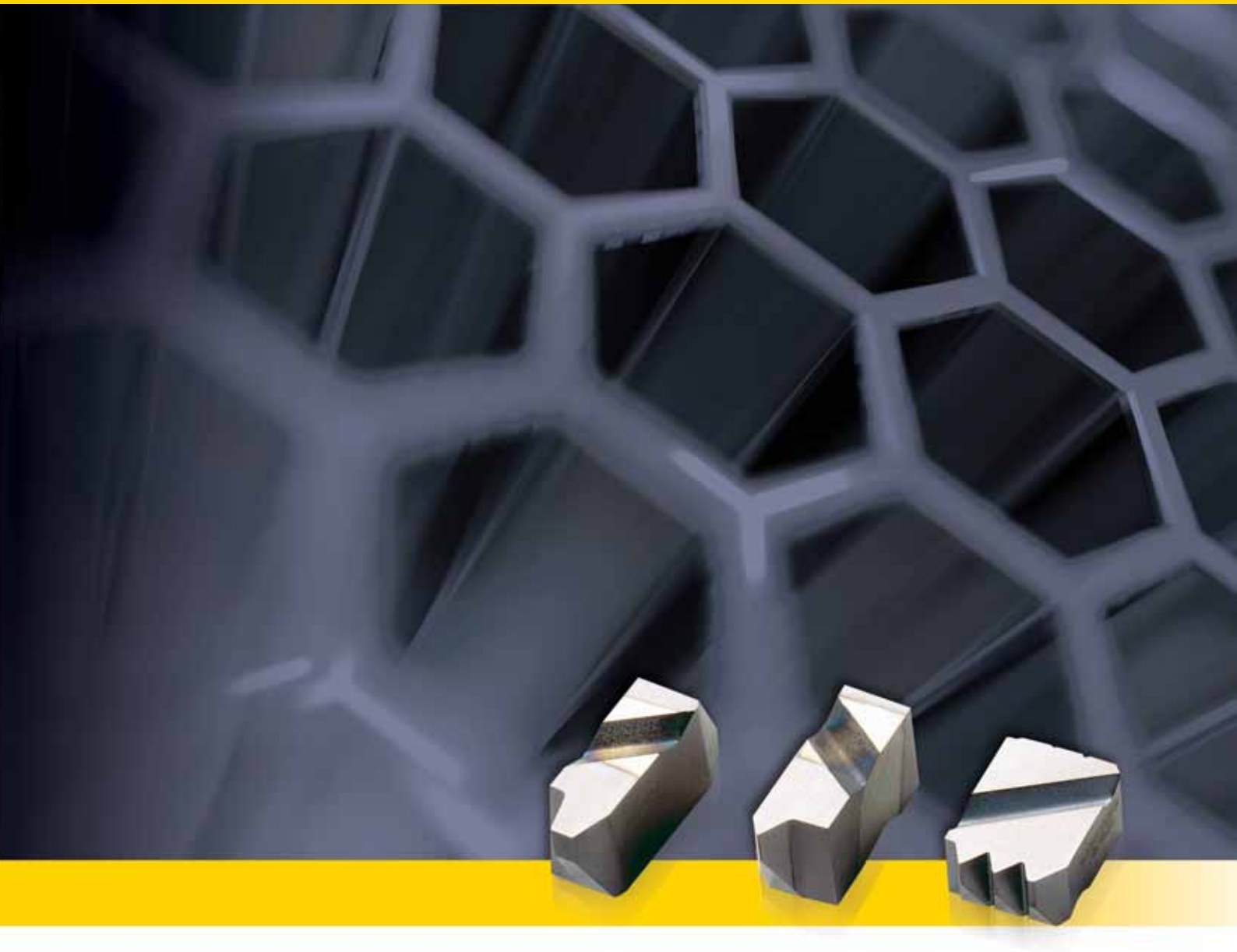
- A superior choice for heavy-duty applications like machining of Acme, Buttress, and API threads. Top Notch is also the best system for coarse pitch and multitooth threading applications.
- Largest selection of insert geometries and grades in the industry.
- A very rigid insert clamping design ensures best tool life, surface finish, and workpiece quality.
- Simplicity of the Top Notch design does not require shim selection for thread helix angles. This helps to avoid mistakes on the shop floor.
- Reduces inventory by using the same Top Notch toolholders and boring bars with either threading or grooving inserts.
- Top Notch chipbreaker inserts eliminate long troublesome coils.
- An excellent choice for special thread forms and toolholder designs.

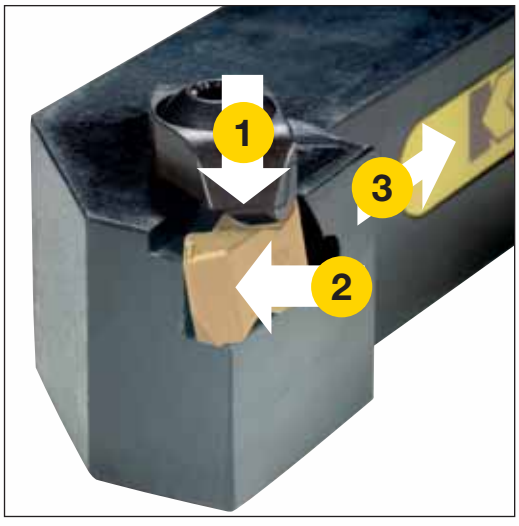
Precision-Ground Thread Form

- Minimises built-up edge.
- Precisely cuts most common materials.
- Reduces cutting forces.
- Ensures accurate high-quality threads.

Superior Chip Control

- Eliminates long, troublesome coils.
- Excellent for internal threading operations.
- Available in partial profile inserts for 60° thread forms.



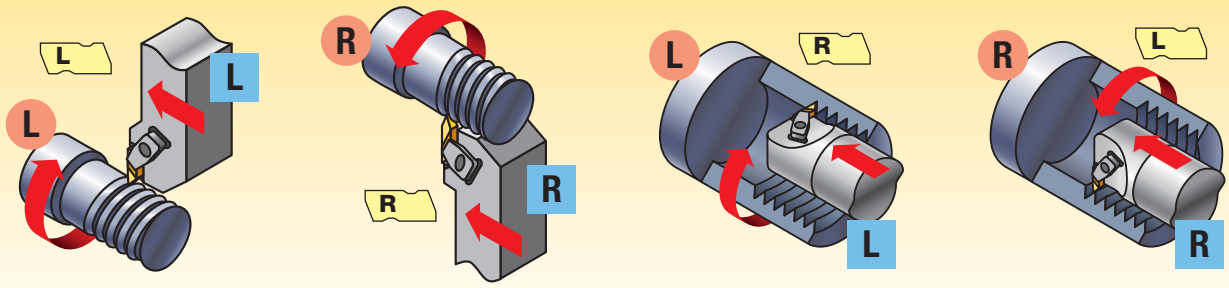

1
2
3

Step 1 • Select threading method and hand of tooling

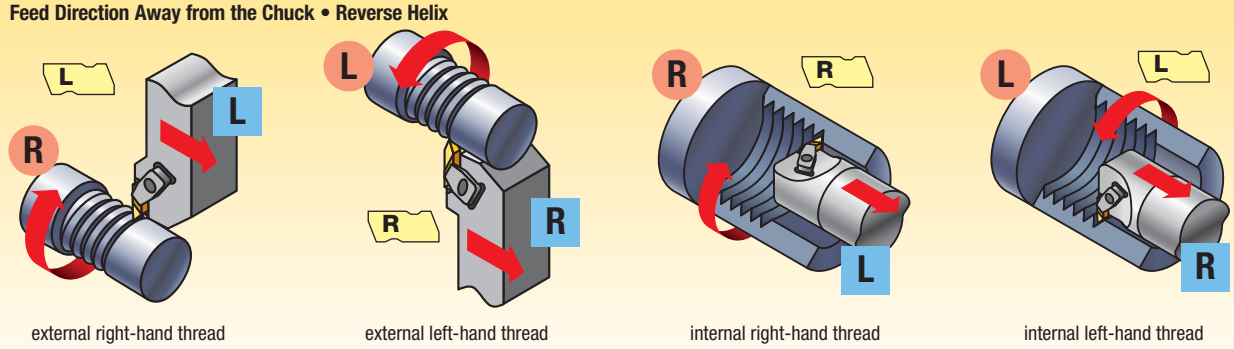
What you need to know:

- External/internal operation.
- Spindle rotation/hand of thread.
- Feed direction.

Feed Direction Toward the Chuck • Standard Helix



Feed Direction Away from the Chuck • Reverse Helix



NOTE: Top Notch threading bars require opposite hand insert and clamp.
Right-hand bar requires left-hand insert and clamp.
Left-hand bar requires right-hand insert and clamp.

Step 2 • Select insert for application

- See threading insert overview on page E9.
- Select cresting inserts for fully controlled thread form including diameter control. Cresting inserts eliminate the need for deburring.
- Non-cresting partial profile inserts can cut a variety of thread pitches. Chip control is only available with partial profile inserts.
- Note insert size for toolholder selection.

insert size	catalogue number	KCU25/KC5025	KCU10/KC5010
2	NT-2RK	●	●
3	NT-3RK	●	●
4	NT-4RK	●	●

Step 3 • Select grade and speed

Recommendations for Grade and Speed Selection • m/min

workpiece material	P	M	K	N	S
insert style	chip control or neutral 	chip control or positive 	neutral 	positive 	positive 
optimum cutting conditions	**KCU10/KC5010** 50–230	**KCU10/KC5010** 50–185	**KCU10/KC5010** 70–210	**KC5410** 70–390	**KCU10/KC5010** 20–120
first choice	**KCU25/KC5025** 40–200	**KCU25/KC5025** 40–135	**KCU25/KC5025** 60–145	**KCU25/KC5025** 50–360	**KCU25/KC5025** 10–100

Example
Chip control .....NT-K or NT-CK (partial profile only)
Neutral .....NT, NT-C, NTF, NTC, NJ, NJF, NDC-V, NA, NDC, NTB-A/B
Positive .....NTP, NTK, NJP, NJK

Step 4 • Select holder from catalogue page

What you need to know:

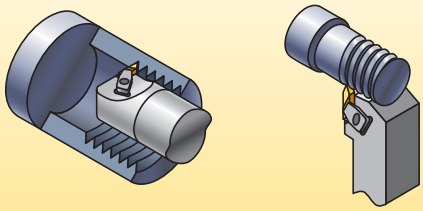
- External/internal operation.
- Minimum bore diameter (for internal operations).
- Hand of tool.
- Insert size (gage insert).

NOTE: The insert size must match the gage insert size of your toolholder selection.

catalogue number	gage insert
NSR-163D	N.3R
NSR-164D	N.4R

NOTE: Top Notch toolholders and boring bars are listed with a gage insert to indicate the size and hand required. They are compatible with both grooving and threading inserts of the same size.

Select the Appropriate Holder for the Insert Size and Hand:

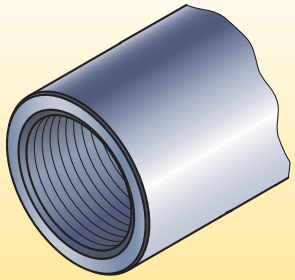


NOTE: Optimise your threading operation by using the proper infeed angle and the recommended infeed values.

Step 5 • Select insert and holder from catalogue page

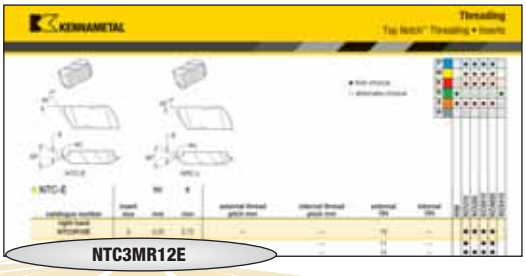
Top Notch Threading Example
Application .....8 TPI Acme internal right-hand thread
Material .....alloy steel
Workpiece diameter 114,3mm
good cutting conditions
feed toward the chuck

Recommendation
Insert NA3L8
Grade KC5010
Insert size 3
Boring bar A50UNNT0R4
Gage insert N.3L
Speed .....150 m/min
Infeed passes .....12 passes



How Do Catalogue Numbers Work?

Each character in our catalogue number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



N — Type of Insert

N = Top Notch*

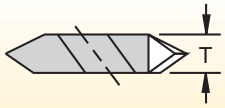
T — Insert Style

A = Acme
D = API or NPT
J = UNJ thread
T = 60° V thread
W = 55° V Whitworth

C — Additional Information

B = Buttress
F = Fine pitch
S = Stub Acme
C = Cresting
P = Positive rake
K = Fine pitch, positive
U = Utility**

3 — Insert Size



insert size	T (mm)
1	2,54
2	3,81
3	4,95
4	6,48
5	9,65
6	9,73
8	11,13

See full dimension chart below

M — Industry Thread Identification

Position indicates API or drilling industry form designation (e.g.,10RD, 8RD, .038)

or

Controlled root radius threading inserts indicate the root radius in .001" increments (NJ, NJF, NJP, NJK)

or

M indicates metric ISO thread

R — Hand of Insert

R = Right hand
L = Left hand

12 — Definition of Insert

- Threads per inch or pitch (for metric)
- "A" or "B" type Buttress insert
- Taper per foot — API threads

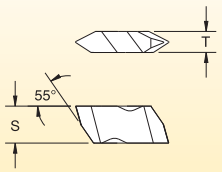
E — Additional Information

I = Internal thread
E = External thread (used only if internal and external thread forms are different)

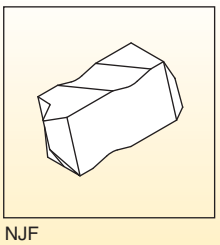
M = Multiple tooth
K = Standard chip control
C = Coarse pitch
D = Dryseal

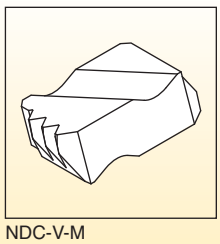
*Kennametal proprietary standard only.
**Utility threading insert can only be used in NSUR/L utility holders.

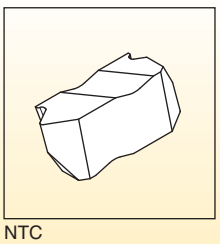
Top Notch Threading and Grooving Insert Dimensions

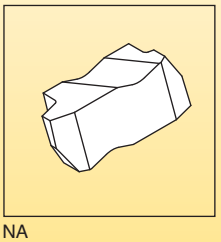


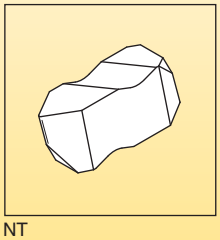
insert size	S mm	T mm
1	2,54	2,54
2	5,56	3,81
3	8,74	4,95
4	11,51	6,48
5	17,48	9,65
6	11,51	9,73
8	7,93	11,13

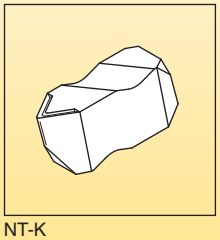

NJF


NDC-V-M

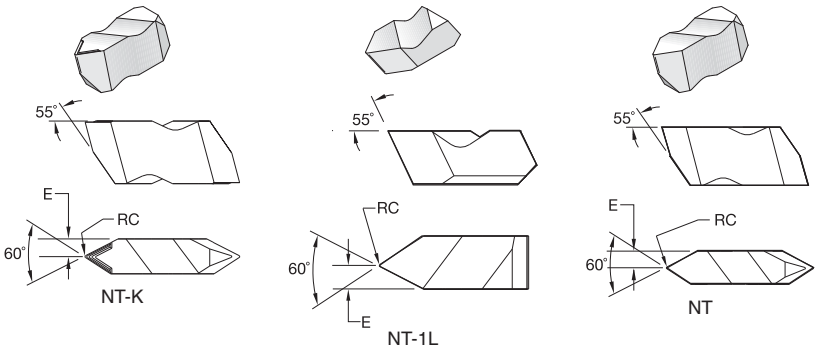

NTC


NA


NT


NT-K

style			thread profile	standard	tolerance class	cresting	application	page(s)
chip control — K	neutral	positive						
 NT-K	 NT	 NTP	Partial Profile 60º	—	—	N	General use for 60º thread forms such as ISO and UN where non-cresting inserts are desired to cut a variety of pitches	E10–E11
 NT-CK			Partial Profile 60º — coarse pitch	—	—	N	Coarse pitch 60º thread forms such as ISO and UN where non-cresting inserts are desired to cut a variety of pitches	E11
	 NTF	 NTK	Partial Profile 60º — fine pitch	—	—	N	Fine pitch 60º thread forms such as ISO and UN where non-cresting inserts are desired to cut a variety of pitches — able to thread close to shoulders	E11–E12
	 NTU		Partial Profile 60º — four-edged insert	—	—	N	Four-edged insert for 60º partial profile threading — requires NSU-style toolholder for size 4U insert	E12
	 NTC-M		Metric ISO	ISO R262, DIN 13	6g/6H	Y	Widely used metric 60º V-form for all industries	E12
	 NTC		American UN	ANSI B1.1:03	2A/2B	Y	Widely used inch-based 60º V-form for all industries	E12–E13
	 NJ	 NJP	UNJ	MIL-S-8879C	3A/3B	N	Controlled root radius on external threads for military and aerospace industries	E14
	 NJF	 NJK	UNJ — fine pitch	MIL-S-8879C	3A/3B	N	Controlled root radius on external threads for military and aerospace industries — able to thread close to shoulders	E15
	 NDC-V		NPT	ANSI B2.1:83	Standard NPT	Y	National Pipe Thread standard forms for pipe fittings	E16
	 NDC-V-M		NPT — multitooth	ANSI B2.1:83	Standard NPT	Y	High productivity multitooth threading inserts for NPT threads	E16
	 NWC		Whitworth, BSW, BSP	BS 84:1956, ISO 228/1:1982, DIN 259	Medium Class A	Y	Widely used 55º form for gas and water connections	E17
	 ND		API Rotary Shoulder Connections — partial profile	API SPEC. 7:1990	Standard API	N	60º V-form used for rotary shoulder pipe connections in the oil and gas industry including V-.038R, V-.040, and V-.050 forms	E17
	 NDC		API Rotary Shoulder Connections — cresting	API SPEC. 7:1990	Standard API	Y	60º V-form used for rotary shoulder pipe connections in the oil and gas industry including V-.038R, V-.040, and V-.050 forms — complete cresting form including taper	E18
	 NDC-RD		API Round	API STD. 5B:1979	Standard API RD	Y	60º V-form with large radius for casing, tubing, and line pipe in the oil and gas industry including 8 and 10 round forms	E18
	 NDC-RD-M		API Round — multitooth	API STD. 5B:1979	Standard API RD	Y	High productivity multitooth threading inserts for API round threads	E18
	 NA		Acme	ANSI B1.5:1988	3G	N	29º truncated thread form for motion applications in a wide variety of industries	E19
	 NAS		Stub Acme	ANSI B1.8:1988	2G	N	Shallow depth 29º truncated thread form for motion applications in a wide variety of industries	E20
	 NTB-A		American Buttress 7º pressure flank leading (Push)	ANSI B1.9:1973	Class 2	N	Sawtooth form for axial load bearing applications in a variety of industries — use the "A" style when the 7º pressure flank is the leading edge	E20
	 NTB-B		American Buttress 45º clearance flank leading (Pull)	ANSI B1.9:1973	Class 2	N	Sawtooth form for axial load bearing applications in a variety of industries — use the "B" style when the 45º clearance flank is the leading edge	E21



● first choice
○ alternate choice

P		●	●	●	●		
M		●	●	●	●		
K	○	●	●	●	●		
N	●	○	○	○	○	●	
S	●	●	●	●	●	○	
H		○		○			

NT-K

catalogue number	insert size	RC mm	E mm	external thread pitch mm	internal thread pitch mm	external TPI	internal TPI	K68	KCU10	KCU25	KC5010	KC5025	KC5410
right hand													
NT2RK	2	0,10	1,91	0,70-3,00	1,25-3,50	8-36	7-20		●	●	●	●	
NT3RK	3	0,17	2,49	1,25-4,00	2,00-5,00	6-20	5-12		●	●	●	●	
NT4RK	4	0,17	3,25	1,25-6,25	2,00-6,25	4-20	4-12		●	●	●	●	
left hand													
NT2LK	2	0,10	1,91	0,70-3,00	1,25-3,50	8-36	7-20		●	●	●	●	
NT3LK	3	0,17	2,49	1,25-4,00	2,00-5,00	6-20	5-12		●	●	●	●	
NT4LK	4	0,17	3,25	1,25-6,25	2,00-6,25	4-20	4-12		●	●	●	●	

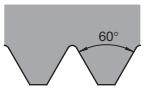
NT-1L

catalogue number	insert size	RC mm	E mm	external thread pitch mm	internal thread pitch mm	external TPI	internal TPI	K68	KCU10	KCU25	KC5010	KC5025	KC5410
left hand													
NT1L	1	0,08	1,09	–	1,00-2,00	–	12-24	●	●	●	●	●	

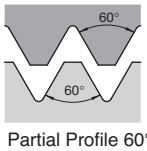
NT

catalogue number	insert size	RC mm	E mm	external thread pitch mm	internal thread pitch mm	external TPI	internal TPI	K68	KCU10	KCU25	KC5010	KC5025	KC5410
right hand													
NT2R	2	0,10	1,91	0,70-3,00	1,25-3,50	8-36	7-20	●	●	●	●	●	
NT3R	3	0,17	2,49	1,25-4,00	2,00-5,00	6-20	5-12	●	●	●	●	●	
NT4R	4	0,17	3,25	1,25-6,25	2,00-6,25	4-20	4-12	●	●	●	●	●	
left hand													
NT2L	2	0,10	1,91	0,70-3,00	1,25-3,50	8-36	7-20	●	●	●	●	●	
NT3L	3	0,17	2,49	1,25-4,0	2,0-5,0	6-20	5-12	●	●	●	●	●	
NT4L	4	0,17	3,25	1,25-6,25	2,0-6,25	4-20	4-12	●	●	●	●	●	

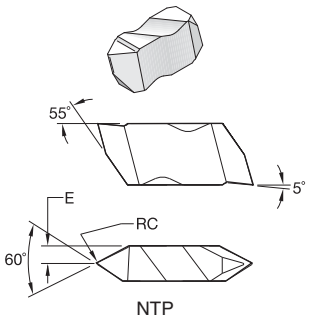
Thread Forms



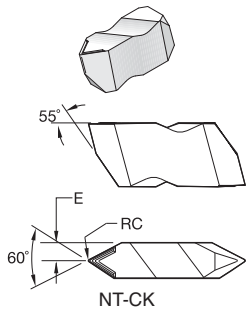
Partial Profile 60°
Internal



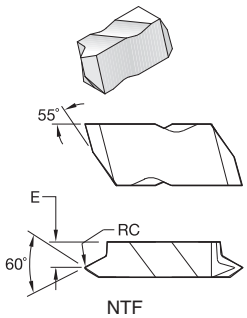
Partial Profile 60°



NTP



NT-CK



NTF

● first choice
○ alternate choice

P			●	●	●	●		
M			●	●	●	●		
K		○	●	●	●	●		
N		●	○	○	○	○	●	
S		●	●	●	●	●	○	
H			○		○			

NTP

catalogue number	insert size	RC mm	E mm	external thread pitch mm	internal thread pitch mm	external TPI	internal TPI	K68	KCU10	KCU25	KC5010	KC5025	KC5410
right hand													
NTP2R	2	0,10	1,91	0,70-3,00	1,25-3,50	8-36	7-20	●	●	●	●	●	●
NTP3R	3	0,17	2,49	1,25-4,00	2,00-5,00	6-20	5-12	●	●	●	●	●	●
NTP4R	4	0,17	3,25	1,25-6,25	2,00-6,25	4-20	4-12		●	●	●	●	
left hand													
NTP2L	2	0,10	1,91	0,70-3,00	1,25-3,50	8-36	7-20	●	●	●	●	●	
NTP3L	3	0,17	2,49	1,25-4,00	2,00-5,00	6-20	5-12	●	●	●	●	●	
NTP4L	4	0,17	3,25	1,25-6,25	2,00-6,25	4-20	4-12		●	●	●	●	

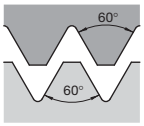
NT-CK

catalogue number	insert size	RC mm	E mm	external thread pitch mm	internal thread pitch mm	external TPI	internal TPI						
right hand													
NT3RCK	3	0,34	2,46	2,5-4,0	4,0	6-11	6		●	●	●	●	
NT4RCK	4	0,34	3,23	2,5-5,5	4,0-5,5	4.5-11	4.5-6		●	●	●	●	
left hand													
NT3LCK	3	0,34	2,46	2,5-4,0	4,0	6-11	6		●	●	●	●	
NT4LCK	4	0,34	3,23	2,5-5,5	4,0-5,5	4.5-11	4.5-6			●	●	●	

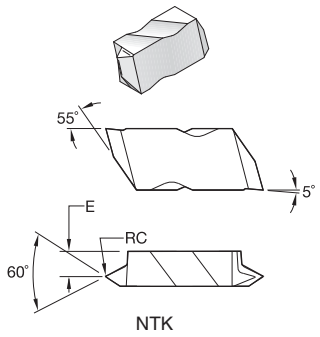
NTF

catalogue number	insert size	RC mm	E mm	external thread pitch mm	internal thread pitch mm	external TPI	internal TPI						
right hand													
NTF2R	2	0,08	2,79	0,60-1,75	1,0-2,0	14-44	12-24	●	●	●	●	●	
NTF3R	3	0,08	3,58	0,60-2,5	1,0-2,5	10-44	9-24	●	●	●	●	●	
NTF4R	4	0,08	5,11	0,60-2,5	1,0-2,5	10-44	9-24	●				●	
left hand													
NTF2L	2	0,08	2,79	0,60-1,75	1,0-2,0	14-44	12-24	●	●	●	●	●	
NTF3L	3	0,08	3,58	0,60-2,5	1,0-2,5	10-44	9-24	●	●	●	●	●	
NTF4L	4	0,08	5,11	0,60-2,5	1,0-2,5	10-44	9-24					●	

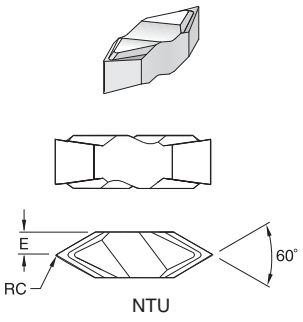
Thread Forms



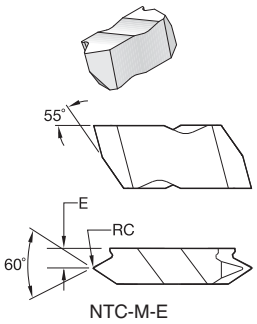
Partial Profile 60°



NTK



NTU



NTC-M-E

● first choice
○ alternate choice

P			●	●	●	●	
M			●	●	●	●	
K		○	●	●	●	●	
N		●	○	○	○	○	●
S		●	●	●	●	●	○
H			○		○		

NTK

catalogue number	insert size	RC mm	E mm	external thread pitch mm	internal thread pitch mm	external TPI	internal TPI	K68	KCU10	KCU25	KC5010	KC5025	KC5410
right hand													
NTK2R	2	0,08	2,79	0,60-1,75	1,00-2,00	14-44	12-24	●	●	●	●	●	
NTK3R	3	0,08	3,58	0,60-2,50	1,00-2,50	10-44	9-24	●	●	●	●	●	
left hand													
NTK2L	2	0,08	2,79	0,60-1,75	1,00-2,00	14-44	12-24	●	●	●	●	●	
NTK3L	3	0,08	3,58	0,60-2,50	1,00-2,50	10-44	9-24	●	●	●	●	●	

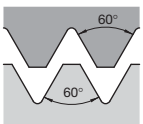
NTU

catalogue number	insert size	RC mm	E mm	external thread pitch mm	internal thread pitch mm	external TPI	internal TPI	K68	KCU10	KCU25	KC5010	KC5025	KC5410
right hand													
NTU4R	4U	0,11	3,18	1,25-6,25	–	4-20	–			●		●	

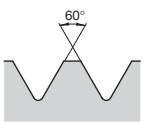
NTC-M-E

catalogue number	insert size	RC mm	E mm	external thread pitch mm	internal thread pitch mm	external TPI	internal TPI	K68	KCU10	KCU25	KC5010	KC5025	KC5410
right hand													
NTC3MR150E	3	0,20	3,68	1,50	–	–	–		●		●	●	
NTC3MR200E	3	0,27	3,68	2,00	–	–	–		●		●		

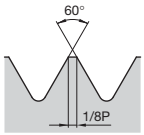
Thread Forms



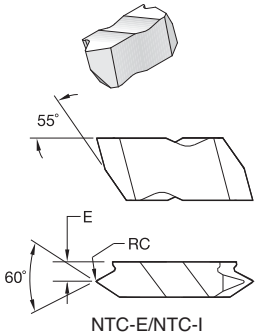
Partial Profile 60°



Partial Profile 60° External



ISO Metric-External



NTC-E/NTC-I

● first choice
○ alternate choice

		K68	KCU10	KCU25	KC5010	KC5025	KC5410
P			●	●	●	●	
M			●	●	●	●	
K		○	●	●	●	●	
N		●	○	○	○	○	●
S		●	●	●	●	●	○
H			○		○		

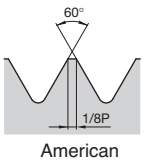
NTC-E

catalogue number	insert size	RC mm	E mm	external thread pitch mm	internal thread pitch mm	external TPI	internal TPI	K68	KCU10	KCU25	KC5010	KC5025	KC5410
right hand													
NTC3R10E	3	0,32	2,72	–	–	10	–		●	●	●	●	
NTC3R11E	3	0,28	2,72	–	–	11	–		●		●	●	
NTC3R12E	3	0,25	3,76	–	–	12	–		●	●	●	●	
NTC3R13E	3	0,24	3,76	–	–	13	–		●	●	●	●	
NTC3R14E	3	0,22	3,76	–	–	14	–		●	●	●	●	
NTC3R16E	3	0,19	3,76	–	–	16	–		●	●	●	●	
NTC3R18E	3	0,18	3,76	–	–	18	–		●	●	●	●	
NTC3R20E	3	0,16	3,76	–	–	20	–		●	●	●	●	
NTC3R24E	3	0,13	3,76	–	–	24	–		●	●	●	●	
NTC3R28E	3	0,12	3,76	–	–	28	–					●	
NTC3R32E	3	0,10	3,76	–	–	32	–		●		●	●	
NTC3R7E	3	0,47	2,72	–	–	7	–					●	
NTC3R8E	3	0,41	2,72	–	–	8	–		●	●	●	●	
NTC3R9E	3	0,36	2,72	–	–	9	–		●		●	●	
left hand													
NTC3L10E	3	0,32	2,72	–	–	10	–		●		●		
NTC3L12E	3	0,25	3,76	–	–	12	–		●		●	●	
NTC3L16E	3	0,19	3,76	–	–	16	–		●		●	●	
NTC3L8E	3	0,41	2,72	–	–	8	–				●		

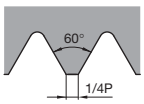
NTC-I

catalogue number	insert size	RC mm	E mm	external thread pitch mm	internal thread pitch mm	external TPI	internal TPI
right hand							
NTC3R12I	3	0,10	3,76	–	–	–	12
NTC3R8I	3	0,18	2,72	–	–	–	8
left hand							
NTC3L10I	3	0,13	2,72	–	–	–	10
NTC3L12I	3	0,10	3,76	–	–	–	12
NTC3L14I	3	0,09	3,76	–	–	–	14
NTC3L16I	3	0,08	3,76	–	–	–	16
NTC3L8I	3	0,18	2,72	–	–	–	8

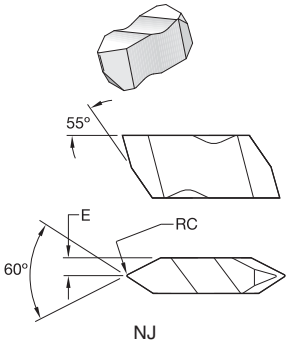
Thread Forms



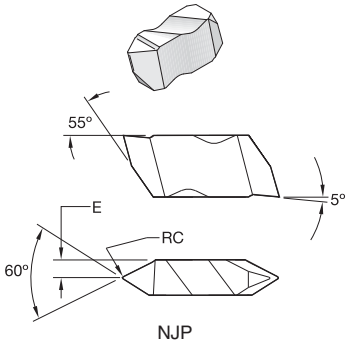
American
UN-External



American
UN-Internal



NJ



NJP

● first choice
○ alternate choice

P			●	●	●	●						
M			●	●	●	●						
K		○	●	●	●	●						
N		●	○	○	○	○	●					
S		●	●	●	●	●	○					
H			○		○							

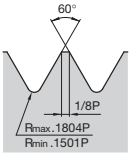
NJ

catalogue number	insert size	RC mm	E mm	external thread pitch mm	internal thread pitch mm	external TPI	internal TPI	K68	KCU10	KCU25	KC5010	KC5025	KC5410
right hand													
NJ3010R16	3	0,25	2,49	–	–	16	–	●		●		●	
NJ3014R12	3	0,33	2,49	–	–	12	–		●	●	●	●	
NJ3020R8	3	0,49	2,49	–	–	8	–		●	●	●	●	
left hand													
NJ3010L16	3	0,25	2,49	–	–	16	–					●	
NJ3014L12	3	0,33	2,49	–	–	12	–		●	●	●	●	
NJ3020L8	3	0,49	2,49	–	–	8	–					●	

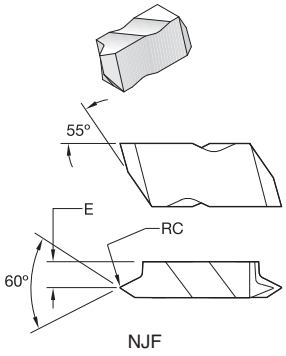
NJP

catalogue number	insert size	RC mm	E mm	external thread pitch mm	internal thread pitch mm	external TPI	internal TPI	K68	KCU10	KCU25	KC5010	KC5025	KC5410
right hand													
NJP3010R16	3	0,25	2,49	–	–	16	–		●	●	●	●	
NJP3014R12	3	0,33	2,49	–	–	12	–	●	●	●	●	●	
NJP3020R8	3	0,49	2,49	–	–	8	–		●	●	●	●	
left hand													
NJP3010L16	3	0,25	2,49	–	–	16	–					●	
NJP3014L12	3	0,33	2,49	–	–	12	–		●	●	●	●	
NJP3020L8	3	0,49	2,49	–	–	8	–			●		●	

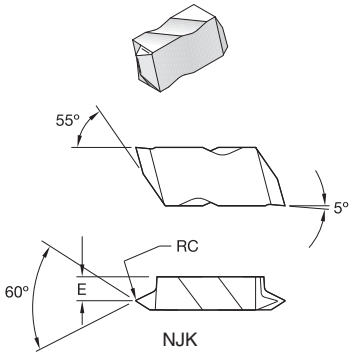
Thread Forms



UNJ External



NJF



NJK

● first choice
○ alternate choice

P		●	●	●	●		
M		●	●	●	●		
K	○	●	●	●	●		
N	●	○	○	○	○	●	
S	●	●	●	●	●	○	
H		○		○			

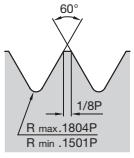
NJF

catalogue number	insert size	RC mm	E mm	external thread pitch mm	internal thread pitch mm	external TPI	internal TPI	K68	KCU10	KCU25	KC5010	KC5025	KC5410
right hand													
NJF3005R32	3	0,13	3,58	–	–	32	–		●		●		
NJF3006R28	3	0,15	3,58	–	–	28	–	●	●		●	●	
NJF3007R24	3	0,17	3,58	–	–	24	–		●	●	●	●	
NJF3008R20	3	0,20	3,58	–	–	20	–		●	●	●	●	
NJF3009R18	3	0,22	3,58	–	–	18	–	●	●	●	●	●	
NJF3010R16	3	0,25	3,58	–	–	16	–	●	●	●	●	●	
NJF3012R14	3	0,28	3,58	–	–	14	–		●	●	●	●	
left hand													
NJF3007L24	3	0,17	3,58	–	–	24	–				●		
NJF3008L20	3	0,20	3,58	–	–	20	–				●		
NJF3009L18	3	0,22	3,58	–	–	18	–				●		

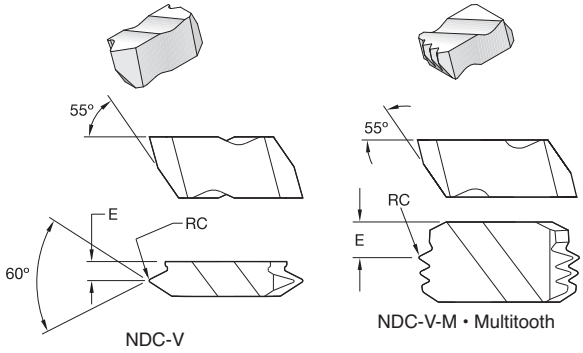
NJK

catalogue number	insert size	RC mm	E mm	external thread pitch mm	internal thread pitch mm	external TPI	internal TPI	K68	KCU10	KCU25	KC5010	KC5025	KC5410
right hand													
NJK3005R32	3	0,13	3,58	–	–	32	–		●	●	●	●	
NJK3006R28	3	0,15	3,58	–	–	28	–		●	●	●	●	
NJK3007R24	3	0,17	3,58	–	–	24	–		●	●	●	●	
NJK3008R20	3	0,20	3,58	–	–	20	–		●	●	●	●	
NJK3009R18	3	0,22	3,58	–	–	18	–		●	●	●	●	
NJK3010R16	3	0,25	3,58	–	–	16	–	●	●	●	●	●	
NJK3012R14	3	0,28	3,58	–	–	14	–		●		●	●	
left hand													
NJK3005L32	3	0,13	3,58	–	–	32	–					●	
NJK3006L28	3	0,15	3,58	–	–	28	–					●	
NJK3008L20	3	0,20	3,58	–	–	20	–			●		●	
NJK3012L14	3	0,28	3,58	–	–	14	–					●	

Thread Forms



UNJ External



NDC-V NDC-V-M • Multitooth

● first choice
○ alternate choice

P			●	●	●	●	
M			●	●	●	●	
K		○	●	●	●	●	
N		●	○	○	○	○	●
S		●	●	●	●	●	○
H			○		○		

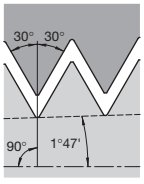
NDC-V

catalogue number	insert size	RC mm	E mm	TPI	K68	KCU10	KCU25	KC5010	KC5025	KC5410
right hand										
NDC3115VR75	3	0,10	3,66	11.5		●		●		
NDC314VR75	3	0,08	3,66	14		●		●		
NDC327VR75	3	0,05	3,66	27		●		●		
NDC38VR75	3	0,13	2,54	8		●		●		
left hand										
NDC3115VL75	3	0,10	3,66	11.5		●		●		
NDC38VL75	3	0,13	2,54	8		●		●		

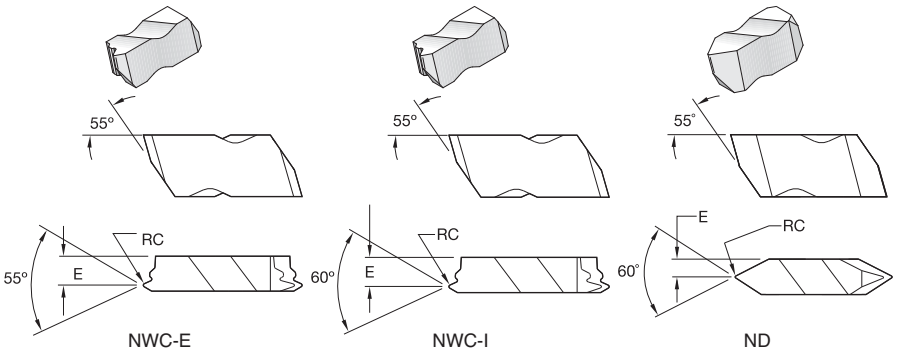
NDC-V-M • Multitooth

catalogue number	insert size	RC mm	E mm	TPI	K68	KCU10	KCU25	KC5010	KC5025	KC5410
right hand										
NDC8115VR75M	8	0,10	2,59	11.5		●		●		
NDC88VR75M	8	0,13	2,41	8		●		●		
left hand										
NDC8115VL75M	8	0,10	2,59	11.5				●		
NDC88VL75M	8	0,13	2,41	8		●		●		

Thread Forms



NPT



● first choice
○ alternate choice

P		●	●	●	●	
M		●	●	●	●	
K	○	●	●	●	●	
N	●	○	○	○	○	●
S	●	●	●	●	●	○
H		○		○		

NWC-E

catalogue number	insert size	RC mm	E mm	TPI	K68	KCU10	KCU25	KC5010	KC5025	KC5410
right hand										
NWC3R11E	3	0,30	3,43	11		●	●	●	●	
NWC3R14E	3	0,24	3,43	14			●	●	●	

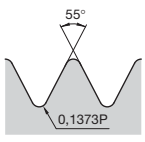
NWC-I

catalogue number	insert size	RC mm	E mm	TPI						
left hand										
NWC3L11I	3	0,30	3,43	11			●		●	

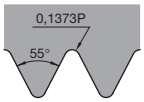
ND • Partial Profile

catalogue number	insert size	RC mm	E mm	TPI						
right hand										
ND3038R	3	0,90	2,08	4			●		●	
ND3040R	3	0,45	2,08	5					●	
ND4050R	4	0,57	3,25	4			●		●	
left hand										
ND3038L	3	0,90	2,08	4			●	●	●	
ND3040L	3	0,45	2,08	5					●	
ND4040L	4	0,45	3,25	5					●	
ND4050L	4	0,57	3,25	4					●	

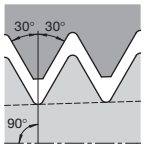
Thread Forms



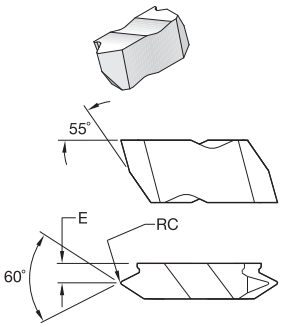
Whitworth BSW, BSP-External



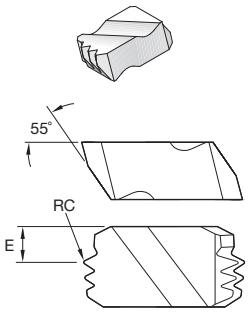
Whitworth BSW, BSP-Internal



API Rotary Shoulder Connections



NDC/NDC-RD



NDC-RD-M • Multitooth

● first choice
○ alternate choice

P			●	●	●	●	
M			●	●	●	●	
K		○	●	●	●	●	
N		●	○	○	○	○	●
S		●	●	●	●	●	○
H			○		○		

NDC • Cresting

catalogue number	insert size	RC mm	E mm	TPI	K68	KCU10	KCU25	KC5010	KC5025	KC5410
right hand										
NDC3040R3	3	0,45	3,73	5			●		●	
NDC4038R2	4	0,90	4,65	4		●	●	●	●	
NDC4040R3	4	0,45	3,73	5					●	
NDC4050R2	4	0,57	4,65	4		●	●	●	●	
NDC4050R3	4	0,57	4,65	4			●	●	●	
left hand										
NDC3040L3	3	0,45	3,73	5		●		●		
NDC4038L2	4	0,90	4,65	4		●	●	●	●	
NDC4040L3	4	0,45	3,73	5					●	
NDC4050L2	4	0,57	4,65	4			●		●	
NDC4050L3	4	0,57	4,65	4		●		●		

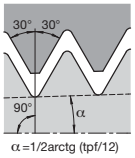
NDC-RD

catalogue number	insert size	RC mm	E mm	TPI	K68	KCU10	KCU25	KC5010	KC5025	KC5410
right hand										
NDC310RDR75	3	0,36	3,18	10		●	●	●	●	
NDC38RDR75	3	0,43	3,18	8		●	●	●	●	
left hand										
NDC310RDL75	3	0,36	3,18	10			●	●	●	
NDC38RDL75	3	0,43	3,18	8		●	●	●	●	

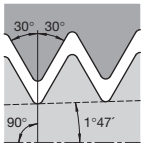
NDC-RD-M • Multitooth

catalogue number	insert size	RC mm	E mm	TPI	K68	KCU10	KCU25	KC5010	KC5025	KC5410
right hand										
NDC68RDR75M	6	0,41	2,62	8		●		●		
left hand										
NDC68RDL75M	6	0,41	2,62	8		●		●		

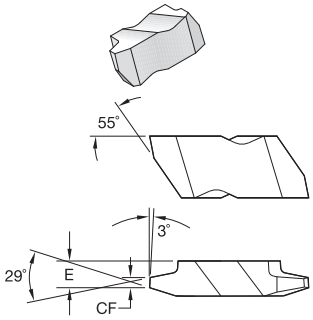
Thread Forms



α=1/2arctg (tpf/12)
API Rotary Shoulder Connections



API Round



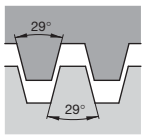
● first choice
○ alternate choice

P	●	●	●	●	●	
M	●	●	●	●	●	
K	○	●	●	●	●	
N	●	○	○	○	○	●
S	●	●	●	●	●	○
H		○		○		

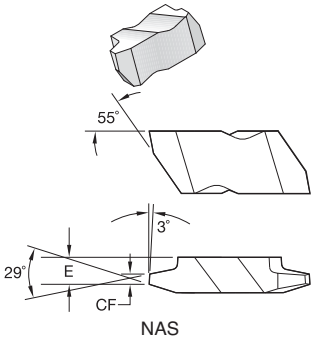
NA

catalogue number	insert size	CF mm	E mm	TPI	K68	KCU10	KCU25	KC5010	KC5025	KC5410
right hand										
NA3R10	3	0,81	3,79	10			●	●	●	
NA3R12	3	0,72	3,79	12				●	●	
NA3R16	3	0,52	3,79	16				●		
NA3R4	3	2,22	3,38	4			●	●	●	
NA3R5	3	1,75	3,79	5			●	●	●	
NA3R6	3	1,44	3,79	6			●	●	●	
NA3R8	3	1,04	3,79	8			●	●	●	
NA4R4	4	2,22	5,13	4		●	●	●	●	
NA4R5	4	1,75	5,13	5			●		●	
NA4R6	4	1,44	5,13	6			●		●	
NA4R8	4	1,04	5,13	8					●	
NA6R2	6	4,58	7,19	2		●	●	●	●	
NA6R25	6	3,64	7,19	2.5			●		●	
NA6R3	6	3,01	7,19	3			●		●	
left hand										
NA3L10	3	0,81	3,79	10			●		●	
NA3L12	3	0,72	3,79	12				●	●	
NA3L14	3	0,61	3,79	14					●	
NA3L4	3	2,22	3,38	4	●	●	●	●	●	
NA3L5	3	1,75	3,79	5			●	●	●	
NA3L6	3	1,44	3,79	6			●	●	●	
NA3L8	3	1,04	3,79	8			●	●	●	
NA4L4	4	2,22	5,13	4		●	●	●	●	
NA4L5	4	1,75	5,13	5			●		●	
NA4L6	4	1,44	5,13	6			●		●	
NA4L8	4	1,04	5,13	8			●		●	
NA6L2	6	4,58	7,19	2		●	●	●	●	
NA6L25	6	3,64	7,19	2.5			●		●	
NA6L3	6	3,01	7,19	3			●		●	

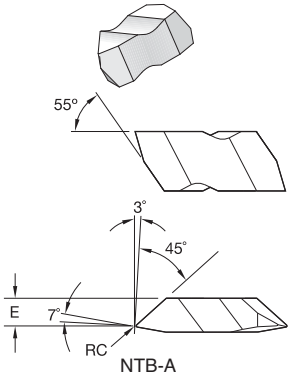
Thread Forms



Acme



NAS



NTB-A

● first choice
○ alternate choice

P			●	●	●	●						
M			●	●	●	●						
K		○	●	●	●	●						
N		●	○	○	○	○	●					
S		●	●	●	●	●	○					
H			○		○							

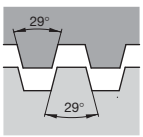
NAS

catalogue number	insert size	RC mm	CF mm	E mm	TPI	K68	KCU10	KCU25	KC5010	KC5025	KC5410
right hand											
NAS3R10	3	–	0,940	3,79	10		●	●	●	●	
NAS3R12	3	–	0,828	3,79	12			●		●	
NAS3R14	3	–	0,701	3,79	14					●	
NAS3R16	3	–	0,605	3,79	16					●	
NAS3R4	3	–	2,550	3,79	–			●		●	
NAS3R5	3	–	2,014	3,79	5		●	●	●	●	
NAS3R6	3	–	1,656	3,79	6		●	●	●	●	
NAS3R8	3	–	1,209	3,79	8		●	●	●	●	
left hand											
NAS3L10	3	–	0,940	3,79	10		●	●	●	●	
NAS3L12	3	–	0,828	3,79	12			●		●	
NAS3L16	3	–	0,605	3,79	16					●	
NAS3L4	3	–	2,550	3,79	–			●		●	
NAS3L5	3	–	2,014	3,79	5		●		●	●	
NAS3L6	3	–	1,656	3,79	6		●	●	●	●	
NAS3L8	3	–	1,209	3,79	8		●	●	●	●	

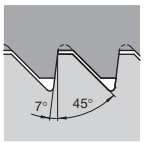
NTB-A

catalogue number	insert size	RC mm	E mm	TPI	K68	KCU10	KCU25	KC5010	KC5025	KC5410
right hand										
NTB2RA	2	0,08	3,20	16-20	●	●		●		
NTB3RA	3	0,17	4,17	8-16		●	●	●	●	
NTB4RA	4	0,25	5,23	4-6		●		●		
left hand										
NTB2LA	2	0,08	3,20	16-20					●	
NTB3LA	3	0,17	4,17	8-16	●	●	●	●	●	
NTB4LA	4	0,25	5,23	4-6				●	●	

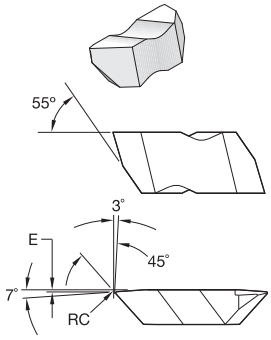
Thread Forms



Stub Acme



American Buttress-Push



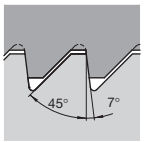
● first choice
○ alternate choice

P	●	●	●	●	●	
M		●	●	●	●	
K	○	●	●	●	●	
N	●	○	○	○	○	●
S	●	●	●	●	●	○
H		○		○		

NTB-B

catalogue number	insert size	RC mm	E mm	TPI	K68	KCU10	KCU25	KC5010	KC5025	KC5410
right hand										
NTB2RB	2	0,08	0,25	16-20		●		●	●	
NTB3RB	3	0,17	0,31	8-16	●	●	●	●	●	
NTB4RB	4	0,25	0,41	4-6		●	●	●	●	
left hand										
NTB2LB	2	0,08	0,25	16-20		●		●		
NTB3LB	3	0,17	0,31	8-16	●	●	●	●	●	
NTB4LB	4	0,25	0,41	4-6		●	●	●	●	

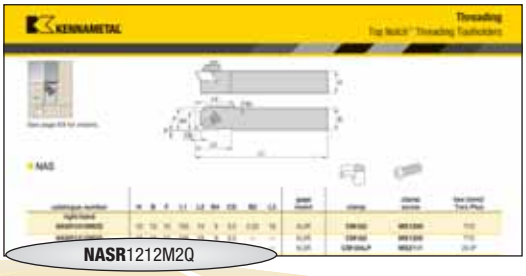
Thread Forms



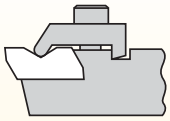
American
Buttress-Pull

How Do Catalogue Numbers Work?

Each character in our catalogue number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.

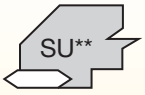


N
Insert Holding Location

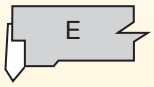


N = Top Notch*

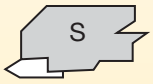
AS
Insert Mounting Location



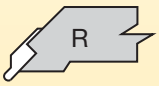
SU = Side mount utility



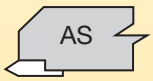
E = End



S = Side mount, offset

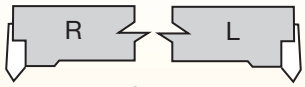


R = Undercut

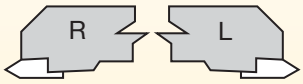


AS = Side mount, no offset

R
Hand of Tool

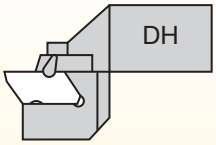


end mount



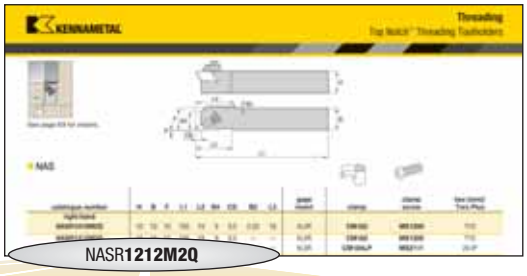
side mount

Drop Head



*Kennametal proprietary standard only.
**Side mount utility holder can only use NTU inserts.

By referencing this easy-to-use guide, you can identify the correct product to meet your needs.



1212

Shank Size

metric:
Shank height and width in mm and holder length according to ISO standard.

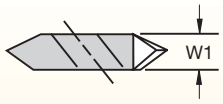
M

Tool Length

L1	ISO
32	A
40	B
50	C
60	D
70	E
80	F
90	G
100	H
110	J
125	K
140	L
150	M
160	N
170	P
180	Q
200	R
250	S
300	T
350	U
400	V
450	W
500	Y
special length	X

2

Insert Size



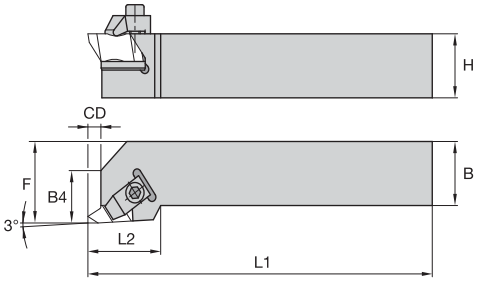
insert size	W1 (mm)
2	3,81
3	4,95
4	6,98
5	9,65
6	9,73
8	11,13

Q

Qualified Surface and Length

A = Qualified back and end, 4" long
B = Qualified back and end, 4.5" long
C = Qualified back and end, 5" long
D = Qualified back and end, 6" long
E = Qualified back and end, 7" long
V = Qualified back and end, 3.5" long
Q = Qualified metric holder

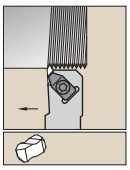
See page E9 for inserts.



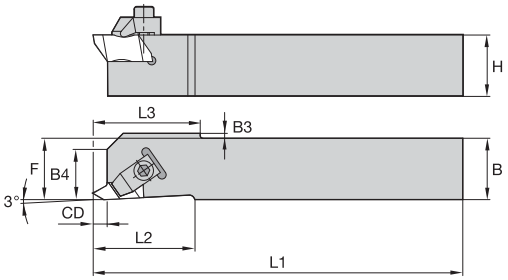
NS

catalogue number	H	B	F	L1	L2	B4	CD	gage insert	clamp	clamp screw	hex (mm)/ Torx Plus
right hand											
NSR1010E2	10	10	14	70	19	9	3,5	N.2R	**CM74**	**MS1200**	T10
NSR1212F2	12	12	16	80	19	9	3,5	N.2R	**CM74**	**MS1200**	T10
NSR1616H2	16	16	20	100	19	9	3,5	N.2R	**CM74**	**MS1200**	T10
NSR2020K2	20	20	25	125	19	9	3,5	N.2R	**CM74**	**MS1200**	T10
NSR2525M2	25	25	32	150	19	9	3,5	N.2R	**CM74**	**MS1200**	T10
NSR2020K3	20	20	25	125	32	13	5,3	N.3R	**CM72LP**	**MS2111**	25 IP
NSR2525M3	25	25	32	150	32	13	5,3	N.3R	**CM72LP**	**MS2111**	25 IP
NSR3225P3	32	25	32	170	32	13	5,3	N.3R	**CM72LP**	**MS2111**	25 IP
NSR3232P3	32	32	40	170	32	13	5,3	N.3R	**CM72LP**	**MS2111**	25 IP
NSR2525M4	25	25	32	150	35	14	7,5	N.4R	**CM72LP**	**MS2111**	25 IP
NSR3225P4	32	25	32	170	35	14	7,5	N.4R	**CM72LP**	**MS2111**	25 IP
NSR3232P4	32	32	40	170	35	14	7,5	N.4R	**CM72LP**	**MS2111**	25 IP
NSR3232P5	32	32	40	170	51	16	10,5	N.5R	**CM80**	**MS352**	6 mm
left hand											
NSL1010E2	10	10	14	70	19	9	3,5	N.2L	**CM75**	**MS1200**	T10
NSL1212F2	12	12	16	80	19	9	3,5	N.2L	**CM75**	**MS1200**	T10
NSL1616H2	16	16	20	100	19	9	3,5	N.2L	**CM75**	**MS1200**	T10
NSL2020K2	20	20	25	125	19	9	3,5	N.2L	**CM75**	**MS1200**	T10
NSL2525M2	25	25	32	150	19	9	3,5	N.2L	**CM75**	**MS1200**	T10
NSL2020K3	20	20	32	125	32	13	5,3	N.3L	**CM73LP**	**MS2111**	25 IP
NSL2525M3	25	25	32	150	32	13	5,3	N.3L	**CM73LP**	**MS2111**	25 IP
NSL3225P3	32	25	32	170	32	13	5,3	N.3L	**CM73LP**	**MS2111**	25 IP
NSL3232P3	32	32	40	170	32	13	5,3	N.3L	**CM73LP**	**MS2111**	25 IP
NSL2525M4	25	25	32	150	35	14	7,5	N.4L	**CM73LP**	**MS2111**	25 IP
NSL3225P4	32	25	32	170	35	14	7,5	N.4L	**CM73LP**	**MS2111**	25 IP
NSL3232P4	32	32	40	170	35	14	7,5	N.4L	**CM73LP**	**MS2111**	25 IP
NSL3232P5	32	32	40	170	51	16	10,5	N.5L	**CM81**	**MS352**	6 mm

NOTE: F dimension measured over sharp point of Top Notch-style threading and grooving insert.



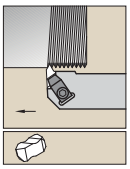
See page E9 for inserts.



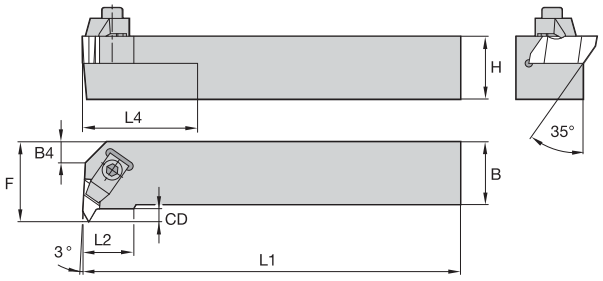
NAS


catalogue number	H	B	F	L1	L2	B4	CD	B3	L3	gage insert	clamp	clamp screw	hex (mm)/ Torx Plus
right hand													
NASR1010M2Q	10	10	10	150	19	9	3,5	2,03	19	N.2R	**CM182**	**MS1200**	T10
NASR1212M2Q	12	12	12	150	19	9	3,5	—	—	N.2R	**CM182**	**MS1200**	T10
NASR1616K3Q	16	16	16	125	32	12	5,3	—	—	N.3R	**CM184LP**	**MS2111**	25 IP
left hand													
NASL1010M2Q	10	10	10	150	19	9	3,5	2,03	19	N.2L	**CM183**	**MS1200**	T10
NASL1212M2Q	12	12	12	150	19	9	3,5	—	—	N.2L	**CM183**	**MS1200**	T10
NASL1616K3Q	16	16	16	125	32	12	5,3	—	—	N.3L	**CM185LP**	**MS2111**	25 IP

NOTE: F dimension measured over sharp point of N-style threading insert.



See page E9 for inserts.



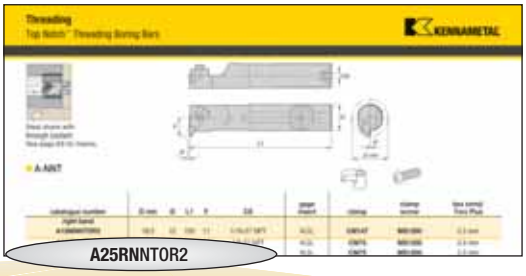
NE


catalogue number	H	B	F	L1	L2	B4	L4	CD	gage insert	clamp	clamp screw	hex (mm)/ Torx Plus
right hand												
NER1616H2	16	16	20	100	15	—	—	4	N.2L	**CM75**	**MS1200**	T10
NER2020K2	20	20	25	125	15	—	—	4	N.2L	**CM75**	**MS1200**	T10
NER2525M2	25	25	32	150	15	—	25	4	N.2L	**CM75**	**MS1200**	T10
NER2525M3	25	25	32	150	22	—	51	5	N.3L	**CM73LP**	**MS2111**	25 IP
NER3225P3	32	25	32	170	22	—	51	4	N.3L	**CM73LP**	**MS2111**	25 IP
NER2525M4	25	25	35	150	24	—	51	7	N.4L	**CM73LP**	**MS2111**	25 IP
NER3225P4	32	25	35	170	24	—	51	7	N.4L	**CM73LP**	**MS2111**	25 IP
NER3232P4	32	32	40	170	24	—	51	6	N.4L	**CM73LP**	**MS2111**	25 IP
left hand												
NEL1616H2	16	16	20	100	15	—	—	4	N.2R	**CM74**	**MS1200**	T10
NEL2020K2	20	20	25	125	15	—	—	4	N.2R	**CM74**	**MS1200**	T10
NEL2525M2	25	25	32	150	15	—	25	4	N.2R	**CM74**	**MS1200**	T10
NEL2525M3	25	25	32	150	22	—	51	5	N.3R	**CM72LP**	**MS2111**	25 IP
NEL3225P3	32	25	32	170	22	—	51	4	N.3R	**CM72LP**	**MS2111**	25 IP
NEL2525M4	25	25	35	150	24	—	51	7	N.4R	**CM72LP**	**MS2111**	25 IP
NEL3225P4	32	25	35	170	24	—	51	7	N.4R	**CM72LP**	**MS2111**	25 IP
NEL3232P4	32	32	40	170	24	—	51	6	N.4R	**CM72LP**	**MS2111**	25 IP

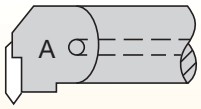
NOTE: F dimension measured over sharp point of Top Notch-style threading insert.

How Do Catalogue Numbers Work?

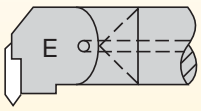
Each character in our catalogue number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



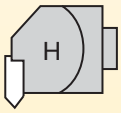
A
Bar Type



A = Steel with coolant

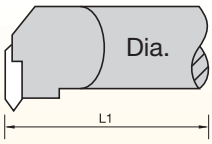


E = Carbide with coolant



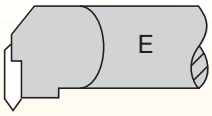
H = Interchangeable head

25
Bar Diameter



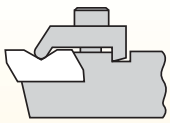
Bar diameter in millimetres

R
Bar Length



metric bars:
M = 150mm
Q = 180mm
R = 200mm
S = 250mm
T = 300mm
U = 350mm

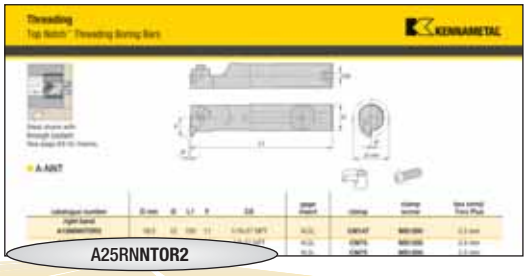
N
Insert Holding Method



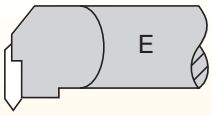
N* = Top Notch

*Kennametal standard only.

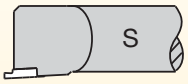
By referencing this easy-to-use guide, you can identify the correct product to meet your needs.



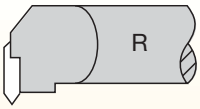
N	T	O	R	2
Insert Shape	Insert Location	Rake Angle	Hand of Bar	Insert Size



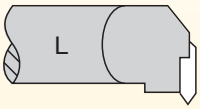
E = End mount



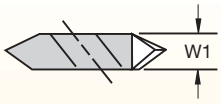
S = Straight mount



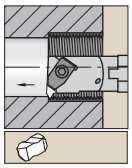
R = Right hand



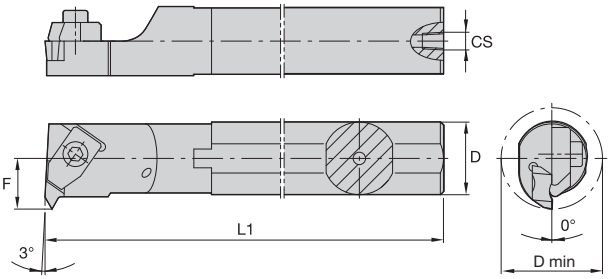
L = Left hand



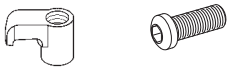
insert size	W1
1	3,54
2	3,81
3	5,35
4	6,40
5	9,65
6	9,73
8	11,13



Steel shank with
through coolant.
See page E9 for inserts.

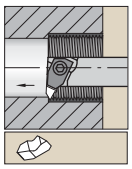


A-NNT

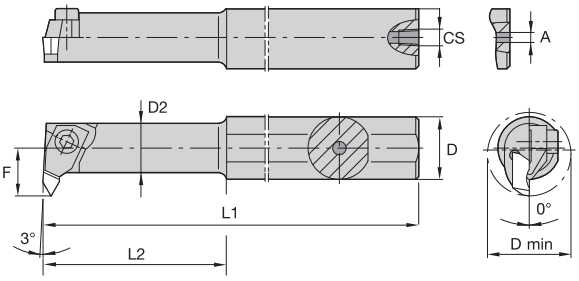


catalogue number	D min	D	L1	F	CS	gage insert	clamp	clamp screw	hex (mm)/ Torx Plus
right hand									
A12MNNTOR2	18,5	12	150	11	1/16-27 NPT	N.2L	**CM147**	**MS1200**	2.5 mm
A16MNNTOR2	22,0	16	150	11	1/8-27 NPT	N.2L	**CM75**	**MS1200**	2.5 mm
A20QNNTOR2	26,0	20	180	13	1/8-27 NPT	N.2L	**CM75**	**MS1200**	2.5 mm
A25RNNTOR2	34,0	25	200	17	1/4-18 NPT	N.2L	**CM75**	**MS1200**	2.5 mm
A25RNNTOR3	34,0	25	200	17	1/4-18 NPT	N.3L	**CM73LP**	**MS2111**	25 IP
A32SNNTOR3	44,0	32	250	22	1/4-18 NPT	N.3L	**CM73LP**	**MS2111**	25 IP
A40TNNTOR3	54,0	40	300	27	1/4-18 NPT	N.3L	**CM73LP**	**MS2111**	25 IP
A40TNNTOR4	54,0	40	300	27	1/4-18 NPT	N.4L	**CM73LP**	**MS2111**	25 IP
A50UNNTOR4	70,0	50	350	35	1/4-18 NPT	N.4L	**CM73LP**	**MS2111**	25 IP
left hand									
A12MNNTOL2	18,5	12	150	11	1/16-27 NPT	N.2R	**CM146**	**MS1200**	2.5 mm
A16MNNTOL2	22,0	16	150	11	1/8-27 NPT	N.2R	**CM74**	**MS1200**	2.5 mm
A20QNNTOL2	26,0	20	180	13	1/8-27 NPT	N.2R	**CM74**	**MS1200**	2.5 mm
A25RNNTOL2	34,0	25	200	17	1/4-18 NPT	N.2R	**CM74**	**MS1200**	2.5 mm
A25RNNTOL3	34,0	25	200	17	1/4-18 NPT	N.3R	**CM72LP**	**MS2111**	25 IP
A32SNNTOL3	44,0	32	250	22	1/4-18 NPT	N.3R	**CM72LP**	**MS2111**	25 IP
A40TNNTOL3	54,0	40	300	27	1/4-18 NPT	N.3R	**CM72LP**	**MS2111**	25 IP
A40TNNTOL4	54,0	40	300	27	1/4-18 NPT	N.4R	**CM72LP**	**MS2111**	25 IP
A50UNNTOL4	70,0	50	350	35	1/4-18 NPT	N.4R	**CM72LP**	**MS2111**	25 IP

NOTE: Minimum bore diameter (D min) capability varies with thread type and pitch. See page E93 for details.
F dimension measured over sharp point of NG-style grooving insert.



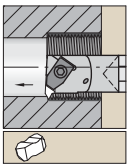
Necked steel shank with
through coolant.
See page E9 for inserts.



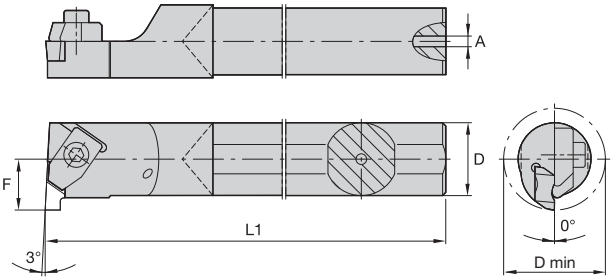
A-NNT -1

catalogue number	D min	D	D2	L1	L2	F	A	CS	gage insert	clamp	clamp screw	hex (mm)
right hand												
A10KNNTOR1	11,5	10	8,7	125	31,75	7	3,2	—	N.1L	**CM109**	**MS1034**	1.5 mm
A12MNNTOR1	11,5	12	8,7	150	31,30	7	4,0	1/16-27 NPT	N.1L	**CM109**	**MS1034**	1.5 mm

NOTE: F dimension measured over sharp point of Top Notch-style threading insert.



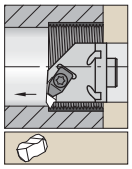
Carbide shank with
through coolant.
See page E9 for inserts.



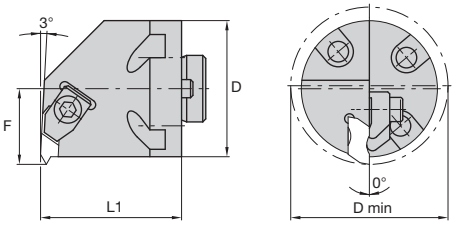
E-NNT


catalogue number	D min	D	L1	F	A	CS	gage insert	clamp	clamp screw	Torx/ Torx Plus
right hand										
E16RNNTOR2	22	16	200	11	5,5	–	N.2L	**CM75**	**MS1200**	T10
E20SNNTOR2	26	20	250	13	7,1	–	N.2L	**CM75**	**MS1200**	T10
E25TNNTOR3	34	25	300	17	7,9	–	N.3L	**CM73LP**	**MS2111**	25 IP
left hand										
E16RNNTOL2	22	16	200	11	5,5	–	N.2R	**CM74**	**MS1200**	T10
E20SNNTOL2	26	20	250	13	7,1	–	N.2R	**CM74**	**MS1200**	T10
E25TNNTOL3	34	25	300	17	7,9	–	N.3R	**CM72LP**	**MS2111**	25 IP

NOTE: Minimum bore diameter (D min) capability varies with thread type and pitch. See page E93 for details.
F dimension measured over sharp point of Top Notch-style threading insert.



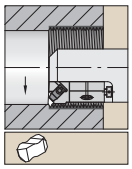
With through coolant.
See page E9 for inserts.



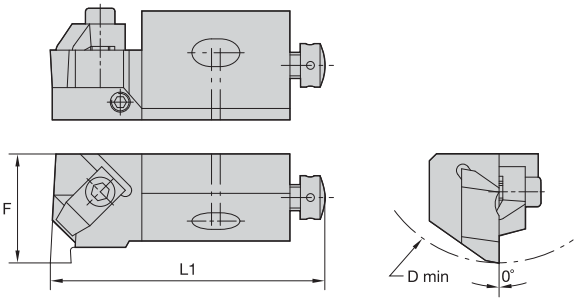
H-NNT


catalogue number	D	D min	F	L1	gage insert	clamp	clamp screw	Torx Plus
right hand								
H32NNTOR3	32,0	44	22	41,3	N.3L	**CM73LP**	**MS2111**	25 IP
H40NNTOR3	40,0	54	27	41,3	N.3L	**CM73LP**	**MS2111**	25 IP
H60NNTOR4	60,0	73	43	41,3	N.4L	**CM73LP**	**MS2111**	25 IP
left hand								
H32NNTOL3	32,0	44	22	41,3	N.3R	**CM72LP**	**MS2111**	25 IP
H40NNTOL3	40,0	54	27	41,3	N.3R	**CM72LP**	**MS2111**	25 IP

NOTE: For boring adaptors, see pages C108–C109.
Minimum bore capability varies with depth of thread. See page E93 for details.



See page E9 for inserts.



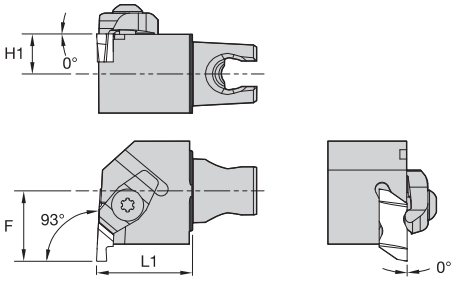
NE-CA

catalogue number	D min	F	L1	gage insert
right hand				
NER12CA2	50	20	55,7	N.2L
NER20CA2	70	25	70,0	N.2L
NER25CA3	100	32	100,0	N.3L
NER25CA4	100	32	100,0	N.4L
left hand				
NEL12CA2	50	20	55,0	N.2R
NEL25CA3	100	32	100,0	N.3R

Spare Parts

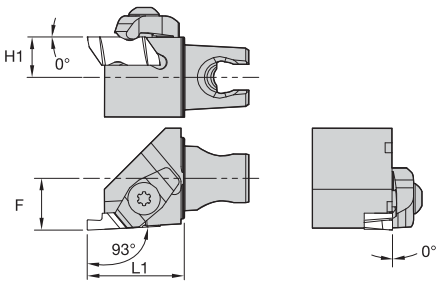
D min	clamp	clamp screw	hex (mm)	radial adjusting screw	hex (mm)	axial screw	hold down screw	hex (mm)	washer
50	**CM75**	**MS1025**	2.5 mm	**KUAM23**	2.5 mm	**KUAM31**	**191.406**	4 mm	**CSWM 060 050**
70	**CM75**	**MS1025**	2.5 mm	**KUAM25**	2.5 mm	**KUAM33**	**191.407**	5 mm	**CSWM 080 050**
100	**CM73LP**	**MS412**	4 mm	**KUAM27**	4 mm	**KUAM33**	**MS364**	6 mm	**CSWM 100 080**
100	**CM73LP**	**MS412**	4 mm	**KUAM27**	4 mm	**KUAM33**	**MS364**	6 mm	**CSWM 100 080**
50	**CM74**	**MS1025**	2.5 mm	**KUAM23**	2.5 mm	**KUAM31**	**191.406**	4 mm	**CSWM 060 050**
100	**CM72LP**	**MS412**	4 mm	**KUAM26**	4 mm	**KUAM33**	**MS364**	6 mm	**CSWM 100 080**

NOTE: Minimum bore diameter (D min) capability varies with thread type and pitch. See page E93 for details.
F dimension measured over sharp point of Top Notch-style threading insert.



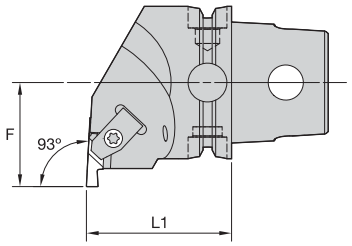
NE 93°

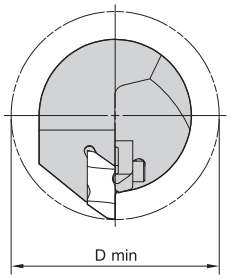
order number	catalogue number	L1 mm	F mm	H1 mm	gage insert	clamp	clamp screw
	right hand						
3483036	**KM20NER225**	25	17	9,5	NG2L	**CM75**	**MS1200**
3483034	**KM20NER325**	25	17	9,5	NG3L	**CM73LP**	**–**
2399462	**KM25NER230**	30	22	12,5	NG2L	**CM75**	**MS1200**
2399494	**KM25NER330**	30	22	12,5	NG3L	**CM73LP**	**–**
2399496	**KM25NER430**	30	24	12,5	NG4L	**CM73LP**	**–**
	left hand						
3483035	**KM20NEL225**	25	17	9,5	NG2R	**CM74**	**MS1200**
3483033	**KM20NEL325**	25	17	9,5	NG3R	**CM72LP**	**–**
2399493	**KM25NEL230**	30	22	12,5	NG2R	**CM74**	**MS1200**
2399495	**KM25NEL330**	30	22	12,5	NG3R	**CM72LP**	**–**
2399497	**KM25NEL430**	30	24	12,5	NG4R	**CM72LP**	**–**



NS 93°

order number	catalogue number	L1 mm	F mm	H1 mm	gage insert	clamp	clamp screw
	right hand						
3483030	**KM20NSR230**	30	12,50	9,5	NG2R	**CM74**	**MS1200**
3483028	**KM20NSR330**	30	12,50	9,5	NG3R	**CM72LP**	**MS524**
2399498	**KM25NSR230**	30	16,00	12,5	NG2R	**CM74**	**MS1200**
2399500	**KM25NSR330**	30	16,00	12,5	NG3R	**CM72LP**	**MS2111**
2399502	**KM25NSR430**	30	16,00	12,5	NG4R	**CM212LP**	**MS2111**
	left hand						
3483029	**KM20NSL230**	30	12,50	9,5	NG2L	**CM75**	**MS1200**
3483027	**KM20NSL330**	30	12,50	9,5	NG3L	**CM73LP**	**MS524**
2399499	**KM25NSL230**	30	16,00	12,5	NG2L	**CM75**	**MS1200**
2399501	**KM25NSL330**	30	16,00	12,5	NG3L	**CM73LP**	**MS2111**
2399503	**KM25NSL430**	30	16,00	12,5	NG4L	**CM213LP**	**MS2111**

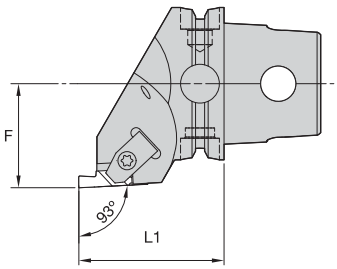


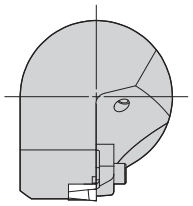


KM QUICK CHANGE

■ NE 93°

order number	catalogue number	L1 mm	F mm	D min mm	gage insert	clamp	clamp screw	kg
	right hand							
3902285	**KM40TSNER2**	40	27	54	NG2L	**CM75**	**MS1488**	0,31
3902286	**KM40TSNER3**	40	27	54	NG3L	**CM73**	**MS1489**	0,30
3902287	**KM40TSNER4**	40	27	54	NG4L	**CM73**	**MS1489**	0,30
	left hand							
3902132	**KM40TSNEL2**	40	27	54	NG2R	**CM74**	**MS1488**	0,31
3902283	**KM40TSNEL3**	40	27	54	NG3R	**CM72**	**MS1489**	0,31
3902284	**KM40TSNEL4**	40	27	54	NG4R	**CM72**	**MS1489**	0,30

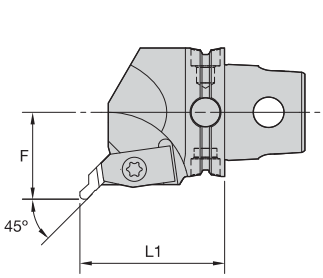


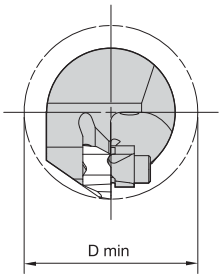


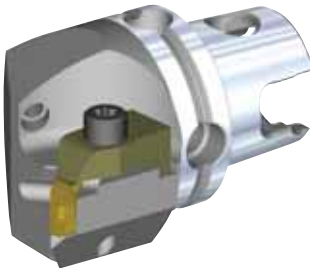
KM QUICK CHANGE

■ NS 93°

order number	catalogue number	L1 mm	F mm	gage insert	clamp	clamp screw	kg
	right hand						
3902293	**KM40TSNSR2**	40	27	NG2R	**CM74**	**MS1488**	0,32
3902294	**KM40TSNSR3**	47	27	NG3R	**CM72**	**MS1489**	0,32
3902295	**KM40TSNSR4**	47	27	NG4R	**CM72**	**MS1489**	0,31
	left hand						
3902290	**KM40TSNSL2**	40	27	NG2L	**CM75**	**MS1488**	0,32
3902291	**KM40TSNSL3**	47	27	NG3L	**CM73**	**MS1489**	0,33
3902292	**KM40TSNSL4**	47	27	NG4L	**CM73**	**MS1489**	0,31







KM QUICK CHANGE

■ NR 45°

order number	catalogue number	L1 mm	F mm	D min mm	gage insert	clamp	clamp screw	kg
	right hand							
3902289	**KM40TSNRR3045M**	45	27	54	NU3L	**CM73**	**MS1489**	0,34
	left hand							
3902288	**KM40TSNRL3045M**	45	27	54	NU3R	**CM72**	**MS1489**	0,33

The LT — Laydown Threading System

Triangle threading inserts and tools that provide the highest accuracy and quality level for daily production needs.

- LT is the system of choice for fine-pitch threads, high-helix/multistart threads, and single-point threading in small-diameter bores.
- Variable shim angles enable proper cutting geometry for high-helix angle and reverse helix angle threading.This maximises tool life and improves thread quality.
- Increase productivity by outperforming conventional PVD grades with up to a 30% advantage in cutting speeds.

Experience the advantages at your Authorised Kennametal Distributor or at **www.kennametal.com**.

www.kennametal.com

KENNAMETAL®

LT • Laydown Triangle Threading

Primary Application

LT Laydown triangle threading is the system of choice for fine-pitch threads, high-helix/multistart threads, and single-point threading in small-diameter bores. With a wide selection of CB-style chip control inserts, you will receive superior chip management for excellent surface finishes and minimal operator intervention. The low-profile design enables unrestricted chip flow — ideal for I.D. threads, and variable shim angles enable proper cutting geometry for high-helix angle and reverse helix angle threading, maximising tool life and improving thread quality.

Features and Benefits

Precision-Ground Thread Form on LT and LT-CB

- Minimises built-up edge.
- Precisely cuts most common materials.
- Reduces cutting forces.
- Ensures accurate, high-quality threads.

Superior Chip Control

- Eliminates long, troublesome coils.
- Excellent for internal threading operations.
- Available in both partial and full profile inserts for all common thread forms.

KC5010™ and KC5025™ Premium PVD TiAlN-Coated Grades

- Increase tool life at existing machining conditions.
- Increase productivity by outperforming conventional PVD grades with up to a 30% advantage in cutting speeds.

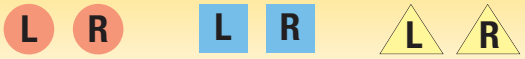
Kenna Universal™ Inserts

- Precision moulded LT-K thread form provides outstanding utility and value.
- Excellent chip control combined with the new KU25T™ grade enables trouble-free threading on a variety of workpiece materials.

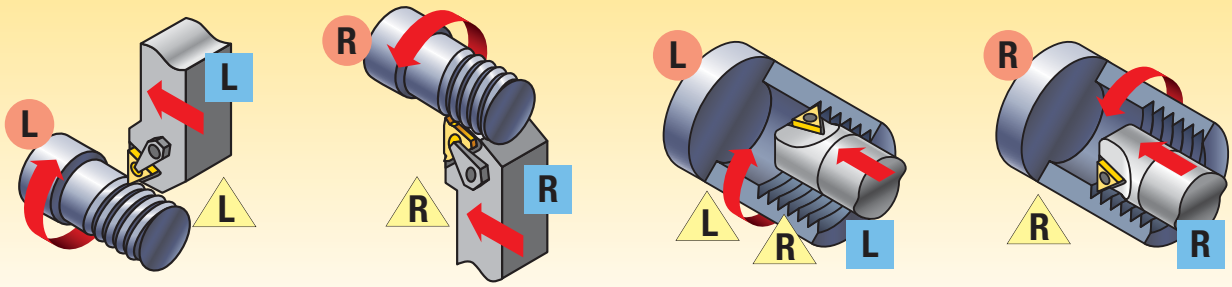
Step 1 • Select threading method and hand of tooling

Required Information:

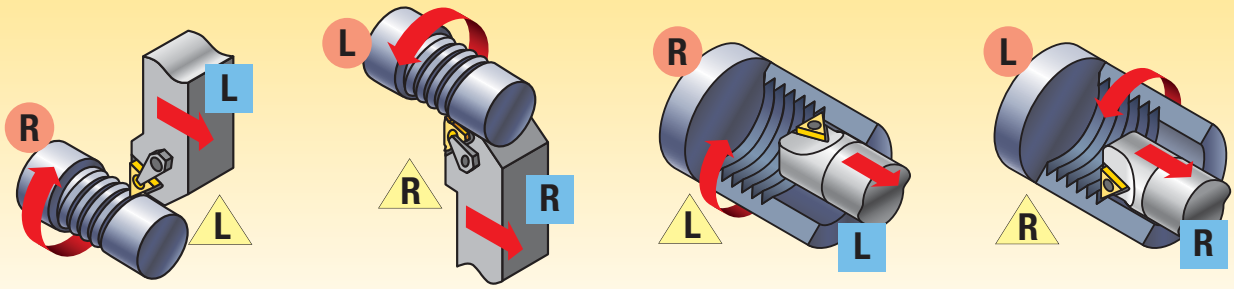
- External/internal operation.
- Spindle rotation/hand of thread.
- Feed direction.



Feed Direction Toward the Chuck • Standard Helix



Feed Direction Away from the Chuck • Reverse Helix

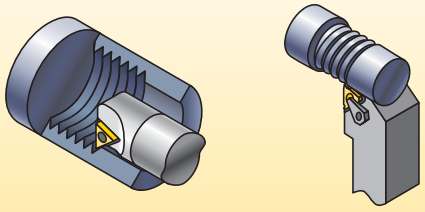


Step 2 • Select threading method and hand of tooling

Required Information:

- External/internal operation.
- Minimum bore diameter (for internal operations).
- Hand of tool.
- Insert size (gage insert).

Select the Appropriate Holder for the Insert Size and Hand:

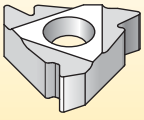


The insert size must match the gage insert size of your toolholder selection:

catalogue number	gage insert	minimum bore diameter	shim
S1212LSER3	LT16NR	.90"	SM-YI3
A2020LSER16	LT16NR	16mm	SM-YI3

Step 3 • Choose insert for application

- Select cresting inserts for fully controlled thread form including diameter.
- Cresting inserts eliminate the need for deburring and are optimised for the best tool life at that pitch.
- Non-cresting partial profile inserts offer the flexibility to cut a variety of thread pitches with one insert.
- Note insert size for toolholder selection.

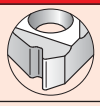
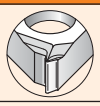
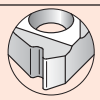


insert size	catalogue number	TN6025
11	LT11NRA60	●
16	LT6NRAG60	●

NOTE: See Threading Insert Overview on page E41.

Step 4 • Select grade and speed

Recommendations for Grade and Speed Selection • SFM (m/min)

	workpiece material	P	M	K	N	S
Kenna Perfect™	insert style	CB chipbreaker		Flat Top 	CB Chipbreaker	
	optimum cutting conditions	**KC5010** 160–750	**KC5010** 160–600	**KC5010** 230–700	**KC5010** 230–1300	**KC5010** 65–400
	first choice	**KC5025** 130–650	**KC5025** 130–450	**KC5025** 200–475	**KC5025** 160–1150	**KC5025** 35–330
Kenna Universal™	insert style	-K chipbreaker				
	selection	**KU25T** 80–450	**KU25T** 80–350	**KU25T** 100–360	**KU25T** 100–1000	**KU25T** 35–280

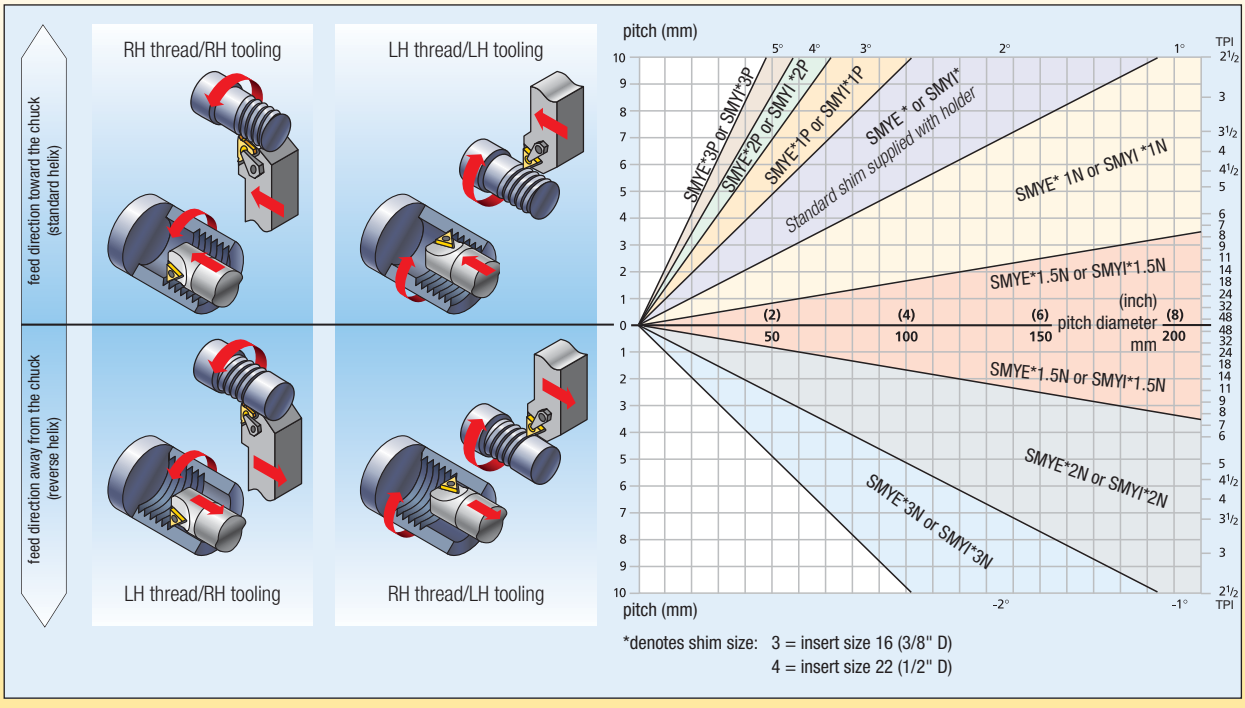
NOTE: CB-style chip control inserts are not available with some thread forms.
In those cases, flat top inserts can be substituted.

Step 5 • Select appropriate shim

Required Information:

- Thread form (TPI or pitch).
- Pitch diameter.
- Helix method (hand of tool, feed direction, hand of thread).

Select the proper shim: SMYE... for external RH or internal LH
SMYI... for internal RH or external LH

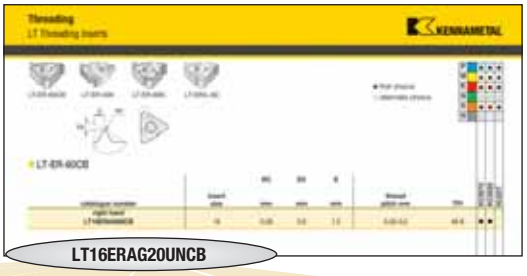


*denotes shim size: 3 = insert size 16 (3/8" D)
4 = insert size 22 (1/2" D)

NOTE: If recommended shim is different from shim supplied with toolholder, order shim separately.
Optimise your threading operation by using the proper infeed angle and the recommended infeed values.
See the Technical Section on page E81–E83.
Also see detailed shim selection information on pages E101–E103.

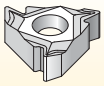
How Do Catalogue Numbers Work?

Each character in our catalogue number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



LT16ERAG20UNCB

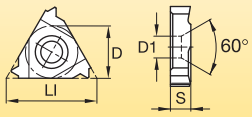
LT — Type of Insert



LT = Laydown triangle threading

16 — Cutting Edge Length (Size)

insert size	LI (mm)	D (mm)	S (mm)	D1 (mm)
11	11,0	6,35	3,20	3,25
16	16,5	9,52	3,63	3,94
22	22,0	12,70	4,78	4,88



ER — Hand of Insert

ER = External right hand
EL = External left hand
NR = Internal right hand
NL = Internal left hand

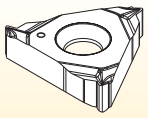
AG20 — Thread Pitch

partial profile		
designation	**thread pitch (mm)**	**TPI**
A	0,50–1,5	48–16
AG	0,50–3,0	48–8
G	1,75–3,0	14–8
N	3,50–5,0	7–5
full profile		
actual TPI or pitch in mm is designated	0,5–4,0	48–8

UN — Thread Profile

ISO = ISO metric 60°
UN = American UN 60°
60 = Partial profile non-cresting 60°
55 = Partial profile non-cresting 55°
W = Whitworth 55°
BSPT = British Standard Pipe Thread 55°
NPT = American National Pipe Thread 60°
ACME = American Acme
STACME = American Stub Acme
TR = Trapez DIN 103
RD = Round DIN 405
UNJ = Controlled root radius 60°
NPTF = Dryseal 60°
API = American Petroleum Institute Threads
BUT = API Buttress Casing
APIRD = API Round

CB — Chip Control

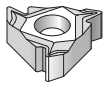


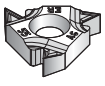
□ = Flat top
CB = Chipbreaker
K = Kenna Universal™ chipbreaker

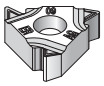
The Kennametal LT Advantage

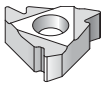
Every box of 10 inserts includes a free Torx wrench and spare locking screw, except LT-K inserts.

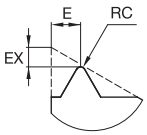
style			thread profile	standard	tolerance class	cresting	application	page(s)
CB	K	flat top						
 LT-60CB	 LT-60K	 LT-60	Partial Profile 60°	—	—	N	General use for 60° thread forms such as ISO and UN where non-cresting inserts are desired to cut a variety of pitches	E42
 LT-ISOCB	 LT-ISOK	 LT-ISO	Metric ISO	ISO R262, DIN 13	6g / 6H	Y	Widely used metric 60° V-form for all industries	E44–E47
 LT-UNCB		 LT-UN	American UN	ANSI B1.1:74	2A / 2B	Y	Widely used inch-based 60° V-form for all industries	E48–E49
	 LT-UNK	 LT-UNJ	UNJ	MIL-S-8879C	3A / 3B	Y	Controlled root radius on external threads for military and aerospace industries, 60° thread form	E50, E52
 LT-NPTCB		 LT-NPT	NPT	USAS B2.1:1968	Standard NPT	Y	National Pipe thread standard 60° thread form for pipe fittings	E53
 LT- NPTFCB		 LT-NPTF	NPTF	ANSI B1.20.3-1976	Class 2	Y	Dryseal-type NPT 60° thread form for pipe fittings	E54
	 LT-55K	 LT-55	Partial Profile 55°	—	—	N	General use for 55° thread forms such as Whitworth, BSW, and BSP where non-cresting inserts are desired to cut a variety of pitches	E55
		 LT-BSPT	BSPT	BS 21:1985	Standard BSPT	Y	55° form for pipe fittings	E59
 LT-WCB	 LT-WK	 LT-W	NPT	Whitworth, BSW, BSF, BSP	Medium Class A	Y	Widely used 55° form for gas and water connections	E57–E58
		 LT-API	NPT — multitooth	API STD. 5B:1979	Standard API	Y	60° V-form used for rotary shoulder pipe connections in the oil and gas industry including V-.038R, V-.040, and V-.050 forms	E59
		 LT-APIRD	API Round	API SPEC. 7:1990	Standard API RD	Y	60° V-form with large radius for casing, tubing, and line pipe in the oil and gas industry including 8 and 10 round forms	E60–E61
		 LT-BUT	API Buttress Casing	API SPEC. 7:1990	Standard API	Y	45° buttress-style form used for pipe casing connections in the oil and gas industry	E60
		 LT-ACME	Acme	ANSI B1.5:1988	3G	N	29° truncated thread form for motion applications in a wide variety of industries	E62
		 LT-STACME	Stub Acme	ANSI B1.8:1988	2G	N	Shallow depth 29° truncated thread form for motion applications in a wide variety of industries	E62
		 LT-RD	Round	DIN 405	7h / 7H	Y	Round thread form for tube fittings in the chemical and food industries	E64
		 LT-TR	Trapez	DIN 103	7e / 7H	N	30° truncated metric thread form for motion applications	E63


LT-ER-60CB


LT-ER-55K


LT-ER-60K


LT-ER/L-60



● first choice
○ alternate choice

P	●	●	●
M	●	●	●
K	●	●	●
N	○	○	○
S	●	●	●
H	○		

LT-ER-60CB

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT16ERAG60CB	16	0,08	0,9	1,5	0,50-3,0	48-8	●	●	

LT-ER-55K

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT16ERAG55K	16	0,07	1,2	1,7	0,50-3,0	48-8			●

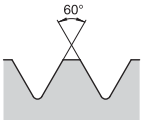
LT-ER-60K

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT16ERAG60K	16	0,08	1,2	1,7	0,50-3,0	48-8			●
LT16ERG60K	16	0,18	1,2	1,7	1,75-3,0	14-8			●

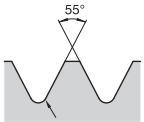
LT-ER/L-60

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT16ERA60	16	0,05	0,8	0,9	0,50-1,5	48-16	●	●	
LT16ERAG60	16	0,08	1,2	1,7	0,50-3,0	48-8	●	●	
LT16ERG60	16	0,28	1,2	1,7	1,75-3,0	14-8	●	●	
LT22ERN60	22	0,53	1,7	2,5	3,5-5,0	7-5		●	
left hand									
LT16ELA60	16	0,05	0,8	0,9	0,50-1,5	48-16		●	
LT16ELAG60	16	0,08	1,2	1,7	0,50-3,0	48-8		●	
LT16ELG60	16	0,28	1,2	1,7	1,75-3,0	14-8		●	
LT22ELN60	22	0,53	1,7	2,5	3,5-5,0	7-5		●	

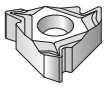
Thread Forms

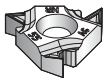


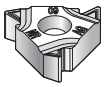
Partial Profile
60° External

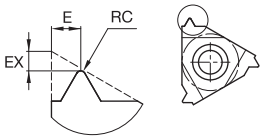


Partial Profile
55° External


LT-NR-60CB


LT-NR-55K


LT-NR-60K



● first choice
○ alternate choice

P	●	●	●
M	●	●	●
K	●	●	●
N	○	○	○
S	●	●	●
H	○		

LT-NR-60CB

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT11NRA60CB	11	0,05	0,6	0,8	0,50-1,5	48-16		●	
LT16NRAG60CB	16	0,05	0,9	1,5	0,50-3,0	48-8		●	
LT16NRG60CB	16	0,16	1,0	1,5	1,75-3,0	14-8		●	

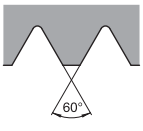
LT-NR-55K

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT16NRAG55K	16	0,07	1,2	1,7	0,50-3,0	48-8			●

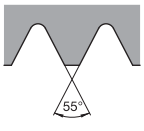
LT-NR-60K

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT11NRA60K	11	0,03	0,8	0,9	0,50-1,5	48-16			●
LT16NRAG60K	16	0,04	1,2	1,7	0,50-3,0	48-8			●
LT16NRG60K	16	0,08	1,2	1,7	1,75-3,0	14-8			●

Thread Forms

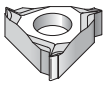


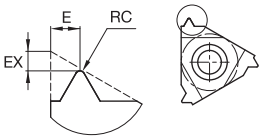
Partial Profile
60° Internal



Partial Profile
55° Internal


LT-NR/L-60


LT-ER-ISOCB



● first choice
○ alternate choice

P	●	●	●
M	●	●	●
K	●	●	●
N	○	○	○
S	●	●	●
H	○		

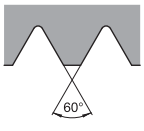
LT-NR/L-60

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT11NRA60	11	0,05	0,8	0,9	0,50-1,5	48-16	●	●	
LT16NRA60	16	0,05	0,8	0,9	0,50-1,5	48-16	●	●	
LT16NRAG60	16	0,05	1,2	1,7	0,50-3,0	48-8	●	●	
LT16NRG60	16	0,15	1,2	1,7	1,75-3,0	14-8	●	●	
LT22NRN60	22	0,31	1,7	2,5	3,5-5,0	7-5		●	
left hand									
LT11NLA60	11	0,05	0,8	0,9	0,50-1,5	48-16		●	
LT16NLA60	16	0,05	0,8	0,9	0,50-1,5	48-16		●	
LT16NLAG60	16	0,05	1,2	1,7	0,50-3,0	48-8		●	
LT16NLG60	16	0,15	1,2	1,7	1,75-3,0	14-8		●	
LT22NLN60	22	0,31	1,7	2,5	3,5-5,0	7-5		●	

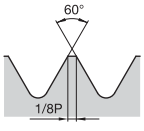
LT-ER-ISOCB

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI			
right hand									
LT16ER05ISOCB	16	–	1,2	0,5	0,50	–	●	●	
LT16ER075ISOCB	16	–	1,2	0,6	0,75	–	●	●	
LT16ER10ISOCB	16	–	0,7	0,8	1,0	–	●	●	
LT16ER125ISOCB	16	–	0,7	0,8	1,25	–	●	●	
LT16ER15ISOCB	16	–	0,7	0,8	1,5	–	●	●	
LT16ER175ISOCB	16	–	1,2	1,5	1,75	–	●	●	
LT16ER20ISOCB	16	–	1,2	1,5	2,0	–	●	●	
LT16ER25ISOCB	16	–	1,2	1,5	2,5	–		●	
LT16ER30ISOCB	16	–	1,3	1,5	3,0	–	●	●	

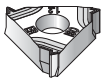
Thread Forms

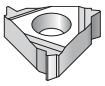


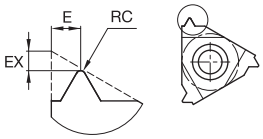
Partial Profile
60° Internal



ISO Metric-External


LT-ER-ISOK


LT-ER/L-ISO



● first choice
○ alternate choice

P	●	●	●
M	●	●	●
K	●	●	●
N	○	○	○
S	●	●	●
H	○		

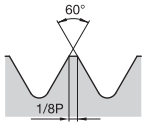
LT-ER-ISOK

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT16ER10ISOK	16	0,14	0,7	0,7	1,0	–			●
LT16ER125ISOK	16	0,16	1,1	0,8	1,25	–			●
LT16ER15ISOK	16	0,20	0,8	1,0	1,5	–			●
LT16ER175ISOK	16	0,22	1,2	1,5	1,75	–			●
LT16ER20ISOK	16	0,27	1,0	1,3	2,0	–			●
LT16ER25ISOK	16	0,32	1,2	1,5	2,5	–			●
LT16ER30ISOK	16	0,38	1,3	1,5	3,0	–			●

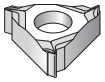
LT-ER/L-ISO

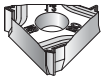
catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT16ER05ISO	16	–	0,6	0,4	0,50	–		●	
LT16ER075ISO	16	–	0,6	0,6	0,75	–		●	
LT16ER10ISO	16	–	0,7	0,7	1,0	–	●	●	
LT16ER125ISO	16	–	0,8	0,9	1,25	–	●	●	
LT16ER15ISO	16	–	0,8	1,0	1,5	–	●	●	
LT16ER175ISO	16	–	0,9	1,2	1,75	–	●	●	
LT16ER20ISO	16	–	1,0	1,3	2,0	–	●	●	
LT16ER25ISO	16	–	1,1	1,5	2,5	–	●	●	
LT16ER30ISO	16	–	1,2	1,6	3,0	–	●	●	
LT22ER35ISO	22	–	1,6	2,3	3,5	–		●	
LT22ER40ISO	22	–	1,6	2,3	4,0	–		●	
LT22ER45ISO	22	–	1,7	2,4	4,5	–		●	
LT22ER50ISO	22	–	1,7	2,5	5,0	–		●	
left hand									
LT16EL05ISO	16	–	0,6	0,4	0,50	–		●	
LT16EL075ISO	16	–	0,6	0,6	0,75	–		●	
LT16EL10ISO	16	–	0,7	0,7	1,0	–		●	
LT16EL125ISO	16	–	0,8	0,9	1,25	–		●	
LT16EL15ISO	16	–	0,8	1,0	1,5	–	●	●	
LT16EL175ISO	16	–	0,9	1,2	1,75	–		●	
LT16EL20ISO	16	–	1,0	1,3	2,0	–		●	
LT16EL25ISO	16	–	1,1	1,5	2,5	–		●	
LT16EL30ISO	16	–	1,2	1,6	3,0	–		●	
LT22EL35ISO	22	–	1,6	2,3	3,5	–		●	

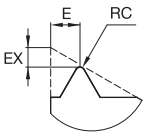
Thread Forms



ISO Metric-External


LT-NR-ISOCB


LT-NR-ISOK



● first choice
○ alternate choice

P	●	●	●
M	●	●	●
K	●	●	●
N	○	○	○
S	●	●	●
H	○		

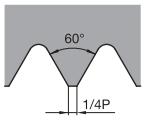
LT-NR-ISOCB

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT11NR075ISOCB	11	–	1,194	0,500	0,75	–		●	
LT11NR10ISOCB	11	–	0,711	0,787	1,0	–		●	
LT16NR10ISOCB	16	–	0,711	0,787	1,0	–		●	
LT11NR125ISOCB	11	–	0,711	0,787	1,25	–		●	
LT11NR15ISOCB	11	–	0,711	0,787	1,5	–		●	
LT16NR15ISOCB	16	–	0,711	0,787	1,5	–		●	
LT16NR20ISOCB	16	–	1,100	1,499	2,0	–		●	
LT16NR25ISOCB	16	–	1,100	1,499	2,5	–		●	

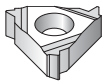
LT-NR-ISOK

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT11NR10ISOK	11	0,06	0,7	0,8	1,0	–			●
LT16NR10ISOK	16	0,05	0,7	0,7	1,0	–			●
LT16NR15ISOK	16	0,08	0,8	1,0	1,5	–			●
LT16NR175ISOK	16	0,10	1,2	1,5	1,75	–			●
LT16NR20ISOK	16	0,10	1,0	1,3	2,0	–			●
LT16NR25ISOK	16	0,14	1,2	1,5	2,5	–			●
LT16NR30ISOK	16	0,17	1,3	1,5	3,0	–			●

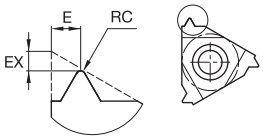
Thread Forms



ISO Metric-Internal



LT-NR-ISO



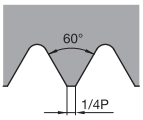
● first choice
○ alternate choice

P	●	●	●
M	●	●	●
K	●	●	●
N	○	○	○
S	●	●	●
H	○		

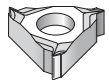
LT-NR/L-ISO

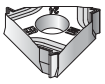
catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT11NR05ISO	11	–	0,6	0,4	0,50	–		●	
LT16NR05ISO	16	–	0,6	0,4	0,50	–		●	
LT11NR075ISO	11	–	0,6	0,6	0,75	–		●	
LT16NR075ISO	16	–	0,6	0,6	0,75	–		●	
LT11NR10ISO	11	–	0,6	0,7	1,0	–		●	
LT16NR10ISO	16	–	0,6	0,7	1,0	–	●	●	
LT11NR125ISO	11	–	0,8	0,9	1,25	–		●	
LT16NR125ISO	16	–	0,8	0,9	1,25	–		●	
LT11NR15ISO	11	–	0,8	1,0	1,5	–	●	●	
LT16NR15ISO	16	–	0,8	1,0	1,5	–	●	●	
LT11NR175ISO	11	–	0,9	1,1	1,75	–		●	
LT16NR175ISO	16	–	0,9	1,2	1,75	–		●	
LT11NR20ISO	11	–	0,9	1,1	2,0	–		●	
LT16NR20ISO	16	–	1,0	1,3	2,0	–	●	●	
LT16NR25ISO	16	–	1,1	1,5	2,5	–		●	
LT16NR30ISO	16	–	1,1	1,5	3,0	–	●	●	
LT22NR35ISO	22	–	1,6	2,3	3,5	–		●	
LT22NR40ISO	22	–	1,6	2,3	4,0	–		●	
LT22NR45ISO	22	–	1,6	2,4	4,5	–		●	
LT22NR50ISO	22	–	1,6	2,3	5,0	–		●	
left hand									
LT11NL10ISO	11	–	0,6	0,7	1,0	–		●	
LT16NL10ISO	16	–	0,6	0,7	1,0	–		●	
LT11NL15ISO	11	–	0,8	1,0	1,5	–		●	
LT16NL15ISO	16	–	0,8	1,0	1,5	–		●	
LT16NL20ISO	16	–	1,0	1,3	2,0	–		●	
LT16NL25ISO	16	–	1,1	1,5	2,5	–		●	
LT16NL30ISO	16	–	1,1	1,5	3,0	–		●	
LT22NL40ISO	22	–	1,6	2,3	4,0	–		●	

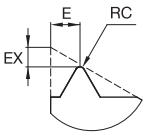
Thread Forms



ISO Metric-Internal


LT-ER-UNCB


LT-ER-UNK



● first choice
○ alternate choice

P	●	●	●
M	●	●	●
K	●	●	●
N	○	○	○
S	●	●	●
H	○		

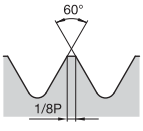
LT-ER-UNCB

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT16ER32UNCB	16	–	1,2	0,5	–	32	●	●	
LT16ER28UNCB	16	–	0,7	0,8	–	28	●	●	
LT16ER24UNCB	16	–	0,7	0,8	–	24	●	●	
LT16ER20UNCB	16	–	0,7	0,8	–	20	●	●	
LT16ER18UNCB	16	–	0,7	0,8	–	18	●	●	
LT16ER16UNCB	16	–	0,8	0,8	–	16	●	●	
LT16ER14UNCB	16	–	1,2	1,5	–	14	●	●	
LT16ER12UNCB	16	–	1,2	1,5	–	12	●	●	
LT16ER10UNCB	16	–	1,2	1,5	–	10		●	
LT16ER8UNCB	16	–	1,3	1,5	–	8	●	●	

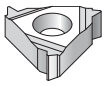
LT-ER-UNK

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI			
right hand									
LT16ER24UNK	16	0,14	0,7	0,8	–	24			●
LT16ER20UNK	16	0,16	0,7	0,8	–	20			●
LT16ER18UNK	16	0,18	0,7	0,8	–	18			●
LT16ER16UNK	16	0,19	0,9	1,1	–	16			●
LT16ER14UNK	16	0,23	1,2	1,5	–	14			●
LT16ER12UNK	16	0,25	1,1	1,4	–	12			●
LT16ER8UNK	16	0,40	1,3	1,5	–	8			●

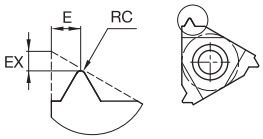
Thread Forms



American
UN-External



LT-E-UN



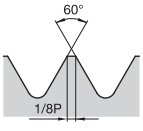
● first choice
○ alternate choice

P	●	●	●
M	●	●	●
K	●	●	●
N	○	○	○
S	●	●	●
H	○		

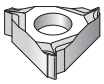
LT-ER/L-UN

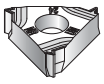
catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT16ER48UN	16	–	0,6	0,6	–	48		●	
LT16ER40UN	16	–	0,6	0,6	–	40		●	
LT16ER36UN	16	–	0,6	0,6	–	36		●	
LT16ER32UN	16	–	0,6	0,6	–	32	●	●	
LT16ER28UN	16	–	0,6	0,7	–	28	●	●	
LT16ER24UN	16	–	0,7	0,8	–	24	●	●	
LT16ER20UN	16	–	0,8	0,9	–	20	●	●	
LT16ER18UN	16	–	0,8	1,0	–	18	●	●	
LT16ER16UN	16	–	0,9	1,1	–	16	●	●	
LT16ER14UN	16	–	1,0	1,2	–	14	●	●	
LT16ER12UN	16	–	1,1	1,4	–	12	●	●	
LT16ER10UN	16	–	1,1	1,5	–	10		●	
LT16ER8UN	16	–	1,2	1,6	–	8		●	
left hand									
LT16EL28UN	16	–	0,6	0,7	–	28		●	
LT16EL24UN	16	–	0,7	0,8	–	24		●	
LT16EL20UN	16	–	0,8	0,9	–	20		●	
LT16EL18UN	16	–	0,8	1,0	–	18		●	
LT16EL16UN	16	–	0,9	1,1	–	16		●	
LT16EL14UN	16	–	1,0	1,2	–	14		●	
LT16EL12UN	16	–	1,1	1,4	–	12		●	
LT16EL11UN	16	–	1,1	1,4	–	11		●	
LT16EL8UN	16	–	1,2	1,6	–	8		●	

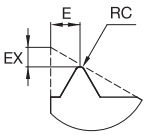
Thread Forms



American
UN-External


LT-NR-UNCB


LT-NR-UNK



● first choice
○ alternate choice

P	●	●	●
M	●	●	●
K	●	●	●
N	○	○	○
S	●	●	●
H	○		

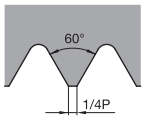
LT-NR-UNCB

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT11NR32UNCB	11	–	1,2	0,5	–	32		●	
LT11NR24UNCB	11	–	0,7	0,8	–	24		●	
LT16NR20UNCB	16	–	0,7	0,6	–	20		●	
LT11NR20UNCB	11	–	0,6	0,8	–	20		●	
LT16NR18UNCB	16	–	0,6	0,8	–	18		●	
LT11NR18UNCB	11	–	0,6	0,8	–	18		●	
LT11NR16UNCB	11	–	0,7	0,8	–	16		●	
LT16NR16UNCB	16	–	0,7	0,8	–	16		●	
LT16NR14UNCB	16	–	1,1	1,5	–	14		●	
LT16NR12UNCB	16	–	1,1	1,5	–	12		●	
LT16NR10UNCB	16	–	1,1	1,5	–	10		●	
LT16NR8UNCB	16	–	1,1	1,5	–	8		●	

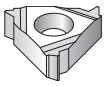
LT-NR-UNK

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT16NR16UNK	16	0,08	0,9	1,1	–	16			●
LT16NR12UNK	16	0,10	1,1	1,4	–	12			●
LT16NR8UNK	16	0,17	1,3	1,5	–	8			●

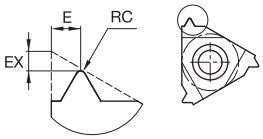
Thread Forms



American
UN-Internal



LT-NR/L-UN



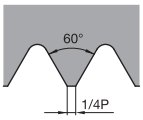
● first choice
○ alternate choice

P	●	●	●
M	●	●	●
K	●	●	●
N	○	○	○
S	●	●	●
H	○		

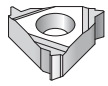
LT-NR/L-UN

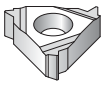
catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT11NR40UN	11	–	0,6	0,6	–	40		●	
LT11NR32UN	11	–	0,6	0,6	–	32		●	
LT11NR28UN	11	–	0,6	0,7	–	28		●	
LT11NR24UN	11	–	0,7	0,8	–	24		●	
LT11NR20UN	11	–	0,8	0,9	–	20		●	
LT11NR18UN	11	–	0,8	1,0	–	18		●	
LT11NR16UN	11	–	0,9	1,1	–	16	●	●	
LT16NR28UN	16	–	0,6	0,7	–	28		●	
LT16NR32UN	16	–	0,6	0,6	–	32		●	
LT16NR24UN	16	–	0,7	0,8	–	24		●	
LT16NR20UN	16	–	0,8	0,9	–	20		●	
LT16NR18UN	16	–	0,8	1,0	–	18		●	
LT16NR16UN	16	–	0,9	1,1	–	16		●	
LT16NR14UN	16	–	0,9	1,2	–	14		●	
LT16NR12UN	16	–	1,1	1,4	–	12	●	●	
LT16NR10UN	16	–	1,1	1,5	–	10		●	
LT16NR8UN	16	–	1,1	1,5	–	8		●	
left hand									
LT11NL32UN	11	–	0,6	0,6	–	32		●	
LT16NL16UN	16	–	0,9	1,1	–	16		●	
LT16NL12UN	16	–	1,1	1,4	–	12		●	
LT16NL10UN	16	–	1,1	1,5	–	10		●	
LT16NL8UN	16	–	1,1	1,5	–	8		●	

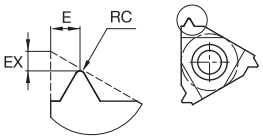
Thread Forms



American
UN-Internal


LT-ER/L-UNJ


LT-NR/L-UNJ



● first choice
○ alternate choice

P	●	●	●
M	●	●	●
K	●	●	●
N	○	○	○
S	●	●	●
H	○		

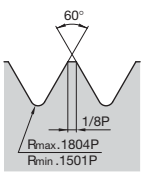
LT-ER/L-UNJ

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT16ER32UNJ	16	–	0,6	0,7	–	32		●	
LT16ER28UNJ	16	–	0,7	0,7	–	28		●	
LT16ER24UNJ	16	–	0,7	0,8	–	24		●	
LT16ER20UNJ	16	–	0,8	0,9	–	20	●	●	
LT16ER18UNJ	16	–	0,8	1,0	–	18	●	●	
LT16ER16UNJ	16	–	0,9	1,1	–	16	●	●	
LT16ER14UNJ	16	–	1,0	1,2	–	14	●	●	
LT16ER12UNJ	16	–	1,1	1,3	–	12	●	●	
left hand									
LT16EL16UNJ	16	–	0,9	1,1	–	16		●	

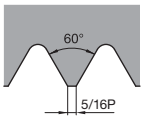
LT-NR/L-UNJ

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI			
right hand									
LT11NR18UNJ	11	–	0,8	1,0	–	18		●	
LT11NR16UNJ	11	–	0,9	1,1	–	16		●	
LT16NR16UNJ	16	–	0,9	1,1	–	16		●	
LT11NR14UNJ	11	–	1,0	1,2	–	14		●	
LT16NR12UNJ	16	–	1,1	1,3	–	12		●	

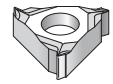
Thread Forms

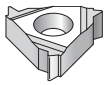


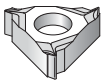
UNJ-External

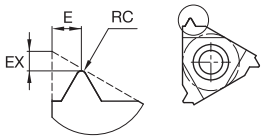


UNJ-Internal


LT-ER-NPTCB


LT-ER/L-NPT


LT-NR-NPTCB



● first choice
○ alternate choice

P	●	●	●
M	●	●	●
K	●	●	●
N	○	○	○
S	●	●	●
H	○		

LT-ER-NPTCB

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT16ER14NPTCB	16	–	1,1	1,5	–	14	●	●	

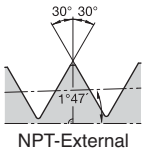
LT-ER/L-NPT

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI			
right hand									
LT16ER27NPT	16	–	0,7	0,8	–	27		●	
LT16ER18NPT	16	–	0,8	1,0	–	18	●	●	
LT16ER14NPT	16	–	0,9	1,2	–	14	●	●	
LT16ER115NPT	16	–	1,1	1,5	–	11.5	●	●	
LT16ER8NPT	16	–	1,3	1,8	–	8		●	

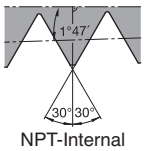
LT-NR-NPTCB

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI			
right hand									
LT16NR14NPTCB	16	–	1,35	1,20	–	14		●	
LT16NR115NPTCB	16	–	1,10	1,50	–	11.5		●	

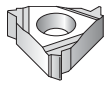
Thread Forms

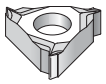


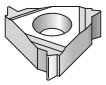
NPT-External

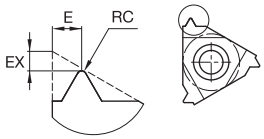


NPT-Internal


LT-NR/L-NPT


LT-ER-NPTFCB


LT-ER/L-NPTF



● first choice
○ alternate choice

	KC5010	KC5025	KU25T
P	●	●	●
M	●	●	●
K	●	●	●
N	○	○	○
S	●	●	●
H	○		

LT-NR/L-NPT

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT11NR18NPT	11	–	0,8	1,0	–	18		●	
LT11NR14NPT	11	–	0,8	1,0	–	14	●	●	
LT16NR14NPT	16	–	0,9	1,2	–	14		●	
LT16NR115NPT	16	–	1,1	1,5	–	11.5	●	●	
LT16NR8NPT	16	–	1,3	1,8	–	8		●	

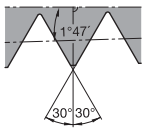
LT-ER-NPTFCB

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI			
LT16ER115NPTFCB	16	–	1,1	1,5	–	11.5		●	

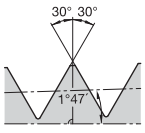
LT-ER/L-NPTF

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI			
right hand									
LT16ER14NPTF	16	–	0,9	1,2	–	14		●	
LT16ER115NPTF	16	–	1,1	1,5	–	11.5		●	

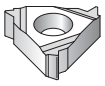
Thread Forms



NPT-Internal

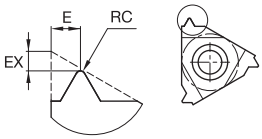


NPTF-External


LT-NR/L-NPTF


LT-ER/L-55


LT-NR/L-55



● first choice
○ alternate choice

P	●	●	●
M	●	●	●
K	●	●	●
N	○	○	○
S	●	●	●
H	○		

LT-NR/L-NPTF

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT11NR14NPTF	11	–	0,8	1,0	–	14		●	
LT16NR14NPTF	16	–	0,9	1,2	–	14		●	
LT16NR115NPTF	16	–	1,1	1,5	–	11.5		●	

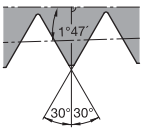
LT-ER/L-55

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT16ERA55	16	0,05	0,8	0,9	0,50-1,50	48-16		●	
LT16ERAG55	16	0,08	1,2	1,7	0,50-3,00	48-8	●	●	
LT16ERG55	16	0,20	1,2	1,7	1,75-3,00	14-8		●	
LT22ERN55	22	0,43	1,7	2,5	3,50-5,00	7-5		●	
left hand									
LT16ELAG55	16	0,08	1,2	1,7	0,50-3,00	48-8		●	

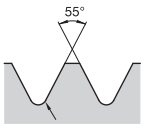
LT-NR/L-55

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT11NRA55	11	0,05	0,8	0,9	0,50-1,50	48-16		●	
LT16NRA55	16	0,05	0,8	0,9	0,50-1,50	48-16		●	
LT16NRAG55	16	0,07	1,2	1,7	0,50-3,00	48-8		●	
LT16NRG55	16	0,21	1,2	1,7	1,75-3,00	14-8		●	
LT22NRN55	22	0,43	1,7	2,5	3,50-5,00	7-5		●	

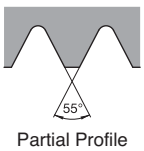
Thread Forms



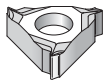
NPTF-Internal

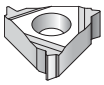


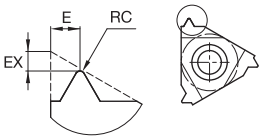
Partial Profile
55° External



Partial Profile
55° Internal


LT-ER-WCB


LT-ER/L-W



● first choice
○ alternate choice

	KC5010	KC5025	KU25T
P	●	●	●
M	●	●	●
K	●	●	●
N	○	○	○
S	●	●	●
H	○		

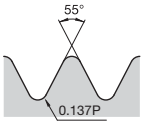
LT-ER-WCB

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT16ER14WCB	16	–	1,3	1,5	–	14	●	●	
LT16ER11WCB	16	–	1,3	1,5	–	11		●	

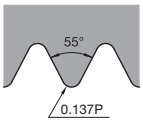
LT-ER/L-W

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI			
right hand									
LT16ER28W	16	–	0,6	0,7	–	28		●	
LT16ER24W	16	–	0,7	0,8	–	24		●	
LT16ER20W	16	–	0,8	0,9	–	20		●	
LT16ER19W	16	–	0,8	1,0	–	19	●	●	
LT16ER18W	16	–	0,8	1,0	–	18		●	
LT16ER16W	16	–	0,9	1,1	–	16		●	
LT16ER14W	16	–	1,0	1,2	–	14	●	●	
LT16ER12W	16	–	1,1	1,4	–	12		●	
LT16ER11W	16	–	1,1	1,5	–	11	●	●	
LT16ER10W	16	–	1,1	1,5	–	10		●	
LT16ER9W	16	–	1,2	1,7	–	9		●	
LT16ER8W	16	–	1,2	1,5	–	8		●	
LT22ER6W	22	–	1,6	2,3	–	6		●	
LT22ER7W	22	–	1,6	2,3	–	7		●	
left hand									
LT16EL14W	16	–	1,0	1,2	–	14		●	
LT16EL11W	16	–	1,1	1,5	–	11		●	

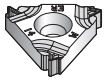
Thread Forms



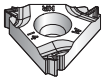
Whitworth BSW, BSF, BSP-External

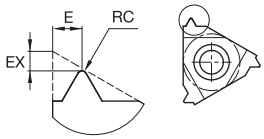


Whitworth BSW, BSF, BSP-Internal


LT-E-WK


LT-NR-WCB


LT-N-WK



● first choice
○ alternate choice

P	●	●	●
M	●	●	●
K	●	●	●
N	○	○	○
S	●	●	●
H	○		

LT-ER/L-WK

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT16ER11WK	16	0,29	1,1	1,5	–	11			●

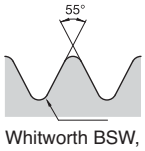
LT-NR-WCB

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT16NR14WCB	16	–	1,3	1,5	–	14		●	
LT16NR11WCB	16	–	1,3	1,5	–	11		●	

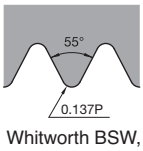
LT-NR/L-WK

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT16NR11WK	16	0,28	1,1	1,5	–	11			●

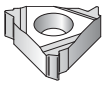
Thread Forms

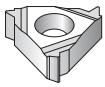


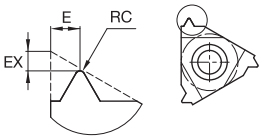
Whitworth BSW, BSF, BSP-External



Whitworth BSW, BSF, BSP-Internal


LT-NR/L-W


LT-ER/L-BSPT



● first choice
○ alternate choice

P	●	●	●
M	●	●	●
K	●	●	●
N	○	○	○
S	●	●	●
H	○		

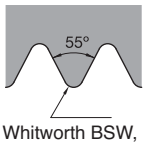
LT-NR/L-W

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT16NR20W	16	–	0,8	0,9	–	20		●	
LT11NR19W	11	–	0,8	1,0	–	19		●	
LT16NR19W	16	–	0,8	1,0	–	19		●	
LT16NR16W	16	–	0,9	1,1	–	16		●	
LT11NR14W	11	–	0,9	1,1	–	14		●	
LT16NR14W	16	–	1,0	1,2	–	14		●	
LT16NR12W	16	–	1,1	1,4	–	12		●	
LT16NR11W	16	–	1,1	1,5	–	11	●	●	
LT16NR10W	16	–	1,1	1,5	–	10		●	
LT16NR8W	16	–	1,2	1,5	–	8		●	
LT22NR6W	22	–	1,6	2,3	–	6		●	
LT22NR7W	22	–	1,6	2,3	–	7		●	
left hand									
LT16NL11W	16	–	1,1	1,5	–	11		●	

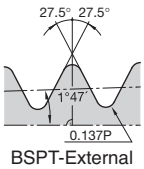
LT-ER/L-BSPT

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT16ER14BSPT	16	–	1,0	1,2	–	14		●	
LT16ER11BSPT	16	–	1,1	1,5	–	11		●	

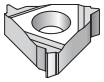
Thread Forms

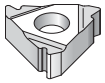


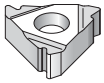
Whitworth BSW, BSF, BSP-Internal

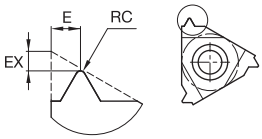


BSPT-External


LT-NR/L-BSPT


LT-ER/L-API


LT-NR/L-API



● first choice
○ alternate choice

P	●	●	●
M	●	●	●
K	●	●	●
N	○	○	○
S	●	●	●
H	○		

LT-NR/L-BSPT

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT11NR14BSPT	11	–	0,9	1,0	–	14		●	
LT16NR14BSPT	16	–	1,0	1,2	–	14		●	
LT16NR11BSPT	16	–	1,1	1,5	–	11		●	

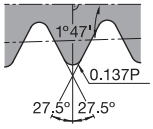
LT-ER/L-API

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI			
right hand									
LT27ER5API403	28	0,51	2,0	2,8	–	5		●	
LT22ER5API403	22	–	1,8	2,6	–	5	●		
LT27ER4API383	28	0,97	2,0	2,8	–	4		●	
LT27ER4API382	28	0,97	2,0	2,8	–	4		●	
LT22ER4API382	22	–	2,1	2,8	–	4		●	
LT27ER4API503	28	0,64	2,0	2,8	–	4		●	
LT27ER4API502	28	0,64	2,0	2,8	–	4		●	
LT22ER4API503	22	–	2,0	2,9	–	4	●		
LT22ER4API502	22	–	2,0	2,9	–	4	●	●	

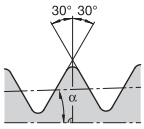
LT-NR/L-API

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI			
right hand									
LT27NR5API403	28	0,52	2,0	2,8	–	5		●	
LT27NR4API383	28	0,99	2,0	2,8	–	4		●	
LT27NR4API382	28	0,99	2,0	2,8	–	4		●	
LT22NR5API403	22	–	1,8	2,6	–	5		●	
LT22NR4API382	22	–	2,1	2,8	–	4		●	
LT27NR4API503	28	0,65	2,0	2,8	–	4		●	
LT27NR4API502	28	0,65	2,0	3,8	–	4		●	
LT22NR4API502	22	–	2,1	3,1	–	4		●	

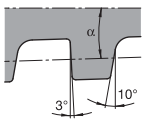
Thread Forms



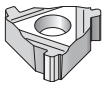
BSPT-Internal

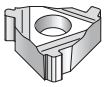


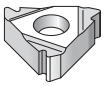
API Rotary Shoulder Connections-External
α = 1/2 arctan (TPF/12)

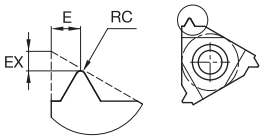


API Rotary Shoulder Connections-Internal
α = 1/2 arctan (TPF/12)


LT-ER/L-BUT


LT-NR/L-BUT


LT-ER/L-APIRD



● first choice
○ alternate choice

P	●	●	●
M	●	●	●
K	●	●	●
N	○	○	○
S	●	●	●
H	○		

LT-ER/L-BUT

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand **LT22ER5BUT75**	22	–	3,10	1,9	–	5		●	

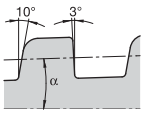
LT-NR/L-BUT

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI			
right hand **LT22NR5BUT1**	22	–	2,8	1,9	–	5		●	
LT22NR5BUT75	22	–	2,8	1,9	–	5		●	

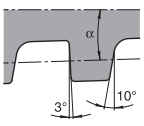
LT-ER/L-APIRD

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI			
right hand **LT16ER10APIRD**	16	–	1,2	1,4	–	10		●	
LT16ER8APIRD left hand	16	–	1,3	1,5	–	8		●	
LT16EL8APIRD	16	–	1,3	1,5	–	8		●	

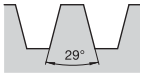
Thread Forms



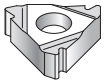
API Buttress Casing-External
α = 1/2 arctan (TPF/12)

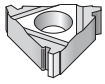


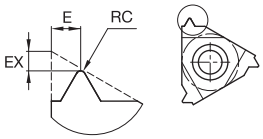
API Buttress Casing-Internal
α = 1/2 arctan (TPF/12)



API Round-External


LT-NR/L-APIRD


LT-ER/L-ACME



● first choice
○ alternate choice

P	●	●	●
M	●	●	●
K	●	●	●
N	○	○	○
S	●	●	●
H	○		

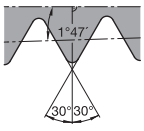
LT-NR/L-APIRD

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT16NR10APIRD	16	–	1,2	1,4	–	10		●	
LT16NR8APIRD	16	–	1,3	1,5	–	8		●	

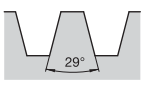
LT-ER/L-ACME

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT16ER16ACME	16	–	1,0	1,1	–	16		●	
LT16ER12ACME	16	–	1,1	1,2	–	12		●	
LT16ER10ACME	16	–	1,3	1,4	–	10		●	
LT16ER8ACME	16	–	1,4	1,5	–	8		●	
LT22ER6ACME	22	–	1,8	2,1	–	6		●	
LT22ER5ACME	22	–	2,0	2,3	–	5		●	
LT27ER4ACME	–	–	–	–	–	–		●	

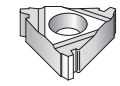
Thread Forms

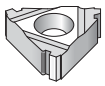


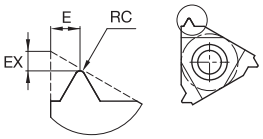
API Round-Internal



Acme External


LT-NR/L-ACME


LT-ER/L-STACME



● first choice
○ alternate choice

P	●	●	●
M	●	●	●
K	●	●	●
N	○	○	○
S	●	●	●
H	○		

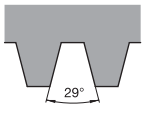
LT-NR/L-ACME

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT16NR12ACME	16	–	1,2	1,3	–	12		●	
LT16NR10ACME	16	–	1,2	1,3	–	10		●	
LT16NR8ACME	16	–	1,4	1,5	–	8		●	
LT22NR6ACME	22	–	1,8	2,1	–	6		●	
LT22NR5ACME	22	–	2,0	2,3	–	5		●	
left hand									
LT16NL10ACME	16	–	1,2	1,3	–	10		●	
LT16NL8ACME	16	–	1,4	1,5	–	8		●	

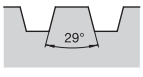
LT-ER/L-STACME

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT16ER16STACME	16	–	1,0	1,0	–	16		●	
LT16ER12STACME	16	–	1,2	1,2	–	12		●	
LT16ER10STACME	16	–	1,2	1,3	–	10		●	
LT16ER8STACME	16	–	1,4	1,5	–	8		●	
LT16ER6STACME	16	–	1,7	1,8	–	6		●	
LT22ER5STACME	22	–	2,1	2,3	–	5		●	
LT27ER4STACME	–	–	–	–	–	–		●	
LT27EL4STACME	–	–	–	–	–	–		●	

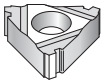
Thread Forms

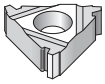


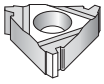
Acme Internal

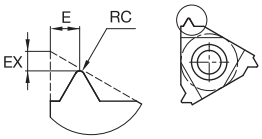


Stub Acme-External


LT-NR/L-STACME


LT-ER/L-TR


LT-NR/L-TR



● first choice
○ alternate choice

P	●	●	●
M	●	●	●
K	●	●	●
N	○	○	○
S	●	●	●
H	○		

LT-NR/L-STACME

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT16NR16STACME	16	–	1,0	1,0	–	16		●	
LT16NR14STACME	16	–	1,1	1,1	–	14		●	
LT16NR12STACME	16	–	1,1	1,2	–	12		●	
LT16NR10STACME	16	–	1,2	1,3	–	10		●	
LT16NR8STACME	16	–	1,4	1,5	–	8		●	
LT16NR6STACME	16	–	1,7	1,8	–	6		●	
LT22NR6STACME	22	–	1,8	1,8	–	6		●	
LT27NL4STACME	–	–	–	–	–	–		●	
LT27NR4STACME	–	–	–	–	–	–		●	

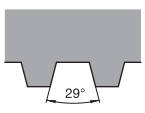
LT-ER/L-TR

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT16ER2TR	16	–	1,1	1,3	2,0	–		●	
LT16ER3TR	16	–	1,3	1,5	3,0	–		●	
LT22ER4TR	22	–	1,7	1,9	4,0	–		●	
LT22ER5TR	22	–	2,1	2,5	5,0	–		●	

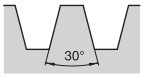
LT-NR/L-TR

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT16NR2TR	16	–	1,1	1,3	2,0	–		●	
LT16NR3TR	16	–	1,3	1,5	3,0	–		●	
LT22NR4TR	22	–	1,7	1,9	4,0	–		●	
LT22NR5TR	22	–	2,1	2,5	5,0	–		●	

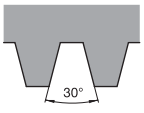
Thread Forms



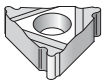
Stub Acme-Internal

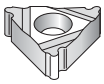


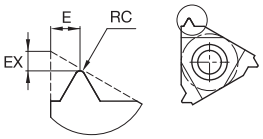
Trapez-External



Trapez-Internal


LT-ER/L-RD


LT-NR/L-RD



● first choice
○ alternate choice

P	●	●	●
M	●	●	●
K	●	●	●
N	○	○	○
S	●	●	●
H	○		

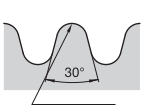
LT-ER/L-RD

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI	KC5010	KC5025	KU25T
right hand									
LT16ER8RD	16	0,76	1,4	1,3	–	8		●	
LT22ER6RD	22	1,01	1,5	1,7	–	6		●	

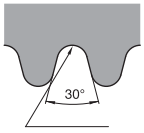
LT-NR/L-RD

catalogue number	insert size	RC mm	EX mm	E mm	thread pitch mm	TPI			
right hand									
LT16NR8RD	16	0,70	1,4	1,4	–	8		●	
LT22NR6RD	22	0,93	1,5	1,7	–	6		●	

Thread Forms



Round External



Round-Internal

Looking for a product that's not shown in this catalogue?
Check the Kennametal website!

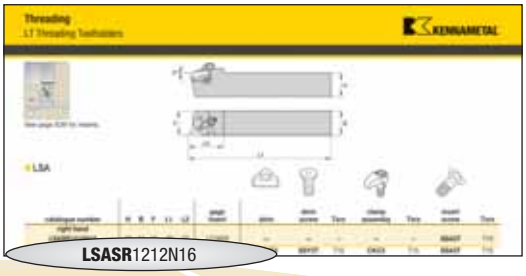
Online product catalogue available 24/7

Visit **http://www.kennametal.com/turning/** to browse our electronic catalogue any time you're looking for Kennametal's best tooling solutions. It's fast, free, and always available. The online e-catalogue is updated weekly with products and solutions for milling, turning, holemaking, and tooling systems applications.

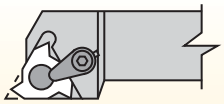
KENNAMETAL

How Do Catalogue Numbers Work?

Each character in our catalogue number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



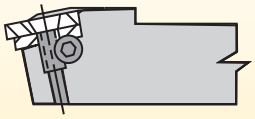
L
Insert Style

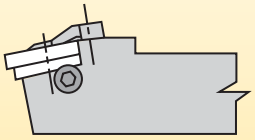


L = Laydown triangle

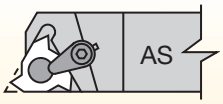
S
Insert Holding Method

S = Insert screw or clamp only

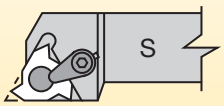




AS
Tool Style



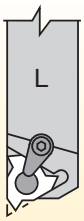
AS = Straight shank



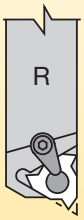
S = Offset shank

R
Hand of Tool

L = Left hand



R = Right hand



NOTE: Toolholders with primary shank sizes larger than 1/2" or 12mm are supplied with clamp and insert screw. Secure the insert with either the clamp or insert screw. **Do not use both.**

LT Threading Shim Catalogue Numbering System

SM
Shim

Y
Shim for LT Standard Inserts

E
Insert Threading

E = External
I = Internal

3
Insert Size

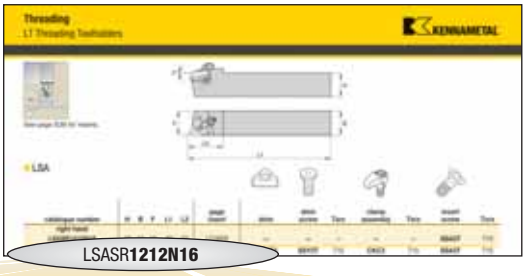
D value in 1/8"

2P
Shim Angle

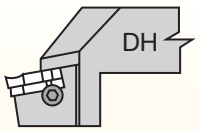
2P = 2º positive
1P = 1º positive
__ = 0º neutral
1N = 1º negative
2N = 2º negative
3N = 3º negative

NOTE: For shims and shim kits, see pages E101–E103.

By referencing this easy-to-use guide, you can identify the correct product to meet your needs.

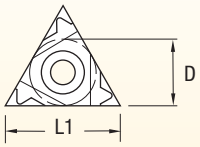


	1212N	**16**	
Drop Head	Shank Size	Insert Size	Qualified Surface and Length



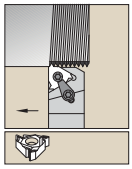
metric:
Shank height and width in mm and holder length according to ISO standard.

Size equals number of 1/8" increments of IC.

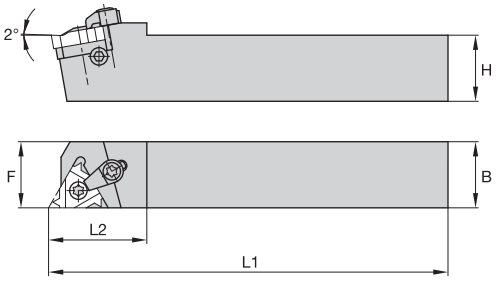


insert size (inch)	insert size (mm)	D (inch)	L1 (mm)
2	11	1/4	11,0
3	16	3/8	16,5
4	22	1/2	22,0

C = Qualified back and end, 5" long
D = Qualified back and end, 6" long
E = Qualified back and end, 7" long
T = Qualified back and end, 3.250" long
Q = Qualified metric holder



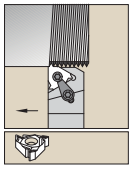
See page E41 for inserts.



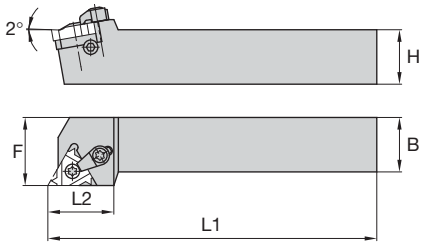
LSA




catalogue number	H	B	F	L1	L2	gage insert	shim	shim screw	Torx	clamp assembly	Torx	insert screw	Torx
right hand													
LSASR1212N16	12	12	16	85	22	LT16ER	–	–	–	–	–	**SSA3T**	T10
LSASR1616H16	16	16	16	100	25	LT16ER	**SMYE3**	**SSY3T**	T10	**CKC3**	T15	**SSA3T**	T10
LSASR2020K16	20	20	20	125	30	LT16ER	**SMYE3**	**SSY3T**	T10	**CKC3**	T15	**SSA3T**	T10
LSASR2525M16	25	25	25	150	30	LT16ER	**SMYE3**	**SSY3T**	T10	**CKC3**	T15	**SSA3T**	T10
LSASR3232P16	32	32	32	170	30	LT16ER	**SMYE3**	**SSY3T**	T10	**CKC3**	T15	**SSA3T**	T10
LSASR2525M22	25	25	25	150	36	LT22ER	**SMYE4**	**SSY4T**	T20	**CKC4**	T20	**SSA4T**	T20
LSASR3232P22	32	32	32	170	36	LT22ER	**SMYE4**	**SSY4T**	T20	**CKC4**	T20	**SSA4T**	T20
left hand													
LSASL1212N16	12	12	16	85	22	LT16EL	–	–	–	–	–	**SSA3T**	T10
LSASL1616H16	16	16	16	100	25	LT16EL	**SMYI3**	**SSY3T**	T10	**CKC3**	T15	**SSA3T**	T10
LSASL2020K16	20	20	20	125	30	LT16EL	**SMYI3**	**SSY3T**	T10	**CKC3**	T15	**SSA3T**	T10
LSASL2525M16	25	25	25	150	30	LT16EL	**SMYI3**	**SSY3T**	T10	**CKC3**	T15	**SSA3T**	T10
LSASL2525M22	25	25	25	150	36	LT22EL	**SMYI4**	**SSY4T**	T20	**CKC4**	T20	**SSA4T**	T20



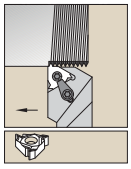
See page E41 for inserts.



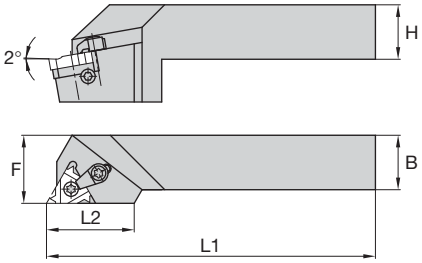
LSS




catalogue number	H	B	F	L1	L2	gage insert	shim	shim screw	Torx	clamp assembly	Torx	insert screw	Torx
right hand													
LSSR2020K16Q	20	20	25	125	25	LT16ER	**SMYE3**	**SSY3T**	T10	**CKC3**	T15	**SSA3T**	T10
LSSR2525M16Q	25	25	32	150	25	LT16ER	**SMYE3**	**SSY3T**	T10	**CKC3**	T15	**SSA3T**	T10
LSSR3232P16Q	32	32	40	170	32	LT16ER	**SMYE3**	**SSY3T**	T10	**CKC3**	T15	**SSA3T**	T10
LSSR2525M22Q	25	25	32	150	30	LT22ER	**SMYE4**	**SSY4T**	T20	**CKC4**	T20	**SSA4T**	T20
LSSR3232P22Q	32	32	40	170	30	LT22ER	**SMYE4**	**SSY4T**	T20	**CKC4**	T20	**SSA4T**	T20
left hand													
LSSL2020K16Q	20	20	25	125	25	LT16EL	**SMYI3**	**SSY3T**	T10	**CKC3**	T15	**SSA3T**	T10
LSSL2525M16Q	25	25	32	150	25	LT16EL	**SMYI3**	**SSY3T**	T10	**CKC3**	T15	**SSA3T**	T10
LSSL3232P16Q	32	32	40	170	32	LT16EL	**SMYI3**	**SSY3T**	T10	**CKC3**	T15	**SSA3T**	T10
LSSL2525M22Q	25	25	32	150	30	LT22EL	**SMYI4**	**SSY4T**	T20	**CKC4**	T20	**SSA4T**	T20



See page E41 for inserts.



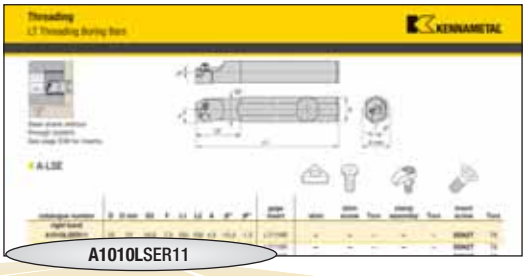
LSS-DH



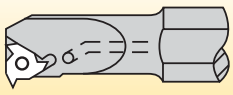

catalogue number	H	B	F	L1	L2	gage insert	shim	shim screw	Torx	clamp assembly	Torx	insert screw	Torx
right hand													
LSSRDH2020K16Q	20	20	25	125	38	LT16ER	**SMYE3**	**SSY3T**	T10	**CKC3**	T15	**SSA3T**	T10
LSSRDH2525M16	25	25	32	150	38	LT16ER	**SMYE3**	**SSY3T**	T10	**CKC3**	T15	**SSA3T**	T10
LSSRDH2525M22Q	25	25	32	150	38	LT22ER	**SMYE4**	**SSY4T**	T20	**CKC4**	T20	**SSA4T**	T20
LSSRDH3232P22	32	32	40	170	38	LT22ER	**SMYE4**	**SSY4T**	T20	**CKC4**	T20	**SSA4T**	T20
left hand													
LSSLDH2525M16	25	25	32	150	38	LT16EL	**SMYI3**	**SSY3T**	T10	**CKC3**	T15	**SSA3T**	T10
LSSLDH2525M22Q	25	25	32	150	38	LT22EL	**SMYI4**	**SSY4T**	T20	**CKC4**	T20	**SSA4T**	T20

How Do Catalogue Numbers Work?

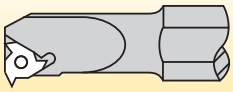
Each character in our catalogue number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



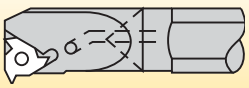
A — Bar Type



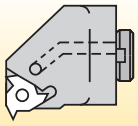
A = Steel with coolant



S = Steel without coolant

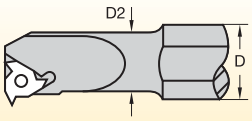


E = Carbide with coolant



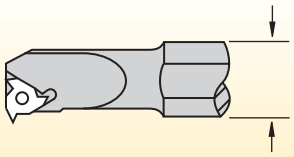
H = Interchangeable head with coolant

10 — Primary Necked Shank Bar Diameter



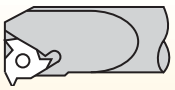
A two-digit number that indicates the primary bar diameter in 1/16" increments. Metric diameter in mm.

10 — Secondary (Mounting) Bar Diameter



A two-digit number that indicates the secondary bar diameter in 1/16" increments. Metric diameter in mm.

L — Insert Style



L = Laydown triangle

NOTE: Boring bars with primary bar diameters larger than 5/8" or 16mm are supplied with clamp and insert screw. Secure the insert with either the clamp or insert screw. **Do not use both.**

LT Threading Shim Catalogue Numbering System

SM — Shim

Y — Shim for LT Standard Inserts

E — Insert Threading

E = External
I = Internal

3 — Insert Size

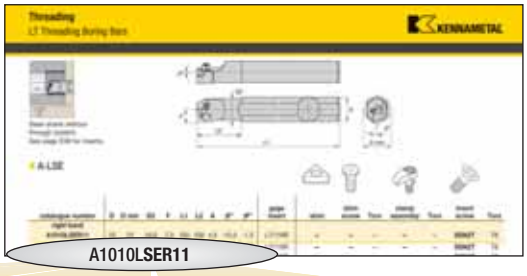
D value in 1/8"

2P — Shim Angle

2P = 2° positive
1P = 1° positive
__ = 0° neutral
1N = 1° negative
2N = 2° negative
3N = 3° negative

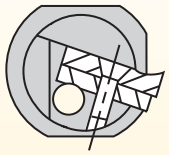
NOTE: For shims and shim kits, see pages E101–E103.

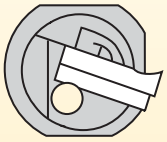
By referencing this easy-to-use guide, you can identify the correct product to meet your needs.



S	E	R	11
Insert Holding Method	Bar Style	Hand of Bar	Insert Size

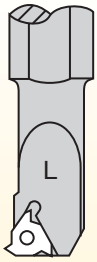
S = Insert screw or clamp



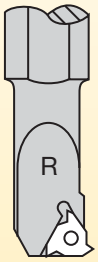


E = End cutting edge mount

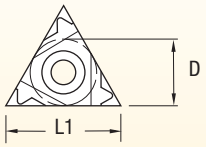
L = Left hand



R = Right hand



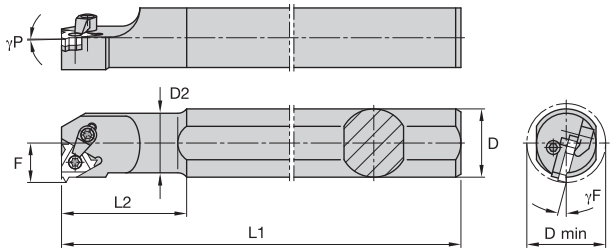
Size equals number of 1/8" increments of IC.



insert size (inch)	insert size (mm)	D (inch)	L1 (mm)
2	11	1/4	11,0
3	16	3/8	16,5
4	22	1/2	22,0

NOTE: Boring bars with primary bar diameters larger than 5/8" or 16mm are supplied with clamp and insert screw. Secure the insert with either the clamp or insert screw. **Do not use both.**

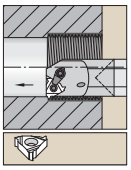
Steel shank without
through coolant.
See page E41 for inserts.



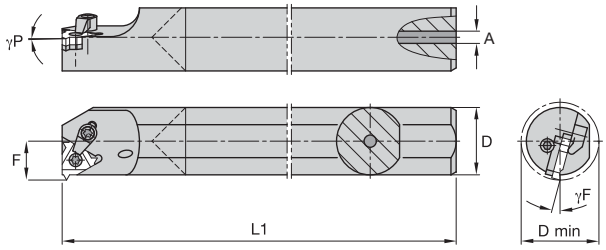
A-LSE

catalogue number	D	D min	D2	F	L1	L2	γF°	γP°	gage insert	shim	shim screw	Torx	clamp assembly	Torx	insert screw	Torx
right hand																
A1010LSER11	10	13	10,0	7,3	100	100	-15.0	-1.5	LT11NR	–	–	–	–	–	**SSN2T**	T8
A1020LSER11	20	13	10,0	7,3	180	25	-15.0	-1.5	LT11NR	–	–	–	–	–	**SSN2T**	T8
A1320LSER11	20	16	13,0	8,9	180	32	-15.0	-1.5	LT11NR	–	–	–	–	–	**SSN2T**	T8
A1616LSER16	16	20	16,0	11,3	150	32	-15.0	-1.5	LT16NR	–	–	–	–	–	**SSA3T**	T10
A1320LSER16	20	17	12,7	10,3	180	32	-15.0	-1.5	LT16NR	–	–	–	–	–	**SSA3T**	T10
A1620LSER16	20	20	16,0	11,5	180	40	-15.0	-1.5	LT16NR	–	–	–	–	–	**SSA3T**	T10
A2020LSER16	20	24	20,0	13,4	180	40	-15.0	-1.5	LT16NR	**SMYI3**	**SSY3T**	T10	**CKC3**	T15	**SSA3T**	T10
A2525LSER16	25	29	24,6	16,1	200	45	-15.0	-1.5	LT16NR	**SMYI3**	**SSY3T**	T10	**CKC3**	T15	**SSA3T**	T10
A2532LSER16	32	29	25,0	16,3	250	60	-15.0	-1.5	LT16NR	**SMYI3**	**SSY3T**	T10	**CKC3**	T15	**SSA3T**	T10
A2020LSER22	20	27	20,0	15,6	180	50	-15.0	-1.5	LT22NR	–	–	–	**CKC4**	T20	**SSA4T**	T20
A2525LSER22	25	32	24,6	17,2	200	45	-15.0	-1.5	LT22NR	**SMYI4**	**SSY4T**	T20	**CKC4**	T20	**SSA4T**	T20
A2532LSER22	32	32	25,0	17,4	250	60	-15.0	-1.5	LT22NR	**SMYI4**	**SSY4T**	T20	**CKC4**	T20	**SSA4T**	T20
A3232LSER22	32	39	32,0	21,5	250	60	-15.0	-1.5	LT22NR	**SMYI4**	**SSY4T**	T20	**CKC4**	T20	**SSA4T**	T20
A4040LSER22	40	47	40,0	25,8	300	60	-15.0	-1.5	LT22NR	**SMYI4**	**SSY4T**	T20	**CKC4**	T20	**SSA4T**	T20
left hand																
A1010LSEL11	10	13	10,0	7,3	100	100	-15.0	-1.5	LT11NL	–	–	–	–	–	**SSN2T**	T8
A1020LSEL11	20	13	10,0	7,3	180	25	-15.0	-1.5	LT11NL	–	–	–	–	–	**SSN2T**	T8
A1320LSEL11	20	16	13,0	8,9	180	32	-15.0	-1.5	LT11NL	–	–	–	–	–	**SSN2T**	T8
A1616LSEL16	16	20	16,0	11,3	150	32	-15.0	-1.5	LT16NL	–	–	–	–	–	**SSA3T**	T10
A1620LSEL16	20	20	16,0	11,5	180	40	-15.0	-1.5	LT16NL	–	–	–	–	–	**SSA3T**	T10
A2020LSEL16	20	24	20,0	13,4	180	40	-15.0	-1.5	LT16NL	**SMYE3**	**SSY3T**	T10	**CKC3**	T15	**SSA3T**	T10
A2525LSEL16	25	29	24,6	16,1	200	45	-15.0	-1.5	LT16NL	**SMYE3**	**SSY3T**	T10	**CKC3**	T15	**SSA3T**	T10
A2532LSEL16	32	29	25,0	16,3	250	60	-15.0	-1.5	LT16NL	**SMYE3**	**SSY3T**	T10	**CKC3**	T15	**SSA3T**	T10
A2020LSEL22	20	27	20,0	15,6	180	50	-15.0	-1.5	LT22NL	–	–	–	**CKC4**	T20	**SSA4T**	T20
A2525LSEL22	25	32	24,6	17,2	200	45	-15.0	-1.5	LT22NL	**SMYE4**	**SSY4T**	T20	**CKC4**	T20	**SSA4T**	T20
A3232LSEL22	32	39	32,0	21,5	250	60	-15.0	-1.5	LT22NL	**SMYE4**	**SSY4T**	T20	**CKC4**	T20	**SSA4T**	T20
A4040LSEL22	40	47	40,0	25,8	300	60	-15.0	-1.5	LT22NL	**SMYE4**	**SSY4T**	T20	**CKC4**	T20	**SSA4T**	T20

NOTE: Items listed without a shim are designed for a 1,5° inclination angle.
Be advised that certain boring bars are shipped without the clamp assembly.



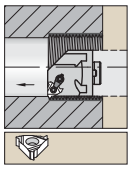
Carbide shank with
through coolant.
See page E41 for inserts.



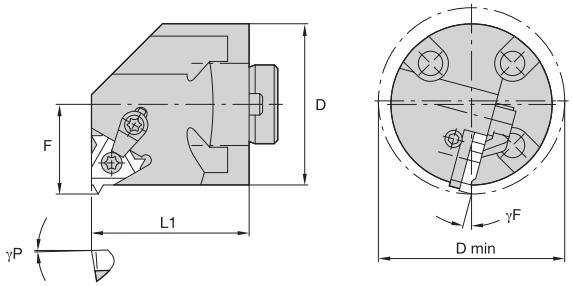
E-LSE

catalogue number	D	D min	F	L1	A	γF°	γP°	gage insert	shim	shim screw	Torx	clamp assembly	Torx	insert screw	Torx
right hand															
E16RLSER16	16	20	11,5	200	5,5	-15.0	-1.5	LT16NR	–	–	–	–	–	**SN3TPKG**	T10
E20SLSER16	20	24	13,4	250	7,1	-15.0	-1.5	LT16NR	**SMYI3**	**SSY3T**	T10	**CKC3**	T15	**SSA3T**	T10
E25TLSER16	25	29	15,8	300	7,9	-15.0	-1.5	LT16NR	**SMYI3**	**SSY3T**	T10	**CKC3**	T15	**SSA3T**	T10

NOTE: All carbide bars need a KWH grade designation.



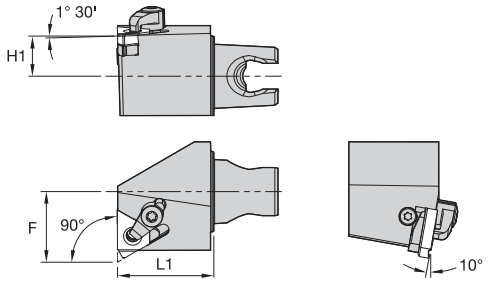
With through coolant.
See page E41 for inserts.



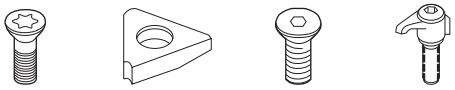
H-LSE

catalogue number	D	D min	L1	F	γF°	γP°	gage insert	shim	shim screw	Torx	clamp assembly	Torx	insert screw	Torx
right hand														
H16LSER3	25	30,5	41,3	16,4	-15.0	-1.5	LT16NR	**SMYI3**	**SSY3T**	T10	**CKC3**	T15	**SSA3T**	T10
H20LSER3	32	36,8	41,3	19,3	-15.0	-1.5	LT16NR	**SMYI3**	**SSY3T**	T10	**CKC3**	T15	**SSA3T**	T10
H24LSER3	38	44,7	41,3	22,5	-15.0	-1.5	LT16NR	**SMYI3**	**SSY3T**	T10	**CKC3**	T15	**SSA3T**	T10
H32LSER3	51	61,0	41,3	32,4	-15.0	-1.5	LT16NR	**SMYI3**	**SSY3T**	T10	**CKC3**	T15	**SSA3T**	T10
H50LSER16	50	54,0	41,3	27,2	-15.0	-1.5	LT16NR	**SMYI3**	**SSY3T**	T10	**CKC3**	T15	**SSA3T**	T10
H24LSER4	38	45,3	41,3	24,7	-15.0	-1.5	LT22NR	**SMYI4**	**SSY4T**	T20	**CKC4**	T20	**SSA4T**	T20
H32LSER4	51	61,0	41,3	32,4	-15.0	-1.5	LT22NR	**SMYI4**	**SSY4T**	T20	**CKC4**	T20	**SSA4T**	T20
H40LSER22	40	47,0	41,3	24,1	-15.0	-1.5	LT22NR	**SMYI4**	**SSY4T**	T20	**CKC4**	T20	**SSA4T**	T20
H50LSER22	50	56,0	41,3	28,7	-15.0	-1.5	LT22NR	**SMYI4**	**SSY4T**	T20	**CKC4**	T20	**SSA4T**	T20
H32LSER5	51	61,0	41,3	32,5	-15.0	-1.5	LT27NR	**SMYI5**	**SSY5T**	T25	**CKC5**	T25	**SSA5T**	T25
H40LSER27	40	50,0	41,3	29,0	-15.0	-1.5	LT27NR	**SMYI5**	**SSY5T**	T25	**CKC5**	T25	**SSA5T**	T25
H40LSER5	64	77,0	41,3	38,9	-15.0	-1.5	LT27NR	**SMYI5**	**SSY5T**	T25	**CKC5**	T25	**SSA5T**	T25
H50LSER27	50	58,0	41,3	31,4	-15.0	-1.5	LT27NR	**SMYI5**	**SSY5T**	T25	**CKC5**	T25	**SSA5T**	T25
left hand														
H16LSEL3	25	30,5	41,3	16,4	-15.0	-1.5	LT16NL	**SMYE3**	**SSY3T**	T10	**CKC3**	T15	**SSA3T**	T10
H20LSEL3	32	36,8	41,3	19,3	-15.0	-1.5	LT16NL	**SMYE3**	**SSY3T**	T10	**CKC3**	T15	**SSA3T**	T10
H24LSEL3	38	44,7	41,3	22,5	-15.0	-1.5	LT16NL	**SMYE3**	**SSY3T**	T10	**CKC3**	T15	**SSA3T**	T10
H24LSEL4	38	45,3	41,3	24,7	-15.0	-1.5	LT22NL	**SMYE4**	**SSY4T**	T20	**CKC4**	T20	**SSA4T**	T20
H32LSEL4	51	61,0	41,3	32,4	-15.0	-1.5	LT22NL	**SMYE4**	**SSY4T**	T20	**CKC4**	T20	**SSA4T**	T20
H50LSEL22	50	56,0	41,3	28,7	-15.0	-1.5	LT22NL	**SMYE4**	**SSY4T**	T20	**CKC4**	T20	**SSA4T**	T20
H32LSEL5	51	61,0	41,3	32,5	-15.0	-1.5	LT27NL	**SMYE5**	**SSY5T**	T25	**CKC5**	T25	**SSA5T**	T25
H40LSEL27	40	50,0	41,3	29,0	-15.0	-1.5	LT27NL	**SMYE5**	**SSY5T**	T25	**CKC5**	T25	**SSA5T**	T25
H40LSEL5	64	77,0	41,3	38,9	-15.0	-1.5	LT27NL	**SMYE5**	**SSY5T**	T25	**CKC5**	T25	**SSA5T**	T25
H50LSEL27	50	58,0	41,3	31,4	-15.0	-1.5	LT27NL	**SMYE5**	**SSY5T**	T25	**CKC5**	T25	**SSA5T**	T25

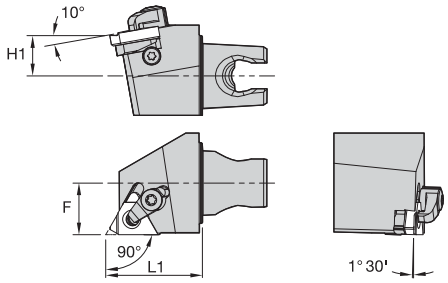
NOTE: For boring adaptors, see pages C108–C109.



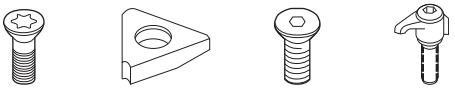
LSE • End Mount



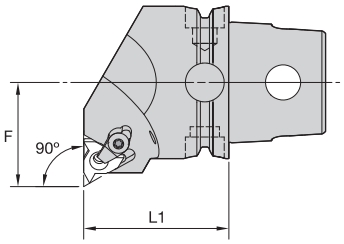
order number	catalogue number	L1 mm	F mm	H1 mm	gage insert	insert screw	shim	shim screw	clamp assembly
	right hand								
3482966	**KM20LSER1625**	25	17	9,5	LT16EL	**SSA3T**	**SMYI3**	**SSY3T**	**CKC3**
2399506	**KM25LSER1630**	30	22	12,5	LT16EL	**SSA3T**	**SMYI3**	**SSY3T**	**CKC3**
	left hand								
3482965	**KM20LSEL1625**	25	17	9,5	LT16ER	**SSA3T**	**SMYE3**	**SSY3T**	**CKC3**
2399507	**KM25LSEL1630**	30	22	12,5	LT16ER	**SSA3T**	**SMYE3**	**SSY3T**	**CKC3**

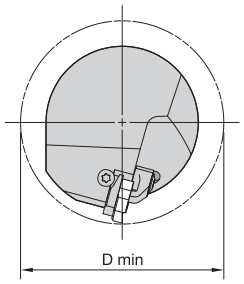


LSS • Side Mount



order number	catalogue number	L1 mm	F mm	H1 mm	gage insert	insert screw	shim	shim screw	clamp assembly
	right hand								
3482968	**KM20LSSR1625**	25	12,50	9,5	LT16ER	**SSA3T**	**SMYE3**	**SSY3T**	**CKC3**
2399504	**KM25LSSR1630**	30	16,00	12,5	LT16ER	**SSA3T**	**SMYE3**	**SSY3T**	**CKC3**
3176219	**KM25LSSR2230**	30	16,00	12,5	LT22ER	**SSA4T**	**SMYE4**	**SSY4T**	**CKC4**
	left hand								
3482967	**KM20LSSL1625**	25	12,50	9,5	LT16EL	**SSA3T**	**SMYI3**	**SSY3T**	**CKC3**
2399505	**KM25LSSL1630**	30	16,00	12,5	LT16EL	**SSA3T**	**SMYI3**	**SSY3T**	**CKC3**
3176220	**KM25LSSL2230**	30	16,00	12,5	LT22EL	**SSA4T**	**SMYI4**	**SSY4T**	**CKC4**



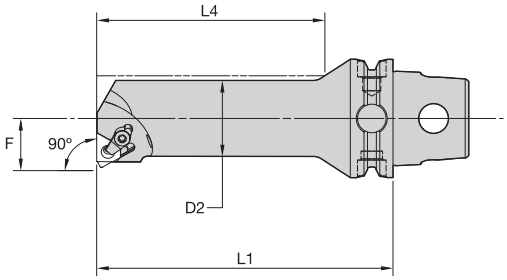


KM QUICK CHANGE

■ LSE-N 90° • Internal Only

order number	catalogue number	L1 mm	F mm	D min mm	gage insert	insert screw	shim	shim screw	clamp assembly	kg
	right hand									
3950832	**KM40TSLSER16N**	40	27	54	LT16NR	**SSA3T**	**SMYI3**	**SSY3T**	**CKC3**	0,35
3950854	**KM40TSLSER22N**	40	27	54	LT22NR	**SSA4T**	**SMYI4**	**SSY4T**	**CKC4**	0,35
3959399	**KM40TSLSER27N**	45	27	54	LT27NR	**SSA5T**	**SMYI5**	**SSY5T**	**CKC5**	0,39
	left hand									
3950831	**KM40TSLSEL16N**	40	27	54	LT16NL	**SSA3T**	**SMYE3**	**SSY3T**	**CKC3**	0,35
3950853	**KM40TSLSEL22N**	40	27	54	LT22NL	**SSA4T**	**SMYE4**	**SSY4T**	**CKC4**	0,35
3959398	**KM40TSLSEL27N**	45	27	54	LT27NL	**SSA5T**	**SMYE5**	**SSY5T**	**CKC5**	0,39

NOTE: Cutting units are supplied with insert screw and clamp assembly. However, tools are designed to use either the insert screw or the clamp assembly, not both.



KM QUICK CHANGE

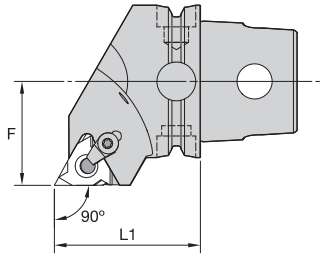
LSE 90°

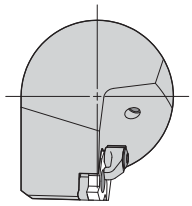
order number	catalogue number	D2 mm	D min mm	F mm	L4 mm	L1 mm	gage insert	kg
	right hand							
3955464	**KM40TSS10DLSER11**	10	13	7	35	60	LT11NR	0,22
3955466	**KM40TSS12ELSER11**	12	16	9	42	70	LT11NR	0,25
3955468	**KM40TSS16FLSER16**	16	20	11	56	80	LT16NR	0,28
3955470	**KM40TSS20GLSER16**	20	25	13	70	90	LT16NR	0,34
3955472	**KM40TSS25HLSER16**	25	32	17	75	100	LT16NR	0,50
3955474	**KM40TSS32JLSER16**	32	40	22	96	110	LT16NR	0,72
3955476	**KM40TSS32JLSER22**	32	40	22	96	110	LT22NR	0,71
	left hand							
3955463	**KM40TSS10DLSEL11**	10	13	7	35	60	LT11NL	0,22
3955465	**KM40TSS12ELSEL11**	12	16	9	42	70	LT11NL	0,25
3955467	**KM40TSS16FLSEL16**	16	20	11	56	80	LT16NL	0,28
3955469	**KM40TSS20GLSEL16**	20	25	13	70	90	LT16NL	0,34
3955471	**KM40TSS25HLSEL16**	25	32	17	75	100	LT16NL	0,50
3955473	**KM40TSS32JLSEL16**	32	40	22	96	110	LT16NL	0,72
3955475	**KM40TSS32JLSEL22**	32	40	22	96	110	LT22NL	0,71

Spare Parts

catalogue number	insert screw	shim	shim screw	clamp assembly
right hand				
KM40TSS10DLSER11	**SSN2T**	**–**	**–**	**–**
KM40TSS12ELSER11	**SSN2T**	**–**	**–**	**–**
KM40TSS16FLSER16	**SN3TPKG**	**–**	**–**	**–**
KM40TSS20GLSER16	**SSA3T**	**SMYI3**	**SSY3T**	**CKC3**
KM40TSS25HLSER16	**SSA3T**	**SMYI3**	**SSY3T**	**CKC3**
KM40TSS32JLSER16	**SSA3T**	**SMYI3**	**SSY3T**	**CKC3**
KM40TSS32JLSER22	**SSA4T**	**SMYI4**	**SSY4T**	**CKC4**
left hand				
KM40TSS10DLSEL11	**SSN2T**	**–**	**–**	**–**
KM40TSS12ELSEL11	**SSN2T**	**–**	**–**	**–**
KM40TSS16FLSEL16	**SN3TPKG**	**–**	**–**	**–**
KM40TSS20GLSEL16	**SSA3T**	**SMYE3**	**SSY3T**	**CKC3**
KM40TSS25HLSEL16	**SSA3T**	**SMYE3**	**SSY3T**	**CKC3**
KM40TSS32JLSEL16	**SSA3T**	**SMYE3**	**SSY3T**	**CKC3**
KM40TSS32JLSEL22	**SSA4T**	**SMYE4**	**SSY4T**	**CKC4**

NOTE: Items listed without a shim are designed for a 1,5° inclination angle.
Cutting units are supplied with insert screw and clamp assembly. However, tools are designed to use either the insert screw or the clamp assembly, not both.





KM QUICK CHANGE

■ LSS 90°

order number	catalogue number	L1 mm	F mm	gage insert	insert screw	shim	shim screw	clamp assembly	kg
	right hand								
3950857	**KM40TSLSSR16**	40	27	LT16ER	**SSA3T**	**SMYE3**	**SSY3T**	**CKC3**	0,31
3950858	**KM40TSLSSR22**	40	27	LT22ER	**SSA4T**	**SMYE4**	**SSY4T**	**CKC4**	0,30
3959401	**KM40TSLSSR27**	45	27	LT27ER	**SSA5T**	**SMYE5**	**SSY5T**	**CKC5**	0,37
	left hand								
3950855	**KM40TSLSSL16**	40	27	LT16EL	**SSA3T**	**SMYI3**	**SSY3T**	**CKC3**	0,32
3950856	**KM40TSLSSL22**	40	27	LT22EL	**SSA4T**	**SMYI4**	**SSY4T**	**CKC4**	0,31
3959400	**KM40TSLSSL27**	45	27	LT27EL	**SSA5T**	**SMYI5**	**SSY5T**	**CKC5**	0,37

NOTE: Cutting units are supplied with insert screw and clamp assembly. However, tools are designed to use either the insert screw or the clamp assembly, not both.

Suggested Grade and Speeds for Threading Various Workpiece Materials

workpiece group	workpiece material	recommendations surface speed – m/min				
		uncoated	PVD coated			
		K68	KC5010	KC5025	KC5410	KU25T
free-machining carbon steel	10L18, 10L45, 1213, 12L13, 12L14, 1140, 1141, 11L44, 1151, 10L50	—	91–198	45–198	—	91–137
plain carbon steel	10063, 1008, 1010, 1015, 1018, 1020, 1025, 1026, 1108, 1117	—	76–198	45–175	—	76–122
alloy steels/tool steels 150–325 HB (up to 35 HRC)	1042, 1045, 1070, 1080, 1085, 1090, 1095, 1541, 1561, 1572, 5140, 8620, W1, O1, S1, P20, H13, D2, A6, H13, L6	—	76–198	38–167	—	73–122
alloy steels/tool steels 330–450 HB (36–47 HRC)		—	61–160	—	—	61–106
martensitic/ferritic stainless/precipitation hardening	416, 420F, 440F, 405, 409, 429, 430, 434, 436, 442, PH	—	45–160	30–122	—	24–61
austenitic stainless steel	201, 202, 301, 302, 303, 304, 304, 305, 321, 347, 348, 310, 314, 316, 316L, 330	61–106	61–198	46–137	—	24–106
grey cast iron 135–270 HB	class 20, 30, 35, 45	61–91	61–237	46–122	—	30–110
grey cast iron 275–450 HB	class 50, 55, 60	45–76	45–175	15–76	—	30–110
alloy/ductile iron	A536, J434C, 60-40-18, 80-55-06, 100-70-03	45–76	45–198	30–160	—	30–110
free-machining aluminium alloys	2024-T4, 2014-T6, 6061-T6 2011-T3, 3003-H18, A2, Alcan, Alcoa 510, Duralumin	122–244	122–365	—	152–457	30–305
high-silicon aluminium alloys	A380, A390, A380-1, A390-1, A380-2	—	—	—	—	—
copper/zinc/brass		76–183	76–304	46–236	—	30–244
non-metallics	Graphite, Nylon, Plastics, Rubbers, Phenolics, Carbon	122–457	122–396	46–305	—	30–304
high-temperature alloys 125–269 HB (up to 27 HRC)	Nickel 200, Monel, R405, Monel K500, INCONEL 600, INCONEL 625/901x750/718, Waspaloy, Hastelloy C	24–37	24–122	13–76	—	11–85
high-temperature alloys 260–450 HB (26–47 HRC)	Rene 95, Waspaloy A286, Incoloy 800, Haynes 188, Stellite F, Haynes 25	24–30	30–76	6–61	—	11–61
titanium alloys	Ti-6Al-4V, TI-5Al-2.5Sn	34–55	34–99	—	—	11–76

NOTE: When workpiece hardness levels are at the top of a range, starting m/min should be at the lower end. Regularly inspect insert clamps for worn flats.

Edge preparation:
Uncoated — sharp
PVD coated — light hone except positive top rake, top rake-sharp

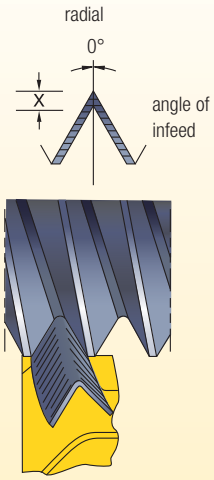
Tool Detective

problem	cause	possible solution
thread with torn finish 	• Burrs. • Torn finish. • Steps.	• Use positive rake or full profile insert. • Increase coolant concentration. • Alter infeed. • Increases m/min. • Check machine “Z” travel axis. • Check insert form. • Check for correct shim in LT system.
chatter 	• Poor rigidity. • Incorrect speed. • Insert movement. • Improper infeed. • Off centerline. • Wrong edge prep.	• Minimise tool overhang. • Check for workpiece deflection. • Adjust m/min. • Check insert and clamp. • Use modified feed angle. • Verify that tool cutting position is at workpiece centerline. • Adjust hone level by ordering special insert.
built-up edge 	• Speed too low. • Insufficient coolant. • Chip load. • Wrong edge prep.	• Increase m/min. • Increase coolant concentration and/or flow. • Adjust infeed angle. • Increase depth of cut per pass. • Adjust hone level by ordering special insert.
deformation 	• Wrong grade. • Speed too high. • Improper infeed angle. • Insufficient coolant.	• Use a more wear-resistant grade (e.g., KC5010™). • Reduce m/min. • Alter infeed method/angle. • Increase coolant flow.
chipping  	• Improper infeed. • Chip load. • Wrong grade. • Incorrect speed. • Poor rigidity. • Wrong edge prep.	• Alter infeed to modified flank. • Adjust chip load. • Increase or decrease number of passes. • Eliminate spring passes. • Use tougher grade (e.g., KC5025™). • Increase m/min if chipping on trailing edge. • Decrease m/min if chipping on leading edge. • Minimise tool overhang. • Check for insert movement/check clamp. • Check for possible part deflection. • Adjust hone size by ordering special insert.
broken nose 	• Heavy chip load. • Small nose radius. • Wrong grade. • Improper infeed. • Wrong edge prep.	• Decrease chip load. • Use large nose radius if allowable. • Use tougher grade (e.g., KC5025). • Alter infeed to modified flank. • Adjust hone size by ordering special insert.
flank wear 	• Wrong grade. • Insufficient coolant. • Off centerline.	• Use a more wear-resistant grade (e.g., KC5025). • Increase coolant flow. • Check the centerline height of the tool. (The smaller the diameter, the more critical the need for centerline accuracy.)

Troubleshooting Matrix

problem	possible solutions																
	increase m/min	reduce m/min	increase chip load	decrease chip load where failure occurs	use tougher carbide grade	use harder carbide grade	apply coolant	use coated carbide	use topping insert	change infeed angle	check for insert movement and reseat	reduce tool overhang	reselect shim	apply chipbreaker style	reduce DOC	adjust center height	begin cutting threads 12mm before workpiece
chatter	●			●							●	●				●	
burr on crest	●								●								
short tool life		●	●	●		●		●									
chipped leading edge			●	●	●												
chipped trailing edge					●					●							
broken nose (first pass)	●														●	●	
broken nose (after first pass)				●	●					●			●				
built-up on cutting edge	●		●				●	●									
premature topping													●				
splitting threads																	●
poor chip evacuation														●			

Radial



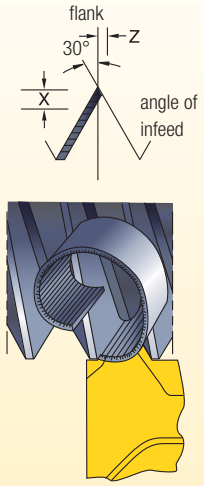
Advantage —

- Cutting on both sides of the thread form places all of the cutting edge in the cut and protects edge from chipping.
- Even wear on the insert.

Disadvantage —

- Tool develops a channel chip that may be difficult to handle.
- Tip chipping occurs when cutting high-tensile materials.
- Burr condition is increased.
- Entire cutting edge is engaged at finish of thread, causing increased tendency to chatter.

Flank



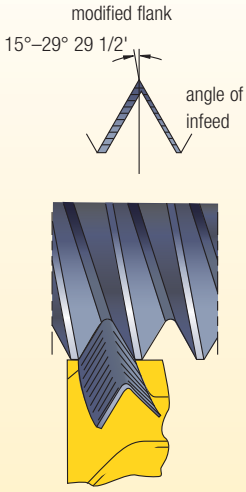
Advantage —

- Cutting with the leading edge of the threading tool gives the chip a definite flow out of the thread form area. This reduces the burr problem on the trailing edge of the tool. To avoid bad surface finish, chipping, or excessive flank wear due to rubbing of the trailing edge, the infeed angle should be 3° to 5° smaller than the angle of the thread. This is a type of modified flank.

Disadvantage —

- Trailing edge of threading insert may drag or rub and tends to chip.
- Torn or poor surface finish threads result when cutting soft, gummy materials like low-carbon steels, aluminium, and stainless steels.

Modified flank



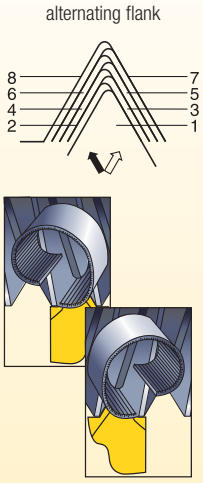
Advantage —

- Tool cuts both sides of thread form, so it is protected from chipping similar to 0° infeed. Channel-type chip develops, but uneven chip thickness helps remove the chip similar to flank infeed.
- This is the preferred method, especially when used with a chip control insert.
- Combined radial and/or alternating flank infeed.
- Results in good tool life, with wear evenly distributed over both flanks.

Disadvantage —

- Similar disadvantages as with 0° infeed, although reduced somewhat in magnitude as cutting forces are better equalised and chip flow is much less of a problem.

Alternating flank



Advantage —

- Increased tool life because both edges are used equally.

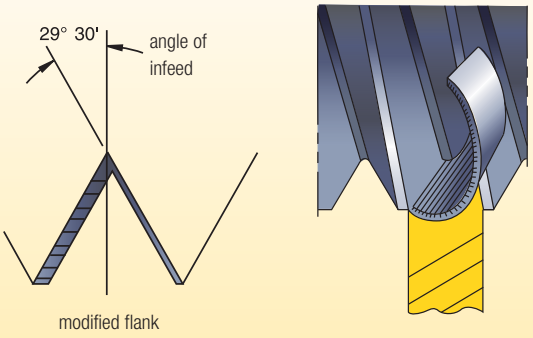
NOTE: Some machine tools may require special programming techniques to achieve this method of infeed.

Disadvantage —

- Difficult to cut on conventional machinery.

Machining Guidelines When Using Chop Control Inserts

Kennametal insert technology brings chip control to your threading operations with the Top Notch™ platform. The proprietary Kennametal recessed chip groove, when used according to our recommendations, breaks the chip in most applications. Our positive rake design lowers cutting pressures, which in turn lowers damaging heat generation thus providing better tool life. Long, stringy chips no longer mar the workpiece surface finish. The danger to operators when removing long chips from the workpiece and chuck is eliminated. All of these benefits combine to improve the productivity of your threading operations.



Machine Programming

Modern CNC controls allow the programmer to easily adjust infeed angle, the number of passes, and depth of cut for each pass. The chip control threading insert performs best at an infeed angle of 29° 30', although 15° to 30° is acceptable. Also, it is important to maintain a minimum of 0,127mm (.005") depth of cut on every pass. In most applications, use of CNC canned cycles produce only marginally successful results. Custom written programs are better and are recommended.

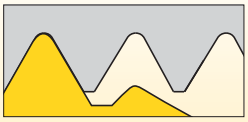
The Last Pass

Some CNC controls require the last pass to be at a 0° infeed angle because the chip will not break on the last pass. On most carbon and alloy steels, the last pass can remain at 0,127mm (.005") depth of cut and produce an acceptable finish. For some materials, a 0,025mm (.001") to 0,076mm (.003") (spring) pass may be used to improve surface finish, however, chip breaking action may be compromised.

Infeed Angle

In order to effectively and consistently break the chip, it is important to use an infeed angle between 28° and 29° 30'. Do not apply chip control inserts at infeed angles less than 15°.

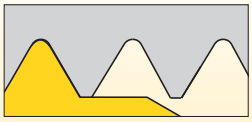
Partial Profile



Tooth profile with universal profile shape:

- 55° or 60° without cutting edges for the tooth tapers.
- Reduced inventory.
- For various pitches in a limited range.
- Preferably one time production.
- Outside/core diameters must be accurately pre-turned.

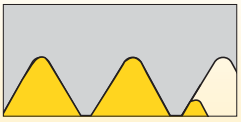
Full Profile



Tooth profile with full profile shape including tooth height:

- For burr-free, precise threads in the specified pitch.
- General application.
- Machining allowance for outside/core diameter around 0.004–0.006".

Multitooth Profile



Multitooth full profile generally with 2–3 teeth:

- Highly productive threading with fewer passes and longer tool life.
- Requires a rigid setup and long thread runout.
- Minimum clearance width approximately 1.25 x E as per indexable insert dimensions table.

Formulas

metric formula		
to find	**given**	**formula**
m/min	D (mm) RPM	$m/min = \frac{\pi \times D}{1000} \times RPM$
RPM	D (mm) m/min	$RPM = \frac{m/min \times 1000}{D \times \pi}$

Legend

IPM = inch per minute
SFM = surface feet per minute
m/min = metres per minute
RPM = revolutions per minute
D = part diameter
π = 3.1416

Maximum Cutting Speeds

Maximum cutting speed is often limited by the maximum travel speed (IPM or mm/min) of the tool allowed by the machine. Check your maximum speed with the following formulas:

metric formula: maximum cutting speed (m/min) = part diameter (mm) x 3.14 x (1/pitch) x $\frac{\text{max mm/min}}{1000mm}$

Recommendation for Threading Infeed Passes

TPI	48–32	28–24	20–16	14–12	11.5–9	8–6	5–4	3–2
metric pitch (mm)	0,50–0,75	0,80–1,0	1,25–1,5	1,75–2,0	2,5–3,0	3,5–4,0	4,5–6,0	8,0

thread type	recommended number of passes							
Common V-thread forms ISO, UN, UNJ, NPT, Whitworth, BSPT, API Rotary Shoulder	4–5	5–6	6–8	8–10	9–12	12–15	14–16	15–25
Acme, Trapez, Round, API Round	—	—	5–6	7–8	10–11	12–13	13–15	18–20
Stub Acme, API Buttress	—	—	5	5–6	7–8	8–10	10–12	14–16
American Buttress	—	—	7–8	9–10	11–12	13–15	17–19	22–24

NOTE: Maintain minimum 0,05mm (.002") infeed on last passes to avoid work hardening and excessive abrasion of the threading tool.

Constant Volume Infeed Values for Threading Operations

In most applications, use of CNC canned cycles produces only marginally successful results. This is the case as these programs do not satisfy the 0,05mm (.002") minimum depth of cut specification recommended.

Example:

Infeed per pass formula: accumulated depth = initial DOC x √ # pass

For example, an 8-pitch external thread has a depth of 2mm (.0789").
25% of 2mm (.0789") = approximately 0,50mm (.0197")
(This is the infeed/DOC for the first pass.)

0,500mm (.0197") x √ 2 = 0,708mm (.0278")
0,708mm (.0278") - 0,500mm (.0197") = 0,207mm (.0082")
(This is the infeed/DOC for the second pass.)

0,500mm (.0197") x √ 3 = 0,867mm (.0341")
0,867mm (.0341") - 0,708mm (.0278") = 0,159mm (.0063")
(This is the infeed/DOC for the third pass.)

0,500mm (.0197") x √ 4 = 1,001mm (.0394")
1,001mm (.0394") - 0,867mm (.0341") = 0,134mm (.0053")
(This is the infeed/DOC for the fourth pass.)

Using Radial Infeed

Bending stress on the cutting edge caused by V-shaped chips from long-chipping steel workpiece materials.

High cutting forces with small cutting thicknesses require sharp edges with high strength.

Its application is recommended for tough and hard, wear-resistant carbides with good resistance to thermal and mechanical shocks.

Using Flank Infeed

Lower bending stress and stabilised cutting edges produce more favourable chip shapes and larger cutting thicknesses.

Carbides with high hardness, good wear resistance, and temperature stability are advantageous.

When turning short threads with short engagement times, there is a good resistance to thermal and mechanical shocks.

Guidelines for Infeeds: How to Determine the Number and the Size of Passes

The number of passes “s” per thread is decisive for successful threading and crest turning. The following tables give standard values for the application condition when machining steel. The proper number of passes must be determined empirically.

If insert breakage occurs, the number of passes must be increased.
With increased wear, we recommend decreasing the number of passes.
The chip thickness should not be less than 0,05mm (.0019").
The allowance at the diameter should not exceed 0,2mm (.0078").

Metric ISO, External Thread Cutting

thread pitch P (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
depth h1	0,307	0,460	0,613	0,767	0,920	1,074	1,227	1,534	1,840	2,147	2,454	2,760	3,067
number of passes	4	4	5	6	6	8	8	10	12	14	15	15	16
	values for flank infeed (X/Z)												
order of passes	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z
1	0,117/-	0,176/-	-0,195/-	0,206/-	0,248/-	0,216/-	0,247/-	0,238/-	0,223/-	0,204/-	0,205/-	0,231/-	0,226/-
2	0,078/0,045	0,118/0,068	0,140/0,081	0,160/0,092	0,192/0,111	0,194/0,112	0,222/0,128	0,248/0,143	0,272/0,157	0,294/0,170	0,324/0,187	0,362/0,211	0,391/0,227
3	0,060/0,035	0,090/0,052	0,108/0,062	0,123/0,071	0,147/0,085	0,149/0,986	0,170/0,098	0,190/0,110	0,209/0,120	0,225/0,130	0,249/0,144	0,280/0,162	0,301/0,174
4	0,052/0,029	0,076/0,044	0,090/0,052	0,104/0,060	0,124/0,072	0,126/0,073	0,144/0,083	0,161/0,093	0,176/0,102	0,190/0,110	0,210/0,121	0,236/0,136	0,254/0,147
5			0,080/0,046	0,091/0,053	0,110/0,063	0,111/0,064	0,126/0,073	0,141/0,082	0,155/0,089	0,167/0,097	0,185/0,107	0,236/0,136	0,224/0,129
6				0,083/0,048	0,099/0,057	0,100/0,058	0,114/0,066	0,128/0,074	0,140/0,081	0,151/0,087	0,167/0,096	0,188/0,108	0,202/0,117
7						0,092/0,053	0,105/0,061	0,118/0,068	0,129/0,074	0,139/0,080	0,154/0,089	0,173/0,100	0,186/0,107
8						0,087/0,049	0,098/0,057	0,109/0,063	0,120/0,069	0,129/0,075	0,143/0,083	0,161/0,093	0,173/0,100
9								0,103/0,059	0,113/0,065	0,122/0,070	0,134/0,078	0,151/0,087	0,163/0,094
10								0,098/0,056	0,106/0,061	0,115/0,066	0,127/0,073	0,143/0,082	0,154/0,089
11									0,101/0,058	0,109/0,063	0,121/0,070	0,136/0,078	0,146/0,084
12									0,097/0,056	0,105/0,060	0,115/0,067	0,130/0,075	0,140/0,081
13										0,100/0,058	0,111/0,064	0,125/0,072	0,134/0,077
14										0,097/0,056	0,107/0,061	0,120/0,069	0,129/0,074
15											0,102/0,059	0,116/0,067	0,124/0,072
16													0,120/0,069

Metric ISO, Internal Thread Cutting

thread pitch P (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
depth h1	0,271	0,406	0,541	0,677	0,812	0,947	1,083	1,353	1,624	1,894	2,165	2,436	2,706
number of passes	4	4	5	6	6	8	8	10	11	12	14	15	16
	values for flank infeed (X/Z)												
order of passes	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z
1	0,108/-	0,162/-	0,182/-	0,196/-	0,235/-	0,212/-	0,243/-	0,243/-	0,263/-	0,277/-	0,261/-	0,269/-	0,277/-
2	0,067/0,039	0,102/0,058	0,120/0,069	0,137/0,079	0,165/0,095	0,166/0,096	0,190/0,110	0,213/0,123	0,243/0,140	0,272/0,157	0,288/0,166	0,313/0,180	0,336/0,194
3	0,052/0,030	0,077/0,045	0,092/0,053	0,105/0,061	0,126/0,073	0,128/0,074	0,146/0,084	0,163/0,094	0,187/0,108	0,209/0,120	0,221/0,127	0,240/0,138	0,258/0,149
4	0,044/0,025	0,065/0,038	0,078/0,045	0,089/0,051	0,107/0,062	0,108/0,062	0,123/0,071	0,138/0,079	0,157/0,091	0,176/0,102	0,186/0,107	0,202/0,117	0,218/0,126
5			0,069/0,040	0,078/0,045	0,94/0,054	0,095/0,055	0,108/0,063	0,121/0,070	0,139/0,080	0,155/0,089	0,164/0,095	0,178/0,103	0,192/0,111
6				0,072/0,041	0,085/0,049	0,086/0,050	0,098/0,057	0,110/0,063	0,125/0,072	0,140/0,081	0,148/0,086	0,161/0,093	0,173/0,100
7						0,079/0,046	0,090/0,052	0,101/0,058	0,115/0,067	0,129/0,074	0,136/0,079	0,148/0,086	0,159/0,092
8						0,073/0,042	0,084/0,048	0,094/0,054	0,107/0,062	0,120/0,069	0,127/0,073	0,138/0,080	0,148/0,086
9								0,088/0,051	0,101/0,058	0,113/0,065	0,119/0,069	0,129/0,075	0,139/0,080
10								0,082/0,048	0,095/0,055	0,106/0,061	0,113/0,065	0,122/0,071	0,132/0,076
11									0,092/0,052	0,101/0,058	0,107/0,062	0,116/0,067	0,125/0,072
12										0,097/0,056	0,102/0,059	0,111/0,064	0,120/0,069
13											0,098/0,057	0,107/0,062	0,115/0,066
14											0,095/0,055	0,103/0,059	0,111/0,064
15												0,099/0,057	0,107/0,062
16													0,107/0,062

UN Thread, External Thread Cutting

thread pitch TPI	24	20	18	16	14	12	11	10	9	8	7	6	5
depth h1	0,649	0,779	0,866	0,974	1,113	1,299	1,416	1,558	1,731	1,948	2,226	2,597	3,116
number of passes	5	6	6	7	9	9	10	11	12	13	14	15	16
	values for flank infeed (X/Z)												
order of passes	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z
1	0,206/-	0,210/-	0,233/-	0,226/-	0,196/-	0,229/-	0,220/-	0,214/-	0,210/-	0,211/-	0,213/-	0,218/-	0,229/-
2	0,148/0,086	0,163/0,094	0,181/0,104	0,188/0,109	0,189/0,110	0,222/0,128	0,228/0,132	0,240/0,139	0,256/0,148	0,276/0,160	0,304/0,176	0,343/0,198	0,399/0,230
3	0,114/0,066	0,125/0,072	0,139/0,080	0,145/0,083	0,146/0,084	0,170/0,098	0,176/0,102	0,184/0,106	0,196/0,113	0,212/0,122	0,234/0,135	0,263/0,152	0,306/0,177
4	0,096/0,055	0,105/0,061	0,117/0,068	0,122/0,070	0,123/0,071	0,143/0,083	0,148/0,086	0,155/0,090	0,165/0,095	0,179/0,103	0,197/0,114	0,222/0,128	0,258/0,149
5	0,085/0,049	0,093/0,054	0,103/0,059	0,107/0,062	0,108/0,062	0,126/0,073	0,131/0,075	0,137/0,079	0,146/0,084	0,158/0,091	0,173/0,100	0,195/0,113	0,227/0,131
6		0,084/0,048	0,093/0,054	0,097/0,056	0,098/0,056	0,114/0,066	0,118/0,068	0,124/0,072	0,132/0,076	0,142/0,082	0,157/0,091	0,177/0,102	0,205/0,119
7				0,089/0,052	0,090/0,052	0,105/0,061	0,109/0,063	0,114/0,066	0,121/0,070	0,142/0,082	0,144/0,083	0,163/0,094	0,189/0,109
8					0,084/0,048	0,098/0,056	0,101/0,058	0,106/0,061	0,113/0,065	0,122/0,070	0,134/0,078	0,151/0,087	0,176/0,101
9					0,079/0,045	0,092/0,053	0,095/0,055	0,100/0,057	0,106/0,061	0,114/0,066	0,126/0,073	0,142/0,082	0,165/0,095
10							0,090/0,052	0,094/0,054	0,100/0,058	0,108/0,063	0,119/0,069	0,134/0,078	0,156/0,090
11								0,090/0,052	0,095/0,055	0,103/0,059	0,113/0,065	0,128/0,074	0,149/0,086
12									0,091/0,053	0,098/0,057	0,108/0,063	0,122/0,071	0,142/0,082
13										0,094/0,054	0,104/0,060	0,117/0,068	0,136/0,079
14											0,100/0,058	0,113/0,065	0,131/0,076
15												0,109/0,063	0,126/0,073
16													0,122/0,071

UN Thread, Internal Thread Cutting

thread pitch TPI	24	20	18	16	14	12	11	10	9	8	7	6	5
depth h1	0,573	0,687	0,764	0,860	0,982	1,146	1,250	1,375	1,528	1,719	1,964	2,291	2,750
number of passes	5	6	6	7	8	9	9	10	11	12	13	14	15
	values for flank infeed (X/Z)												
order of passes	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z
1	20,193/-	0,200/-	0,222/-	0,219/-	0,220/-	0,228/-	0,250/-	0,247/-	0,246/-	0,252/-	0,262/-	0,278/-	0,302/-
2	0,127/0,073	0,239/0,081	0,155/0,089	0,161/0,093	0,173/0,100	0,190/0,110	0,207/0,120	0,216/0,125	0,229/0,132	0,247/0,142	0,271/0,156	0,304/0,176	0,353/0,204
3	0,098/0,056	0,107/0,062	0,119/0,069	0,124/0,072	0,132/0,076	0,146/0,084	0,159/0,092	0,166/0,096	0,176/0,101	0,247/0,142	0,208/0,120	0,234/0,135	0,271/0,156
4	0,082/0,048	0,090/0,052	0,100/0,058	0,104/0,060	0,112/0,064	0,123/0,071	0,134/0,077	0,140/0,081	0,148/0,086	0,160/0,092	0,175/0,101	0,197/0,114	0,228/0,132
5	0,073/0,042	0,072/0,041	0,088/0,051	0,092/0,053	0,098/0,057	0,108/0,062	0,118/0,068	0,123/0,071	0,130/0,075	0,141/0,081	0,154/0,089	0,173/0,100	0,201/0,116
6			0,080/0,046	0,083/0,048	0,089/0,051	0,098/0,056	0,107/0,062	0,111/0,064	0,118/0,068	0,127/0,073	0,140/0,081	0,157/0,091	0,182/0,105
7				0,077/0,044	0,082/0,047	0,090/0,052	0,098/0,057	0,102/0,059	0,108/0,063	0,117/0,067	0,128/0,074	0,144/0,083	0,167/0,097
8					0,076/0,044	0,084/0,048	0,091/0,053	0,095/0,055	0,101/0,058	0,109/0,063	0,119/0,069	0,134/0,078	0,156/0,090
9						0,079/0,045	0,086/0,050	0,090/0,052	0,095/0,055	0,102/0,059	0,112/0,065	0,126/0,073	0,146/0,084
10								0,085/0,049	0,090/0,052	0,097/0,056	0,106/0,061	0,119/0,069	0,138/0,080
11									0,085/0,049	0,092/0,053	0,101/0,058	0,113/0,065	0,131/0,076
12										0,088/0,051	0,096/0,056	0,108/0,063	0,126/0,073
13											0,092/0,053	0,104/0,060	0,121/0,070
14												0,100/0,058	0,116/0,067
15													0,112/0,065

NPT Thread, External, and Internal Machining

pitch, Gg/Z	27.0	18.0	14.0	11.5	8.0
depth	0,0750	1,129	1,451	1,767	2,540
number of passes	6	8	10	12	14
	values for flank infeed (X/Z)				
order of passes	X/Z	X/Z	X/Z	X/Z	X/Z
1	0,19/–	0,22/–	0,240/–	0,24/–	0,255/–
2	0,15/0,087	0,181/0,104	0,200/0,115	0,208/0,120	0,250/0,144
3	0,13/0,075	0,152/0,088	0,170/0,098	0,182/0,105	0,245/0,141
4	0,11/0,063	0,141/0,081	0,150/0,086	0,168/0,097	0,230/0,133
5	0,09/0,052	0,131/0,075	0,140/0,081	0,155/0,089	0,210/0,121
6	0,08/0,046	0,121/0,070	0,130/0,075	0,145/0,084	0,195/0,112
7		0,101/0,058	0,120/0,069	0,138/0,079	0,180/0,104
8		0,082/0,047	0,110/0,063	0,124/0,072	0,175/0,101
9			0,100/0,058	0,117/0,067	0,170/0,098
10			0.091/0,052	0,105/0,060	0,155/0,089
11				0,095/0,055	0,140/0,080
12				0,090/0,052	0,125/0,072
13					0,110/0,063
14					0,100/0,058

BSPT Thread, External, and Internal Machining

pitch, Gg/Z	28	19	14	11
depth	0,581	0,856	1,162	BSPT thread
number of passes	5	6	6	10
	values for flank infeed (X/Z)			
order of passes	X/Z	X/Z	X/Z	X/Z
1	0,179/–	0,223/–	0,222/–	0,214/–
2	0,134/0,070	0,181/0,094	0,213/0,111	0,242/0/0,126
3	0,103/0,054	0,139/0,072	0,163/0,085	0,186/0,097
4	0,087/0,045	0,1171/0,061	0,138/0,072	0,157/0,082
5	0,078/0,040	0,103/0,054	0,121/0,063	0,138/0,072
6		0,093/0,049	0,110/0,057	0,125/0,065
7			0,101/0,052	0,115/0,060
8			0,094/0,049	0,107/0,056
9				0,100/0,052
10				0,095/0,049

Trapezoid Thread to DIN 103, External, and Internal Machining

pitch	24	20	18	16	14
depth	0,573	0,687	0,764	0,860	0,982
number of passes	6	8	10	12	14
	values for flank infeed (X/Z)				
order of passes	X/Z	X/Z	X/Z	X/Z	X/Z
1	0,240/–	0,250/–	0,260/–	0,265/–	0,285/–
2	0,190/0,051	0,230/0,062	0,245/0,066	0,270/0,072	0,295/0,079
3	0,137/0,037	0,175/0,047	0,220/0,059	0,250/0,067	0,295/0,079
4	0,124/0,033	0,149/0,040	0,200/0,054	0,230/0,062	0,255/0,068
5	0,110/0,029	0,126/0,034	0,175/0,047	0,210/0,056	0,235/0,063
6	0,099/0,027	0,114/0,031	0,160/0,043	0,190/0,051	0,215/0,058
7		0,106/0,028	0,145/0,039	0,175/0,047	0,200/0,054
8		0,100/0,028	0,103/0,035	0,160/0,043	0,185/0,050
9			0,115/0,031	0,145/0,039	0,170/0,046
10			0,100/0,027	0,130/0,035	0,155/0,042
11				0,120/0,032	0,140/0,038
12				0,105/0,028	0,125/0,033
13					0,115/0,031
14					0,100/0,027

Round Thread to DIN 405, External, and Internal Machining

pitch, Gg/Z	10	8	6
depth	1,31	1,63	2,17
number of passes	8	10	12
	values for flank infeed (X/Z)		
order of passes	X/Z	X/Z	X/Z
1	0,210/–	0,220/–	0,206/–
2	0,205/0,055	0,210/0,058	0,250/0,067
3	0,195/0,052	0,200/0,055	0,024/0,064
4	0,180/0,048	0,190/0,051	0,230/0,062
5	0,160/0,042	0,175/0,047	0,215/0,059
6	0,140/0,037	0,160/0,043	0,195/0,54
7	0,115/0,031	0,145/0,039	0,180/0,048
8	0,090/0,024	0,1360/0,035	0,160/0,043
9		0,110/0,029	0,140/0,038
10		0,140/0,038	0,120/0,032
11			0,100/0,027
12			0,080/0,024

Whitworth, External, and Internal Thread Cutting

pitch TPI	28	20	19	16	14	12	11	10	9	8	7	6	5
depth h1	0,581	0,813	0,813	0,856	1,017	1,355	1,479	1,626	1,807	2,033	2,324	2,711	2,750
number of passes	5	6	6	8	8	9	9	10	11	12	14	15	16
	values for flank infeed (X/Z)												
order of passes	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z
1	0,179/–	0,211/–	0,223/–	0,196/–	0,223/–	0,226/–	0,246/–	0,236/–	0,230/–	0,255/–	0,195/–	0,197/–	0,204/–
2	0,134/0,070	0,172/0,089	0,181/0,094	0,186/0,097	0,213/0,111	0,234/0,122	0,255/0133	0,266/0,139	0,282/0,147	0,304/0,158	0,322/0,167	0,361/0,189	0,421/0,219
3	0,104/0,054	0,132/0,069	0,139/0,072	0,142/0,074	0,163/0,085	0,180/0,093	0,197/0,102	0,206/0,106	0,216/0,113	0,233/0,121	0,247/0,128	0,278/0,145	0,323/0,168
4	0,087/0,045	0,111/0,058	0,117/0,061	0,120/0,063	0,138/0,072	0,15/0,079	0,165/0,086	0,172/0,090	0,182/0,095	0,197/0,102	0,208/0,108	0,234/0,122	0,272/0,142
5	0,077/0,040	0,098/0,051	0,103/0,054	0,160/0,055	0,121/0,063	0,133/0,069	0,1450,076	0,152/0,079	0,161/0,084	0,173/0,090	0,183/0,095	0,207/0,108	0,240/0,125
6		0,098/0,051	0,093/0,049	0,096/0,050	0,110/0,057	0,121/0,063	0,131/0,068	0,137/0,071	0,145/0,076	0,157/0,082	0,166/0,086	0,187/0,097	0,217/0,113
7				0,088/0,046	0,101/0,052	0,111/0,058	0,121/0,063	0,126/0,066	0,134/0,070	0,144/0,075	0,152/0,079	0,172/0,089	0,200/0,104
8				0,082/0,043	0,093/0,049	0,103/0,054	0,113/0,059	0,117/0,061	0,124/0,065	0,134/0,070	0,142/0,074	0,160/0,083	0,186/0,097
9						0,97/0,050	0,106/0,055	0,110/0,057	0,117/0,061	0,126/0,066	0,133/0,069	0,150/0,078	0,174/0,091
10								0,104/0,054	0,111/0,058	0,119/0,062	0,126/0,066	0,135/0,074	0,165/0,086
11									0,105/0,055	0,113/0,059	0,120/0,062	0,135/0,070	0,157/0,082
12										0,108/0,056	0,114/0,060	0,129/0,067	0,150/0,078
13											0,110/0,057	0,124/0,064	0,144/0,075
14											0,106/0,055	0,119/0,062	0,138/0,072
15												,115/0,060	0,133/0,069
16													0,129/0,067

Multitooth Threads, Internal

	ISO metric						ISO UN					Whitworth	NPT		
type	3M	2M	3M	2M	3M	2M	2M	3M	2M	3M	2M	2M	2M	3M	2M
pitch (mm)	1,0	1,5	1,5	2,0	2,0	3,0	—	—	—	—	—	—	—	—	—
TPI	—	—	—	—	—	—	16	16	12	12	8	11	11.5	11.5	8
total depth	0,609	0,838	0,838	11,684	11,684	1,778	0,939	0,939	12,446	12,446	18,796	15,748	17,526	17,526	2,540
1	0,330	0,381	0,508	0,508	0,711	0,558	0,431	0,558	0,558	0,762	0,584	0,736	0,584	0,812	0,889
2	0,279	0,254	0,330	0,381	0,457	0,482	0,304	0,381	0,406	0,482	0,508	0,482	0,508	0,558	0,635
3	—	0,203	—	0,279	—	0,431	0,203	—	0,279	—	0,431	0,355	0,355	0,381	0,558
4	—	—	—	—	—	0,304	—	—	—	—	0,355	—	0,304	—	0,457

Recommendations for Steel Workpieces (<300 BHN)

catalogue number	insert size	TPI profile	total depth — on radius		
			1st pass	2nd pass	3rd pass
NTC-8R/L8EM	8	8 UN	1,21	16,25	2,00
NTC-8R/L8IM	8	8 UN	1,19	15,36	1,88
NTC-8R/L10EM	8	10 UN	0,92	1,27	1,60
NTC-8R/L10IM	8	10 UN	0,90	12,06	1,52
NTC-8R/L12EM	8	12 UN	0,76	10,41	1,32
NTC-8R/L12IM	8	12 UN	0,76	0,93	1,20
NTC-8R/L14EM	8	14 UN	0,68	0,95	1,12
NTC-8R/L14IM	8	14 UN	0,60	0,78	1,04
NTC-8R/L16EM	8	16 UN	0,58	0,81	0,96
NTC-8R/L16IM	8	16 UN	0,50	0,68	0,93
NTC-8R/L18EM	8	18 UN	0,48	0,66	0,86
NTC-8R/L18IM	8	18 UN	0,48	0,60	0,83
NDC-68RDR/L-75M	8	8 round	1,47	1,65	1,85
NDC-61RDR/L-75M	8	10 round	1,11	1,29	1,45
NDC-88RDRD/L-75M	8	8 round	1,29	1,75	1,85
NDC-88VR/L-75M	8	8 NPT	1,01	1,72	2,45
NDC-8115VR/L-75M	8	11.5 NPT	0,96	1,37	1,70
NDN-814VR/L-75M	8	14 NPT	0,96	1,22	1,36

Recommendations for Steel Workpieces (<300 BHN)

catalogue number	insert size	TPI profile	total depth — on radius		
			1st pass	2nd pass	3rd pass
NTC-8R/L8EM	8	8 UN	1,21	1,63	2,00
NTC-8R/L8IM	8	8 UN	1,19	1,55	1,88
NTC-8R/L10EM	8	10 UN	0,92	1,27	1,60
NTC-8R/L10IM	8	10 UN	0,90	1,22	1,52
NTC-8R/L12EM	8	12 UN	0,76	1,04	1,32
NTC-8R/L12IM	8	12 UN	0,76	0,93	1,20
NTC-8R/L14EM	8	14 UN	0,68	0,95	1,12
NTC-8R/L14IM	8	14 UN	0,60	0,78	1,04
NTC-8R/L16EM	8	16 UN	0,58	0,81	0,96
NTC-8R/L16IM	8	16 UN	0,50	0,68	0,93
NTC-8R/L18EM	8	18 UN	0,48	0,66	0,86
NTC-8R/L18IM	8	18 UN	0,48	0,60	0,83
NDC-68RDR/L-75M	8	8 round	1,47	1,65	1,85
NDC-61RDR/L-75M	8	10 round	1,11	1,29	1,45
NDC-88RDRD/L-75M	8	8 round	1,29	1,75	1,85
NDC-88VR/L-75M	8	8 NPT	1,01	1,72	2,45
NDC-8115VR/L-75M	8	11.5 NPT	0,96	1,37	1,70
NDN-814VR/L-75M	8	14 NPT	0,96	1,22	1,36

ACME, External

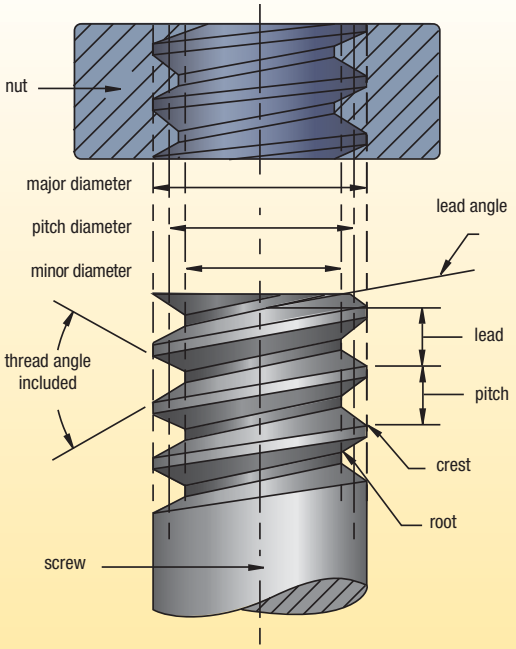
pitch, TPI	28	20	19	16	14	12	11	10	9	8	7	6	5
depth	0.023	0.032	0.032	0.034	0.04	0.053	0.058	0.064	0.071	0.08	0.091	0.107	0.128
number of passes	5	6	6	8	8	9	9	10	11	12	14	15	16
	values for flank infeed (X/Z)												
order of passes	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z
1	0.9906	1.0414	1.27	1.6002	1.8796	2.413	2.8448	3.5052	4.572	6.731	0.2032/-	0.2032/-	0.2032/-
2	0.2286	0.2032	0.2286	0.254	0.254	0.2794	0.3048	0.3302	0.4826	0.7112	0.3302/ 0.1778	0.3556/ 0.1778	0.4318/ 0.2286
3	0.2286	0.2032	0.2286	0.2286	0.254	0.2794	0.2794	0.3048	0.4572	0.6604	0.254/ 0.127	0.2794/ 0.1524	0.3302/ 0.1778
4	0.1778	0.1778	0.1778	0.2286	0.2286	0.254	0.254	0.2794	0.4064	0.5842	0.2032/ 0.1016	0.2286/ 0.127	0.2794/ 0.1524
5	0.1524	0.1524	0.1778	0.1778	0.1778	0.2286	0.254	0.2794	0.381	0.5588	0.1778/ 0.1016	0.2032/ 0.1016	0.2286/ 0.127
6	0.127	0.127	0.127	0.1524	0.1524	0.2032	0.2286	0.254	0.3302	0.4826	0.1778/ 0.0762	0.1778/ 0.1016	0.2286/ 0.1016
7	0.0762	0.1016	0.127	0.127	0.127	0.1778	0.2032	0.254	0.2794	0.4318	0.1524/ 0.0762	0.1778/ 0.1016	0.2032/ 0.1016
8	0.0762	0.1016	0.127	0.127	0.1524	0.1778	0.2286	0.2794	0.381	0.1524/ 0.0762	0.1524/ 0.0762	0.1778/ 0.1016	
9	0.1016	0.1016	0.127	0.1524	0.1778	0.2032	0.2286	0.3302	0.127/ 0.0762	0.1524/ 0.0762	0.1778/ 0.1016		
10	0.1016	0.127	0.1524	0.1778	0.2032	0.2286	0.3302	0.127/ 0.0762	0.127/ 0.0762	0.1524/ 0.0762			
11	0.1016	0.1016	0.1524	0.1524	0.1778	0.2286	0.2794	0.127/ 0.0508	0.127/ 0.0762	0.1524/ 0.0762			
12	0.1016	0.1524	0.1524	0.1778	0.2032	0.2794	0.1016/ 0.0508	0.127/ 0.0762	0.1524/ 0.0762				
13	0.1016	0.127	0.1524	0.1524	0.1778	0.254	0.1016/ 0.0508	0.127/ 0.0762	0.1524/ 0.0762				
14	0.1016	0.127	0.1524	0.1778	0.2286	0.1016/ 0.0508	0.127/ 0.0508	0.127/ 0.0762					
15	0.1016	0.1524	0.1778	0.2286	0.127/ 0.0508	0.127/ 0.0762							
16	0.1016	0.1524	0.1524	0.2032	0.127/ 0.0762								
17	0.1016	0.127	0.1778	0.1016/ 0.0508	0.127/ 0.0762	0.1524/ 0.0762							
18	0.1016	0.127	0.1778	0.1016/ 0.0508	0.127/ 0.0508	0.127/ 0.0762							
19	0.127	0.1524	0.127/ 0.0508	0.127/ 0.0762									
20	0.1524	0.127/ 0.0762											

ACME, Internal

pitch, TPI	28	20	19	16	14	12	11	10	9	8	7	6	5
depth	0.023	0.032	0.032	0.034	0.04	0.053	0.058	0.064	0.071	0.08	0.091	0.107	0.128
number of passes	5	6	6	8	8	9	9	10	11	12	14	15	16
	values for flank infeed (X/Z)												
order of passes	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z
1	0.9906	1.0414	1.27	1.6002	1.8796	2.413	2.8448	3.5052	4.572	6.731	0.2032/-	0.2032/-	0.2032/-
2	0.2286	0.2032	0.2286	0.254	0.254	0.2794	0.3048	0.3302	0.4826	0.7112	0.3302/ 0.1778	0.3556/ 0.1778	0.4318/ 0.2286
3	0.2286	0.2032	0.2286	0.2286	0.254	0.2794	0.2794	0.3048	0.4572	0.6604	0.254/ 0.127	0.2794/ 0.1524	0.3302/ 0.1778
4	0.1778	0.1778	0.1778	0.2286	0.2286	0.254	0.254	0.2794	0.4064	0.5842	0.2032/ 0.1016	0.2286/ 0.127	0.2794/ 0.1524
5	0.1524	0.1524	0.1778	0.1778	0.1778	0.2286	0.254	0.2794	0.381	0.5588	0.1778/ 0.1016	0.2032/ 0.1016	0.2286/ 0.127
6	0.127	0.127	0.127	0.1524	0.1524	0.2032	0.2286	0.254	0.3302	0.4826	0.1778/ 0.0762	0.1778/ 0.1016	0.2286/ 0.1016
7	0.0762	0.1016	0.127	0.127	0.127	0.1778	0.2032	0.254	0.2794	0.4318	0.1524/ 0.0762	0.1778/ 0.1016	0.2032/ 0.1016
8	0.0762	0.1016	0.127	0.127	0.1524	0.1778	0.2286	0.2794	0.381	0.1524/ 0.0762	0.1524/ 0.0762	0.1778/ 0.1016	
9	0.1016	0.1016	0.127	0.1524	0.1778	0.2032	0.2286	0.3302	0.127/ 0.0762	0.1524/ 0.0762	0.1778/ 0.1016		
10	0.1016	0.127	0.1524	0.1778	0.2032	0.2286	0.3302	0.127/ 0.0762	0.127/ 0.0762	0.1524/ 0.0762			
11	0.1016	0.1016	0.1524	0.1524	0.1778	0.2286	0.2794	0.127/ 0.0508	0.127/ 0.0762	0.1524/ 0.0762			
12	0.1016	0.1524	0.1524	0.1778	0.2032	0.2794	0.1016/ 0.0508	0.127/ 0.0762	0.1524/ 0.0762				
13	0.1016	0.127	0.1524	0.1524	0.1778	0.254	0.1016/ 0.0508	0.127/ 0.0762	0.1524/ 0.0762				
14	0.1016	0.127	0.1524	0.1778	0.2286	0.1016/ 0.0508	0.127/ 0.0508	0.127/ 0.0762					
15	0.1016	0.1524	0.1778	0.2286	0.127/ 0.0508	0.127/ 0.0762							
16	0.1016	0.1524	0.1524	0.2032	0.127/ 0.0762								
17	0.1016	0.127	0.1778	0.1016/ 0.0508	0.127/ 0.0762	0.1524/ 0.0762							
18	0.1016	0.127	0.1778	0.1016/ 0.0508	0.127/ 0.0508	0.127/ 0.0762							
19	0.127	0.1524	0.127/ 0.0508	0.127/ 0.0762									
20	0.1524	0.127/ 0.0762											

Screw Thread Definitions

1. **Major diameter —** The largest diameter of a straight screw thread. This applies to both internal and external threads.
2. **Pitch diameter —** On a straight thread, it is the diameter which passes through the thread profiles at such points which make the thread width of the groove equal to one-half of the basic pitch. On a "perfect thread," this occurs at the point where the widths of the thread and groove are equal.
3. **Thread angle (included) —** The included angle between the individual flanks of the thread form.
4. **Minor diameter —** The smallest diameter of a straight screw thread. This applies to both internal and external threads.
5. **Lead angle —** On a straight thread, the lead angle is the angle created by the helix of the thread at the pitch diameter with a plane perpendicular to the axis.
6. **Lead —** The distance a screw thread advances axially in one revolution. On a single start, the pitch and lead are identical. The lead is equal to the pitch times the number of starts.
7. **Pitch —** The distance from a point on a screw thread to a corresponding point on the next thread measured parallel to the thread axis.
8. **Crest —** The outer most surface of the thread form which joins the flanks.
9. **Root —** The inner most surface of the thread form which joins the flanks.

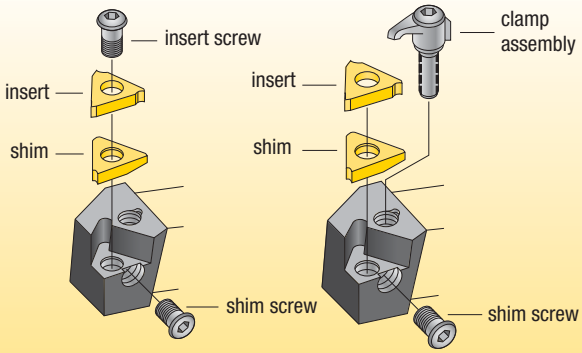


NOTE: Threads per inch (TPI) not shown:
The number of threads per inch measured axially.
The terms pitch and TPI are often used interchangeably.
TPI = 1/pitch

LT Threading Toolholders

In all cases, the proper shim selection is important.

Kennametal toolholders are supplied with a shim for a 1,5° lead angle. Change the shim if your thread is more than 1° different. For more details on proper shim selections, see pages E101–E103.



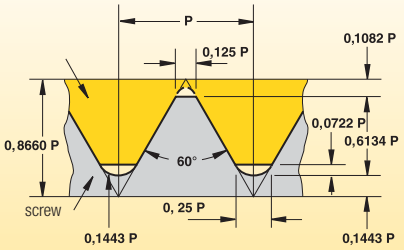
LT Threading Shim Catalogue Numbering System

1-1/4	8	UNX	2	A	LH	(21)
Thread Size	Number of threads per inch	Thread form, series, and tolerance formulation symbol	Thread Class **1** = Allowance and tolerance **2** = Allowance and tolerance **3** = Tolerance only **4** = Interference fit	**A** = External thread **B** = Internal thread	**LH** = Left-hand thread (threads are right hand unless specified)	Thread Gaging System **21** = **22** = Per ANSI B1.3 **23** =

NOTE: For shims and shim kits, see pages E101–E103.

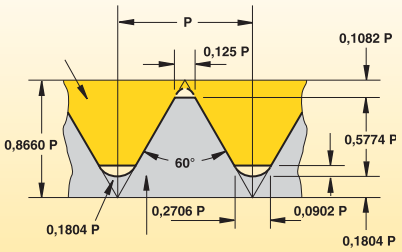
Common Thread Forms

ISO M (Metric) and UN (Unified National)



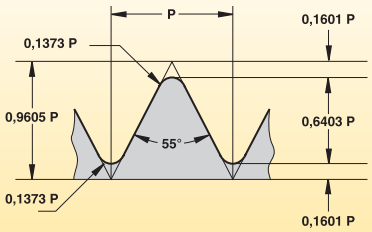
Use: All branches of mechanical industry.

UNJ (controlled root radius)



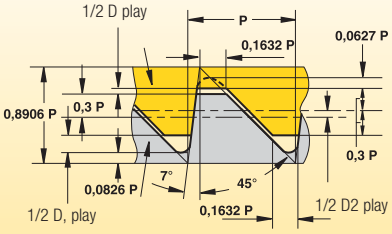
Use: Aircraft and space industry.

Whitworth (BSW)



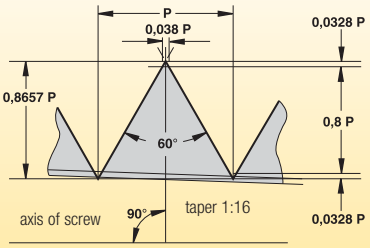
Use: Fittings and pipe couplings for gas, water, and sewer lines (replaced by ISO).

American Buttress



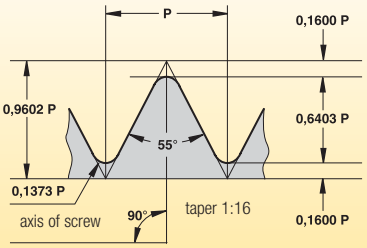
Use: Fittings and pipe couplings.

NPT (American National Pipe Thread)



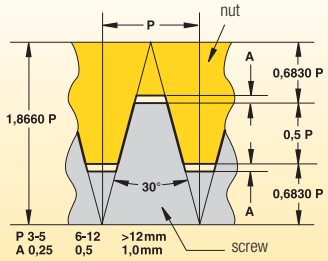
Use: Fittings and pipe couplings.

BSPT (British Standard Pipe Thread)



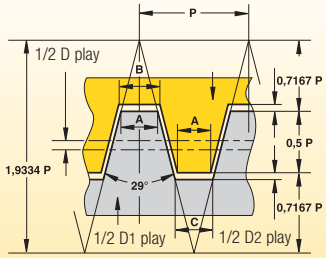
Use: Pipe thread for steam, gas, and water lines.

TR DIN 103



Use: Mechanical industry for motion transmission screws.

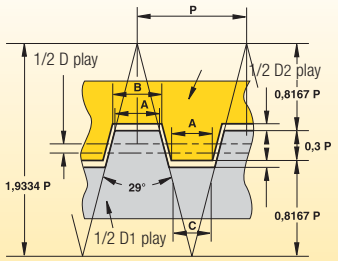
Acme



A = 0,0307 P
B = 0,3707 P—x D play
C = 0,3707 P—(D1 play—D2 play)

Use: Acme-General is used in mechanical industry for motion transmission screws.

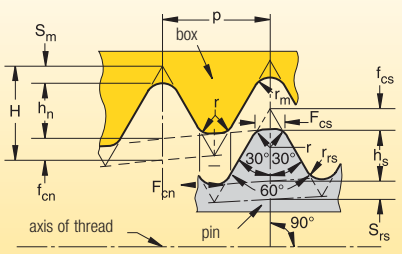
Acme, truncated (Stub)



A = 0,4224 P
B = 0,4224 P—x D play
C = 0,4224 P—(D1 play—D2 play)

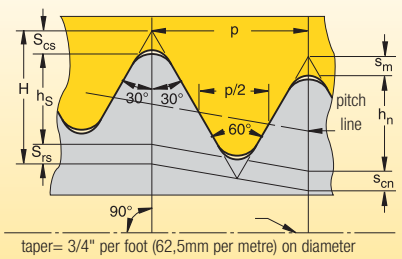
Use: Where normal Acme is too deep.

API Rotary Shoulder Connection



NOTE: Taper shown exaggerated.

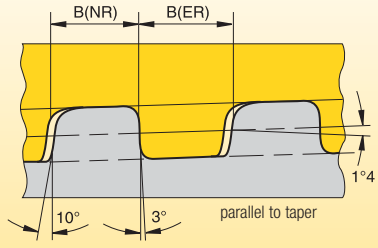
API Casing and Tubing Round Thread Form



taper= 3/4" per foot (62,5mm per metre) on diameter

NOTE: Taper shown exaggerated.

API Buttress



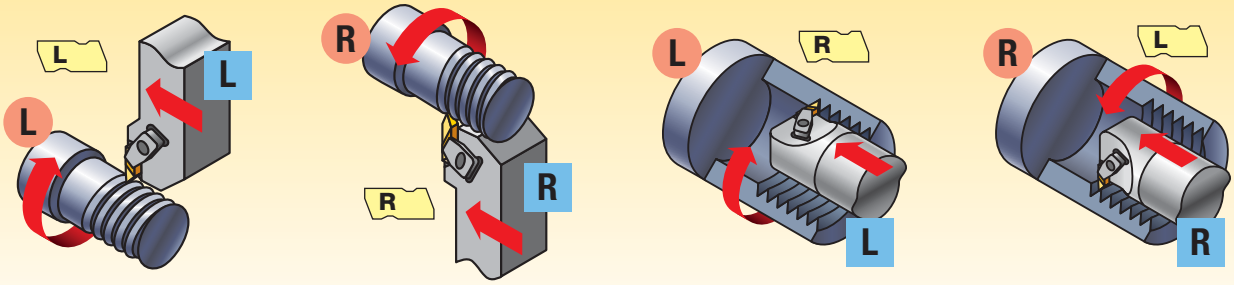
Threading Method and Hand of Tooling

Required Information:

- External/internal operation.
- Spindle rotation/hand of thread.
- Feed direction.

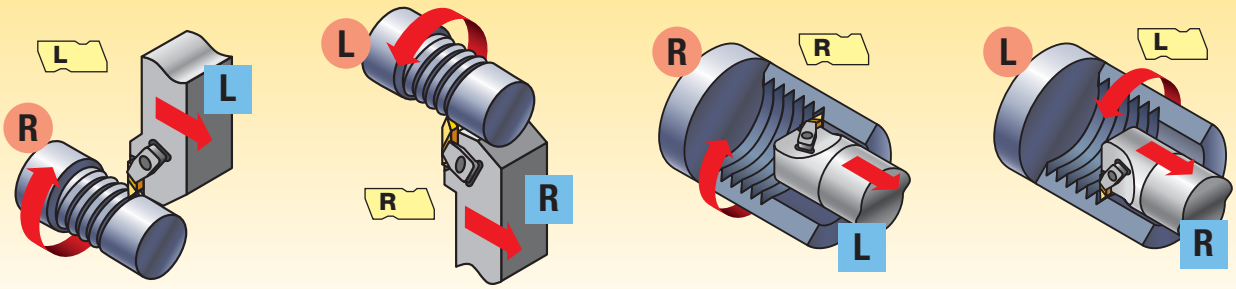
hand of thread | hand of toolholder | hand of insert

Feed Direction Toward the Chuck • Standard Helix



external left-hand thread | external right-hand thread | internal left-hand thread | internal right-hand thread

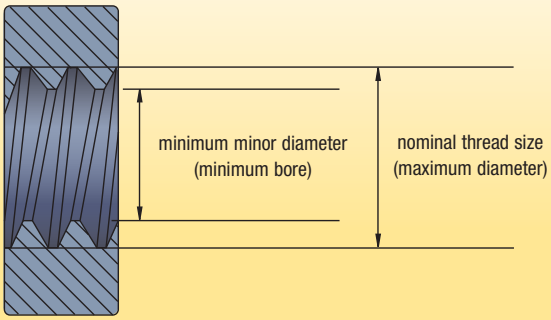
Feed Direction Away from the Chuck • Reverse Helix



external right-hand thread | external left-hand thread | internal right-hand thread | internal left-hand thread

NOTE: Top Notch threading bars require opposite hand insert and clamp.
Right-hand bar requires left-hand insert and clamp.
Left-hand bar requires right-hand insert and clamp.

The following charts list the largest thread pitch that can be applied on internal applications using Top Notch threading inserts for 60° V-threading and Acme threading.



Inch-Sized 60° V-Threading Limits

internal threading limitations
NT-1, NT-2 V-threading inserts

TPI	nominal thread size		minimum minor diameter (inch)	
	NT-1	NT-2	NT-1	NT-2
6	1-7/8	—	1.695	—
7	1-3/4	—	1.595	—
8	1-5/8	—	1.490	—
9	1-9/16	—	1.442	—
10	1-1/2	15/16	1.392	.830
11	1-7/16	15/16	1.339	.830
11-1/2	1-3/8	15/16	1.281	.830
12	1-3/8	9/16	1.285	.472
13	1-5/16	9/16	1.229	.472
14	1-1/4	9/16	1.173	.472
16	1-1/4	9/16	1.182	.472
18	1-1/8	9/16	1.065	.472
20	1-1/8	1/2	1.071	.440
24*	1-1/16	1/2	1.017	.440

*Twenty-four threads per inch and finer can be cut with an NT-2 insert provided the minor diameter is 25mm or larger (11,18mm or larger with NT-1).

internal threading limitations
NT-3, NT-4 V-threading inserts

TPI	nominal thread size	minimum minor diameter (inch)
4**	3	2.729
4-1/2**	2-7/8	2.634
5	2-3/4	2.534
6	2-1/2	2.320
7	2-1/4	2.095
8	2	1.865
9	1-15/16	1.817
10	1-7/8	1.767
11	1-13/16	1.714
11-1/2	1-3/4	1.656
12	1-3/4	1.660
13	1-5/8	1.542
14	1-9/16	1.485
16*	1-7/16	1.370

*Sixteen threads per inch and finer can be cut provided minor diameter is 34,8mm or larger.
**NT-4 insert only.

Metric-sized 60° V-Threading Limits

internal threading limitations
NT-1, NT-2 60° V-threading inserts

TPI	nominal thread size		minimum thread diameter (mm)	
	NT-1	NT-2	NT-1	NT-2
4,00	M48 x 4.00	—	43,67	—
3,00	M42 x 3.00	—	38,75	—
2,50	M39 x 2.50	M24 x 2,50	36,29	21,29
2,00	M33 x 2.00	M15 x 2,00	30,84	12,84
1,75	M32 x 1.75	M15 x 1,75	30,11	13,11
1,50	M32 x 1.50	M15 x 1,50	30,38	13,38
1,25	M29 x 1.29	M14 x 1,25	27,65	12,65
1,00*	M27 x 1.00	M14 x 1,00	25,92	12,92
0,75	M22 x 0.75	M12 x 0,75	21,19	11,19

*Thread pitch of 1mm and less can be cut with an NT-2 insert provided the core thread diameter is 25mm or larger (11mm or larger with NT-1).

internal threading limitations
NT-3, NT-4 60° V-threading inserts

TP	nominal thread size	minimum thread diameter (mm)
6,00**	M76 x 6.00	69,50
5,50**	M73 x 5.50	67,05
5,00	M70 x 5.00	64,59
4,00	M64 x 4.00	59,67
3,00	M52 x 3.00	48,75
2,50	M48 x 2.50	45,29
2,00	M42 x 2.00	39,84
1,75	M40 x 1.75	38,11
1,50*	M38 x 1.50	36,38

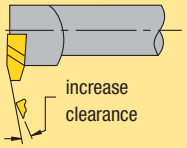
*Thread pitch of 1,5mm and less can be cut provided core thread diameter is 35mm or larger.
**NT-4-insert only.

Acme Threading Limits

internal threading limitations
NA and NAS-2, -3, -4, and -6 Acme threading inserts

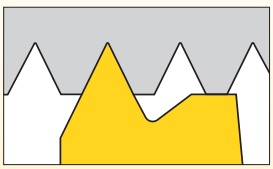
TPI	nominal thread size	minimum thread diameter	
		NT-1	NT-2
2**	5	4.500	114,3
2-1/2**	4-1/2	4.100	104,1
3**	4	3.665	93,1
4	3-1/2	3.250	82,6
5	3	2.800	71,1
6	2-1/2	2.333	59,3
8	2-1/4	2.125	54,0
10	2	1.900	48,3
12	1-3/4	1.667	42,4
14	1-5/8	1.554	39,5
16*	1-1/2	1.438	36,5

*Sixteen threads per inch and finer can be cut provided minor diameter is 36,5mm (1.438") or larger.
**NA-6 insert only.



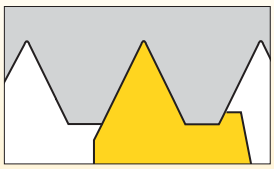
Additional secondary clearance can be ground on leading edge of insert to provide sufficient helical clearance for machining coarser threads and multistart threads. Modified standard inserts may be furnished for machining threads outside of the limits shown.

60° V-Thread Crest Turning Application Data



feed direction

NTC crest turning insert for 12 threads per inch and finer (P ≤2mm)



feed direction

NTC crest turning insert for 11 threads per inch and coarser (P ≥3mm)

"J" thread note for catalogue

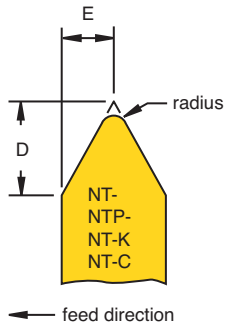
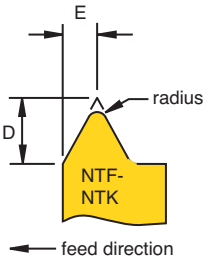
The controlled root radius thread form (SAE8879C) is defined for the external thread only. To machine the corresponding internal thread, choose any insert that will cut a unified class 2B thread, then bore the minor diameter to size. Refer to SAE8879C and MIL-S-8879C and SAEAS8879D for the correct "J" thread minor diameter values.

Controlled Root Radius Specifications for UNJ Threads

insert catalogue number	nose radius on insert	thread radius per MIL-S-8879A
NJ-3020R/L8 NJP-3020R/L8	0,477/0,502	0,477/0,574
NJ-3014R/L12 NJP-3014R/L12	0,317/0,342	0,317/0,381
NJ-3010R/L16 NJP-3010R/L16	0,238/0,264	0,238/0,287
NJF-3012R/L14 NJK-3012R/L14	0,271/0,297	0,271/0,327
NJF-3010R/L16 NJK-3010R/L16	0,238/0,264	0,238/0,287
NJF-3009R/L18 NJK-3009R/L18	0,210/0,236	0,210/0,254
NJF-3008R/L20 NJK-3008R/L20	0,190/0,215	0,190/0,228
NJF-3007R/L24 NJK-3007R/L24	0,160/0,185	0,160/0,190
NJF-3006R/L28 NJK-3006R/L28	0,137/0,162	0,137/0,162
NJF-3005R/L32 NJK-3005R/L32	0,119/0,142	0,119/0,142

NOTE: NTC inserts automatically control root to crest dimensions. Therefore, in setting up threading operations with NTC inserts, check the O.D. or I.D. at the thread crest for correct dimensions.

60° V-Thread Application Data

insert description	insert	D** (mm)	E** (mm)	recommended TP* external	recommended TP* internal	recommended TPI* external	recommended TPI* internal
	NT-1	1,90	1,11	—	1,00–2,00	—	24–12
	NT-2	28,70	1,90	0,70–3,00	1,25–3,50	36–8	20–7
	NT-2-K	28,70	1,90	0,70–3,00	1,25–3,50	36–8	20–7
	NTF-2	15,75	1,01	0,60–1,75	1,00–2,00	44–14	24–12
	NTK-2	15,75	1,01	0,60–1,75	1,00–2,00	44–14	24–12
	NTP-2	28,70	1,90	0,70–3,0	1,25–3,50	36–8	20–7
	NT-3	37,59	2,46	1,25–4,00	2,00–5,00	20–6	12–5
	NT-3-K	37,59	2,46	1,25–4,00	2,00–5,00	20–6	12–5
	NT-3-C	37,59	2,46	2,50–4,00	4,00 (only)	11–6	6 (only)
	NT-3-CK	37,59	2,46	2,50–4,00	4,00 (only)	11–6	6 (only)
	NTF-3	21,08	1,37	0,60–2,50	1,00–2,50	44–10	24–9
	NTK-3	21,08	1,37	0,60–2,50	1,00–2,50	44–10	24–9
	NTP-3	37,59	2,46	1,25–4,00	2,00–5,00	20–6	12–5
	NT-4	49,78	3,22	1,25–6,25	2,00–6,25	20–4	12–4
	NT-4-K	49,78	3,22	1,25–6,25	2,00–6,25	20–4	12–4
	NT-4-C	49,78	3,22	2,50–5,50	4,00–5,50	11–4 1/2	6–4 1/2
	NT-4-CK	49,78	3,22	2,50–5,50	4,00–5,50	11–4 1/2	6–4 1/2
	NTF-4	21,08	1,37	0,60–2,50	1,00–2,50	44–10	24–9
	NTK-4	21,08	1,37	0,60–2,50	1,00–2,50	44–10	24–9
	NTP-4	49,78	3,22	1,25–6,25	2,00–6,25	20–4	12–4

*Based on maximum insert radius size and class 2A and 2B thread specifications.
**For metric D and E dimensions, multiply by 25,4.

API Thread Forms • Insert Applications Chart for API Rotary Shouldered Connections

thread form	Kennametal insert		tool joint application	minimum box size*
	cresting	non-cresting		
V-.038R 2" TPF 4 TPI	NDC-4038R/L2 4-E/IR4API382	ND-3038R/L	2-3/8 API internal flush 2-7/8 API internal flush 3-1/2 API internal flush 4 API internal flush 4-1/2 API internal flush 5-1/2 API internal flush 6-5/8 API internal flush 4 API full hole API #23, API #26, API #31, API #35, API #38, API #40, API #44, API #46, API #50	API #31 2-7/8 IF
V-.038R 3" TPF 4 TPI	NDC-4038R/L3 4-E/IR4API383	ND-3038R/L	API #56 API #61 API #70 API #77	API #56
V-.050 2" TPF 4 TPI	NDC-4050R/L2 4-E/IRAPI502	ND-4050R/L	5-1/2 API full hole 6-5/8 API regular 6-5/8 API full hole	5-1/2 API full hole
V-.050 3" TPF 4 TPI	NDC-4050R/L3 4-E/IR4API503	ND-4050R/L	5-1/2 API regular 7-5/8 API regular 8-5/8 API regular	5-1/2 API regular
V-.040 3" TPF 5 TPI	NDC-3040R/L3 NDC-4040R/L3 4-E/IR5API403	ND-3040R/L ND-4040R/L	2-3/8 API regular 2-7/8 API regular 3-1/2 API regular 4-1/2 API regular	3-1/2 API regular

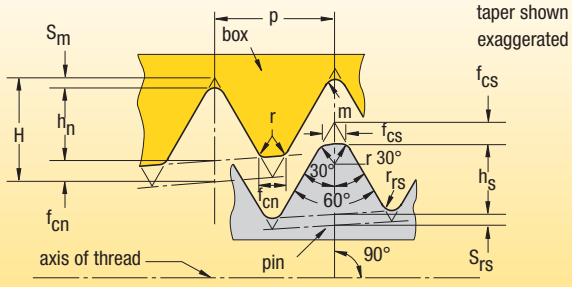
*Minimum box size that can be threaded with a standard Top Notch insert due to minimum bore equipment.

API Thread Forms • Product Thread Dimensions • Rotary Shouldered Connections (Inch)

thread form	taper inch per ft	thread height, not truncated H	thread height, truncated $h_n=h_s$	root truncation $S_m=S_{rs}$ $f_m=f_{rs}$	crest truncation $f_{cn}=f_{cs}$	width of flat		root radius $r_m=r_{rs}$	radius at thread corners r	pitch p
						crest $f_{cn}=f_{cs}$	crest $f_m=f_{rs}$			
V-.038R	2	.216005	.121844	.038000	.056161	.065	—	.038	.015	.250
V-.038R	3	.215379	.121381	.038000	.055998	.065	—	.038	.015	
V-.040	3	.172303	.117842	.020000	.034461	.040	—	.020	.015	.250
V-.050	3	.215379	.147303	.025000	.043076	.050	—	.025	.015	
V-.050	2	.216005	.147804	.025000	.043201	.050	—	.025	.015	.250

NOTE: All dimensions in inches.

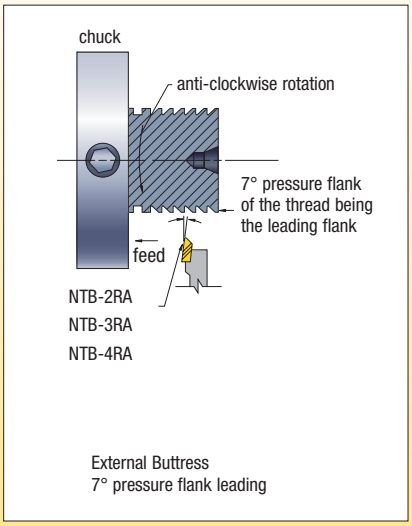
V-.040 and V-.050 Product Thread Form

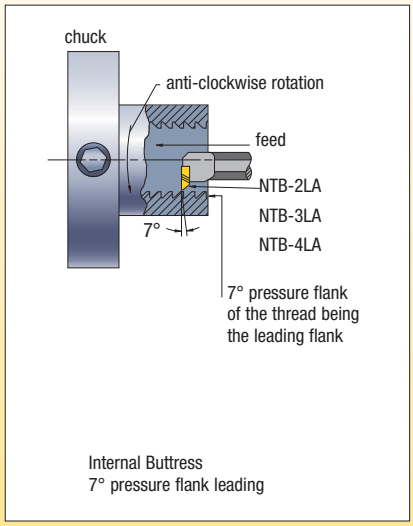


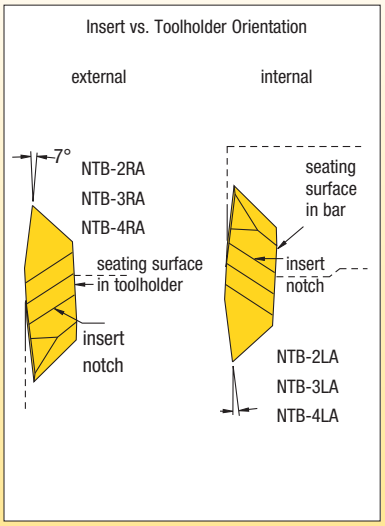
Casing and Tubing Round Thread (Height Dimensions)

thread element		10 TPI p=.1000	8 TPI p=.1250
H	=.866p	.08660	.10825
$H_s = h_n$	=.626p-.007	.05560	.07125
$S_{rs} = S_m$	=.120p+.002	.01400	.01700
$S_{cs} = S_{cn}$	=.120p+.005	.01700	.02000

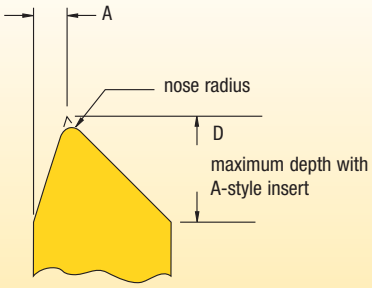
American Buttress (7° Pressure Flank Leading) NTB-A Inserts • Push Type



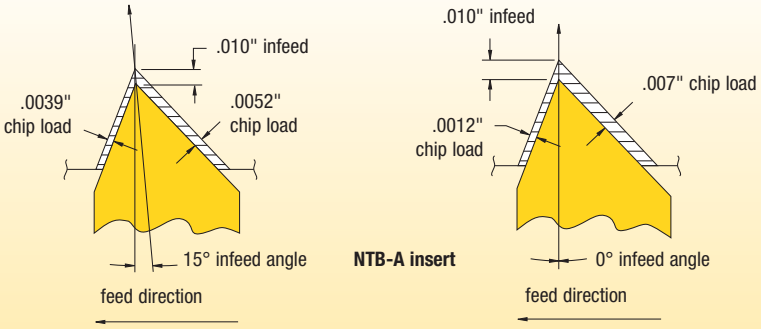




Reference Dimensions



Infeed Angle vs. Chip Load: 7° Pressure Flank Leading



insert	D (inch)	A (inch)	nose radius (inch)	pitch based on maximum radius
NTB-2A	.133	.024	.002–.004	16–20 TPI
NTB-3A	.171	.031	.005–.008	8–16 TPI
NTB-4A	.218	.049	.008–.012	4–6 TPI

NOTE: For balanced chip load, 15° infeed angle is suggested.

Internal Threading Limitations

internal threading limitations
NTB-2A Buttress threading inserts

TPI	nominal thread size	minimum minor diameter (inch)
8	1-3/4	1.600
10	1-5/8	1.505
12	1-1/2	1.400
16	1-1/4	1.175
20	1-1/16	1.002

internal threading limitations
NTB-3 and NTB-4A Buttress threading inserts

TPI	nominal thread size	minimum minor diameter (inch)
4*	2-1/2	2.200
5	2-1/4	2.010
6	2	1.800
8	1-3/4	1.600
10	1-5/8	1.505
12**	1-1/2	1.400

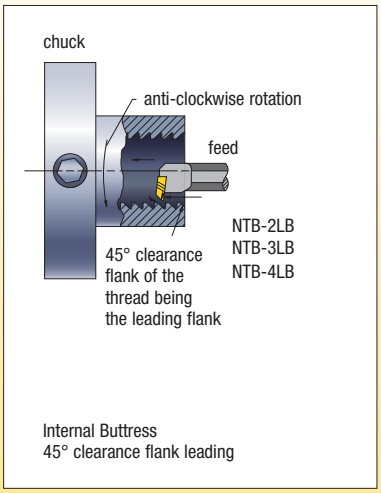
*NTB-4A insert only.
**Can cut 16 or 20 threads per inch provided minor diameter is 1.375" or larger.

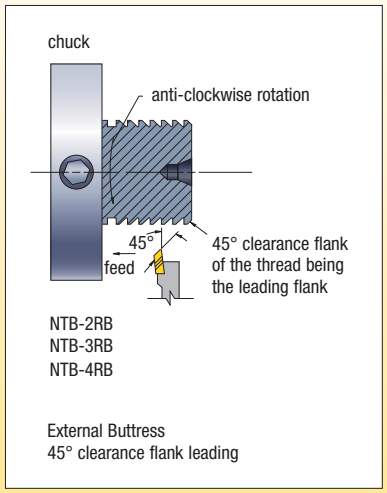
Threads per Inch vs. Maximum Root Radius Chart (Inch)

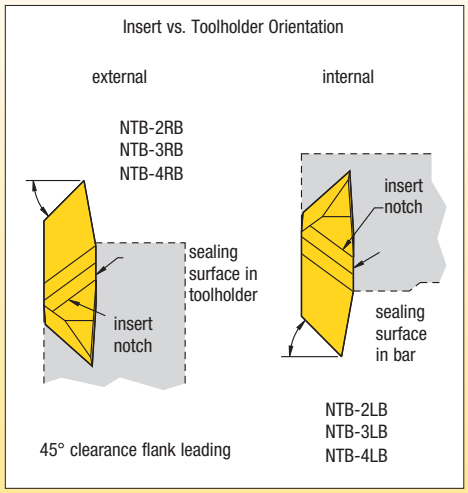
TPI	20	16	12	10	8	6	5	4	3	2-1/2	2	1-1/2	1-1/4	1
maximum root radius	.0036	.0045	.0059	.0071	.0089	0.119	.0143	.0179	.0238	.0286	0.375	.0476	.0572	.0714

NOTE: Special Buttress forms are available upon request.

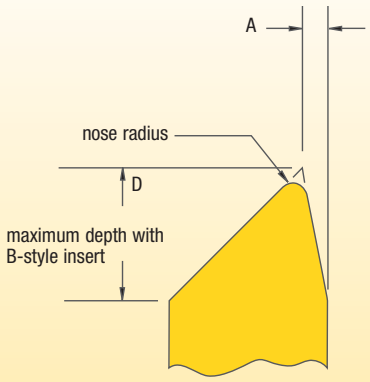
American Buttress (45° Clearance Flank Leading): NTB-B Inserts • PULL-type



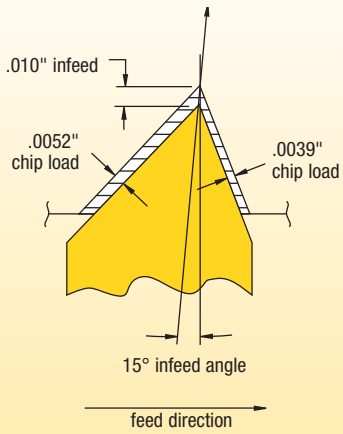


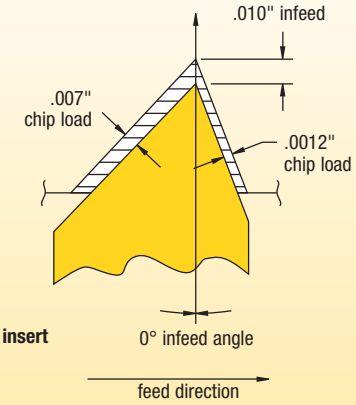


Reference Dimensions



Infeed Angle vs. Chip Load: 45° Clearance Flank Leading





insert	D (inch)	A (inch)	nose radius (inch)	pitch based on maximum radius
NTB-2B	.133	.024	.002–.004	16–20 TPI
NTB-3B	.171	.031	.005–.008	8–16 TPI
NTB-4B	.218	.049	.008–.012	4–6 TPI

NOTE: For balanced chip load, a reverse 15° infeed angle is suggested.

Internal Threading Limitations

internal threading limitations
NTB-2B Buttress threading inserts

TPI	nominal thread size	minimum minor diameter (inch)
8	1-3/4	1.600
10	1-5/8	1.505
12	1-1/2	1.400
16	1-1/4	1.175
20	1-1/16	1.002

internal threading limitations
NTB-3 and NTB-4B Buttress threading inserts

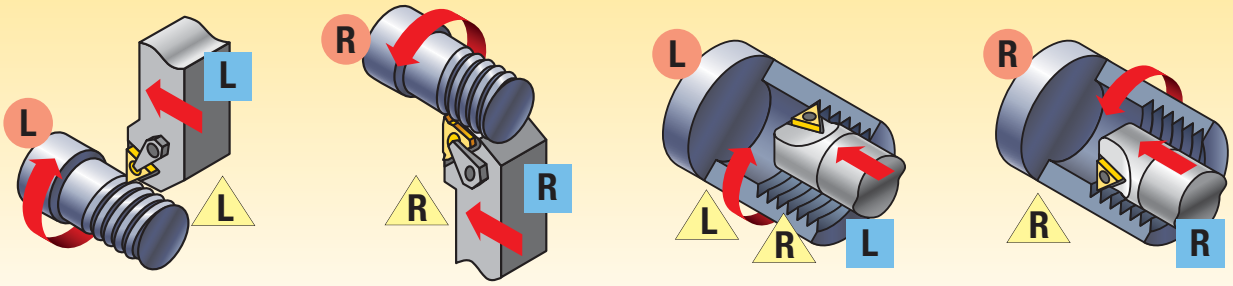
TPI	nominal thread size	minimum minor diameter (inch)
4*	2-7/8	2.575
5	2-3/4	2.510
6	2-3/8	2.175
8	2-1/8	1.975
10	1-7/8	1.755
12	1-5/8	1.525
16	1-1/2	1.407
20	1-7/16	1.378

*NTB-4B insert only.

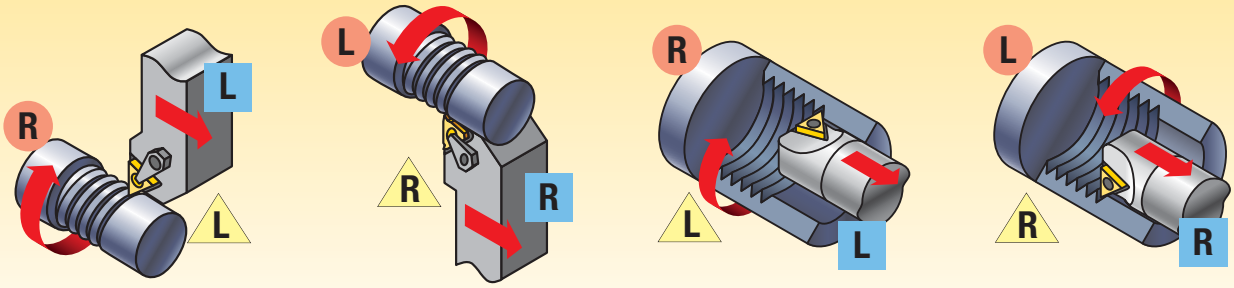
Required Information:

- External/internal operation.
- Spindle rotation/hand of thread.
- Feed direction.

Feed Direction Toward the Chuck • Standard Helix



Feed Direction Away from the Chuck • Reverse Helix



NOTE: Right-hand toolholders and bars use right-hand inserts.
Left-hand toolholders and bars use left-hand inserts.

External Threading Operation Example

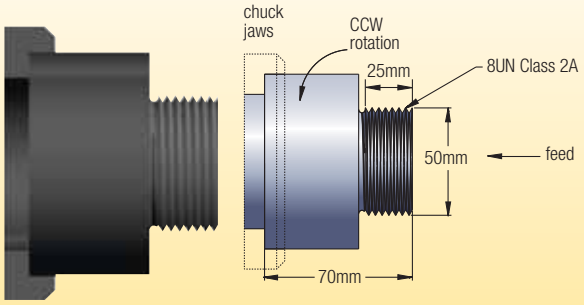
Required Information

From Part Drawing:

material: 316SS, 200 HB
thread form: 8UN Class 2A
operation: external threading
pitch diameter: 50mm x 25mm deep

From Machine Setup Data:

tooling: 20mm x 20mm
spindle rotation: anti-clockwise
feed: toward chuck

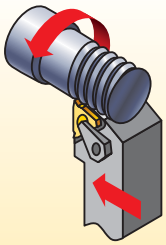


Steps for a Successful Threading Operation

Step 1 • Determine Threading Method

Need to Know:

- Operation (external).
- Spindle rotation (CCW).
  Anti-clockwise rotation.
- Feed direction (toward chuck).
- Right-hand toolholder.
- Right-hand insert (ER).
- Standard helix method.



Step 2 • Select Insert

Need to Know:

- Thread form (8 UN Class 2A).
- Hand of insert (right hand — ER).

Choose the High-Performance Solution

catalogue number	insert size	KC5010
3ER8UN	3"	●

High-Performance Selection

NOTE: Use insert with largest IC available.

insert: LT-16ER-8UNCB
grade: KC5010
speed: 150 m/min

Step 3 • Select the Grade and Speed

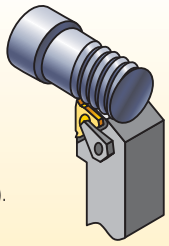
Need to Know:

- Workpiece material (316SS-200HB).
- Operation (external).

Options: Grade and Speed Selection Guidelines

threading operation	stainless steel	
external	general purpose	style
	KC5025	CB
	50–360 m/min	
	high-performance	style
	KC5010	CB
	70–390 m/min	

Step 4 • Select Toolholder



Need to Know:

- External or internal operation (external).
- Pitch diameter to determine minimum bore diameter (N/A).
- Type of tooling — toolholder, boring bar (toolholder).
- Hand of tool (right hand).
- Insert size (16).

Options:

catalogue number	gage insert	shim
LSASR-123	LT-16ER	SM–YE3
LSSR-123	LT-16ER	SM–YE3

First choice: LSASR-123 holder

Step 5 • Select Shim

Need to Know:

- Thread form — TPI or pitch (1mm).
- Pitch diameter (50mm).
- Helix method (standard).
  See LT shim selection chart.

Select SM-YE3 shim

NOTE: The SM-YE3 shim is supplied with the selected toolholder.

NOTE: Optimise your operation by using a constant infeed or the constant volume method with a minimum infeed of .005 and an infeed angle of 29-1/2°.

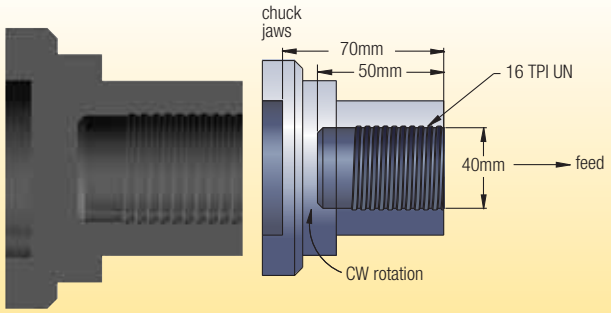
Required Information

From Part Drawing:

material: 4140 steel
thread form: 16 TPI UN
operation: internal threading
pitch diameter: 40mm x 50mm deep

From Machine Setup Data:

tooling: 20mm boring bar
spindle rotation: clockwise
feed: away from chuck

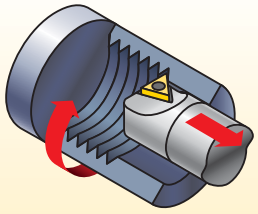


Steps for a Successful Threading Operation

Step 1 • Determine Threading Method

Need to Know:

- Operation (internal).
- Spindle rotation (CW).
  Clockwise rotation.
- Feed direction (away from chuck).
- Left-hand toolholder.
- Left-hand insert (NL).
- Reverse helix method.



Step 2 • Select Insert

Need to Know:

- Thread form (16UN Class 2A).
- Hand of insert (left hand — NL).

Choose the High-Performance Solution

catalogue number	insert size	KC5025
LT-11NL-16UN	1/4"	●
LT-16NL-16UN	3/8"	●

High-Performance Selection

NOTE: Use insert with largest possible IC to go into the bore.

insert: LT-16NL-16UN
grade: KC5025
speed: 130 m/min

Step 3 • Select the Grade and Speed

Need to Know:

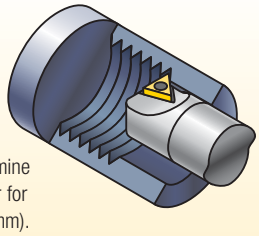
- Workpiece material (4010 steel).
- Operation (internal).

Options: Grade and Speed Selection Guidelines

threading operation	steel
internal	general purpose and high performance
	KC5025
	40–200 m/min

Optimise your operation by using a constant infeed or the constant volume method with a minimum infeed of .005 and an infeed angle of 29-1/2°.

Step 4 • Select Toolholder



Need to Know:

- External or internal operation (internal).
- Pitch diameter to determine minimum bore diameter for internal operations (40mm).
- Type of tooling — toolholder, boring bar (boring bar).
- Hand of tool (left hand).
- Insert size (16).

Options:

catalogue number	insert size	minimum bore diameter	shim
S1212-LSEL3	3"	.90	SM-YE3
S0812-LSEL2	2"	.65	—

First choice: S1212-LSEL3 bar

Step 5 • Select Shim

Need to Know:

- Thread form — TPI or pitch (16 TPI).
- Pitch diameter (40mm).
- Helix method (reverse).
  See LT shim selection chart.

Select SM-YE3-2N shim

NOTE: Shim supplied with selected boring bar is not correct; order correct shim.

LT Threading Shim Selection Guidelines

The following questions must be answered before a successful threading operation can begin:

A — Select your method of thread cutting:
- Machining toward the chuck (standard helix).
- Machining away from the chuck (reverse helix).

B — Select lead angle and choose shim.

C — Select insert and toolholder size.

D — Select insert grade.

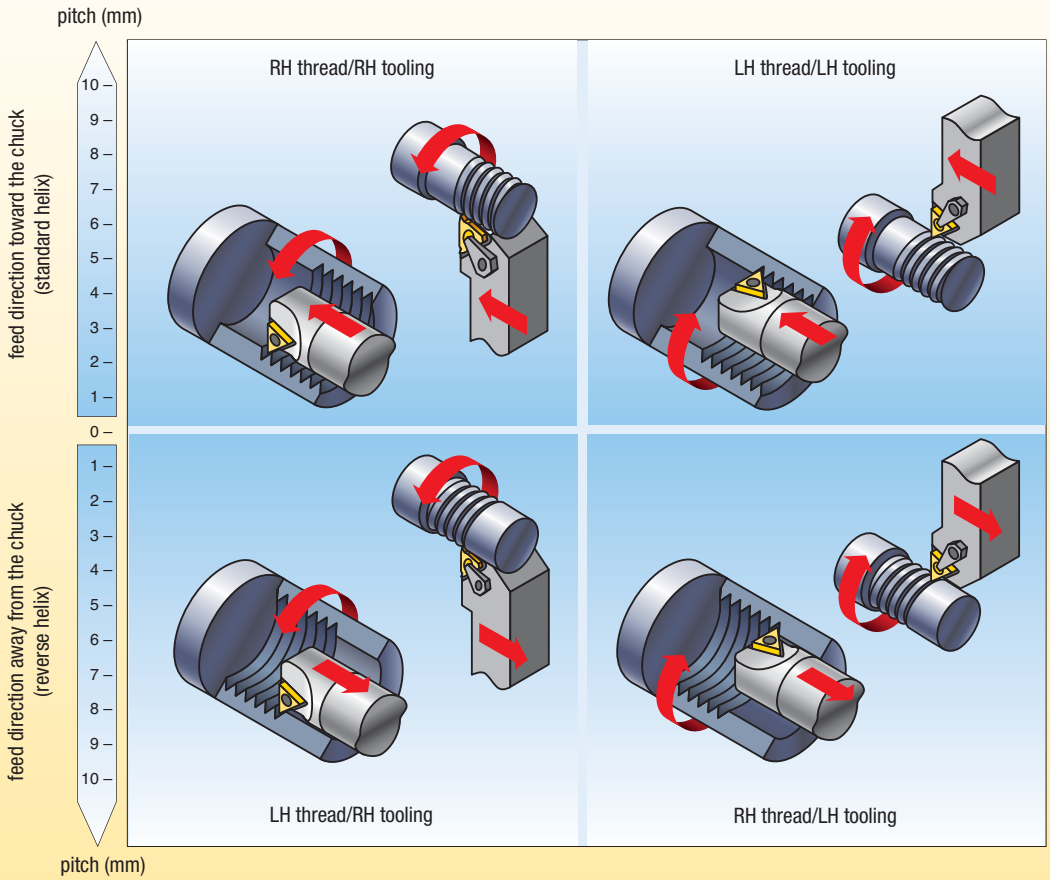
E — Select speed.

F — Select number of thread passes.

G — Select infeed method.

NOTE: When considering method of thread cutting, the part's shape and stability and the flow of chips are determining factors in your decision.

LT Selection Chart



NOTE: For multistart threads, use the lead value instead of the pitch.

Diagram of Thread Lead Angles

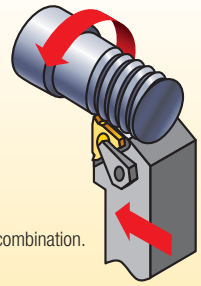
To calculate the lead angle of a given thread, use this formula:

$$\beta = \text{Arctan} \frac{P \bullet S}{\pi \, D_e}$$

ß = thread lead angle
De = effective pitch diameter of thread wear
P = 1/TPI
TPI = threads per inch
S = number of starts
single-start, lead = pitch
multistart, lead = pitch (x) number of starts

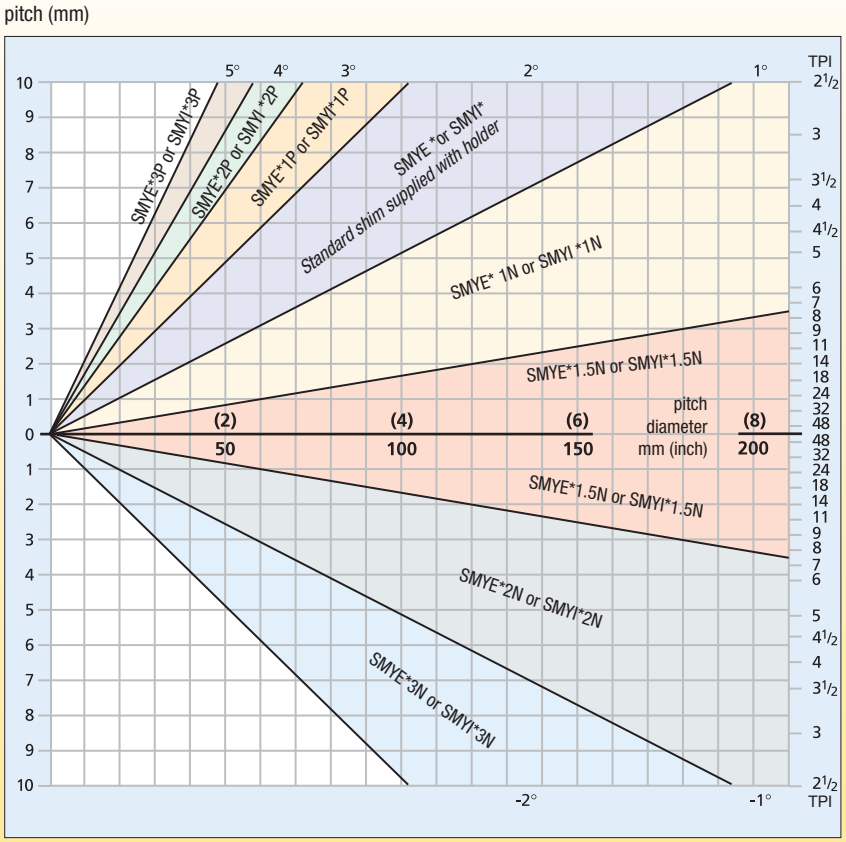
All toolholders are designed with an inclination angle = 1.5°. When turning standard threads with a lead angle of 1–2°, this guarantees adequate clearance at the flanks of the insert's thread tooth. The thread lead angle and the required inclination angle of the insert are given by ß.

Cutting edge height is constant at every shim and insert combination. All toolholders are supplied with 1-1/2° lead angle.



NOTE: Arctan equals Tan-1 (see chart below for approximate lead angles).

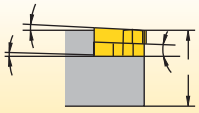
LT Selection Chart



*denotes shim size: 3 = insert size 16 (3/8" D)
4 = insert size 22 (1/2" D)

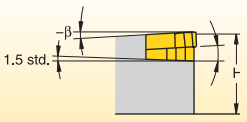
Standard Helix Method:

Used when RH thread is cut with RH tool or LH thread with LH tool.



Reverse Helix Method:

Used when RH thread is cut with LH tool or when LH thread is cut with RH tool. Dimension "H" is constant at every shim and insert combination. All toolholders are supplied with 1.5º lead angle.



LT Threading Shim Selection Table • Metric

	toolholder		shim ordering code (mm)							
insert size	external	internal				standard				
LT-16 (3/8")	RH	LH	SM–YE3–3P	SM–YE3–2P	SM–YE3–1P	SM–YE3	SM–YE3–1N	SM–YE3–1.5N	SM–YE3–2N	SM–YE3–3N
LT-16 (3/8")	LH	RH	SM–YI3–3P	SM–YI3–2P	SM–YI3–1P	SM–YI3	SM–YI3–1N	SM–YI3–1.5N	SM–YI3–2N	SM–YI3–3N
LT-22 (1/2")	RH	LH	SM–YE4–3P	SM–YE4–2P	SM–YE4–1P	SM–YE4	SM–YE4–1N	SM–YE4–1.5N	SM–YE4–2N	SM–YE4–3N
LT-22 (1/2")	LH	RH	SM–YI4–3P	SM–YI4–2P	SM–YI4–1P	SM–YI4	SM–YI4–1N	SM–YI4–1.5N	SM–YI4–2N	SM–YI4–3N
TPI		pitch (mm)	pitch diameter (mm)							
72		–	–	–	–	3,1–8	8–21,4	> 21,4	21,4–8	8–3,1
–		0,35	–	–	–	3–8	8–21,3	> 21,3	21,3–8	3–8
64		–	–	–	–	3,4–9	9–24,1	> 24,1	24,1–9	9–3,4
–		0,40	–	–	–	3,5–9,1	9,1–24,3	> 24,3	24,3–9,1	9,1–3,5
56		0,45	–	–	–	3,9–10,3	10,3–27,6	> 27,6	27,6–10,3	10,3–3,9
–		0,50	–	–	2,8–4,3	4,3–11,4	11,4–30,4	> 30,4	30,4–11,4	11,4–4,3
48		–	–	–	3–4,6	4,6–12,1	12,1–32,2	> 32,2	32,2–12,1	12,1–4,6
44		–	–	–	3,3–5	5–13,2	13,2–35,1	> 35,1	35,1–13,2	13,2–5
–		0,60	–	2,6–3,4	3,4–5,2	5,2–13,7	13,7–36,5	> 36,5	36,5–13,7	13,7–5,2
40		–	–	2,8–3,6	3,6–5,5	5,5–14,5	14,5–38,6	> 38,6	38,6–14,5	14,5–5,5
–		0,70	–	3–4	4–6,1	6,1–16	16–42,6	> 42,6	42,6–16	16–6,1
36		–	–	3,1–4	4–6,1	6,1–16,1	16,1–42,9	> 42,9	42,9–16,1	16,1–6,1
–		0,75	2,8–3,2	3,3–4,3	4,3–6,5	6,5–17,1	17,1–45,6	> 45,6	45,6–17,1	17,1–6,5
32		–	3–3,4	3,4–4,5	4,5–6,9	6,9–18,1	18,1–48,3	> 48,3	48,3–18,1	18,1–6,9
–		0,80	3–3,5	3,5–4,6	4,6–6,9	6,9–18,2	18,2–48,6	> 48,6	48,6–18,2	18,2–6,9
28		–	3,4–3,9	3,9–5,2	5,2–7,9	7,9–20,7	20,7–55,1	> 55,1	55,1–20,7	20,7–7,9
27		–	3,6–4,1	4,1–5,4	5,4–8,2	8,2–21,4	21,4–57,2	> 57,2	57,2–21,4	21,4–8,2
–		1,00	3,8–4,3	4,3–5,7	5,7–8,7	8,7–22,8	22,8–60,8	> 60,8	60,8–22,8	22,8–8,7
24		–	4–4,6	4,6–6	6–9,2	9,2–24,1	24,1–64,3	> 64,3	64,3–24,1	24,1–9,2
–		1,25	4,7–5,4	5,4–7,1	7,1–10,8	10,9–28,5	28,5–76	> 76	76–28,5	28,5–10,8
20		–	4,8–5,5	5,5–7,2	7,2–11	11–28,9	29–77,2	> 77,2	77,2–28,9	29–11
18		–	5,3–6,1	6,1–8	8–12,2	12,2–32,2	32,2–85,8	> 5,8	85,8–32,2	32,2- 12,2
–		1,50	5,7–6,5	6,5–8,5	8,5–13	13–34,2	34.2–91.2	> 91,2	91,2–34,2	34,2–13
16		–	6–6,9	6,9–9	9–13,8	13,8–36,2	36,2–96,5	> 96,5	96,5–36,2	36,2–13,8
–		1,75	6,6–7,6	7,6–10	10–15,2	15,2–39,9	39,9–106,4	> 96,5	106,4–39,9	39,9–15,2
14		–	6,9–7,9	7,9–10,3	10,3–15,7	15,7–41,4	41,4–110,3	> 110,3	110,3–41,4	41,4–15,7
13		–	7,4–8,5	8,5–11,1	11,1–17	17–44,5	44,5–118,8	> 118,8	118,8–44,5	44,5–17
–		2,00	7,6–8,7	8,7–11,4	11,4–17,4	17,4–45,6	45,6–121,6	> 121,6	121,6–45,6	45,6–17,4
12		–	8–9,2	9,2–12	12,1–18,4	18,4–48,2	48,3–128,7	> 128,7	128,7–48,2	48,3–18,4
11.5		–	8,4–9,6	9,6–12,6	12,6–19,2	19,2–50,3	50,3–134,3	> 134,3	134,3–50,3	50,3–19,2
11		–	8,8–10	10–13,1	13,1–20	20–52,6	52,6–140,4	> 140,4	140,4–52,6	52,6–20
–		2,50	9,5–10,8	10,8–14,2	14,2–21,7	21,7–57	57–152	> 152	152–57	57–21,7
10		–	9,6–11	11–14,5	14,5–22	22–57,9	57,9–154,4	> 154,4	154,4–57,9	57,9–22
9		–	10,7–12,2	12,2–16,1	16,1–24,5	24,5–64,3	64,3–171,6	> 171,6	171,6–64,3	64,3–24,5
–		3,00	11,4–13	13–17,1	17,1–26	26–68,4	68,4–182,4	> 182,4	182,4–68,4	68,4–26
8		–	12–13,8	13,8–18,1	18,1–27,6	27,6–72,4	72,4–193	> 193	193–72,4	72,4–27,6
–		3,50	13,3–15,2	15,2–19,9	19,9–30,4	30,4–79,8	79,8–212,8	> 212,8	212,8–79,8	79,8–30,4
7		–	13,8–15,7	15,7–20,7	20,7–31,5	31,5–82,7	82,7–220,6	> 220,6	220,6–82,7	82,7–31,5
–		4,00	15,2–17,3	17,3–22,8	22,8–34,7	34,7–91,2	91,2–243,2	> 243,2	243,2–91,2	91,2–34,7
6		–	16–18,3	18,3–24,1	24,1–36,7	36,7–96,5	96,5–257,4	> 257,4	257,4–96,5	96,5–36,7
–		5,00	19–21,7	21,7–28,5	28,5–43,4	43,4–114	114–304	> 304	304–114	114–43,4
5		–	19,3–22	22–28,9	28,9–44,1	44,1–115,8	115,8–308,8	> 308,8	308,8–115,8	115,8–44,1
4.5		–	21,4–24,5	24,5–32,1	32,1–49	49–128,7	128,7–343,1	> 343,1	343,1–128,7	128,7–49
–		6,00	22,7–26	26–34,2	34,2–52,1	52,1–136,8	136,8–364,8	> 364,8	364,8–136,8	136,8–52,1
4		–	24,1–27,5	27,5–36,2	36,2–55,1	55,1–144,8	144,8–386	> 386	386—144,8	144,8—55,1
inclination angle			4.5	3.5	2.5	1.5	0.5	0.0	-0.5	-1.5
feed direction			standard helix (feed toward the chuck)						reverse helix (feed away from the chuck)	

1. Select TPI or pitch from the left-hand columns.
2. Follow row to specified pitch diameter and the correct feed direction.
3. Follow the column to the top for the required shim based on the toolholder and insert size.