

Indexable Threading Inserts

CTRI Science & Technology Co, Ltd, produces and sells various indexable threading inserts which can replace the same types of foreign products. Besides, the fact is that our inserts have achieved the same international precision and machinability level as the international companies' inserts of the same types. Indexable threading cutters are high precise threading



cutters that can be used to process stainless steel, cast iron, cast steel, high-strength steel and non-ferrous metal, etc. Our main sales are: metric threading inserts (M), unified threading inserts (UN), Whitworth threading inserts (W), British standard pipe threading inserts (BSPT), National (American) pipe threading inserts (NPT), partial profile 60° section top type threading inserts, partial profile 55° section top type threading inserts, metric trapezoidal threading inserts (Tr), American trapezoidal (Acme) threading inserts (ACME), American short-tooth trapezoidal (Acme) threading inserts (STACME), Metric saw tooth threading inserts (3°/30°) (B), American saw tooth threading inserts (7°/45°) (ABUTT), British saw tooth threading inserts (B.S.BUTTRESS), American threading inserts for oil pipe (API) and threading cutter arbors (external and internal threading cutter arbors), which includes square shank and round shank.

Indexable Threading Inserts Identification System

16	V	E	R	2.00	ISO	2M	ZM20A
1	2	3	4	5	6	7	8

1. Size of insert

Cutting Length (mm)	Inscribed Circle Diameter	
	mm	IC
06	3.96	5/32
08	4.76	3/16
11	6.35	1/4
16	9.525	3/8
22	12.7	1/2
27	15.875	5/8

2. Insert installation type

- : Horizontal type (level installation) threading inserts
- V Vertical type (vertical installation) threading inserts
- U Horizontal type centring threading inserts

3. Type of cutting

- E (external): external threading inserts
- N (internal): internal threading inserts

4. Hand type of insert

- R Right hand
- L Left hand

5. Pitch

Full tooth (Range of pitch indicated in number)

Full	mm	TPI (teeth per inch)
pitch	0.5~5	48~4

V-tooth (Range of pitch indicated in letter)

Partial profile	mm	TPI
A	0.5~1.5	48~16
AG	0.5~3.0	4~8
G	1.75~3.0	14~8
N	3.5~5.0	7~5
Q	5.5~6.0	4.5~4
U	5.5~9.0	4.5~2.75

6. Thread Standard

thread type	
60°	partial profile, 60°
55°	partial profile, 55°
ISO	ISO metric thread, 60°
UN	Unified thread (American standard), 60°
W	Whitworth thread, 55°
NPT	National pipe thread, American, 60°
NPTF	National pipe thread, American (dryseal), 60°
BSPT	British standard pipe thread, 55°
API	American petroleum pipe thread, 60°
TR	metric trapezoidal thread, 30°
ACME	American trapezoidal(acme) thread, 29°
STACME	American short-tooth trapezoidal(acme) thread, 29°
B	Metric saw tooth threading insert, 3°/30°
ABUTT	American saw tooth thread, 7°/45°

B.S.BUTTRES	British saw tooth thread, 7°/45°
RD	Round (DIN405)

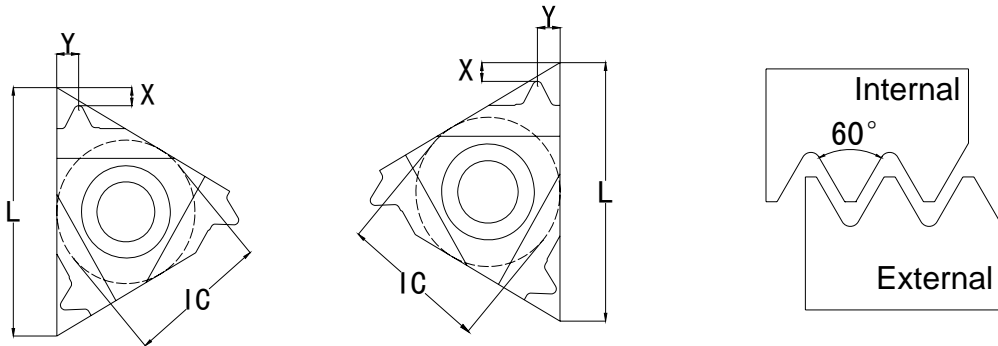
7. Teeth number on each cutting edge

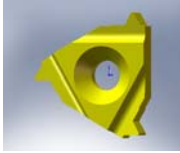
2M - two teeth 3M - three teeth

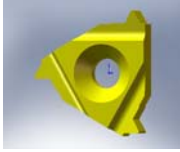
8. Insert material

Insert material	Coating color	Processed material
GY3021	yellow	carbon steel, alloy steel, cast steel, nonferrous metal
GY3062	black	stainless steel, alloy steel, cast steel, high strength steel, nonferrous metal
GY3065	red	stainless steel, carbon steel, alloy steel, cast steel, high strength steel, nonferrous metal

Partial profile 60°

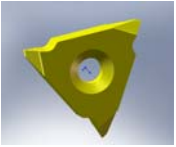


Insert Shape	I.C.	Pitch		Identification		L	X	Y
		mm	TPI	right	left			
external threading insert 	3/8"	0.5~1.5	48~16	16ERA60	16ELA60	16.5	0.6	0.8
		1.75~3.0	14~8	16ERG60	16ELG60	16.5	1.1	1.5
		0.5~3.0	48~8	16ERAG60	16ELAG60	16.5	1.1	1.5
	1/2"	3.5~5.0	7~5	22ERN60	22ELN60	22	1.8	2.5
	5/8"	5.5~6.0	4.5~4	27ERQ60	27ELQ60	27.5	2.1	3.1

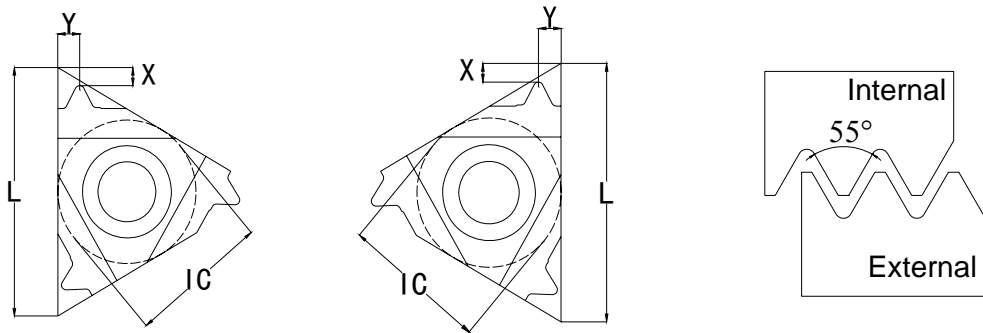
internal threading insert 	1/4"	0.5~1.5	48~16	11NRA60	11NLA60	11	0.6	0.8
	3/8"	0.5~1.5	48~16	16NRA60	16NLA60	16.5	0.6	0.8
		1.75~3.0	14~8	16NRG60	16NLG60	16.5	1.1	1.5
		0.5~3.0	48~8	16NRAG60	16NLAG60	16.5	1.1	1.5
	1/2"	3.5~5.0	7~5	22NRN60	22NLN60	22	1.8	2.5
	5/8"	5.5~6.0	4.5~4	27NRQ60	27NLQ60	27.5	1.8	2.7

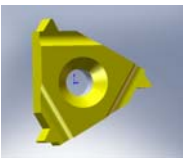
Partial profile 60° Vertical

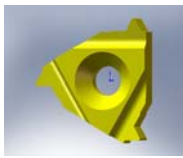


Insert Shape	I.C.	Pitch		Identification	T	X	Y
		mm	TPI				
external threading insert 	3/8"	0.5~1.5	48~16	16VERA60	3.6	1.0	0.9
		1.75~3.0	14~8	16VERG60	3.6	1.0	1.8
		0.5~3.0	48~8	16VERAG60	3.6	1.0	1.8
	1/2"	1.75~3.0	14~8	22VERG60	4.0	1.2	1.7
		3.5~5.0	7~5	22VERN60	4.8	1.2	2.5

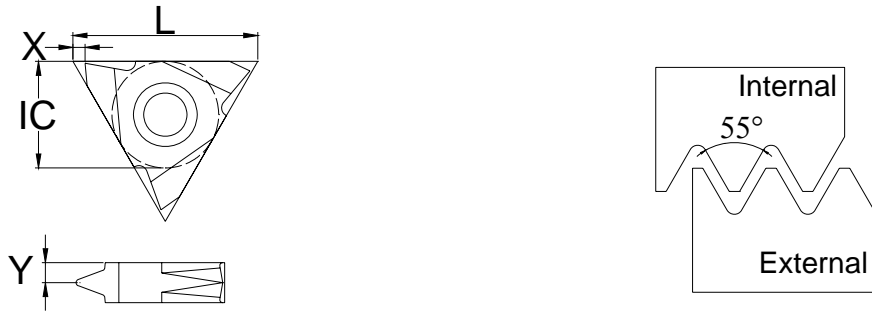
Partial profile 55°

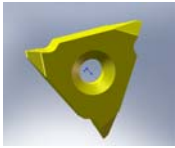


Insert Shape	I.C.	Pitch		Identification		L	X	Y
		mm	TPI	right	left			
external threading insert 	3/8"	0.5~1.5	48~16	16ERA55	16ELA55	16.5	0.6	0.8
		1.75~3.0	14~8	16ERG55	16ELG55	16.5	1.1	1.5
		0.5~3.0	48~8	16ERAG55	16ELAG55	16.5	1.1	1.5
	1/2"	3.5~5.0	7~5	22ERN55	22ELN55	22	1.8	2.5
	5/8"	5.5~6.0	4.5~4	27ERQ55	27ELQ55	27.5	2.0	2.9

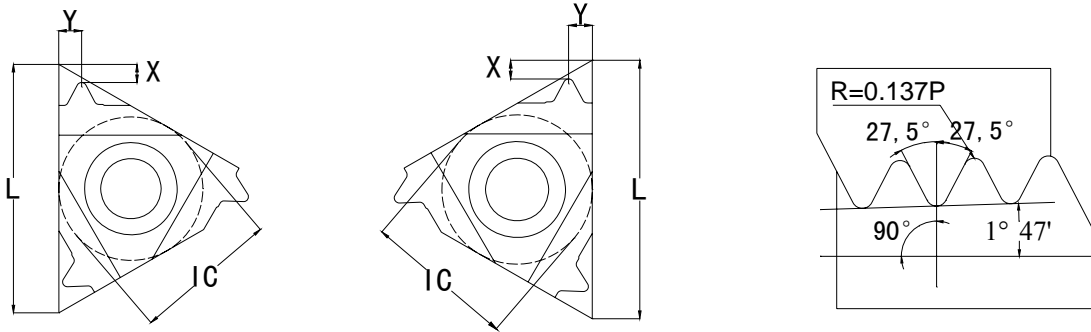
internal threading insert 	1/4"	0.5~1.5	48~16	11NRA55	11NLA55	11	0.6	0.8
	3/8"	0.5~1.5	48~16	16NRA55	16NLA55	16.5	0.6	0.8
		1.75~3.0	14~8	16NRG55	16NLG55	16.5	1.1	1.5
		0.5~3.0	48~8	16NRAG55	16NLAG55	16.5	1.1	1.5
	1/2"	3.5~5.0	7~5	22NRN55	22NLN55	22	1.8	2.5
	5/8"	5.5~6.0	4.5~4	27NRQ55	27NLQ55	27.5	2.0	2.9

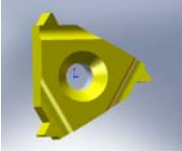
Partial profile 55° Vertical

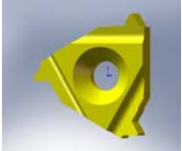


Insert Shape	I.C.	Pitch		Identification	T	X	Y
		mm	TPI	right			
external threading insert 	3/8"	0.5~1.5	48~16	16VERA55	3.6	1.0	0.9
		1.75~3.0	14~8	16VERG55	3.6	1.0	1.7
		0.5~3.0	48~8	16VERAG55	3.6	1.0	1.8
	1/2"	3.5~5.0	7~5	22VERN55	4.8	1.2	2.5

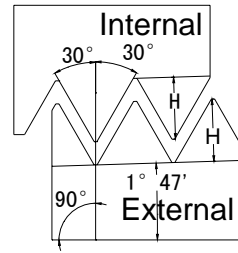
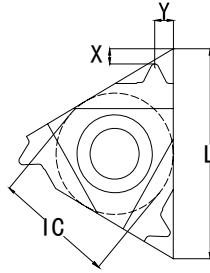
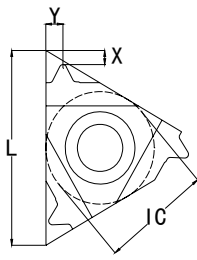
British standard pipe thread BSPT Full

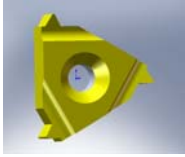


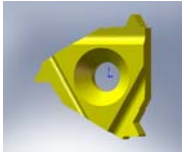
Insert Shape	I.C.	Pitch	Symbol		L	X	Y
		TPI	right	left			
external threading insert 	3/8"	28	16ER28BSPT	16EL28BSPT	16.5	0.6	0.6
		19	16ER19BSPT	16EL19BSPT		0.8	0.9
		14	16ER14BSPT	16EL14BSPT		1.0	1.2
		11	16ER11BSPT	16EL11BSPT		1.1	1.5

internal threading insert 	3/8"	28	16NR28BSPT	16NL28BSPT	16.5	0.6	0.6
		19	16NR19BSPT	16NL19BSPT		0.8	0.9
		14	16NR14BSPT	16NL14BSPT		1.0	1.2
		11	16NR11BSPT	16NL11BSPT		1.1	1.5

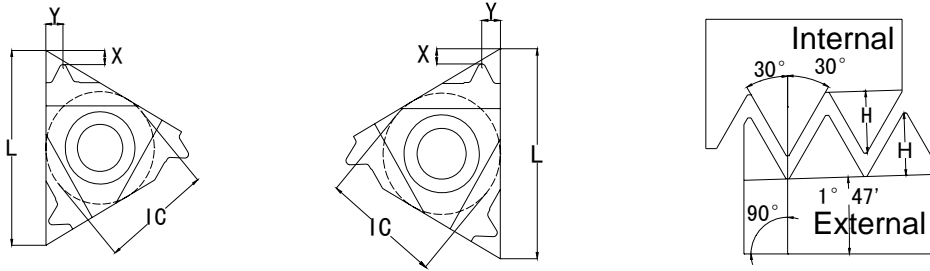
National pipe thread, American NPT Full

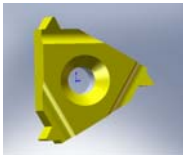


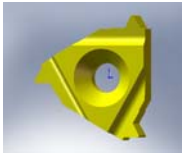
Insert Shape	I.C.	Pitch	Identification		L	X	Y
		TPI	right	left			
external threading insert 	3/8"	27	16ER27NPT	16EL27NPT	16.5	0.8	0.7
		18	16ER18NPT	16EL18NPT		0.8	0.7
		14	16ER14NPT	16EL14NPT		1.5	1.1
		11.5	16ER11.5NPT	16EL11.5NPT		1.5	1.1
		8	16ER8NPT	16EL8NPT		1.5	1.1

internal threading insert 	3/8"	27	16NR27NPT	16NL27NPT	16.5	0.8	0.7
		18	16NR18NPT	16NL18NPT		0.8	0.7
		14	16NR14NPT	16NL14NPT		1.5	1.1
		11.5	16NR11.5NPT	16NL11.5NPT		1.5	1.1
		8	16NR8NPT	16NL8NPT		1.5	1.1

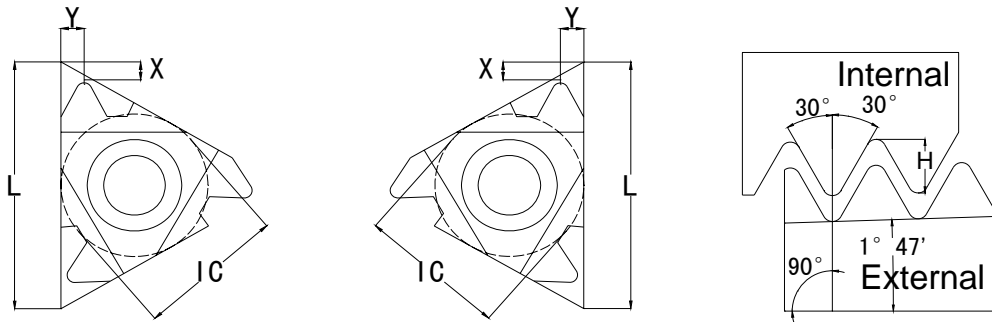
National pipe thread, American (dryseal) NPTF Full

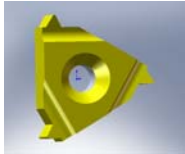


Insert Shape	I.C.	Pitch	Identification		L	X	Y
		TPI	right	left			
external threading insert 	1/4"	27	11ER27NPTF	11EL27NPTF	11	0.8	0.7
		18	11ER18NPTF	11EL18NPTF		0.8	0.7
		14	11ER14NPTF	11EL14NPTF		1.2	1.0
	3/8"	27	16ER27NPTF	16EL27NPTF	16.5	0.8	0.7
		18	16ER18NPTF	16EL18NPTF		0.8	0.7
		14	16ER14NPTF	16EL14NPTF		1.5	1.1
		11.5	16ER11.5NPTF	16EL11.5NPTF		1.5	1.1
		8	16ER8NPTF	16EL8NPTF		1.5	1.1

internal threading insert 	1/4"	27	11NR27NPTF	11NL27NPTF	11	0.8	0.7
		18	11NR18NPTF	11NL18NPTF		0.8	0.7
		14	11NR14NPTF	11NL14NPTF		1.2	1.0
	3/8"	27	16NR27NPTF	16NL27NPTF	16.5	0.8	0.7
		18	16NR18NPTF	16NL18NPTF		0.8	0.7
		14	16NR14NPTF	16NL14NPTF		1.5	1.1
		11.5	16NR11.5NPTF	16NL11.5NPTF		1.5	1.1
		8	16NR8NPTF	16NL8NPTF		1.5	1.1

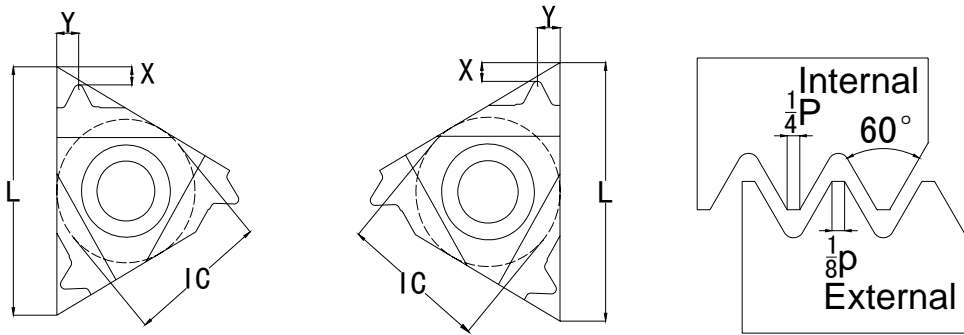
American petroleum pipe thread API Full

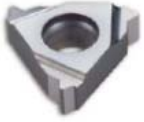


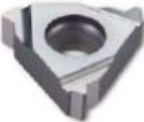
Insert Shape	I.C.	Pitch	Identification		L	X	Y
		TPI	right	left			
external threading insert 	3/8"	10	16ER10 API RD	16EL10 API RD	16.5	1.1	1.2
		8	16ER8 API RD	16EL8 API RD		1.4	1.3
	1/2"	10	22ER10 API RD	22EL10 API RD	22	1.5	1.7
		8	22ER8 API RD	22EL8 API RD		2.2	2.3

internal threading insert	3/8"	10	16NR10 API RD	16NL10 API RD	16.5	1.1	1.2
		8	16NR8 API RD	16NL8 API RD		1.4	1.4
	1/2"	10	22NR10 API RD	22NL10 API RD	22	1.5	1.7
		8	22NR8 API RD	22NL8 API RD		2.2	2.3

ISO Metric Full



Insert Shape	I.C.	Pitch	Identification		L	X	Y
		mm	right	left			
external threading insert 	3/8"	0.75	16ER0.75ISO	16EL0.75ISO	16.5	0.8	0.8
		1.0	16ER1.0ISO	16EL1.0ISO		0.8	0.8
		1.25	16ER1.25ISO	16EL1.25ISO		0.8	0.8
		1.5	16ER1.5ISO	16EL1.5ISO		0.8	0.8
		1.75	16ER1.75ISO	16EL1.75ISO		1.2	1.5
		2.0	16ER2.0ISO	16EL2.0ISO		1.2	1.5
		2.5	16ER2.5ISO	16EL2.5ISO		1.2	1.5
	1/2"	3.0	16ER3.0ISO	16EL3.0ISO	1.2	1.5	
		3.5	22ER3.5ISO	22EL3.5ISO	22	1.8	2.5
		4.0	22ER4.0ISO	22EL4.0ISO		1.8	2.5
		4.5	22ER4.5ISO	22EL4.5ISO		1.8	2.5
	5.0	22ER5.0ISO	22EL5.0ISO	1.8		2.5	
	5/8"	5.5	27ER5.5ISO	27EL5.5ISO	27.5	2.2	3.2
		6.0	27ER6.0ISO	27EL6.0ISO		2.2	3.2

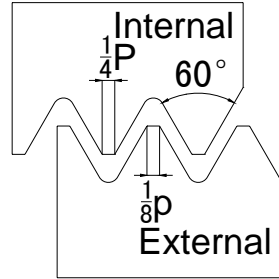
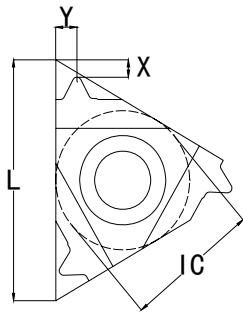
internal threading insert 	1/4"	0.75	11NR0.75ISO	11NL0.75ISO	11	0.8	0.8
		1.0	11NR1.0ISO	11NL1.0ISO		0.8	0.8
		1.25	11NR1.25ISO	11NL1.25ISO		0.8	0.8
		1.5	11NR1.5ISO	11NL1.5ISO		0.8	0.8
		1.75	11NR1.75ISO	11NL1.75ISO		0.8	0.8
	3/8"	0.75	16NR0.75ISO	16NL0.75ISO	16.5	0.8	0.8
		1.0	16NR1.0ISO	16NL1.0ISO		0.8	0.8
		1.25	16NR1.25ISO	16NL1.25ISO		0.8	0.8
		1.5	16NR1.5ISO	16NL1.5ISO		0.8	0.8
		1.75	16NR1.75ISO	16NL1.75ISO		1.2	1.5
		2.0	16NR2.0ISO	16NL2.0ISO		1.2	1.5
		2.5	16NR2.5ISO	16NL2.5ISO		1.2	1.5
	1/2"	3.0	16NR3.0ISO	16NL3.0ISO	1.2	1.5	
		3.5	22NR3.5ISO	22NL3.5ISO	22	1.8	2.5
		4.0	22NR4.0ISO	22NL4.0ISO		2.0	2.5
		4.5	22NR4.5ISO	22NL4.5ISO		2.1	2.5
	5.0	22NR5.0ISO	22NL5.0ISO	1.8		2.5	
	5/8"	5.5	27NR5.5ISO	27NL5.5ISO	27.5	2.2	3.2
		6.0	27NR6.0ISO	27NL6.0ISO		2.2	3.2

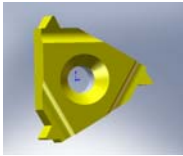
ISO Metric Vertical



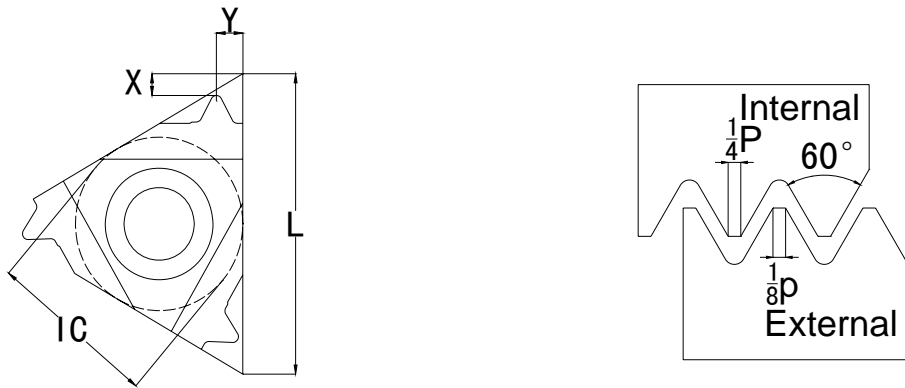
Insert Shape	I.C.	Pitch	Identification	L	X	Y	T
		mm	right				
external threading insert 	3/8"	1	16VER1.0ISO	16.5	1.0	0.7	3.6
		1.25	16VER1.25ISO		1.0	0.9	3.6
		1.5	16VER1.5ISO		1.0	0.9	3.6
		1.75	16VER1.75ISO		1.0	1.2	3.6
		2	16VER2.0ISO		1.0	1.3	3.6
		2.5	16VER2.5ISO		1.0	1.5	3.6

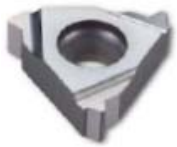
Unified thread, 60° Full (UN, UNC, UNF, UNEF)



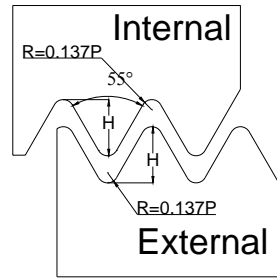
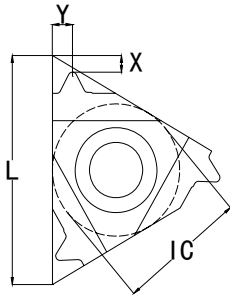
Insert Shape	I.C.	Pitch	Identification		L	X	Y
		TPI	right	left			
external threading insert 	3/8"	32	16ER32UN	16EL32UN	16.5	0.8	0.8
		28	16ER28UN	16EL28UN		0.8	0.8
		24	16ER24UN	16EL24UN		0.8	0.8
		20	16ER20UN	16EL20UN		0.8	0.8
		18	16ER18UN	16EL18UN		0.8	0.8
		16	16ER16UN	16EL16UN		0.8	0.8
		14	16ER14UN	16EL14UN		1.2	1.5
		12	16ER12UN	16EL12UN		1.2	1.5
		11	16ER11UN	16EL11UN		1.2	1.5
		10	16ER10UN	16EL10UN		1.2	1.5
		9	16ER9UN	16EL9UN		1.2	1.5
		8	16ER8UN	16EL8UN		1.2	1.5
	1/2"	7	22ER7UN	22EL7UN	22	2.0	2.5
		6	22ER6UN	22EL6UN		2.2	2.5
		5	22ER5UN	22EL5UN		1.8	2.5
	5/8"	4.5	27ER4.5UN	27EL4.5UN	27.5	2.2	3.2
		4	27ER4UN	27EL4UN		2.2	3.2

UN Unified Thread 60° Full (UN, UNC, UNF, UNEF)



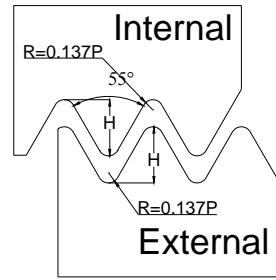
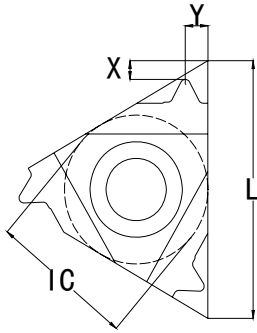
Insert Shape	I.C.	Pitch	Identification		L	X	Y
		TPI	right	left			
internal threading insert 	1/4"	32	11NR32UN	11NL32UN	11	0.8	0.8
		28	11NR28UN	11NL28UN		0.8	0.8
		24	11NR24UN	11NL24UN		0.8	0.8
		20	11NR20UN	11NL20UN		0.8	0.8
		18	11NR18UN	11NL18UN		0.8	0.8
		16	11NR16UN	11NL16UN		0.8	0.8
		14	11NR14UN	11NL14UN		0.8	0.8
	3/8"	32	16NR32UN	16NL32UN	16.5	0.8	0.8
		28	16NR28UN	16NL28UN		0.8	0.8
		24	16NR24UN	16NL24UN		0.8	0.8
		20	16NR20UN	16NL20UN		0.8	0.8
		18	16NR18UN	16NL18UN		0.8	0.8
		16	16NR16UN	16NL16UN		0.8	0.8
		14	16NR14UN	16NL14UN		1.2	1.5
		12	16NR12UN	16NL12UN		1.2	1.5
		11	16NR11UN	16NL11UN		1.2	1.5
		10	16NR10UN	16NL10UN		1.2	1.5
	1/2"	9	16NR9UN	16NL9UN	22	1.2	1.5
		8	16NR8UN	16NL8UN		1.2	1.5
		7	22NR7UN	22NL7UN		2.0	2.5
	5/8"	6	22NR6UN	22NL6UN	27.5	2.2	2.5
		5	22NR5UN	22NL5UN		1.8	2.5
		4.5	27NR4.5UN	27NL4.5UN	2.2	3.2	
		4	27NR4UN	27NL4UN	2.2	3.2	

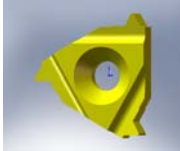
British Whitworth thread 55° Full (BSW、BSF、BSP)



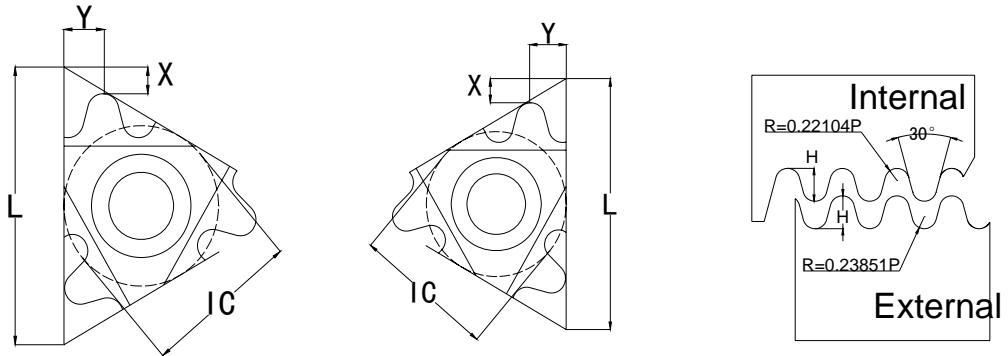
Insert Shape	I.C.	Pitch	Identification		L	X	Y
		TPI	right	left			
external threading insert 	3/8"	28	16ER28W	16EL28W	16.5	0.8	0.8
		26	16ER26W	16EL26W		0.8	0.8
		24	16ER24W	16EL24W		0.8	0.8
		22	16ER22W	16EL22W		0.8	0.8
		20	16ER20W	16EL20W		0.8	0.8
		19	16ER19W	16EL19W		0.8	0.8
		18	16ER18W	16EL18W		0.8	0.8
		16	16ER16W	16EL16W		1.2	1.5
		14	16ER14W	16EL14W		1.2	1.5
		12	16ER12W	16EL12W		1.2	1.5
		11	16ER11W	16EL11W		1.2	1.5
		10	16ER10W	16EL10W		1.2	1.5
	9	16ER9W	16EL9W	1.2	1.5		
	8	16ER8W	16EL8W	1.2	1.5		
	1/2"	7	22ER7W	22EL7W	22	1.8	2.5
		6	22ER6W	22EL6W		1.8	2.5
		5	22ER5W	22EL5W		1.8	2.5
	5/8"	4.5	27ER4.5W	27EL4.5W	27.5	2.2	3.2
		4	27ER4W	27EL4W		2.2	3.2

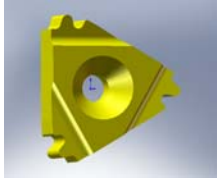
British Whitworth thread 55° Full (BSW、BSF、BSP)



Insert Shape	I.C.	Pitch	Identification		L	X	Y
		TPI	right	left			
internal threading insert 	1/4"	19	11NR19W	11NL19W	11	0.8	0.8
		14	11NR14W	11NL14W		0.8	0.8
	3/8"	28	16NR28W	16NL28W	16.5	0.8	0.8
		26	16NR26W	16NL26W		0.8	0.8
		24	16NR24W	16NL24W		0.8	0.8
		22	16NR22W	16NL22W		0.8	0.8
		20	16NR20W	16NL20W		0.8	0.8
		19	16NR19W	16NL19W		0.8	0.8
		18	16NR18W	16NL18W		0.8	0.8
		16	16NR16W	16NL16W		1.2	1.5
		14	16NR14W	16NL14W		1.2	1.5
		12	16NR12W	16NL12W		1.2	1.5
		11	16NR11W	16NL11W		1.2	1.5
		10	16NR10W	16NL10W		1.2	1.5
		9	16NR9W	16NL9W		1.2	1.5
		8	16NR8W	16NL8W		1.2	1.5
	1/2"	7	22NR7W	22NL7W	22	1.8	2.5
		6	22NR6W	22NL6W		1.8	2.5
		5	22NR5W	22NL5W		1.8	2.5
	5/8"	4.5	27NR4.5W	27NL4.5W	27.5	2.2	3.2
		4	27NR4W	27NL4W		2.2	3.2

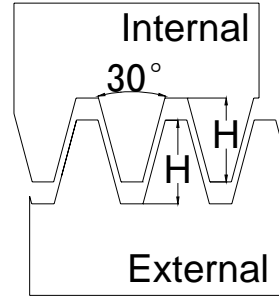
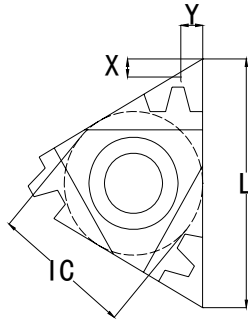
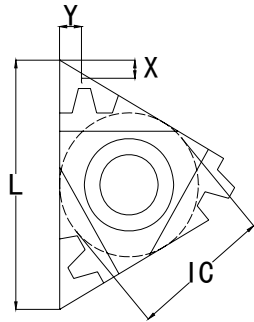
RD 405 Full

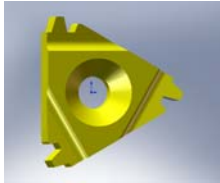


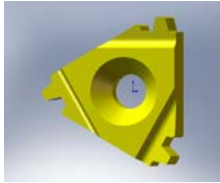
Insert Shape	I.C.	Pitch	Identification		L	X	Y
		TPI	right	left			
external threading insert 	3/8"	10	16ER10RD	16EL10RD	16.5	1.1	1.2
		8	16ER8RD	16EL8RD		1.4	1.3
		6	16ER6RD	16EL6RD		1.5	1.7
	1/2"	6	22ER6RD	22EL6RD	22	1.5	1.7
		4	22ER4RD	22EL4RD		2.2	2.3

internal threading insert 	3/8"	10	16NR10RD	16NL10RD	16.5	1.1	1.2
		8	16NR8RD	16NL8RD		1.4	1.4
		6	16NR6RD	16NL6RD		1.4	1.5
	1/2"	6	22NR6RD	22NL6RD	22	1.5	1.7
		4	22NR4RD	22NL4RD		2.2	2.3

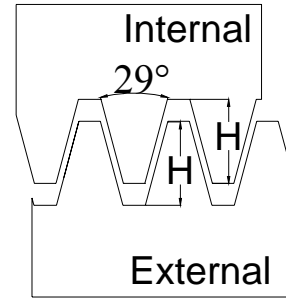
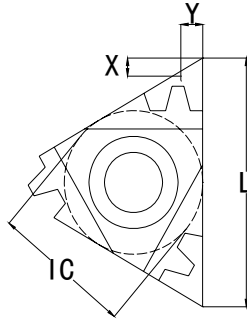
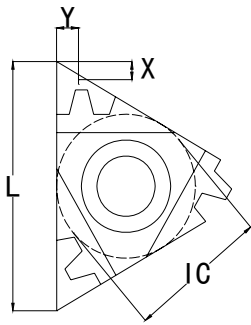
Metric trapezoidal thread TR Full, Partial



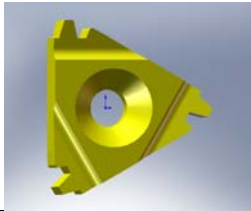
Insert Shape	I.C.	Pitch	Identification		L	X	Y
		mm	right	left			
external threading insert 	3/8"	1.5	16ER1.5TR	16EL1.5TR	16.5	1.0	1.1
		2	16ER2TR	16ER2TR		1.1	1.3
		3	16ER3TR	16ER3TR		1.3	1.5
	1/2"	4	22ER4TR	22EL4TR	22	1.8	1.9
		5	22ER5TR	22EL5TR		2.0	2.4
	5/8"	6	27ER6TR	27EL6TR	27.5	2.3	2.7
		7	27ER7TR	27EL7TR		2.2	2.6

internal threading insert 	3/8"	1.5	16NR1.5TR	16NL1.5TR	16.5	1.0	1.1
		2	16NR2TR	16NR2TR		1.1	1.3
		3	16NR3TR	16NR3TR		1.3	1.5
	1/2"	4	22NR4TR	22NL4TR	22	1.8	1.9
		5	22NR5TR	22NL5TR		2.0	2.4
	5/8"	6	27NR6TR	27NL6TR	27.5	2.3	2.7
		7	27NR7TR	27NL7TR		2.2	2.6

USA trapezoidal thread ACME Full, Partial

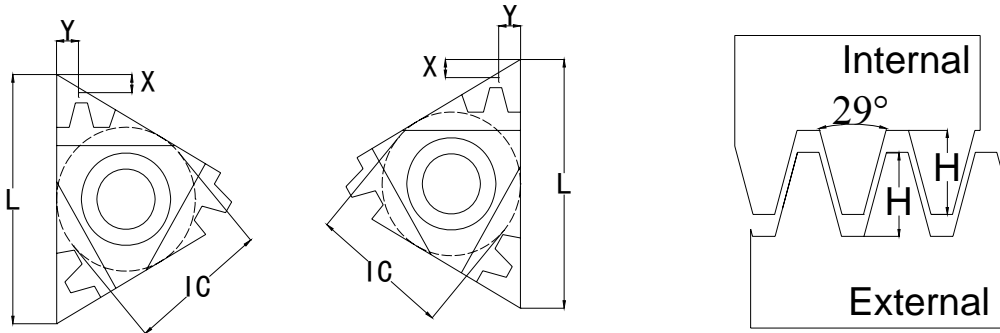


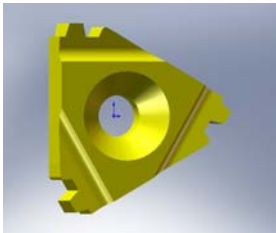
Insert Shape	I.C.	Thread Pitch TPI	Identification		L	X	Y
			right	left			
external thread insert	1/4"	16	11ER16ACME	11EL16ACME	11	0.9	1.0
	3/8"	16	16ER16ACME	16EL16ACME	16.5	0.9	1.0
		14	16ER14ACME	16EL14ACME		1.0	1.2
		12	16ER12ACME	16EL12ACME		1.1	1.2
		10	16ER10ACME	16EL10ACME		1.3	1.3
		8	16ER8ACME	16EL8ACME		1.5	1.5
		6	22ER6ACME	22EL6ACME		22	1.8
	5	22ER5ACME	22EL5ACME	2.0	2.3		
	5/8"	4	27ER4ACME	27EL4ACME	27.5	2.3	2.7

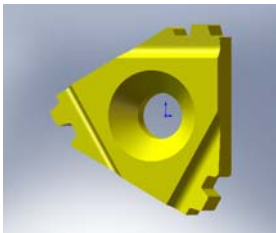


internal thread insert	1/4"	16	11NR16ACME	11NL16ACME	11	0.9	1.0
	3/8"	16	16NR16ACME	16NL16ACME	16.5	0.9	1.0
		14	16NR14ACME	16NL14ACME		1.0	1.2
		12	16NR12ACME	16NL12ACME		1.1	1.2
		10	16NR10ACME	16NL10ACME		1.3	1.3
		8	16NR8ACME	16NL8ACME		1.5	1.5
		6	22NR6ACME	22NL6ACME		22	1.8
	5	22NR5ACME	22NL5ACME	2.0	2.3		
	5/8"	4	27NR4ACME	27NL4ACME	27.5	2.3	2.7

American short-tooth trapezoidal (ACME) thread STACME Full, Partial



Insert Shape	I.C.	Pitch	Identification		L	X	Y
		TPI	right	left			
external threading insert 	1/4"	16	11ER16ACME	11EL16ACME	11	1.0	1.0
	3/8"	16	16ER16ACME	16EL16ACME	16.5	1.0	1.0
		14	16ER14ACME	16EL14ACME		1.1	1.1
		12	16ER12ACME	16EL12ACME		1.2	1.2
		10	16ER10ACME	16EL10ACME		1.3	1.3
		8	16ER8ACME	16EL8ACME		1.5	1.5
	1/2"	6	22ER6ACME	22EL6ACME	22	1.8	1.8
		5	22ER5ACME	22EL5ACME		2.0	2.3
	5/8"	4	27ER4ACME	27EL4ACME	27.5	2.3	2.4
		3	27ER3ACME	27EL3ACME		2.8	2.9

internal threading insert 	1/4"	16	11NR16ACME	11NL16ACME	11	1.0	1.0
	3/8"	16	16NR16ACME	16NL16ACME	16.5	1.0	1.0
		14	16NR14ACME	16NL14ACME		1.1	1.1
		12	16NR12ACME	16NL12ACME		1.2	1.2
		10	16NR10ACME	16NL10ACME		1.3	1.3
		8	16NR8ACME	16NL8ACME		1.5	1.5
	1/2"	6	22NR6ACME	22NL6ACME	22	1.8	1.8
		5	22NR5ACME	22NL5ACME		2.0	2.3
	5/8"	4	27NR4ACME	27NL4ACME	27.5	2.3	2.4
		3	27NR3ACME	27NL3ACME		2.8	2.9

Insert Selection Guidelines

In order to provide you good processing quality, please take the following factors into consideration when selecting our inserts:

1. Selection of threading inserts: based on the suggested parameters as we offered in the following table, which are related to the way of processing, that is, internal or external, direction of turning, workpiece's pitch and teeth per inch. If you are interested in our products, you are welcome to consult our salesperson to select suitable grade, based on the material of processed parts.

Insert material	Coating color	Processed material
LW20	yellow	45carbon steel, alloy steel, cast steel, nonferrous metal
GY20	purple	stainless steel, 45carbon steel, alloy steel, cast steel, high strength steel, nonferrous steel
GY30	black	stainless steel, 45carbon steel, alloy steel, cast steel, high strength steel, nonferrous steel

2. Selection of tool holders: according to the model of lathe you use, machining way and insert type that you choose.

3. Selection of shim: the thread lead angle must be consistent with insert slant angle, try your best to avoid adverse wear of the blade's side, which would lessen the insert's lifespan.

We have designed λ to be 1° when manufacturing thread tool holders.

4. Selection of cutting speed: conversion between cutting speed V_c and rotating speed n :

$$V_c = \frac{\pi \times D \times n}{1000} \quad (V_c: \text{m/min}, D: \text{mm}, n: \text{r/min})$$

		cutting speed V_c : m/min	
carbon steel	low alloy steel	HB180	125
		HB250	100
		HB275	95
	high alloy steel	HB200	110
		HB325	80
	cast steel	HB180	200
HB200		110	
stainless steel	free cutting steel	HB220	120~140
	ferrite/martensite	HB330	90
	austenite	HB200	90
		HB330	65

cast iron	nodular cast iron	HB130	135
		HB230	65
	grey cast iron	HB180	130
		HB260	110
	chilled cast iron	HB400	15-45

With regard to the threading cutting of stainless steel, the most important factor is to make sure the cutting speed V_c is high enough to avoid built-up edge.

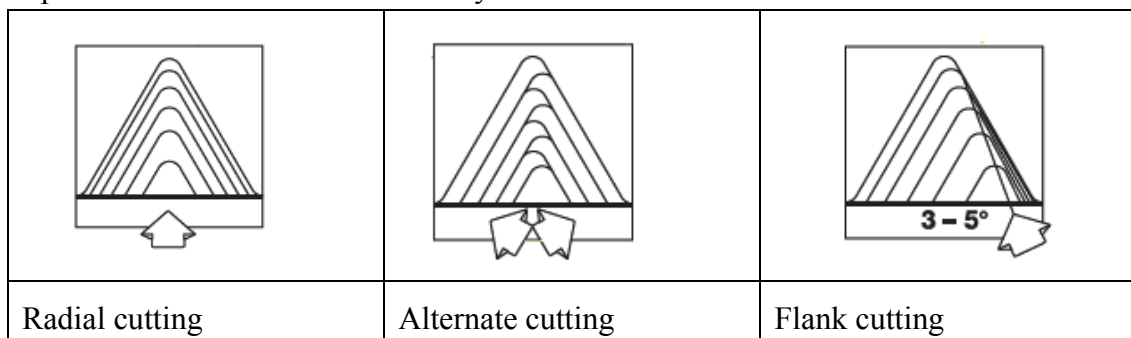
In order to prolong the lifespan of small inserts with sharp edges, such as NPT thread, it is suggested to process first with a bigger insert with sharp edge or to change the cutting parameters (increase the times of cutting).

5、 Choice of cutting style:

1) **Radial cutting:** When turning thread, you should choose radial cutting first, which is easy to operate and is the first choice when processing hardening material, such as austenite stainless steel. However, when processing big pitch, which is easy to vibrate, it is better to choose flank cutting or alternate cutting.

2) **Flank cutting:** It is easy to control the flow direction of chipping, to eject the chipping and to alleviate the vibration when turning thread. In order to gain even abrasion when maintaining the teeth shape during flank cutting we adopt to axial feed $1/2 a_p$ as the radial feed of 60° Metric thread to be a_p .

3) **Alternate cutting:** It can obviously alleviate the abrasion of inserts and prolong the lifespan of inserts which will suitably be used on CNC machines.



6、 Suggested choice of cutting depth

In most CNC machines, during one cycle of thread processing, the total depth of the thread , the depth value (a_p) of the first and the last cutting should be stated (such as the fixed cycle of the thread processing), besides, the maxim cutting depth of the first cutting should be 1.5 to 2 times of the insert's edge radius, following by a gradual decrease of cutting depth. The

last unilateral cutting depth should be no less than 0.05 mm, otherwise, it will easily cause abrasion on the insert's edge and poor smooth finish on the workpiece's tooth surface.

There are two thread cutting (fixed cycle) ways with the current NC machines:

Radial cutting uses G32 (G33、G34、G35) programm;

Flank cutting uses G76 programm.

Because of different cutting methods and programming, there will be different processing error.

(1)、Programming order of these two processing ways

(a) G32X (U) ---Z (W) ---F-----;

G32 Programm: distribution of cutting depth is usually a fixed value; double edges cutting; the cutting depth per time will be given by the programmer.

Radial infeed is a kind of double edges cutting, which is hard for the cutter and chipping ejection, therefore, these two edges are easily worn when cutting. When cutting relatively big pitch thread, the edges are also relatively faster worn, which will easily cause error of the pitch diameter. Because of the relatively high precision of the tooth, it is usually used in small pitch processing, besides, your are expected to do frequent measurement when processing for the edges are easily worn.

(b) G76P (m) ® (2) Q (Δd_{min}) R(d);

G76X (U) Z (W) R () Q () F ();

G76 Programm: distribution of cutting depth is usually a gradual decrease; single edge cutting; the cutting depth is automatically given by the control system.

G76 Flank cutting: Because of its single edge cutting, which is easily worn and the uneven processed thread surface, the edge of the cutter will be transformed, the tooth precision will be decreased. Meanwhile, because of its single edge cutting, the cutter's load is relatively small, the chipping is easily ejected and the vibration when turning will be alleviated. This kind of process is suitable for big pitch processing. When processing relatively high precision thread, it is suggested to adopt double edges cutting, that is, using G76 programm to do the rough process and G32 to do the finish. A very important point is that the starting point of the insert should be precisely fixed.

Cutting Parameters of Metric Threading Inserts

cutting parameters of Metric ISO internal thread (with polishing edge)						
Pitch(mm)	1	1.25	1.5	1.75	2	2.5
Total cutting (ap)	0.62	0.77	0.92	1.07	1.21	1.49
Times of cutting (nap)	5	6	7	8	9	11
Sequence of cutting	Radial cutting(X); Tooth flank cutting(Z)					
	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z
1	0.18/-	0.20/-	0.22/-	0.23/-	0.24/-	0.25/-
2	0.14/0.08	0.15/0.09	0.16/0.09	0.16/0.09	0.18/0.10	0.20/0.12
3	0.12/0.07	0.12/0.07	0.14/0.08	0.14/0.08	0.15/0.09	0.15/0.09
4	0.10/0.06	0.12/0.07	0.12/0.07	0.13/0.08	0.14/0.08	0.15/0.09
5	0.08/-	0.10/0.06	0.11/0.06	0.12/0.07	0.12/0.07	0.13/0.08
6		0.08/-	0.09/0.05	0.11/0.06	0.11/0.06	0.12/0.07
7			0.08/-	0.10/0.06	0.10/0.06	0.12/0.07
8				0.08/-	0.09/0.05	0.10/0.06
9					0.08/-	0.10/0.06
10						0.09/0.05
11						0.08/-

cutting parameters of Metric ISO external thread (with polishing edge)						
Pitch(mm)	1	1.25	1.5	1.75	2	2.5
Total cutting (ap)	0.72	0.86	1.02	1.17	1.33	1.63
Times of cutting (nap)	5	6	7	8	9	11
Sequence of cutting	Radial cutting(X); Tooth flank cutting(Z)					
	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z
1	0.20/-	0.20/-	0.21/-	0.22/-	0.24/-	0.25/-
2	0.18/0.10	0.18/0.10	0.18/0.10	0.20/0.12	0.22/0.13	0.24/0.14
3	0.16/0.09	0.16/0.09	0.18/0.10	0.18/0.10	0.20/0.12	0.21/0.12
4	0.10/0.06	0.14/0.09	0.15/0.09	0.15/0.09	0.15/0.09	0.18/0.10
5	0.08/-	0.10/0.06	0.12/0.07	0.13/0.08	0.12/0.07	0.15/0.09
6		0.08/-	0.10/0.06	0.11/0.06	0.12/0.07	0.12/0.07
7			0.08/-	0.10/0.06	0.10/0.06	0.12/0.07
8				0.08/-	0.09/0.05	0.10/0.06
9					0.08/-	0.10/0.06
10						0.08/0.05
11						0.08/-

cutting parameters of NPT internal/external thread				
Pitch(mm)	11.5	14	18	
Total cutting (ap)	1.767	1.451	1.129	
Times of cutting (nap)	12	10	8	
Sequence of cutting	Radial cutting(X); Tooth flank cutting(Z)			
	X/Z	X/Z	X/Z	X/Z
1	0.24/-	0.24/-	0.22/-	
2	0.208/0.12	0.200/0.115	0.181/0.104	
3	0.182/0.105	0.170/0.098	0.152/0.088	
4	0.168/0.097	0.150/0.086	0.141/0.081	
5	0.155/0.089	0.140/0.081	0.131/0.075	
6	0.145/0.084	0.130/0.075	0.121/0.070	
7	0.138/0.079	0.120/0.069	0.101/0.058	
8	0.124/0.072	0.010/0.063	0.082/0.047	
9	0.117/0.067	0.100/0.058		
10	0.105/0.060	0.090/0.052		
11	0.095/0.055			
12	0.090/0.052			

cutting parameters of Unified (American standard) external thread					
Pitch(mm)	12	16	18	20	
Total cutting (ap)	1.299	0.974	0.866	0.779	
Times of cutting (nap)	9	7	6	6	
Sequence of cutting	Radial cutting(X); Tooth flank cutting(Z)				
	X/Z	X/Z	X/Z	X/Z	X/Z
1	0.229/-	0.226/-	0.233/-	0.210/-	
2	0.222/0.128	0.188/0.109	0.181/0.104	0.163/0.094	
3	0.170/0.098	0.145/0.083	0.139/0.080	0.125/0.072	
4	0.143/0.083	0.122/0.070	0.117/0.068	0.105/0.072	
5	0.126/0.073	0.107/0.062	0.103/0.059	0.093/0.054	
6	0.114/0.066	0.097/0.056	0.093/0.054	0.084/0.048	
7	0.105/0.061	0.089/0.052			
8	0.098/0.056				
9	0.092/0.053				

cutting parameters of Unified (American standard) internal thread					
Pitch(mm)	12	16	18	20	
Total cutting (ap)	1.222	0.916	0.815	0.733	
Times of cutting (nap)	9	7	6	6	
Sequence of cutting	Radial cutting(X); Tooth flank cutting(Z)				
	X/Z	X/Z	X/Z	X/Z	X/Z
1	0.222/-	0.230/-	0.174/-	0.191/-	
2	0.207/0.120	0.173/0.10	0.161/0.093	0.155/0.089	
3	0.159/0.092	0.132/0.076	0.124/0.072	0.119/0.069	
4	0.134/0.077	0.112/0.064	0.104/0.060	0.100/0.058	
5	0.118/0.068	0.098/0.057	0.092/0.053	0.088/0.051	
6	0.107/0.062	0.089/0.051	0.083/0.048	0.08/0.046	
7	0.098/0.057	0.082/0.047	0.077/0.044		
8	0.091/0.053				
9	0.086/0.050				

cutting parameters of BSPT internal/external thread					
Pitch(mm)	11	14	19		
Total cutting (ap)	1.479	1.162	0.856		
Times of cutting (nap)	10	8	6		
Sequence of cutting	Radial cutting(X); Tooth flank cutting(Z)				
	X/Z	X/Z	X/Z	X/Z	X/Z
1	0.214/-	0.222/-	0.223/-		
2	0.242/0.126	0.213/0.111	0.181/0.094		
3	0.186/0.097	0.163/0.085	0.139/0.072		
4	0.157/0.082	0.138/0.072	0.117/0.061		
5	0.138/0.072	0.121/0.063	0.103/0.054		
6	0.125/0.065	0.110/0.057	0.093/0.049		
7	0.115/0.060	0.101/0.052			
8	0.107/0.056	0.094/0.049			
9	0.100/0.052				
10	0.095/0.049				

Attention

1. Please install a suitable tool holder with certain center height according to the lathe's center height, for there are so many companies manufacturing lathes, even the same model of the same company's lathe may have different center height. It is enough to select only one tool holder regardless of the diameter of the workpiece in the external thread processing. On the contrary, the selecting of tool holder is related to workpiece's inner diameter in the internal thread processing, which mainly takes the tool holder's strength into consideration.

(1) When install external thread tool holder, choose one with the same center height as the lathe, we will optimize the center height when manufacturing the tool holder.

(2) When install internal thread tool holder, it is suggested to take the following aspects into consideration: it is unnecessary to adjust after clamping if the round loath stand itself uses a round tool holder. On the contrary, if it is a square loath stand and a round tool holder is used, it is inevitably to adjust the insert shim to a suitable center height, which will probably cause inaccurate center height and incorrect thread semiangle. As a result, it is better to adjust the center height to 0.1-0.2 mm higher than the loath center line. Otherwise, it will cause abrasion of the insert's back surface if the center height is higher than the loath center line while it will cause break of the insert's edge if the center height is lower than the loath center line. In addition, it is suitable to choose a square internal thread tool holder, as the center height has been optimized when manufacturing.

(3) Selection of insert shim should with reference to the selection guidelines while incorrect selection would cause over abrasion of the insert's side and the back surfaces.

2. Please make sure the lathe has good performance quality, to be specific, it should has good rigidity, high enough speed and good cooling system. During the thread processing, a relatively high cutting speed (80 - 120 turn/minute) is needed to avoid producing built-up edge and to get lower surface roughness / higher surface smoothness. The selection of cutting speed is based on the processed material (with reference to the selection guidelines). Another factor worthy of our consideration is the cooling. General speaking, we usually eject the cooling liquid onto the workpiece directly, which is in fact not so suitable, the correct way is to eject the cooling liquid onto the place where the insert's edge contact the workpiece. What's more, the cooling liquid should have enough flow (15-20 litre/minute), because the temperature of the cutter's edge will be very high during the processing, the cooling liquid

without enough flow will be gasified before contacting the insert's edge, which is useless to cool the insert's edge but to burn the insert's edge.

3. Suitable cutting parameters are an important factor to prolong the insert's lifespan.

(1) External thread processing: It is easy to eject the chipping. In order to program conveniently, we adopt direct processing, except the situation of high precise thread, in which we adopt a processing way to control the flow direction of the chipping.

(2) Internal thread processing: We adopt radius cutting when the workpiece has big radius in most cases, for it is easy to eject the chipping. On the contrary, we adopt flank cutting to make sure the chipping can be ejected along the cutter's adverse cutting direction when the workpiece has small radius, for the room here for ejecting chipping is too small to break the insert's edge and influence the workpiece's surface quality, however, if we choose flank cutting, we can prolong the insert's lifespan and improve the workpiece's surface quality (with reference to the selection guidelines).

4. Machining of the processed inserts (suitable for threading inserts with polishing edges):

(1) External thread processing: the insert's external diameter should be more than the thread's nominal diameter. For example, M 30x1.5, the insert's external diameter $\phi 30.1\text{mm}$

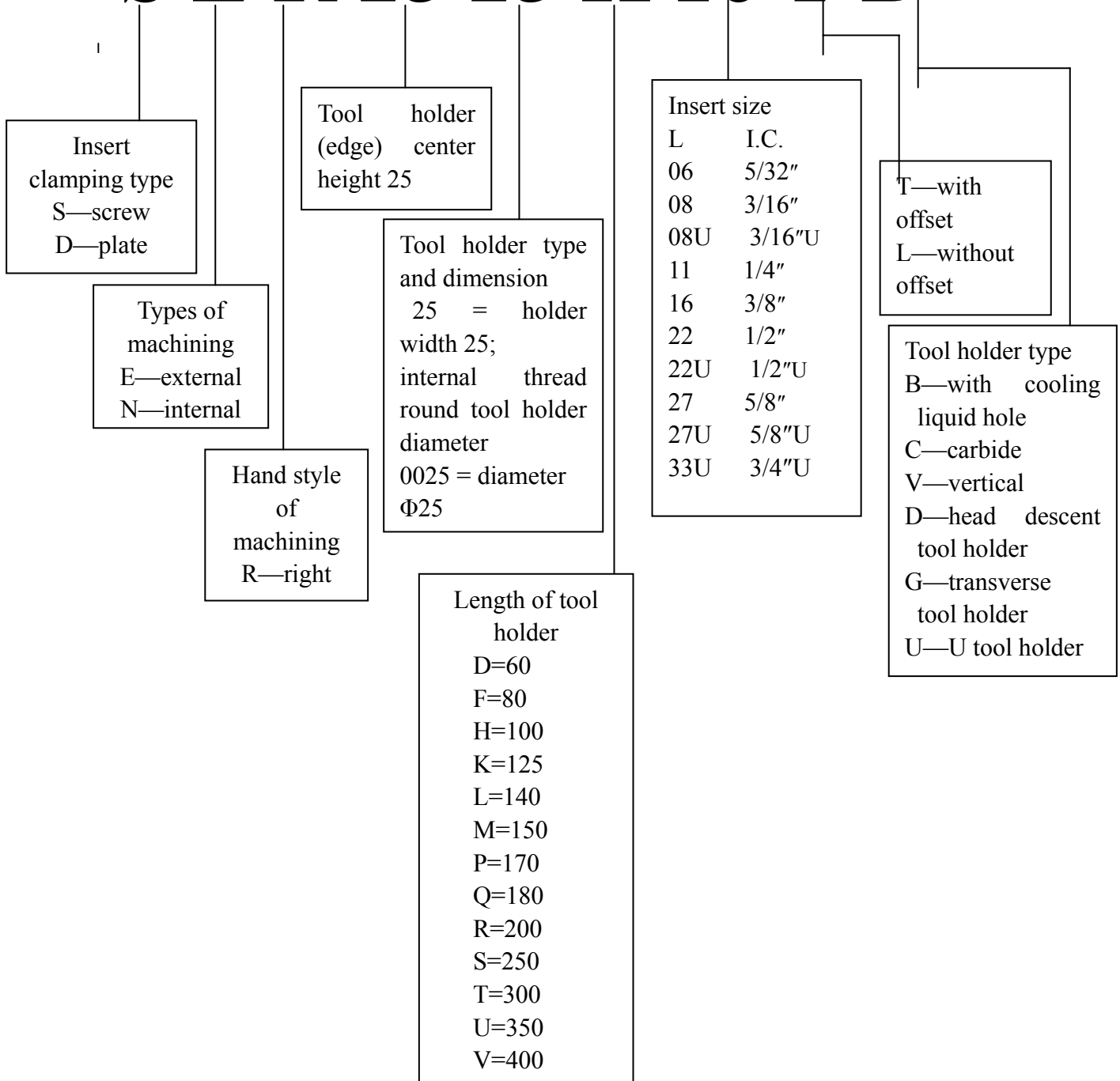
(2) Internal thread processing: the insert's external diameter should be less than the thread's nominal diameter. For example, M 30x1.5, the insert's external diameter $\phi 29.9\text{mm}$.

5. If the insert's edge is broken during processing, great attention should be given to make sure there is no residual alloy chippings when changing insert (or changing the position of the insert).

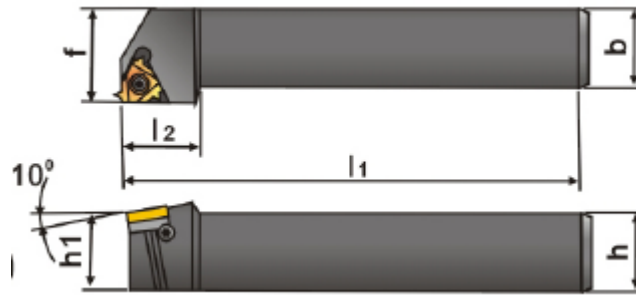
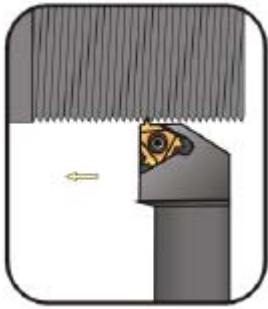
Thread Turning Tool Holders

Identification system to tool holder of indexable thread turning Inserts

S E R 25 25 K 16 T B

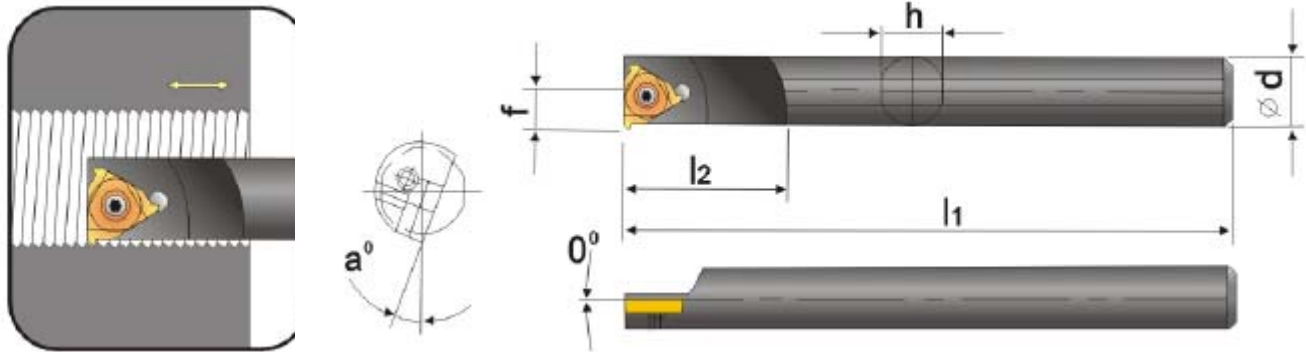


External Thread Tool holder



Order Model	h	b	l1	l2	h1	f	shim	Shim screw	Side screw	spanner	Insert
SER/L 1010 H11	10	10	100	18	10	12	X	S-2.5P	X	T8	11ER/L_____
SER/L 1212 H16	12	12	100	22	12	16		MU16		T15	
SER/L 1616 H16	16	16	100	22	16	20	(R) SE16 (L) SL16	MU16	ME16	T15	16ER/L_____
SER/L 2020 K16	20	20	125	22	20	35					
SER/L 2525 M16	25	25	150	22	25	32					
SER/L 3232 P16	32	32	170	22	32	40	(R) SE22 (L) SL22	MU22	ME22	T15	22ER/L_____
SER/L 2525 M22	25	25	150	28	25	22					
SER/L 3232 P22	32	32	170	32	32	40	(R) SE27 (L) SL27	MU27	ME27	T20	27ER/L_____
SER/L 2525 M27	25	25	150	34	25	32					
SER/L 3232 P27	32	32	170	34	32	40					

Internal Thread Tool holder

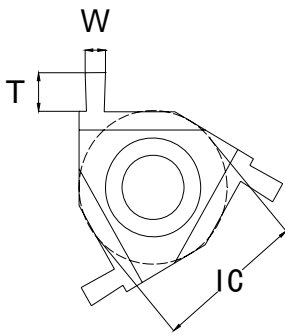


Order Model	Min Processing diameter	Φd	f	l1	l2	h	α°	Shim	Shim screw	Side screw	Spanner	Insert
SNR/L0010K11	12	10	7.4	125	25	9	15°	/	S-2.5P	/	T8	11NR/L_
SNR/L0016M16	19	16	11.7	150	40	15	15°	/	MU16S	/	T10	16NR/L_
SNR/L0020Q16	24	20	13.7	180	40	19	15°	(L) SE16 (R) SL16	MU16	ME16		
SNR/L0025R16	29	25	16.2	200	45	24	15°					
SNR/L0032S16	36	32	19.7	250	50	30	15°					
SNR/L0020Q22	24	20	15.6	180	45	19	15°	/	MU22	/	T20	22NR/L_
SNR/L0025R22	29	25	18.1	200	47	24	15°	(L) SE22 (R) SL22		ME22		
SNR/L0032S22	38	32	21.6	250	55	30	15°					
SNR/L0040T22	46	40	25.6	300	60	38	15°	(L) SE27 (R) SL27	MU27	ME27	T25	27NR/L_
SNR/L0032S27	40	32	22.6	250	60	30	15°					
SNR/L0040T27	48	40	26.6	300	65	38	15°					
SNR/L0050U27	58	50	31.6	350	75	48	15°					

Problem and solution to thread turning

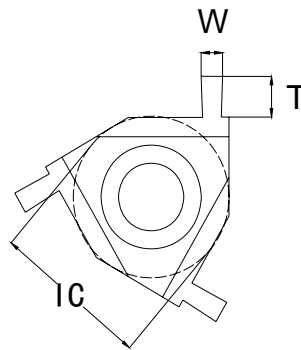
Problem	Possible Cause	Solution
Vibration	incorrect workpiece clamping; incorrect insert clamping; incorrect cutting parameter; incorrect insert center height	change a softer gripper; decrease the overhanging of insert; check whether the insert is clamped tight; increase the linear speed, if it does not work, decrease the linear speed to a large extent; adopt a continuous fixed feed of 0.1-0.6; adopt a right center height
Over stress of the edge	over cutting depth when processing harden material; over stress of the cutting edge; small angle of thread tooth	decrease the times of insert's feed; adopt a harder grade; adopt side feed processing
Poor quality of the thread surface	too slow cutting; insert is above the center line; poor cutting control	increase the cutting speed; adopt a right center height; adopt side feed processing
Too even tooth of the thread	incorrect center height; broken insert; insert does not process to the top of the thread	adopt a right center height; change a insert; check the dimension of the insert and workpiece

Grooving Cutters



ER/NL

Served as an external right groove cutter or internal groove left cutter



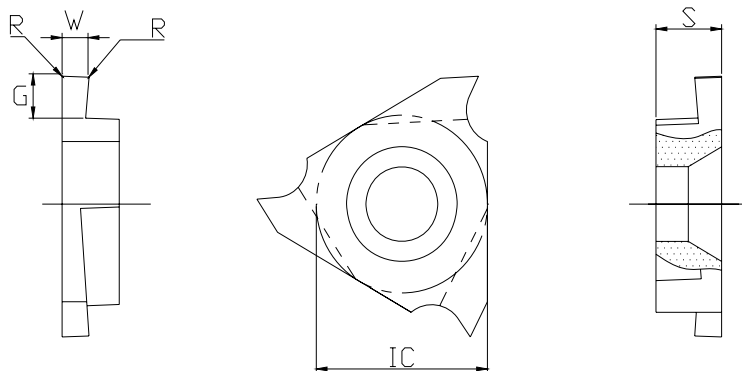
NR/EL

Served as an external left groove cutter or internal right groove cutter

W ±0.02	T	I.C.	Model	
			ER/NL	NR/EL
1.00	1.4	3/8"	16ER/NL 1.00	16NR/EL 1.00
1.20	1.6	3/8"	16ER/NL 1.20	16NR/EL 1.20
1.40	1.8	3/8"	16ER/NL 1.40	16NR/EL 1.40
1.60	2.0	3/8"	16ER/NL 1.60	16NR/EL 1.60
1.70	2.0	3/8"	16ER/NL 1.70	16NR/EL 1.70
1.80	2.0	3/8"	16ER/NL 1.80	16NR/EL 1.80
1.90	2.0	3/8"	16ER/NL 1.90	16NR/EL 1.90
1.95	2.0	3/8"	16ER/NL 1.95	16NR/EL 1.95
2.00	2.0	3/8"	16ER/NL 2.00	16NR/EL 2.00
2.10	2.2	3/8"	16ER/NL 2.10	16NR/EL 2.10
2.20	2.2	3/8"	16ER/NL 2.20	16NR/EL 2.20
2.25	2.25	3/8"	16ER/NL 2.25	16NR/EL 2.25

Note: Nonstandard model can be made according to your request.

Vertical Triangle Grooving Cutters



Technical Information

Cutting Speed (Vc) of Groove Cutters

ISO	Material	Cutting Speed m/min
P	low, medium carbide steel	20-100
	high carbide steel	30-80
	alloy steel, hardened and tempered steel	40-90
M	stainless steel	30-80
	cast steel	30-90
K	cast iron	30-90
N	nonferrous metal, aluminum alloy	20-200

Model	W	G	Max Cutting Depth	I.C.	R	S
	±0.02					
JTGR/L3100	1.00	2.2	2.1	3/8"	0.05	3.65
JTGR/L3110	1.10	2.2	2.1	3/8"	0.05	3.65
JTGR/L3130	1.30	2.2	2.1	3/8"	0.05	3.65
JTGR/L3150	1.50	2.2	2.1	3/8"	0.05	3.65
JTGR/L3175	1.75	2.2	2.1	3/8"	0.05	3.65
JTGR/L3200	2.00	2.7	2.6	3/8"	0.05	3.65
JTGR/L3225	2.25	2.7	2.6	3/8"	0.05	3.65
JTGR/L3250	2.50	2.7	2.6	3/8"	0.05	3.65
JTGR/L3275	2.75	2.7	2.6	3/8"	0.05	3.65
JTGR/L3300	3.00	2.7	2.6	3/8"	0.05	3.65

Thread Milling Cutters

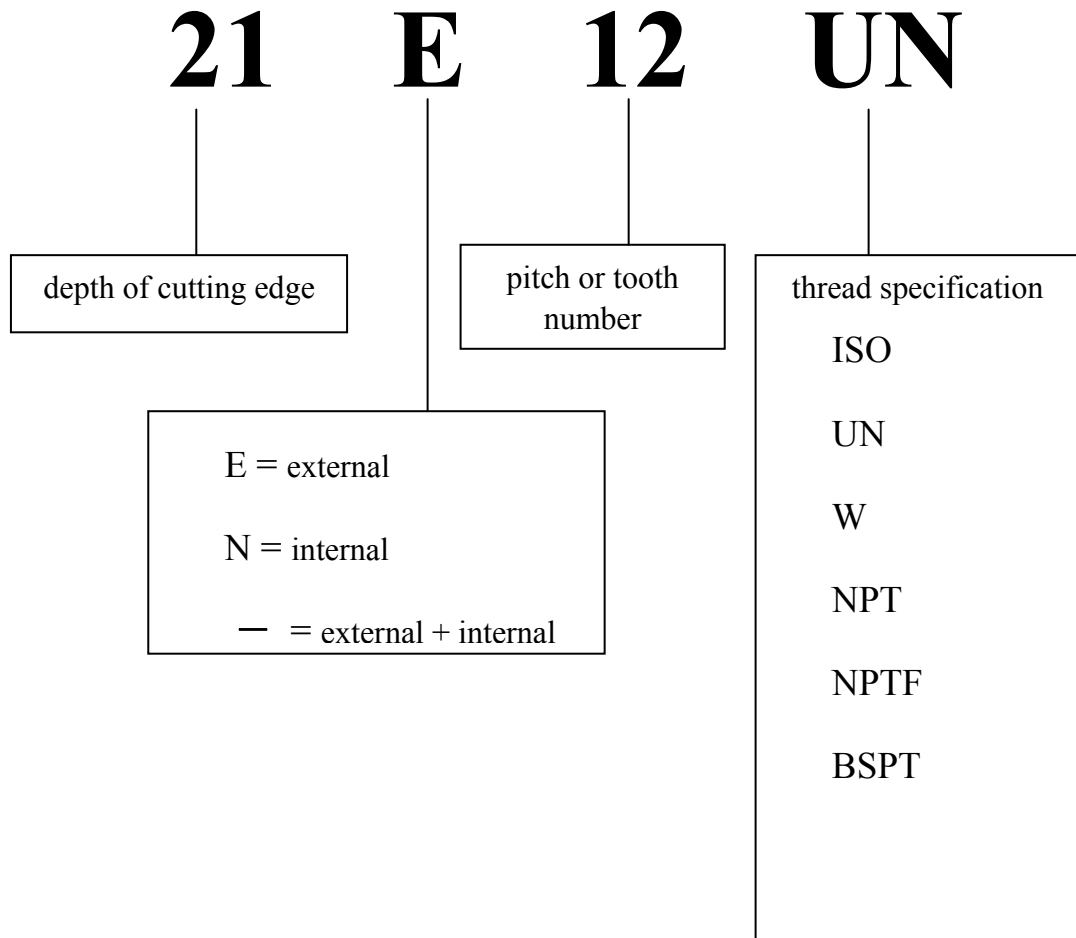


Advantages of Thread Milling Cutters

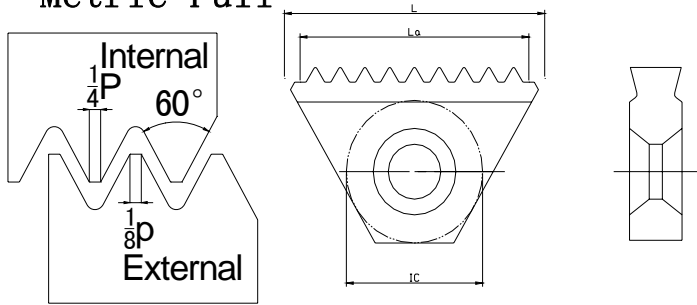
- the same tool holder and insert can be used to process left hand or right hand thread
- the cutting speed and productivity can be improved with multitooth
- the same assembly of tool holder and insert can be used to process threads of various diameters
- it can be used to improve processing blind hole
- most inserts have two cutting edges
- thread processing can be finished once
- low requirement for the machine tool, which means a small one can process big thread and the processing time can be lessened
- cost can be decreased, which is better than using a screw tap

Product Serial Number

Introduction to Thread Milling Cutter

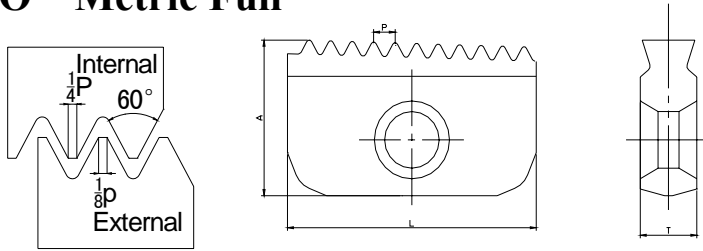


ISO Metric Full



Inscribed Circle Diameter IC	Length of Cutting Edge L mm	Pitch mm	Insert Model		Effective Cutting Length Le
			External Thread Insert	Internal Thread Insert	
1/4"	11	0.5		11 N 0.5 ISO	10.0
		0.75	11 E 0.75 ISO	11 N 0.75 ISO	10.5
		1.0	11 E 1.0 ISO	11 N 1.0 ISO	10.0
		1.25	1 E 1.25 ISO		10.0
		1.25		11 N 1.25 ISO	8.75
		1.5	11 E 1.5 ISO		9.0
		1.5		11 N 1.5 ISO	10.5
3/8"	16	0.5		16 N 0.5 ISO	15.0
		0.75	16 E 0.75 ISO	16 N 0.75 ISO	15.0
		1.0	16 E 1.0 ISO		14.0
		1.0		16 N 1.0 ISO	15.0
		1.25	16 E 1.25 ISO	16 N 1.25 ISO	15.0
		1.5	16 E 1.5 ISO	16 N 1.5 ISO	15.0
		1.75	16 E 1.75 ISO	16 N 1.75 ISO	14.0
		2.0	16 E 2.0 ISO	16 N 2.0 ISO	14.0
3/8"B	22	1.0	22 E 1.0 ISO	22 N 1.0 ISO	22.0
		1.25	22 E 1.25 ISO	22 N 1.25 ISO	21.25
		1.5	22 E 1.5 ISO	22 N 1.5 ISO	21.0
		1.75	22 E 1.75 ISO	22 N 1.75 ISO	21.0
		2.0	22 E 2.0 ISO	22 N 2.0 ISO	22.0
5/8"	27	1.0	27 E 1.0 ISO	27 N 1.0 ISO	26.0
		1.25	27 E 1.25 ISO	27 N 1.25 ISO	25.0
		1.5	27 E 1.5 ISO	27 N 1.5 ISO	25.5
		1.75	27 E 1.75 ISO	27 N 1.75 ISO	24.5
		2.0	27 E 2.0 ISO	27 N 2.0 ISO	24.0
		2.5	27 E 2.5 ISO	27 N 2.5 ISO	25.0
		3.0	27 E 3.0 ISO	27 N 3.0 ISO	24.0
		3.5	27 E 3.5 ISO	27 N 3.5 ISO	24.5
		4.0	27 E 4.0 ISO	27 N 4.0 ISO	24.0
		4.5	27 E 4.5 ISO	27 N 4.5 ISO	22.5

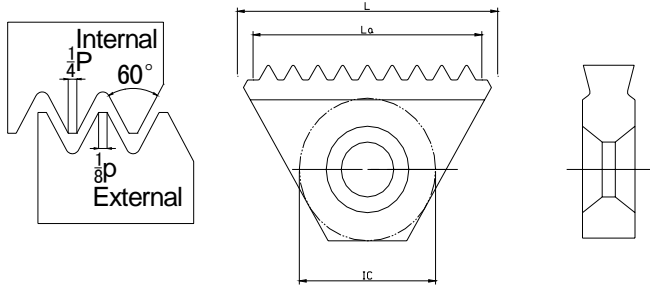
ISO Metric Full



Pitch mm		Length of cutting edge L				
		12mm	14mm	21mm	30mm	40mm
0.5	Ext.					
	Int.	12 N 0.5 ISO	14 N 0.5 ISO			
0.75	Ext.		14 E 0.75ISO			
	Int.	12 N 0.75ISO	14 N 0.75ISO			
1	Ext.		14 E 1.0 ISO	21 E 1.0 ISO		
	Int.	12 N 1.0 ISO	14 N 1.0 ISO	21 N 1.0 ISO		
1.25	Ext.		14 E 1.25ISO			
	Int.	12 N 1.25ISO	14 N 1.25ISO			
1.5	Ext.		14 E 1.5 ISO	21 E 1.5 ISO	30 E 1.5 ISO	40 E 1.5 ISO
	Int.	12 N 1.5 ISO	14 N 1.5 ISO	21 N 1.5 ISO	30 N 1.5 ISO	40 N 1.5 ISO
1.75	Ext.		14 E 1.75ISO			
	Int.		14 N 1.75ISO	21 N 1.75ISO		
2	Ext.		14 E 2.0 ISO	21 E 2.0 ISO	30 E 2.0 ISO	40 E 2.0 ISO
	Int.		14 N 2.0 ISO	21 N 2.0 ISO	30 N 2.0 ISO	40 N 2.0 ISO
2.5	Ext.		14 E 2.5 ISO	21 E 2.5 ISO		
	Int.		14 N 2.5 ISO	21 N 2.5 ISO		
3	Ext.			21 E 3.0 ISO	30 E 3.0 ISO	40 E 3.0 ISO
	Int.			21 N 3.0 ISO	30 N 3.0 ISO	40 N 3.0 ISO
3.5	Ext.				30 E 3.5 ISO	
	Int.			21 N 3.5 ISO	30 N 3.5 ISO	40 N 3.5 ISO
4	Ext.				30 E 4.0 ISO	40 E 4.0 ISO
	Int.				30 N 4.0 ISO	40 N 4.0 ISO
4.5	Ext.					
	Int.				30 N 4.5 ISO	40 N 4.5 ISO
5	Ext.					40 E 5.0 ISO
	Int.					40 N 5.0 ISO
5.5	Ext.					
	Int.					40 N 5.5 ISO
6	Ext.					40 E 6.0 ISO
	Int.					40 N 6.0 ISO

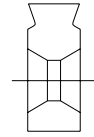
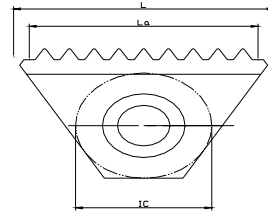
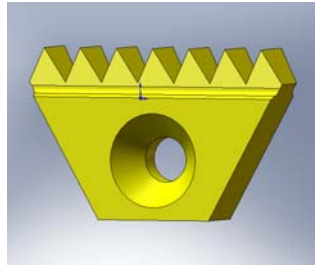
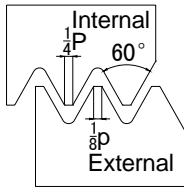
H	6.3	7.5	12	16	20
T	2.9	3.1	4.7	5.5	6.3

ISO British 60° Full (UN, UNC, UNF)



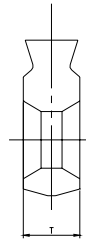
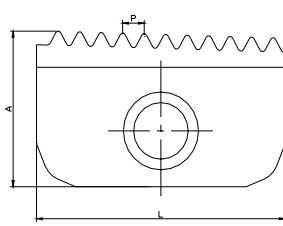
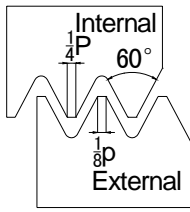
Inscribed Circle Diameter IC	Length of Cutting Edge L mm	Pitch TPI	Insert Model		Effective Cutting Length Le
			External Thread Insert	Internal Thread Insert	
1/4"	11	48		11 N 48 UN	10.05
		40		11 N 40 UN	10.16
		32		11 N 32 UN	10.32
		28	11 E 28 UN	11 N 28 UN	9.98
		27	11 E 27 UN	11 N 27 UN	10.35
		24	11 E 24 UN	11 N 24 UN	9.53
		20	11 E 20 UN	11 N 20 UN	10.16
		18	11 E 18 UN	11 N 18 UN	9.88
		16	11 E 16 UN	11 N 16 UN	9.53
		14	11 E 14 UN	11 N 14 UN	9.07
3/8"	16	40		16 N 40 UN	14.61
		32		16 N 32 UN	15.08
		28	16 E 28 UN	16 N 28 UN	14.51
		24	16 E 24 UN	16 N 24 UN	14.82
		20	16 E 20 UN	16 N 20 UN	13.97
		18	16 E 18 UN	16 N 18 UN	14.11
		16	16 E 16 UN	16 N 16 UN	14.29
		14	16 E 14 UN	16 N 14 UN	14.51
		12	16 E 12 UN	16 N 12 UN	14.82
3/8"B	22	24	22 E 24 UN	22 N 24 UN	21.16
		20	22 E 20 UN	22 N 20 UN	21.59
		18	22 E 18 UN	22 N 18 UN	21.17
		16	22 E 16 UN	22 N 16 UN	20.64
		14	22 E 14 UN	22 N 14 UN	21.77
		12	22 E 12 UN	22 N 12 UN	21.77

ISO British 60° Full (UN, UNC, UNF)



Inscribed Circle IC	Length of Cutting Edge L mm	Pitch TPI	Insert Model		Effective Cutting Edge Le
			External Thread Insert	Internal Thread Insert	
5/8"	27	24	27 E 24 UN	27 N 24 UN	25.40
		20	27 E 20 UN	27 N 20 UN	25.40
		18	27 E 18 UN	27 N 18 UN	25.40
		16	27 E 16 UN	27 N 16 UN	25.40
		14	27 E 14 UN	27 N 14 UN	25.40
		12	27 E 12 UN	27 N 12 UN	25.40
		11	27 E 11 UN	27 N 11 UN	25.40
		10	27 E 10 UN		22.86
		10		27 N 10 UN	25.40
		9	27 E 9 UN	27 N 9 UN	22.58
		8	27 E 8 UN	27 N 8 UN	22.23
		7	27 E 7 UN		21.77
		7		27 N 7 UN	25.40
		6	27 E 6 UN		21.17
		6		27 N 6 UN	25.40

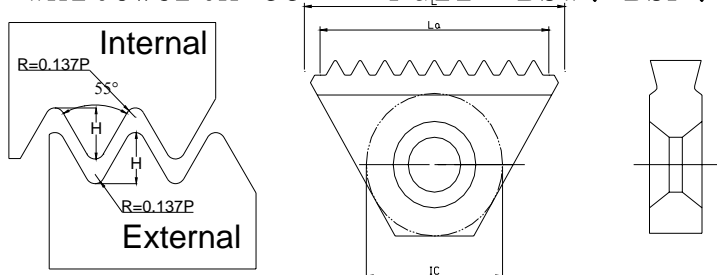
ISO British 60° Full (UN, UNC, UNF)



Pitch TPI		Length of Cutting Edge L				
		12mm	14mm	21mm	30mm	40mm
32	Ext.		14 E 32 UN			
	Int.	12 N 32 UN	14 N 32 UN			
28	Ext.		14 E 28 UN			
	Int.	12 N 28 UN	14 N 28 UN			
27	Ext.					
	Int.		14 N 27 UN			
24	Ext.		14 E 24 UN	21 E 24 UN		
	Int.	12 N 24 UN	14 N 24 UN	21 N 24 UN		
20	Ext.		14 E 20 UN	21 E 20 UN	30 E 20 UN	
	Int.	12 N 20 UN	14 N 20 UN	21 N 20 UN	30 N 20 UN	
18	Ext.		14 E 18 UN	21 E 18 UN	30 E 18 UN	
	Int.	12 N 18 UN	14 N 18 UN	21 N 18 UN	30 N 18 UN	
16	Ext.		14 E 16 UN	21 E 16 UN	30 E 16 UN	40 E 16 UN
	Int.	12 N 16 UN	14 N 16 UN	21 N 16 UN	30 N 16 UN	40 N 16 UN
14	Ext.		14 E 14 UN	21 E 14 UN	30 E 14 UN	40 E 14 UN
	Int.		14 N 14 UN	21 N 14 UN	30 N 14 UN	40 N 14 UN
12	Ext.		14 E 12 UN	21 E 12 UN	30 E 12 UN	40 E 12 UN
	Int.		14 N 12 UN	21 N 12 UN	30 N 12 UN	40 N 12 UN
10	Ext.			21 E 10 UN	30 E 10 UN	40 E 10 UN
	Int.		14 N 10 UN	21 N 10 UN	30 N 10 UN	40 N 10 UN
8	Ext.				30 E 8 UN	40 E 8 UN
	Int.			21 N 8 UN	30 N 8 UN	40 N 8 UN
7	Ext.					
	Int.			21 N 7 UN		
6	Ext.				30 E 6 UN	40 E 6 UN
	Int.				30 N 6 UN	40 N 6 UN
4.5	Ext.					
	Int.					40 I 4.5 UN
4	Ext.					
	Int.					40 I 4 UN

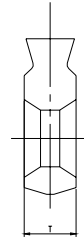
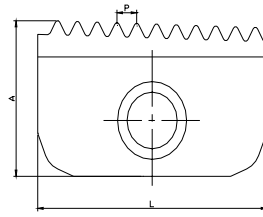
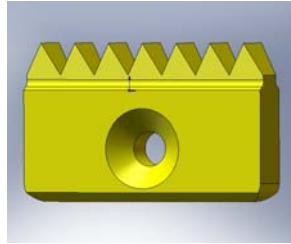
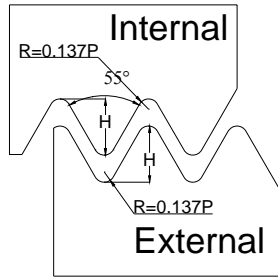
H	6.3	7.5	12	16	20
T	2.9	3.1	4.7	5.5	6.3

Whitworth 55° Full BSW, BSF, BSP



Inscribed Circle Diameter IC	Length of Cutting Edge L mm	Pitch TPI	Insert Model	Effective Cutting Length Le
			External + Internal	
1/4"	11	28	11 - 28 W	9.98
		26	11 - 26 W	9.77
		24	11 - 24 W	9.53
		20	11 - 20 W	10.16
		19	11 - 19 W	9.36
		14	11 - 14 W	9.07
3/8"	16	26	16 - 26 W	14.65
		24	16 - 24 W	14.82
		20	16 - 20 W	13.97
		19	16 - 19 W	14.71
		18	16 - 18 W	14.11
		16	16 - 16 W	14.29
		14	16 - 14 W	14.51
		12	16 - 12 W	14.82
		11	16 - 11W	13.85
		24	16 - 24 W	21.17
3/8"B	22	20	22 - 20 W	21.59
		19	22 - 19 W	21.39
		18	22 - 18 W	21.17
		16	22 - 16 W	20.64
		14	22 - 14 W	21.77
		12	22 - 12 W	21.17
		11	22 - 11 W	20.78
5/8"	27	16	27 - 16 W	25.4
		14	27 - 14 W	25.4
		12	27 - 12 W	23.28
		11	27 - 11 W	23.09
		10	27 - 10 W	25.40
		9	27 - 9 W	22.58
		8	27 - 8 W	22.23
		7	27 - 7 W	21.77
6	27 - 6 W	21.17		

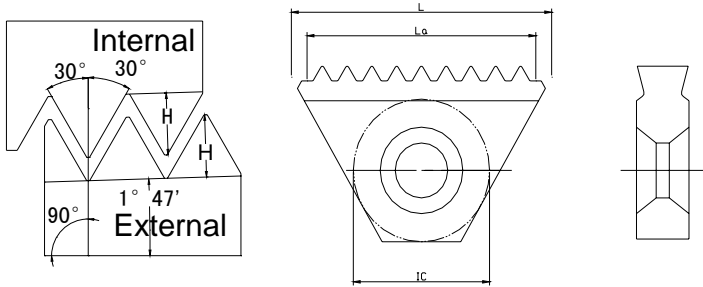
Whitworth 55° Full BSW, BSF, BSP



Pitch TPI	Length of Cutting Edge L				
	12mm	14mm	21mm	30mm	40mm
24		14-24 W			
20		14-20 W	21-20 W		
19	12-19 W	14-19 W	21-19 W		
16		14-16 W	21-16 W	30-16 W	
14		14-14 W	21-14 W	30-14 W	
11			21-11 W	30-11 W	40-11 W
8					40-8 W

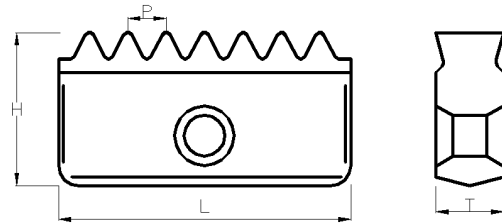
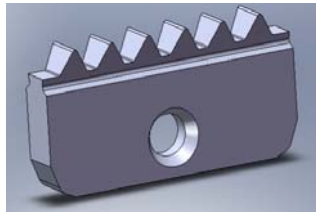
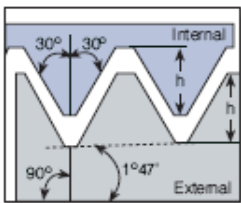
H	6.3	7.5	12	16	20
T	2.9	3.1	4.7	5.5	6.3

National Pipe Thread (American) NPT



Inscribed Circle Diameter IC	Length of Cutting Edge L mm	Pitch TPI	Insert Model	Effective Cutting Edge Le
			External + Internal	
3/8"	16	18	16 - 18 NPT	14.11
		14	16 - 14 NPT	14.51
		11.5	16 - 11.5 NPT	13.25
3/8"B	22	14	22 - 14 NPT	21.77
		11.5	22 - 11.5 NPT	19.88
5/8"	27	11.5	27 - 11.5 NPT	24.30
		8	27 - 8 NPT	22.23

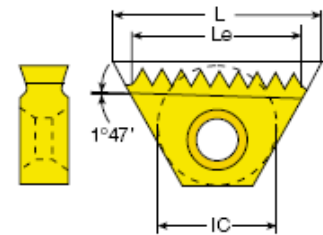
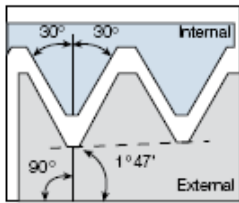
National Pipe Thread (American) NPT



Pitch TPI	Length of Cutting Edge L				
	12mm	14mm	21mm	30mm	40mm
18	12-18 NPT	14-18 NPT			
14		14-14 NPT	21-14 NPT		
11.5			21-11.5 NPT	30-11.5 NPT	40-11.5 NPT
8				30-8 NPT	40-8 NPT

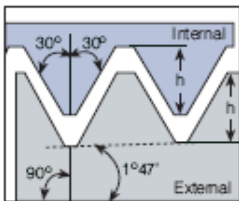
H	6.3	7.5	12	16	20
T	2.9	3.1	4.7	5.5	6.3

NPTF



Inscribed Circle Diameter IC	Length of Cutting Edge L mm	Pitch TPI	Insert Model	Effective Cutting Length Le
			External + Internal	
3/8"	16	14	16 - 14 NPTF	14.51
		11.5	16 - 11.5 NPTF	13.25
3/8"B	22	14	22 - 14 NPTF	21.77
		11.5	22 - 11.5 NPTF	19.88
5/8"	27	11.5	27 - 11.5 NPTF	24.30
		8	27 - 8 NPTF	22.23

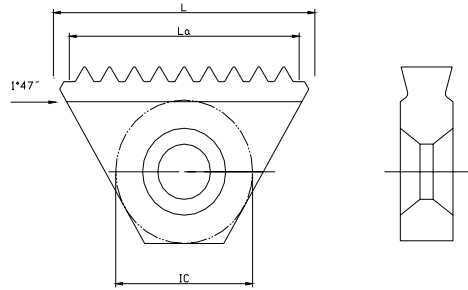
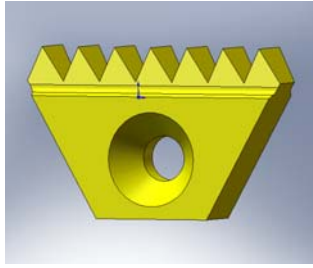
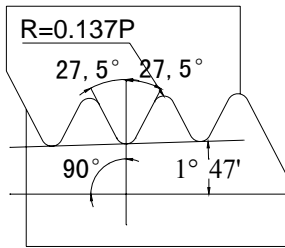
NPTF



Pitch TPI	Length of Cutting Edge L				
	12mm	14mm	21mm	30mm	40mm
18	12-18 NPTF	14-18 NPTF			
14		14-14 NPTF	21-14 NPTF		
11.5			21-11.5 NPTF	30-11.5 NPTF	40-11.5 NPTF
8				30-8 NPTF	40-8 NPTF

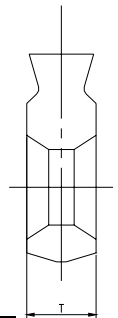
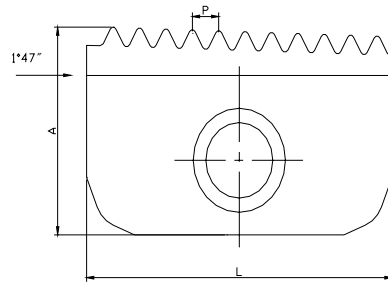
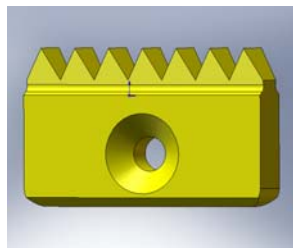
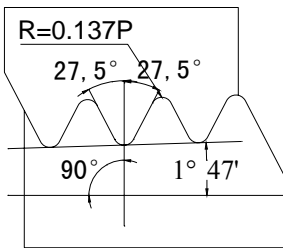
H	6.3	7.5	12	16	20
T	2.9	3.1	4.7	5.5	6.3

British Standard Pipe Thread BSPT



Inscribed Circle Diameter IC	Length of Cutting Edge L mm	Pitch TPI	Insert Model	Effective Cutting Length Le
			External + Internal	
1/4"	11	19	11 - 19 BSPT	9.36
3/8"	16	14	16 - 14 BSPT	14.51
3/8"	16	11	16 - 11 BSPT	13.85
5/8"	27	11	27 - 11 BSPT	23.09

British Standard Pipe Thread BSPT



Pitch TPI	Length of Cutting Edge L				
	12mm	14mm	21mm	30mm	40mm
19	12-19 BSPT	14-19 BSPT			
14		14-14 BSPT	21-14 BSPT		
11			21-11 BSPT	30-11 BSPT	30-11 BSPT

H	6.3	7.5	12	16	20
T	2.9	3.1	4.7	5.5	6.3