

# THREADING

### Threading Inserts Identification System



① Insert Size	
S L	IC(mm)
11	6.35
16	9.525
22	12.7

② Thread Style
E=External
I=Internal

③ Hand of Insert
R=Right
L=Left

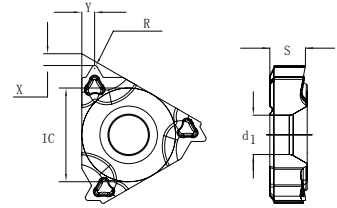
④ Pitch		
Full tooth type pitch range		
mm	TPI	
0.35-5.0	72-5	
Range tooth type pitch range		
Code	mm	TPI
A	0.5-1.5	48-16
AG	0.5-3.0	48-8
G	1.75-3.0	14-8
N	3.5-5.0	7-5

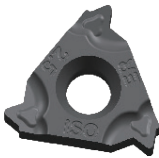
⑤ Thread Standard
60=60° Universal Thread
55=55° Universal Thread
ISO=Metric ISO standard thread
UN=American Standard unified thread
W=British Whitworth thread
NPT=American Standard taper pipe thread
BSPT=British standard tapered pipe thread
ACME=American trapezoid thread
STACME=US-made short teeth trapezoidal thread
ABUT=American serrated thread
API=American oil industry thread

⑥ Additional Information
Groove is used to define the number of teeth or the like

## ● Metric 60°

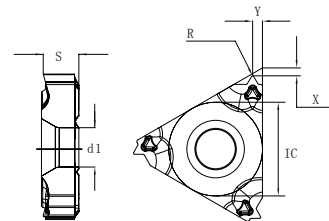
### ▶ ● External

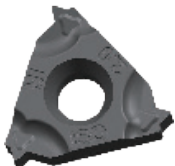


Ordering Code	Pitch (mm)	Dimensions(mm)						Availability	
		X	Y	R	IC	S	d1	M3225	
	16 ER1.00ISO-TC	1.00	0.8	0.7	0.14	9.525	3.47	4	●
	16 ER1.25ISO-TC	1.25	0.8	0.9	0.18	9.525	3.47	4	●
	16 ER1.50ISO-TC	1.50	0.8	1.0	0.22	9.525	3.47	4	●
	16 ER1.75ISO-TC	1.75	1.2	1.2	0.25	9.525	3.47	4	●
	16 ER2.00ISO-TC	2.00	1.2	1.3	0.29	9.525	3.47	4	●
	16 ER2.50ISO-TC	2.50	1.2	1.5	0.36	9.525	3.47	4	●
	16 ER3.00ISO-TC	3.00	1.2	1.5	0.43	9.525	3.47	4	●

● Stock ○ Available upon Order

### ▶ ● Internal

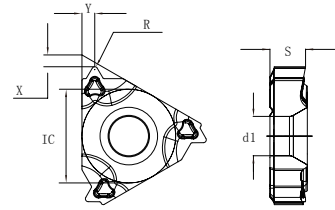


Ordering Code	Pitch (mm)	Dimensions(mm)						Availability	
		X	Y	R	IC	S	d1	M3225	
	16 IR1.00ISO-TC	1.00	0.8	0.7	0.07	9.525	3.47	4	●
	16 IR1.25ISO-TC	1.25	0.8	0.9	0.09	9.525	3.47	4	●
	16 IR1.50ISO-TC	1.50	0.8	1.0	0.11	9.525	3.47	4	●
	16 IR1.75ISO-TC	1.75	1.2	1.2	0.13	9.525	3.47	4	●
	16 IR2.00ISO-TC	2.00	1.2	1.3	0.15	9.525	3.47	4	●
	16 IR2.50ISO-TC	2.50	1.2	1.5	0.18	9.525	3.47	4	●
	16 IR3.00ISO-TC	3.00	1.2	1.5	0.22	9.525	3.47	4	●

● Stock ○ Available upon Order

# BSPT 55°

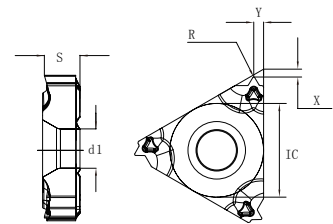
▶ External



Ordering Code	Pitch (TPI)	Dimensions(mm)						Availability	
		X	Y	R	IC	S	d1	M3225	
	16 ER28BSPT-TC	28	0.7	0.8	0.11	9.525	3.47	4	●
	16 ER19BSPT-TC	29	0.8	1.0	0.17	9.525	3.47	4	●
	16 ER14BSPT-TC	14	1.2	1.5	0.24	9.525	3.47	4	●
	16 ER11BSPT-TC	11	1.2	1.5	0.30	9.525	3.47	4	●

● Stock ○ Available upon Order

▶ Internal

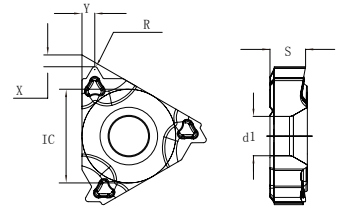


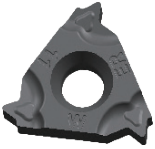
Ordering Code	Pitch (TPI)	Dimensions(mm)						Availability	
		X	Y	R	IC	S	d1	M3225	
	16 IR28BSPT-TC	28	0.7	0.8	0.11	9.525	3.47	4	●
	16 IR19BSPT-TC	19	0.8	1.0	0.17	9.525	3.47	4	●
	16 IR14BSPT-TC	14	1.2	1.5	0.24	9.525	3.47	4	●
	16 IR11BSPT-TC	11	1.2	1.5	0.30	9.525	3.47	4	●

● Stock ○ Available upon Order

## Whitworth 55°

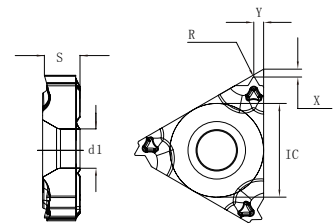
- External

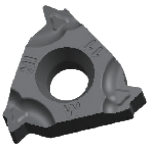


Ordering Code	Pitch (TPI)	Dimensions(mm)						Availability	
		X	Y	R	IC	S	d1	M3225	
	16 ER19W-TC	19	0.8	1.0	0.17	9.525	3.47	4	●
	16 ER14W-TC	14	1.2	1.5	0.24	9.525	3.47	4	●
	16 ER11W-TC	11	1.2	1.5	0.30	9.525	3.47	4	●

● Stock ○ Available upon Order

- Internal



Ordering Code	Pitch (TPI)	Dimensions(mm)						Availability	
		X	Y	R	IC	S	d1	M3225	
	16 IR19W-TC	19	0.8	1.0	0.17	9.525	3.47	4	●
	16 IR14W-TC	14	1.2	1.5	0.24	9.525	3.47	4	●
	16 IR11W-TC	11	1.2	1.5	0.30	9.525	3.47	4	●

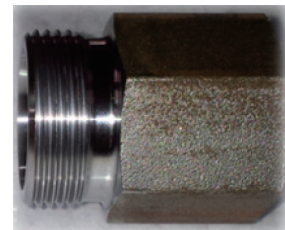
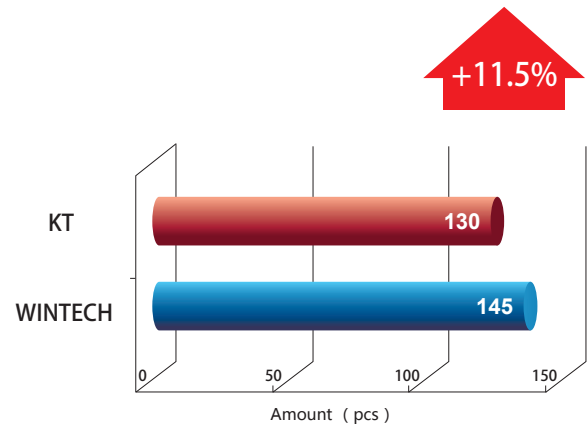
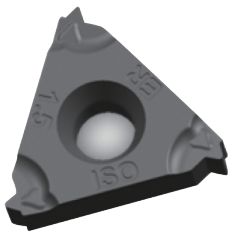
● Stock ○ Available upon Order

Threading Inserts

Case Studies

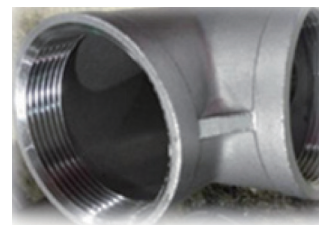
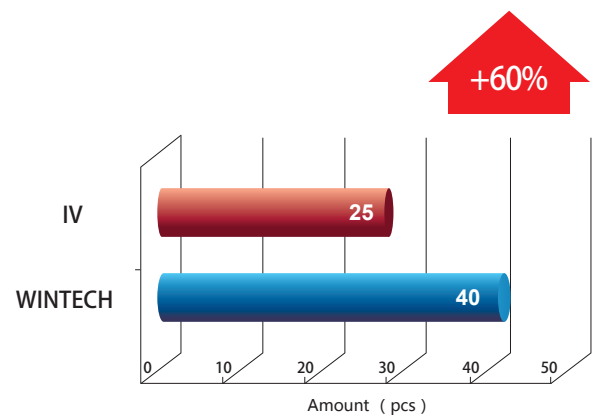
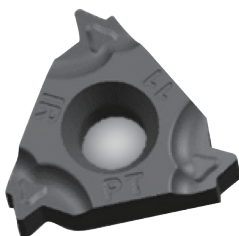
Case 1

Workpiece Material	C45
Processing Way	Threading, Wet
Cutting Parameters	Vc=110m/min
Inserts	16ER1.50ISO-TC M3225



Case 2

Workpiece Material	316
Processing Way	Threading, Wet
Cutting Parameters	Vc=150m/min
Inserts	16IR11BSPT-TC M3225



## Cutting Speed Recommendation Table

Workpiece Material			Material Hardness	Cutting Speed Vc (m/min)	
				Grade	
				M3225	
<b>P</b>	Carbon Steel	Low-carbon (C=0.1-0.25%)	HB125	160 (120-230)	
		Medium-carbon (C=0.25-0.55%)	HB150	150 (100-195)	
		High-carbon (C=0.55-0.80%)	HB170	140 (90-180)	
	Low-alloy Steel	Non-hardened	HB180	130 (100-180)	
		Hardened and tempered	HB275	100 (75-140)	
		Hardened and tempered	HB350	80 (60-130)	
	High-alloy Steel	Annealed	HB200	110 (80-140)	
		Hardened and tempered	HB325	90 (70-115)	
	Steel Castings	Unalloyed	HB180	200 (180-220)	
		Low-alloy	HB200	110 (70-150)	
		High-alloy	HB225	100 (60-120)	
		Manganese steel (12-14% Mn)	HB250	40 (40-50)	
<b>M</b>	Stainless Steel	Austenitic	HB180	120 (90-140)	
		Ferritic/Martensitic	HB200	140 (70-170)	
		Duplex stainless steel	HB230	90 (60-120)	
<b>K</b>	Malleable Cast Iron	Ferritic	HB130	130 (110-170)	
		Pearlitic	HB230	100 (85-145)	
	Gray Cast Iron	Low tensile strength	HB180	120 (100-160)	
		High tensile strength	HB260	100 (80-140)	
	Nodular Cast Iron	Ferritic	HB160	125 (110-160)	
		Pearlitic	HB250	100 (80-120)	
<b>N</b>	Wrought Aluminum Alloys	Non aging	HB60	500 (350-700)	
		Aged	HB100	400 (300-500)	
	Cast Aluminum Alloys	Non aging	HB75	450 (300-500)	
		Aged	HB90	290 (200-400)	
	Copper and Copper Alloys	Brass	HB90	220 (100-300)	
Bronze and non-lead copper		HB100	180 (80-255)		
<b>S</b>	Heat-resistant Alloys	Iron base	Annealed	HB200	45 (35-60)
			Aged	HB280	35 (25-50)
		Nickel base and cobalt base	Annealed	HB250	25 (15-30)
			Aged	HB350	15 (10-25)
	Titanium Alloys	Commercial pure (99.5% Ti)	400Rm	150 (140-170)	
		$\alpha + \beta$ alloys	1050Rm	60 (50-70)	
<b>H</b>	High Hardness Materials	Hardened steel	HRC55	45 (40-50)	
		Chilled cast iron	HB400	40 (30-50)	

## Cutting Passes and Radial Infeed Recommendation Table

▶ • ISO Metric / • External

Pitch (mm)	1.00	1.25	1.50	1.75	2.00	2.50	3.00
Total infeed (mm)	0.65	0.79	0.95	1.11	1.26	1.56	1.88
Total passes	5	6	6	8	8	10	12
No. of infeed	Radial infeed per pass (mm)						
1	0.16	0.17	0.20	0.17	0.20	0.20	0.20
2	0.15	0.15	0.19	0.17	0.19	0.19	0.19
3	0.14	0.14	0.18	0.16	0.18	0.18	0.19
4	0.12	0.13	0.16	0.15	0.17	0.17	0.18
5	0.08	0.12	0.14	0.14	0.16	0.17	0.17
6		0.08	0.08	0.13	0.15	0.16	0.17
7				0.11	0.13	0.15	0.16
8				0.08	0.08	0.14	0.15
9						0.12	0.14
10						0.08	0.13
11							0.12
12							0.08

▶ • ISO Metric / • Internal

Pitch (mm)	1.00	1.25	1.50	1.75	2.00	2.50	3.00
Total infeed (mm)	0.63	0.77	0.92	1.05	1.20	1.48	1.78
Total passes	5	6	6	8	8	10	12
No. of infeed	Radial infeed per pass (mm)						
1	0.15	0.16	0.20	0.16	0.19	0.19	0.19
2	0.14	0.15	0.18	0.15	0.18	0.18	0.18
3	0.13	0.14	0.17	0.15	0.17	0.17	0.18
4	0.12	0.13	0.15	0.14	0.16	0.17	0.17
5	0.08	0.11	0.13	0.13	0.15	0.16	0.16
6		0.08	0.08	0.12	0.14	0.15	0.16
7				0.11	0.12	0.14	0.15
8				0.08	0.08	0.13	0.14
9						0.12	0.14
10						0.08	0.12
11							0.11
12							0.08



## Cutting Passes and Radial Infeed Recommendation Table

### ▶ BSPT • External & Internal

Pitch (TPI)	28	19	14	11
Total infeed (mm)	0.62	0.90	1.20	1.51
Total passes	5	6	8	9
No. of infeed	Radial infeed per pass (mm)			
1	0.15	0.19	0.19	0.22
2	0.14	0.18	0.18	0.21
3	0.13	0.17	0.17	0.20
4	0.12	0.15	0.16	0.19
5	0.08	0.13	0.15	0.18
6		0.08	0.14	0.16
7			0.12	0.15
8			0.08	0.13
9				0.08

### ▶ • Whitworth • External & Internal

Pitch (TPI)	19	14	11
Total infeed (mm)	0.90	1.20	1.51
Total passes	6	8	9
No. of infeed	Radial infeed per pass (mm)		
1	0.19	0.19	0.22
2	0.18	0.18	0.21
3	0.17	0.17	0.20
4	0.15	0.16	0.19
5	0.13	0.15	0.18
6	0.08	0.14	0.16
7		0.12	0.15
8		0.08	0.13
9			0.08

Attention: Infeeds of less than 0.05mm should be avoided, for austenitic stainless steels not less than 0.08mm.