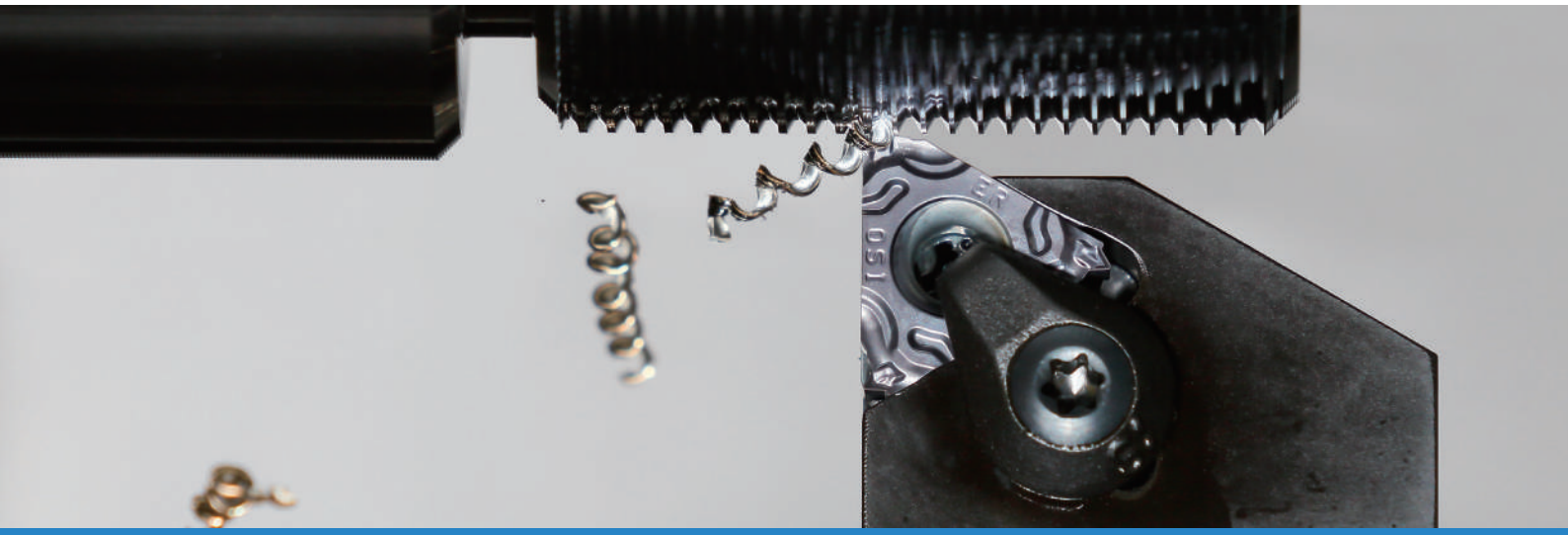
Threading Insert with Molded Chipbreaker

TQ Chipbreaker



Increase Productivity with Improved Chip Control

Stable Chip Control

Low Cutting Force and Suppressed Vibration

Improved Tool Life with New Insert Grades

Threading Insert with Molded Chipbreaker

TQ Chipbreaker

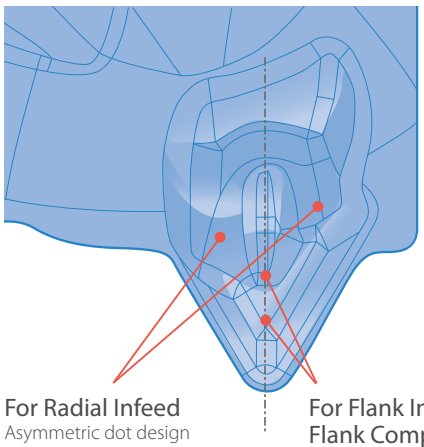
Increase Productivity with Improved Chip Control
Improved Tool Life with New Insert Grades

1 Stable Chip Control

Stable Chip Control with Asymmetric Chipbreaker Design

Chipbreaker Geometry

Stable chip control regardless of cutting direction



For Radial Infeed
Asymmetric dot design controls chip-flow direction

For Flank Infeed / Flank Compound Infeed
Breaks chips easily with shallow breaker depth

Chip Control Performance (Internal Evaluation)

Radial Infeed

TQ Chipbreaker | Competitor A

Flank Compound Infeed

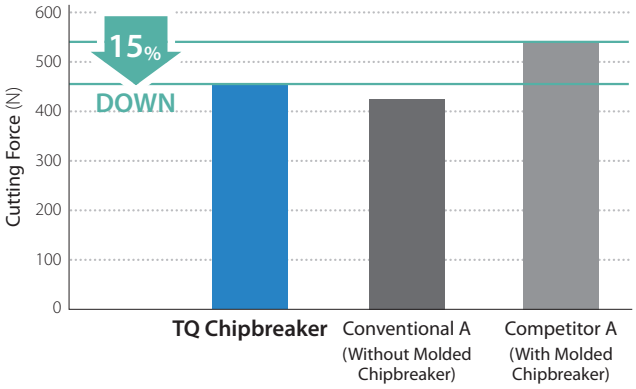
TQ Chipbreaker | Competitor A

Cutting Conditions: Vc = 150 m/min, ap = 0.12 mm (4th Pass), L = 25 mm, Wet, 16ER150ISO Type
M45 × P1.5 Workpiece: SCM415

2 Low Cutting Force and Resists Vibration

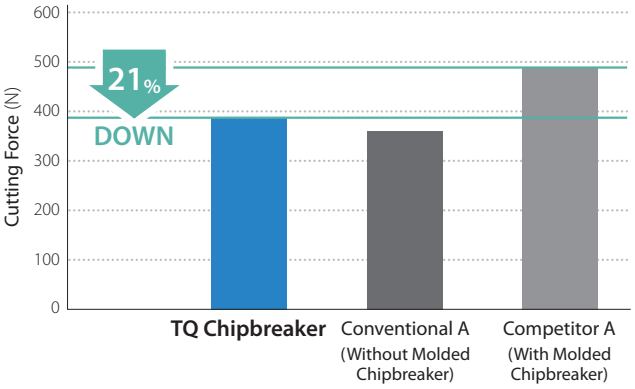
Strong Edge and Low Cutting Force

Comparison of Cutting Force Radial Infeed (Internal Evaluation)



Cutting Conditions: Vc = 150 m/min, Wet, 16ER150ISO Type
Cutting Force Shows the Average of 6 Passes, M35 × P1.5 Workpiece: SCM415

Cutting Force Comparison Flank Compound Infeed (Internal Evaluation)



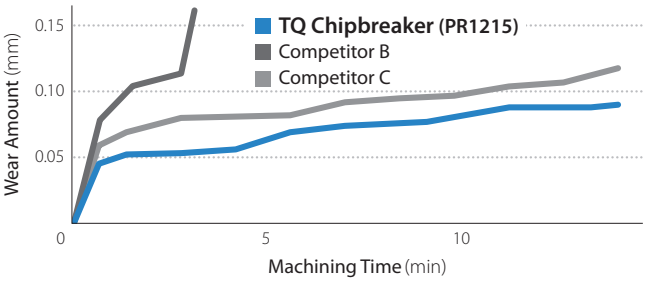
Cutting Conditions: Vc= 150 m/min, Adjusted Angle: 5 Degrees, Wet, 16ER150ISO Type
Cutting Force Shows the Average of 6 Passes, M35 × P1.5 Workpiece: SCM415

3 Improved Tool Life with New Insert Grades

For Steel Machining **PR1215**
For Stainless Steel Machining **PR1515 (First Recommendation)** **PR1535 (Stability Focused)**

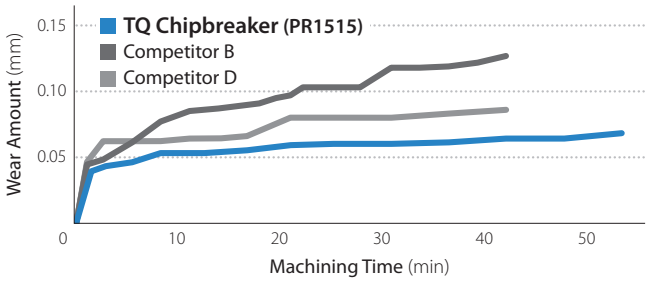
Wear Resistance Comparison (Internal Evaluation)

Workpiece: SCM435



Cutting Conditions: Vc = 150 m/min, P = 1.5 mm, Number of Passes = 6, Wet, 16ER150ISO Type Radial Infeed

Workpiece: SUS304

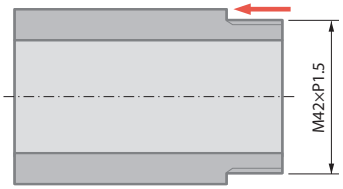


Cutting Conditions: Vc = 100 m/min, P = 1.5 mm, Number of Passes = 8, Wet, 16ER150ISO Type Radial Infeed

Case Studies

Handle Steel Tube

n = 1,000 min^{-1} (Vc = 130 m/min)
Number of Passes: 7
P = 1.5 mm
Wet (Water Soluble)
16ER150ISO-TQ
PR1215



Tool Life

TQ Chipbreaker
PR1215

Tool Life x1.5

300 pcs/edge

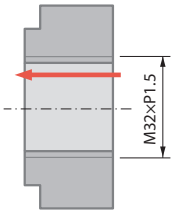
Competitor B

200 pcs/Edge or Less

TQ Chipbreaker (PR1215) maintains 1.5 times the tool life of Competitor B with good chip control
(User Evaluation)

Nut S45C

n = 1,000 min^{-1} (Vc = 95 m/min)
Number of Passes: 7
P = 1.5 mm
Wet (Water Soluble)
16IR150ISO-TQ
PR1215



Tool Life

TQ Chipbreaker
PR1215

Tool Life x1.6

500 pcs/edge

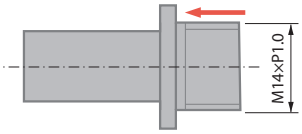
Conventional B

300 pcs/Edge or Less

TQ Chipbreaker (PR1215) maintains 1.6 times the tool life of Competitor B without breakage
(User Evaluation)

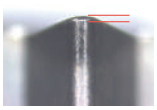
Piping Parts SUS304

n = 1,500 min^{-1} (Vc = 65 m/min)
P = 1.0 mm
Wet (Oil)
16ER100ISO-TQ
PR1535

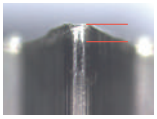


Tool Life (Fixed Quantity 1,200 pcs/Edge)

TQ Chipbreaker
PR1535



Competitor E

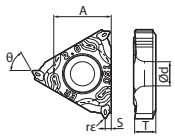


Wear: Large Amount

Against Competitor E, TQ Chipbreaker (PR1535) provided stable machining and a better edge condition in fixed a quantity without sudden cracking (User Evaluation)

External Threading Inserts

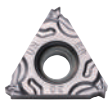
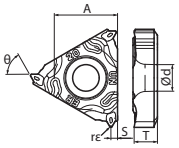
Metric (M) 60° Full Profile

Insert (Right-handed Insert Shown)			Description	Applicable Thread	Pitch		Dimensions (mm)					Included Thread Angle	MEGA COAT		MEGACOAT NANO			
					mm	TPI	A	T	ød	rε	S	θ	PR1215		PR1515		PR1535	
													R	L	R	L	R	L
Full Profile			16ER 100ISO-TQ	M	1.00	—	9.525	3.68	4.0	0.12	0.80	60°	●		●		●	
			125ISO-TQ		1.25					0.15	0.90		●		●		●	
			150ISO-TQ		1.50					0.19	1.00		●		●		●	
			175ISO-TQ		1.75					0.22	1.60		●		●		●	
			200ISO-TQ		2.00					0.25	1.50		●		●		●	
			250ISO-TQ		2.50					0.33	1.60		●		●		●	
			300ISO-TQ		3.00					0.41	1.60		●		●		●	

PR1215/PR1515/PR1535 (threading inserts) are sold in 5 piece box

●: Standard Stock

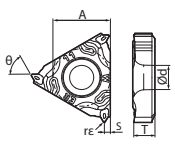
Unified (UN) 60° Full Profile

Insert (Right-handed Insert Shown)			Description	Applicable Thread	Pitch		Dimensions (mm)					Included Thread Angle	MEGA COAT		MEGACOAT NANO			
					mm	TPI	A	T	ød	rε	S	θ	PR1215		PR1515		PR1535	
													R	L	R	L	R	L
Full Profile			16ER 24UN-TQ	UN,UNF		24	9.525	3.68	4.0	0.12	0.80	60°	●		●		●	
			20UN-TQ			20				0.15	1.00		●		●		●	
			18UN-TQ			18				0.18	1.00		●		●		●	
			16UN-TQ			16				0.20	1.10		●		●		●	
			14UN-TQ		—	14				0.23	1.50		●		●		●	
			13UN-TQ			13				0.25	1.50		●		●		●	
			12UN-TQ			12				0.27	1.50		●		●		●	
			10UN-TQ			10				0.34	1.50		●		●		●	
			08UN-TQ			8				0.43	1.75		●		●		●	

PR1215/PR1515/PR1535 (threading inserts) are sold in 5 piece box

●: Standard Stock

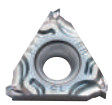
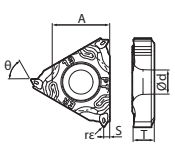
Parallel Pipe [G (PF)], Whitworth (W) 55° Full Profile

Insert (Right-handed Insert Shown)			Description	Applicable Thread	Pitch		Dimensions (mm)					Included Thread Angle	MEGA COAT		MEGACOAT NANO			
					TPI		A	T	ød	rε	S	θ	PR1215		PR1515		PR1535	
					G (PF)	W							R	L	R	L	R	L
Full Profile			16ER 19W-TQ	G (PF) W	19	—	9.525	3.68	4.0	0.16	1.0	55°	●		●		●	
			16W-TQ		—	16				0.19	1.1		●		●		●	
			14W-TQ		14	14				0.23	1.5		●		●		●	
			11W-TQ		11	11				0.30	1.5		●		●		●	

PR1215/PR1515/PR1535 (threading inserts) are sold in 5 piece box

●: Standard Stock

Tapered Pipe [R(PT), (BSPT)] 55° Full Profile

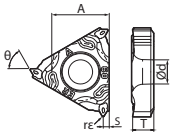
Insert (Right-handed Insert Shown)			Description	Applicable Thread	Pitch		Dimensions (mm)					Included Thread Angle	MEGA COAT		MEGACOAT NANO			
					mm	TPI	A	T	ød	rε	S	θ	PR1215		PR1515		PR1535	
													R	L	R	L	R	L
Full Profile			16ER 28BSPT-TQ	R (PT) (BSPT)		28	9.525	3.68	4.0	0.10	0.8	55°	●		●		●	
			19BSPT-TQ		—	19				0.16	1.0		●		●		●	
			14BSPT-TQ			14				0.22	1.6		●		●		●	
			11BSPT-TQ			11				0.29	1.6		●		●		●	

PR1215/PR1515/PR1535 (threading inserts) are sold in 5 piece box

●: Standard Stock

External Threading Inserts

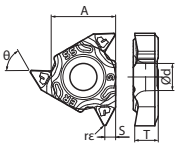
Metric (M), Unified (UN) 60° Partial Profile

Insert (Right-handed Insert Shown)			Description		Applicable Thread	Pitch		Dimensions (mm)					Included Thread Angle	MEGA COAT		MEGACOAT NANO			
														PR1215		PR1515		PR1535	
						mm	TPI	A	T	ød	rε	S	θ	R	L	R	L	R	L
Partial Profile			16ER	A60-TQ	M UN UNF	0.5-1.5	48-16	9.525	3.68	4.0	0.06	1.00	60°	●		●		●	
				G60-TQ		1.75-3	14-8				0.22	1.60		●		●		●	
				AG60-TQ		0.5-3	48-8				0.06	1.60		●		●		●	

PR1215/PR1515/PR1535 (threading inserts) are sold in 5 piece box

●: Standard Stock

Parallel Pipe [G (PF)], Tapered Pipe [R(PT), (BSPT)], Whitworth (W) 55° Partial Profile

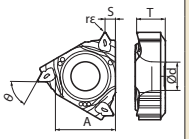
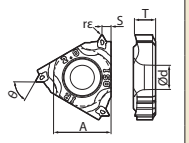
Insert (Right-handed Insert Shown)			Description		Applicable Thread	Pitch		Dimensions (mm)					Included Thread Angle	MEGA COAT		MEGACOAT NANO			
						TPI								PR1215		PR1515		PR1535	
						G (PF) R (PT)	W	A	T	ød	rε	S	θ	R	L	R	L	R	L
Partial Profile			16ER	A55-TQ	G (PF) R (PT) W	28, 19	40-16	9.525	3.68	4.0	0.06	1.00	55°	●		●		●	
				G55-TQ		14, 11	14-8				0.22	1.60		●		●		●	
				AG55-TQ		28-11	40-8				0.06	1.60		●		●		●	

PR1215/PR1515/PR1535 (threading inserts) are sold in 5 piece box

●: Standard Stock

Internal Threading Inserts

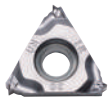
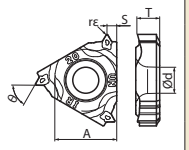
Metric (M) 60° Full Profile

Insert (Right-handed Insert Shown)			Description	Applicable Thread	Pitch		Dimensions (mm)					Included Thread Angle	MEGA COAT		MEGACOAT NANO			
													PR1215		PR1515		PR1535	
					mm	TPI	A	T	ød	rε	S	θ	R	L	R	L	R	L
Full Profile			11IR 100ISO-TQ	M	1.00	—	6.35	3.18	3.0	0.07	0.8	60°	●		●		●	
			125ISO-TQ		1.25					0.08	1.1		●		●		●	
			150ISO-TQ		1.50					0.11	1.1		●		●		●	
			175ISO-TQ		1.75					0.12	1.1		●		●		●	
			16IR 100ISO-TQ	M	1.00	—	9.525	3.68	4.0	0.07	0.8	60°	●		●		●	
			125ISO-TQ		1.25					0.08	1.1		●		●		●	
			150ISO-TQ		1.50					0.11	1.1		●		●		●	
			175ISO-TQ		1.75					0.12	1.1		●		●		●	
			200ISO-TQ		2.00					0.14	1.5		●		●		●	
			250ISO-TQ		2.50					0.17	1.5		●		●		●	
			300ISO-TQ		3.00					0.19	1.6		●		●		●	

PR1215/PR1515/PR1535 (threading inserts) are sold in 5 piece box

●: Standard Stock

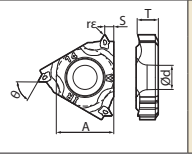
Unified (UN) 60° Full Profile

Insert (Right-handed Insert Shown)			Description	Applicable Thread	Pitch		Dimensions (mm)					Included Thread Angle	MEGA COAT		MEGACOAT NANO			
													PR1215		PR1515		PR1535	
					mm	TPI	A	T	ød	rε	S	θ	R	L	R	L	R	L
Full Profile			16IR 24UN-TQ	UN,UNF	—	24	9.525	3.68	4.0	0.06	0.8	60°	●		●		●	
			20UN-TQ			20				0.08	1.0		●		●		●	
			18UN-TQ			18				0.09	1.0		●		●		●	
			16UN-TQ			16				0.10	1.1		●		●		●	
			14UN-TQ			14				0.12	1.5		●		●		●	
			13UN-TQ			13				0.13	1.5		●		●		●	
			12UN-TQ			12				0.14	1.5		●		●		●	
			10UN-TQ			10				0.17	1.5		●		●		●	
			08UN-TQ			8				0.21	1.8		●		●		●	

PR1215/PR1515/PR1535 (threading inserts) are sold in 5 piece box

●: Standard Stock

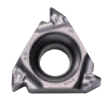
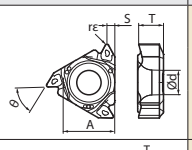
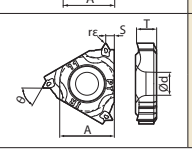
Parallel Pipe [G (PF)], Whitworth (W) 55° Full Profile

Insert (Right-handed Insert Shown)			Description	Applicable Thread	Pitch		Dimensions (mm)					Included Thread Angle	MEGA COAT		MEGACOAT NANO			
					TPI								PR1215		PR1515		PR1535	
					G (PF)	W	A	T	ød	rε	S	θ	R	L	R	L	R	L
Full Profile			16IR 19W-TQ	G (PF) W	19	—	9.525	3.68	4.0	0.16	1.0	55°	●		●		●	
			16W-TQ		—	16				0.19	1.1		●		●		●	
			14W-TQ		14	14				0.23	1.5		●		●		●	
			11W-TQ		11	11				0.30	1.5		●		●		●	

PR1215/PR1515/PR1535 (threading inserts) are sold in 5 piece box

●: Standard Stock

Tapered Pipe [Rc(PT), (BSPT)] 55° Full Profile

Insert (Right-handed Insert Shown)			Description	Applicable Thread	Pitch		Dimensions (mm)					Included Thread Angle	MEGA COAT		MEGACOAT NANO			
													PR1215		PR1515		PR1535	
					mm	TPI	A	T	ød	rε	S	θ	R	L	R	L	R	L
Full Profile			11IR 28BSPT-TQ	Rc (PT) (BSPT)	—	28	6.35	3.18	3.0	0.10	0.6	55°	●		●		●	
			19BSPT-TQ			19				0.16	0.78		●		●		●	
			14BSPT-TQ			14				0.22	0.97		●		●		●	
			16IR 14BSPT-TQ		—	14	9.525	3.68	4.0	0.22	0.97		●		●		●	
			11BSPT-TQ			11				0.29	1.5		●		●		●	

PR1215/PR1515/PR1535 (threading inserts) are sold in 5 piece box

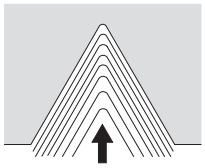
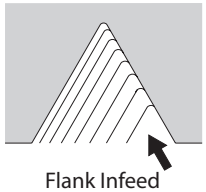
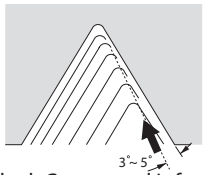
●: Standard Stock

Recommended Cutting Conditions ★: 1st Recommendation ☆: 2nd Recommendation

Workpiece Material	Recommended Insert Grade (Vc m/min)		
	MEGACOAT	MEGACOAT NANO	
	PR1215	PR1515	PR1535
Carbon Steel	★ 100 – 150	—	—
Initial D.O.C. (Radial)	0.3mm or Less		
Alloy Steel	★ 100 – 150	—	—
Initial D.O.C. (Radial)	0.3mm or Less		
Stainless Steel	—	★ 60 – 100	☆ 40 – 80
Initial D.O.C. (Radial)		0.25mm or Less	0.25mm or Less

Coolant is Recommended
For stainless steel threading, please set a smaller initial D.O.C. and take two or three more passes than threading for carbon steel. (See Page 7-8)

Infeed Methods

Infeed Methods	Features
 Radial Infeed	• General method The cutting edge moves towards the center of the workpiece with each pass • Suitable for small pitch size threading • V-shape chips are generated and chip control may be difficult depending on the workpiece material
 Flank Infeed	• Used for large pitch size threading • No D. O. C. on right side of the figure causes insert wear • Chips flow to one side
 Flank Compound Infeed	• Adjusted variation of flank infeed above • No D. O. C. is reduced • Chips flow to one side

DEPTH OF CUT AND NUMBER OF PASSES

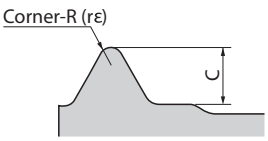
11 / 16 (Full Profile)

(D.O.C. shows the value of radial D.O.C.)

Thread Type		Pitch mm & TPI	Description	C (mm)	Total D.O.C. (mm)	No. of Passes	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Metric	External Thread	1.00mm	16ER 100ISO-TQ	0.64	0.72	5	0.23	0.19	0.15	0.10	0.05											
		1.25mm	125ISO-TQ	0.80	0.88	6	0.26	0.21	0.16	0.12	0.08	0.05										
		1.50mm	150ISO-TQ	0.95	1.03	6	0.26	0.24	0.21	0.16	0.11	0.05										
		1.75mm	175ISO-TQ	1.11	1.19	8	0.26	0.22	0.19	0.16	0.13	0.10	0.08	0.05								
		2.00mm	200ISO-TQ	1.27	1.35	10	0.26	0.21	0.18	0.16	0.14	0.12	0.10	0.08	0.05	0.05						
		2.50mm	250ISO-TQ	1.57	1.65	12	0.26	0.23	0.21	0.18	0.14	0.12	0.12	0.10	0.10	0.08	0.06	0.05				
		3.00mm	300ISO-TQ	1.87	1.95	14	0.26	0.24	0.22	0.20	0.18	0.16	0.14	0.12	0.10	0.10	0.08	0.08	0.05	0.02		
	Internal Thread	1.00mm	11IR 100ISO-TQ	0.60	0.68	5	0.20	0.18	0.15	0.11	0.04											
		1.25mm	125ISO-TQ	0.74	0.82	7	0.20	0.18	0.14	0.12	0.08	0.06	0.04									
		1.50mm	150ISO-TQ	0.88	0.96	8	0.24	0.18	0.14	0.10	0.10	0.08	0.07	0.05								
		1.75mm	175ISO-TQ	1.02	1.10	9	0.24	0.18	0.16	0.14	0.10	0.10	0.08	0.05	0.05							
		1.00mm	16IR 100ISO-TQ	0.60	0.68	5	0.20	0.18	0.15	0.11	0.04											
		1.25mm	125ISO-TQ	0.74	0.82	7	0.20	0.18	0.14	0.12	0.08	0.06	0.04									
		1.50mm	150ISO-TQ	0.88	0.96	8	0.22	0.18	0.14	0.12	0.10	0.08	0.07	0.05								
		1.75mm	175ISO-TQ	1.02	1.10	9	0.22	0.18	0.16	0.14	0.12	0.10	0.08	0.05	0.05							
		2.00mm	200ISO-TQ	1.18	1.26	10	0.24	0.20	0.18	0.14	0.12	0.10	0.10	0.08	0.05	0.05						
		2.50mm	250ISO-TQ	1.46	1.54	12	0.26	0.22	0.18	0.16	0.14	0.12	0.10	0.10	0.08	0.08	0.05	0.05				
		3.00mm	300ISO-TQ	1.76	1.84	14	0.26	0.24	0.21	0.18	0.16	0.15	0.13	0.12	0.10	0.10	0.07	0.05	0.05	0.02		
Unified	External Thread	24 TPI	16ER 24UN-TQ	0.67	0.75	5	0.24	0.20	0.16	0.10	0.05											
		20 TPI	20UN-TQ	0.80	0.88	6	0.24	0.20	0.16	0.13	0.10	0.05										
		18 TPI	18UN-TQ	0.89	0.97	6	0.26	0.22	0.18	0.15	0.11	0.05										
		16 TPI	16UN-TQ	1.01	1.09	7	0.26	0.22	0.18	0.15	0.12	0.11	0.05									
		14 TPI	14UN-TQ	1.15	1.23	8	0.26	0.22	0.18	0.16	0.14	0.12	0.10	0.05								
		13 TPI	13UN-TQ	1.24	1.32	9	0.26	0.22	0.18	0.16	0.14	0.12	0.11	0.08	0.05							
		12 TPI	12UN-TQ	1.34	1.42	11	0.26	0.22	0.18	0.16	0.13	0.12	0.10	0.08	0.07	0.05	0.05					
		10 TPI	10UN-TQ	1.59	1.67	12	0.26	0.22	0.20	0.18	0.16	0.14	0.12	0.12	0.10	0.07	0.05	0.05				
		8 TPI	08UN-TQ	1.98	2.06	14	0.26	0.24	0.22	0.20	0.18	0.16	0.14	0.14	0.12	0.12	0.10	0.08	0.05	0.05		
	Internal Thread	24 TPI	16IR 24UN-TQ	0.62	0.70	5	0.22	0.19	0.15	0.10	0.04											
		20 TPI	20UN-TQ	0.75	0.83	6	0.22	0.20	0.16	0.12	0.08	0.05										
		18 TPI	18UN-TQ	0.83	0.91	6	0.24	0.20	0.18	0.14	0.10	0.05										
		16 TPI	16UN-TQ	0.94	1.02	7	0.24	0.20	0.18	0.14	0.11	0.10	0.05									
		14 TPI	14UN-TQ	1.07	1.15	8	0.24	0.22	0.18	0.14	0.12	0.10	0.10	0.05								
		13 TPI	13UN-TQ	1.15	1.23	9	0.24	0.22	0.18	0.14	0.12	0.10	0.10	0.08	0.05							
		12 TPI	12UN-TQ	1.24	1.32	11	0.24	0.22	0.16	0.15	0.12	0.10	0.10	0.07	0.07	0.05	0.04					
		10 TPI	10UN-TQ	1.48	1.56	12	0.24	0.22	0.20	0.16	0.15	0.12	0.12	0.10	0.09	0.07	0.05	0.04				
		8 TPI	08UN-TQ	1.86	1.94	14	0.24	0.22	0.20	0.18	0.16	0.16	0.14	0.14	0.12	0.12	0.10	0.07	0.05	0.04		
Parallel Pipe	External Thread	19 TPI	16ER 19W-TQ	0.89	0.97	6	0.27	0.22	0.18	0.15	0.10	0.05										
		14 TPI	14W-TQ	1.19	1.27	9	0.27	0.22	0.18	0.16	0.11	0.10	0.10	0.08	0.05							
		11 TPI	11W-TQ	1.50	1.58	12	0.27	0.22	0.18	0.16	0.12	0.12	0.12	0.10	0.10	0.07	0.07	0.05				
	Internal Thread	19 TPI	16IR 19W-TQ	0.88	0.96	6	0.25	0.21	0.20	0.15	0.10	0.05										
		14 TPI	14W-TQ	1.19	1.27	9	0.27	0.22	0.18	0.16	0.11	0.10	0.10	0.08	0.05							
		11 TPI	11W-TQ	1.50	1.58	12	0.27	0.22	0.18	0.16	0.12	0.12	0.12	0.10	0.10	0.07	0.07	0.05				
Whitworth	External Thread	16 TPI	16ER 16W-TQ	1.05	1.13	8	0.25	0.21	0.18	0.16	0.12	0.08	0.08	0.05								
		14 TPI	14W-TQ	1.19	1.27	9	0.27	0.22	0.18	0.16	0.11	0.10	0.10	0.08	0.05							
		11 TPI	11W-TQ	1.50	1.58	12	0.27	0.22	0.18	0.16	0.12	0.12	0.12	0.10	0.10	0.07	0.07	0.05				
	Internal Thread	16 TPI	16IR 16W-TQ	1.05	1.13	8	0.25	0.21	0.18	0.16	0.12	0.08	0.08	0.05								
		14 TPI	14W-TQ	1.19	1.27	9	0.27	0.22	0.18	0.16	0.11	0.10	0.10	0.08	0.05							
		11 TPI	11W-TQ	1.50	1.58	12	0.27	0.22	0.18	0.16	0.12	0.12	0.12	0.10	0.10	0.07	0.07	0.05				
Tapered Pipe	External Thread	28 TPI	16ER 28BSPT-TQ	0.58	0.63	5	0.20	0.15	0.13	0.11	0.04											
		19 TPI	19BSPT-TQ	0.86	0.94	6	0.26	0.20	0.18	0.15	0.10	0.05										
		14 TPI	14BSPT-TQ	1.16	1.24	9	0.22	0.20	0.18	0.16	0.14	0.12	0.10	0.08	0.04							
		11 TPI	11BSPT-TQ	1.48	1.56	12	0.26	0.22	0.18	0.16	0.12	0.12	0.11	0.10	0.10	0.07	0.07	0.05				
	Internal Thread	28 TPI	11IR 28BSPT-TQ	0.58	0.63	5	0.20	0.16	0.13	0.10	0.04											
		19 TPI	19BSPT-TQ	0.86	0.94	7	0.22	0.20	0.18	0.14	0.10	0.06	0.04									
		14 TPI	14BSPT-TQ	1.16	1.24	9	0.22	0.20	0.18	0.16	0.14	0.12	0.10	0.08	0.04							
		14 TPI	16IR 14BSPT-TQ	1.16	1.24	9	0.22	0.20	0.18	0.16	0.14	0.12	0.10	0.08	0.04							
		11 TPI	11BSPT-TQ	1.48	1.56	12	0.26	0.22	0.18	0.16	0.12	0.12	0.11	0.10	0.10	0.07	0.07	0.05				

Caution for Full Profile Insert

1) When using full profile insert, pre machining with finishing allowance by thread diameter 0.05-0.08mm
2) Final D.O.C. for finishing should be 0.02-0.05mm
3) Prepare chamfering for C0.3 - C0.5 to prevent cracking the insert in the 1st pass
4) Coolant is recommended



(D.O.C. shows the value of radial D.O.C.)

Corner-R (r ε) Selection for Partial Profiling Inserts

	External Thread	Internal Thread
Metric Unified	rε≦ 0.1443P	rε≦ 0.0720P
Parallel Pipe (Whitworth) Tapered Pipe	(For Both External and Internal Thread) rε≦ 0.1373P	

rε: Corner-R P: Pitch (Metric) $\left(=\frac{25.4}{n}\right)$ n: TPI

Metric, Unified Thread
Corner-R (r ε) of internal threading is almost half of that of external

Parallel Pipe, Tapered Pipe, Whitworth Thread
Same Corner-R (r ε) for both external and internal threading

DEPTH OF CUT AND NUMBER OF PASSES

60°/55° (Partial Profile)

(D.O.C. shows the value of radial D.O.C.)

Thread Type		Pitch mm & TPI	Description	Corner-R (rε)	Total D.O.C. (mm)	No. of Passes	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Metric	External Thread	0.5mm	16ER A60-TQ AG60-TQ	0.06 0.06	0.33 0.33	5 5	0.10 0.10	0.08 0.08	0.07 0.07	0.05 0.05	0.03 0.03											
		0.75mm	16ER A60-TQ AG60-TQ	0.06 0.06	0.51 0.51	6 6	0.14 0.14	0.11 0.11	0.09 0.09	0.07 0.07	0.06 0.06	0.04 0.04										
		1.00mm	16ER A60-TQ AG60-TQ	0.06 0.06	0.70 0.70	7 7	0.18 0.18	0.13 0.13	0.12 0.12	0.09 0.09	0.08 0.08	0.06 0.06	0.04 0.04									
		1.25mm	16ER A60-TQ AG60-TQ	0.06 0.06	0.89 0.89	8 8	0.18 0.18	0.15 0.15	0.14 0.14	0.12 0.12	0.10 0.10	0.08 0.08	0.07 0.07	0.05 0.05								
		1.50mm	16ER A60-TQ AG60-TQ	0.06 0.06	1.08 1.08	9 9	0.21 0.21	0.17 0.17	0.16 0.16	0.14 0.14	0.11 0.11	0.09 0.09	0.08 0.08	0.07 0.07	0.05 0.05							
		1.75mm	16ER G60-TQ AG60-TQ	0.22 0.06	1.11 1.27	8 11	0.24 0.22	0.20 0.20	0.18 0.18	0.16 0.13	0.13 0.11	0.10 0.09	0.06 0.09	0.04 0.08	0.07	0.06	0.04					
		2.00mm	16ER G60-TQ AG60-TQ	0.22 0.06	1.30 1.46	10 11	0.24 0.25	0.20 0.22	0.18 0.20	0.16 0.16	0.14 0.14	0.12 0.12	0.09 0.10	0.07 0.09	0.06 0.08	0.04 0.06	0.04					
		2.50mm	16ER G60-TQ AG60-TQ	0.22 0.06	1.67 1.84	12 13	0.25 0.25	0.22 0.22	0.20 0.20	0.18 0.19	0.16 0.17	0.14 0.16	0.12 0.14	0.12 0.11	0.10 0.10	0.08 0.09	0.06 0.09	0.04 0.07	0.05			
		3.00mm	16ER G60-TQ AG60-TQ	0.22 0.06	2.05 2.22	14 15	0.25 0.27	0.23 0.25	0.22 0.22	0.20 0.20	0.18 0.18	0.16 0.16	0.14 0.14	0.13 0.13	0.12 0.12	0.11 0.12	0.10 0.11	0.09 0.10	0.07 0.09	0.05 0.08	0.05	
Unified	External Thread	48 TPI	16ER A60-TQ AG60-TQ	0.06 0.06	0.35 0.35	5 5	0.10 0.10	0.08 0.08	0.07 0.07	0.06 0.06	0.04 0.04											
		24 TPI	16ER A60-TQ AG60-TQ	0.06 0.06	0.75 0.75	7 7	0.18 0.18	0.15 0.15	0.13 0.13	0.10 0.10	0.08 0.08	0.07 0.07	0.04 0.04									
		20 TPI	16ER A60-TQ AG60-TQ	0.06 0.06	0.91 0.91	8 8	0.18 0.18	0.16 0.16	0.14 0.14	0.12 0.12	0.10 0.10	0.09 0.09	0.07 0.07	0.05 0.05								
		18 TPI	16ER A60-TQ AG60-TQ	0.06 0.06	1.01 1.01	8 8	0.20 0.20	0.18 0.18	0.16 0.16	0.14 0.14	0.12 0.12	0.08 0.08	0.08 0.08	0.05 0.05								
		16 TPI	16ER A60-TQ AG60-TQ	0.06 0.06	1.15 1.15	10 10	0.22 0.22	0.18 0.18	0.15 0.15	0.13 0.13	0.11 0.11	0.10 0.10	0.08 0.08	0.08 0.08	0.06 0.06	0.04 0.04						
		14 TPI	16ER G60-TQ AG60-TQ	0.22 0.06	1.15 1.32	9 11	0.20 0.22	0.18 0.20	0.16 0.18	0.14 0.15	0.13 0.13	0.12 0.10	0.10 0.09	0.07 0.08	0.05 0.07	0.06	0.04					
		13 TPI	16ER G60-TQ AG60-TQ	0.22 0.06	1.26 1.43	9 11	0.24 0.25	0.20 0.23	0.18 0.20	0.16 0.16	0.14 0.14	0.12 0.12	0.10 0.10	0.07 0.08	0.05 0.06	0.05	0.04					
		12 TPI	16ER G60-TQ AG60-TQ	0.22 0.06	1.38 1.55	10 12	0.25 0.24	0.22 0.20	0.20 0.18	0.17 0.16	0.15 0.15	0.12 0.14	0.10 0.12	0.07 0.10	0.06 0.09	0.04 0.07	0.06	0.04				
		10 TPI	16ER G60-TQ AG60-TQ	0.22 0.06	1.71 1.87	12 13	0.25 0.25	0.22 0.22	0.20 0.21	0.18 0.20	0.16 0.18	0.15 0.16	0.14 0.14	0.12 0.12	0.10 0.11	0.08 0.10	0.06 0.08	0.05 0.06	0.04			
		9 TPI	16ER G60-TQ AG60-TQ	0.22 0.06	1.92 2.08	13 14	0.27 0.27	0.24 0.24	0.22 0.22	0.20 0.20	0.18 0.18	0.16 0.16	0.14 0.14	0.12 0.13	0.11 0.12	0.10 0.11	0.08 0.10	0.06 0.09	0.04 0.07	0.05		
		8 TPI	16ER G60-TQ AG60-TQ	0.22 0.06	2.19 2.35	15 16	0.27 0.30	0.25 0.25	0.22 0.23	0.20 0.20	0.18 0.18	0.16 0.17	0.14 0.16	0.12 0.14	0.12 0.12	0.11 0.12	0.10 0.11	0.10 0.10	0.09 0.09	0.08 0.08	0.05 0.05	0.05
Parallel Pipe Tapered Pipe	External Thread	28 TPI	16ER A55-TQ AG55-TQ	0.06 0.06	0.67 0.67	7 7	0.16 0.16	0.14 0.14	0.10 0.10	0.09 0.09	0.08 0.08	0.06 0.06	0.04 0.04									
		19 TPI	16ER A55-TQ AG55-TQ	0.06 0.06	1.02 1.02	8 8	0.20 0.20	0.18 0.18	0.16 0.16	0.14 0.14	0.12 0.12	0.10 0.10	0.07 0.07	0.05 0.05								
		14 TPI	16ER G55-TQ AG55-TQ	0.22 0.06	1.20 1.40	9 11	0.22 0.24	0.19 0.22	0.17 0.19	0.15 0.16	0.13 0.14	0.12 0.12	0.10 0.10	0.08 0.08	0.04 0.06	0.05	0.04					
		11 TPI	16ER G55-TQ AG55-TQ	0.22 0.06	1.60 1.79	12 13	0.24 0.25	0.22 0.22	0.20 0.21	0.18 0.20	0.16 0.18	0.14 0.16	0.13 0.14	0.10 0.12	0.08 0.10	0.06 0.08	0.05 0.05	0.04 0.05	0.03			
Whitworth	External Thread	48 TPI	16ER A55-TQ AG55-TQ	0.06 0.06	0.37 0.37	5 5	0.12 0.12	0.09 0.09	0.07 0.07	0.05 0.05	0.04 0.04											
		24 TPI	16ER A55-TQ AG55-TQ	0.06 0.06	0.79 0.79	7 7	0.18 0.18	0.16 0.16	0.14 0.14	0.11 0.11	0.08 0.08	0.07 0.07	0.05 0.05									
		20 TPI	16ER A55-TQ AG55-TQ	0.06 0.06	0.96 0.96	8 8	0.20 0.20	0.18 0.18	0.15 0.15	0.13 0.13	0.10 0.10	0.08 0.08	0.07 0.07	0.05 0.05								
		18 TPI	16ER A55-TQ AG55-TQ	0.06 0.06	1.07 1.07	9 9	0.20 0.20	0.17 0.17	0.16 0.16	0.14 0.14	0.11 0.11	0.09 0.09	0.08 0.08	0.07 0.07	0.05 0.05							
		16 TPI	16ER A55-TQ AG55-TQ	0.06 0.06	1.22 1.22	11 11	0.20 0.20	0.18 0.18	0.16 0.16	0.13 0.13	0.11 0.11	0.10 0.10	0.09 0.09	0.08 0.08	0.07 0.07	0.06 0.06	0.04 0.04					
		14 TPI	16ER G55-TQ AG55-TQ	0.22 0.06	1.20 1.40	9 11	0.22 0.24	0.19 0.22	0.17 0.19	0.15 0.16	0.13 0.14	0.12 0.12	0.10 0.10	0.08 0.08	0.04 0.06	0.05	0.04					
		12 TPI	16ER G55-TQ AG55-TQ	0.22 0.06	1.44 1.64	10 12	0.24 0.24	0.22 0.22	0.20 0.20	0.18 0.18	0.15 0.16	0.12 0.14	0.12 0.12	0.09 0.10	0.07 0.09	0.05 0.08	0.06	0.05				
		11 TPI	16ER G55-TQ AG55-TQ	0.22 0.06	1.60 1.79	12 13	0.24 0.25	0.22 0.22	0.20 0.21	0.18 0.20	0.16 0.18	0.14 0.16	0.13 0.14	0.10 0.12	0.08 0.10	0.06 0.08	0.05 0.05	0.04 0.05	0.03			
		10 TPI	16ER G55-TQ AG55-TQ	0.22 0.06	1.78 1.98	12 14	0.24 0.25	0.22 0.22	0.20 0.20	0.18 0.18	0.17 0.16	0.16 0.15	0.15 0.14	0.13 0.13	0.12 0.12	0.09 0.11	0.07 0.10	0.05 0.09	0.08	0.05		
		9 TPI	16ER G55-TQ AG55-TQ	0.22 0.06	2.01 2.20	14 15	0.24 0.27	0.22 0.25	0.20 0.22	0.19 0.20	0.18 0.18	0.16 0.16	0.15 0.14	0.14 0.13	0.12 0.12	0.11 0.11	0.10 0.10	0.08 0.10	0.07 0.09	0.05 0.08	0.05	
		8 TPI	16ER G55-TQ AG55-TQ	0.22 0.06	2.29 2.49	15 16	0.28 0.30	0.26 0.28	0.24 0.26	0.22 0.24	0.19 0.20	0.16 0.18	0.14 0.16	0.13 0.14	0.12 0.12	0.12 0.12	0.11 0.11	0.10 0.10	0.09 0.09	0.08 0.08	0.05 0.06	0.05

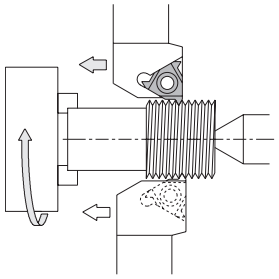
Thread Methods (TQ Chipbreaker)

■ External Thread (L-hand Thread / R-hand Thread)

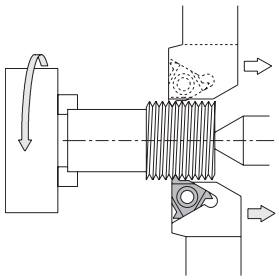
External Thread

Left-Hand Thread

Toolholder	(R)R-hand
Insert	(R)R-hand
The direction of spindle revolution	M04

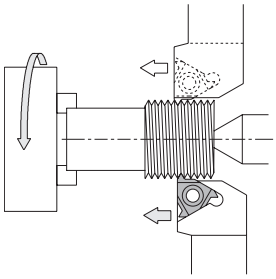


Toolholder	(R)R-hand
Insert	(R)R-hand
The direction of spindle revolution	M03

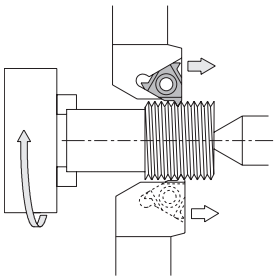


Right-Hand Thread

Toolholder	(R)R-hand
Insert	(R)R-hand
The direction of spindle revolution	M03



Toolholder	(R)R-hand
Insert	(R)R-hand
The direction of spindle revolution	M04

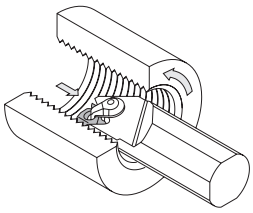


* These tables are based on KTN/KTNS Toolholder

■ Internal Thread (L-hand Thread / R-hand Thread)

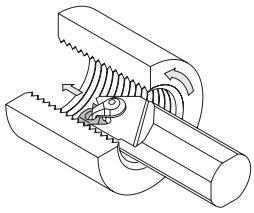
Internal Threading

Left-Hand Thread



Toolholder	(R)R-hand
Insert	(R)R-hand
The direction of spindle revolution	M03

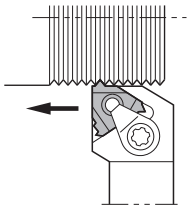
Right-Hand Thread



Toolholder	(R)R-hand
Insert	(R)R-hand
The direction of spindle revolution	M03

* These tables are based on SIN/CIN Toolholder

KTN/ KTNS External Threading Toolholder



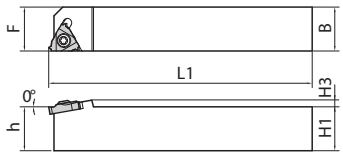


Fig. 1

Right-hand Shown

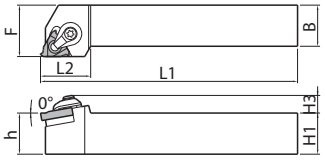
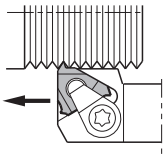
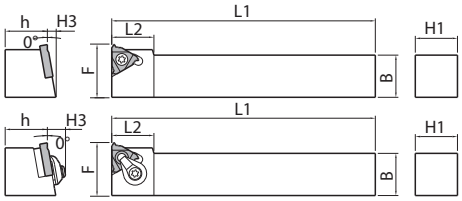


Fig. 2

Right-hand Insert for Right-hand Toolholder, Left-hand Insert for Left-hand Toolholder





KTNSR1010H-16
1212K-16

Fig. 3

KTNSR1616K-16
2020K-16

Fig. 4

Right-hand Shown

Right-hand Insert for Right-hand Toolholder

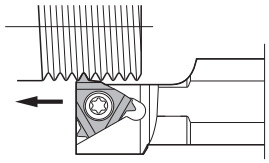
Toolholder Dimensions

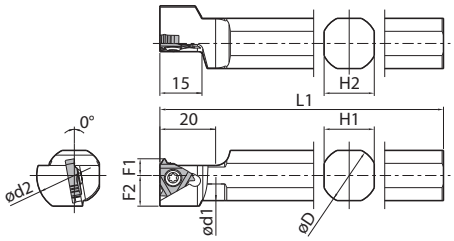
Description		Stock		Dimensions (mm)						Drawing	Spare Parts					Applicable Inserts
		R	L	H1=h	H3	B	L1	L2	F		Clamp Set	Clamp Screw	Wrench	Shim	Shim Screw	
KTNR/L	1216JX-16F	●	●	12	3	16	120	—	16	Fig. 1	—	SB-3.5TR	LTW-15S	—	—	16ER/L
	1616H-16	●	●	16	8.5	16	100	25	20	Fig. 2	CPS-5S	—	FT-15	TN-32	SP3X8	
	1616JX-16F	●	●		3		120	—	16	Fig. 1	—	SB-3.5TR	LTW-15S	—	—	
	2020H-16	●		20	8.5	20	100	25	25	Fig. 2	CPS-5S	—	FT-15	TN-32	SP3X8	
	2020JX-16F	●	●		3		120	—	20	Fig. 1	—	SB-3.5TR	LTW-15S	—	—	
	2020K-16	●	●		8.5		125	25	25	Fig. 2	CPS-5S	—	FT-15	TN-32	SP3X8	
	2525M-16	●	●	25		25	150		30							
KTNSR	1010H-16	●		10	8.5	10	100	16	16	Fig. 3	—	SB-3.5TR	FT-15	—	—	16ER…
	1212K-16	●		12		12	125	18	18							
	1616K-16	●		16		16			22	Fig. 4	CPS-5S	—		TN-32	SP3X8	
	2020K-16	●		20		20		20	27.4							

KTNR2020H-16 indicates short-shank type

●: Standard Stock

S…KTNL External Threading Sleeve Holder





Left-hand Shown

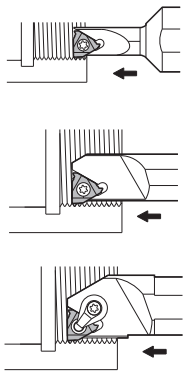
Right-hand Insert for Left-hand Toolholder

Toolholder Dimensions

Description	Stock	Dimensions (mm)							Spare Parts		Applicable Inserts
		øD	L1	F1	F2	ød1	ød2	H1=H2	Clamp Screw	Wrench	
S16F-KTNL16	●	16	85	6	11	15	27	15	SB-3.5TR	LTW-15S	16ER…
S19K-KTNL16	●	19.05	120			18		17			
S20K-KTNL16	●	20				19		18			
S22K-KTNL16	●	22				21		20			
S25.0H-KTNL16	●	25	100	10	14	24	32	23			
S25K-KTNL16	●	25.4	120								

●: Standard Stock

SIN/CIN Internal Threading Holder



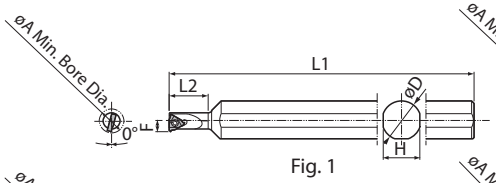


Fig. 1

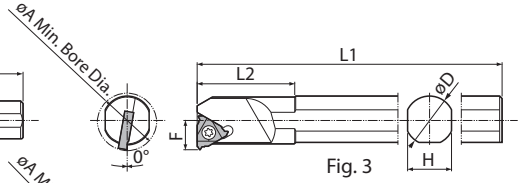


Fig. 3

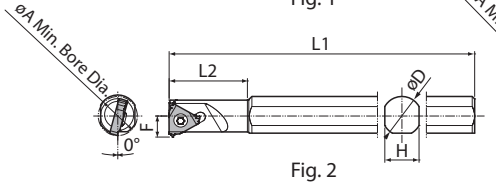


Fig. 2

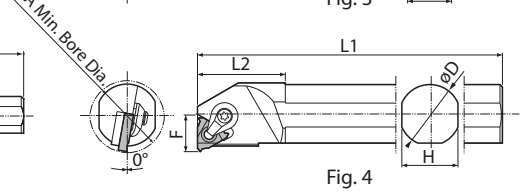


Fig. 4

Right-hand Shown

Right-hand Insert for Right-hand Toolholder, Left-hand Insert for Left-hand Toolholder

Toolholder Dimensions

Description		Stock		Min. Bore Dia.	Dimensions (mm)					Drawing	Spare Parts					Applicable Inserts
		R	L	øA	øD	H	L1	L2	F		Clamp Screw	Clamp Set	Wrench	Shim	Shim Screw	
SIN R/L	1216S-11E	●	●	12	16	14	150	25	6.3	Fig. 1	SB-2TR	—	FT-8	—	—	11I R/L
	1516S-11	●	●	15				30	7.5							
	1616S-16	●	●	16	16	14	150	32	8.6	Fig. 2	SB-3.5TR	—	FT-15	—	—	16I R/L
	2016S-16	●	●	20				37	10.0	Fig. 3						
	2420S-16	●	●	24	20	18	180	40	12.0							
CIN R/L	3025S-16	●	●	30	25	23	200	36	15.0	Fig. 4	—	CPS-5S	FT-15	TN-32	SP3X8	16I R/L
	3732S-16	●		37	32	30	250	45	18.5							

●: Standard Stock

Guide for Internal Threading

For internal threading, pay extra attention to "Stabilizing Diameters of Pre-drilled Holes" and "Chip Evacuation"

1. Stabilizing Diameters of Pre-drilled Holes

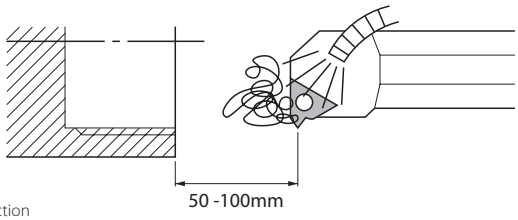
Because small pitch internal threads have a small corner radius, any variation in the diameter of pre-drilled holes will greatly affect the tool life of the insert
Please minimize any variation of pre-drilled holes and add an air pass to the first thread pass for safety
Pre-drilled holes are finished to stabilize the first thread pass

2. Chip Evacuation

If the threading cycle continues with chips tangled on the holder or the part,
it may damage the insert
Use the methods below to make sure chips do not become entangled

< 1 When Running the First Part of a Setup>

Run the program in single block
Start each thread pass 50mm-100mm from the workpiece face to allow room
for the coolant to remove chips from the tool on each pass



< 2 When Running the Second Part of a Setup>

Run through the full threading cycle and again check that chips are removed from the tool before going into production

CP388-1