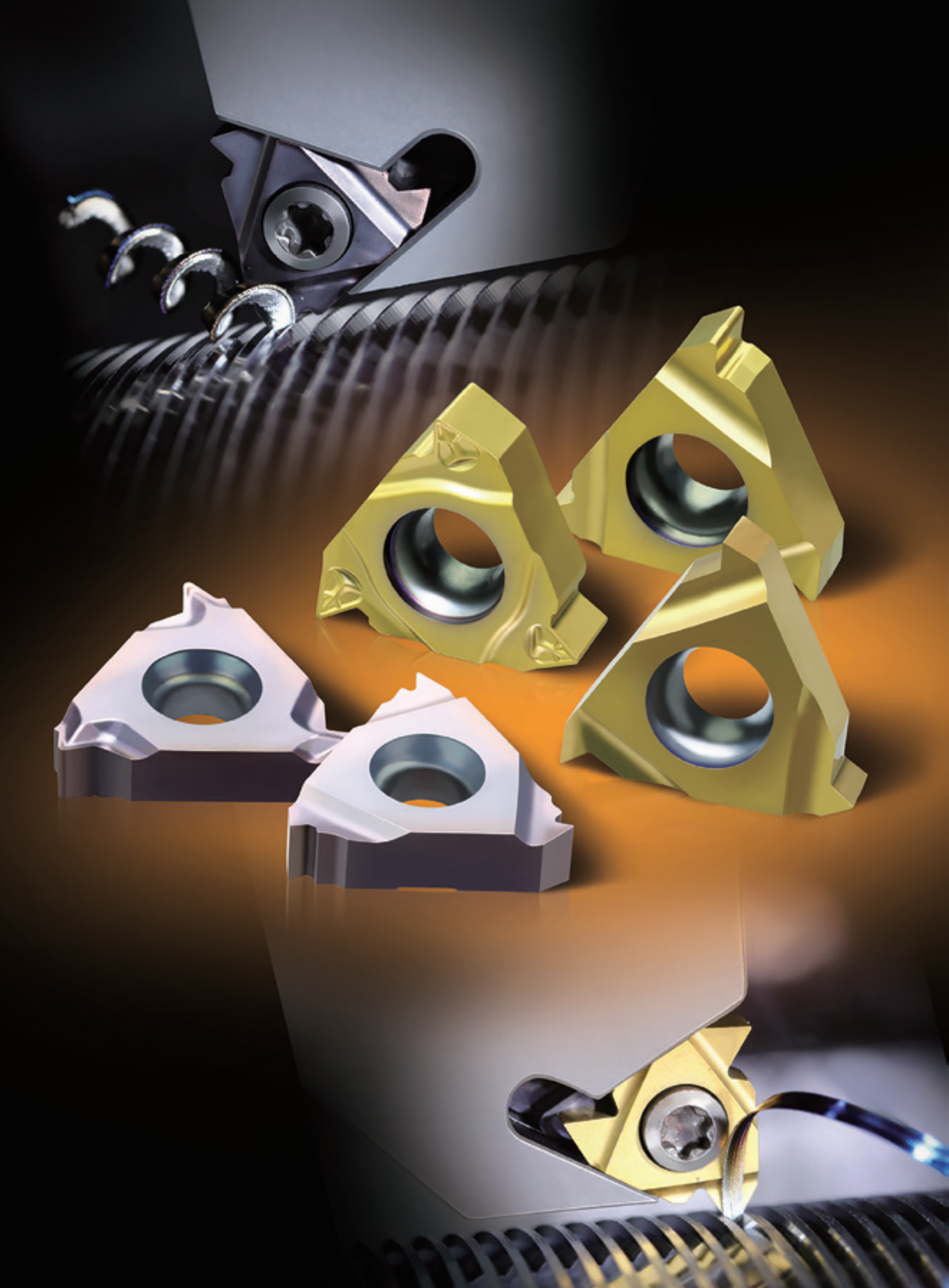
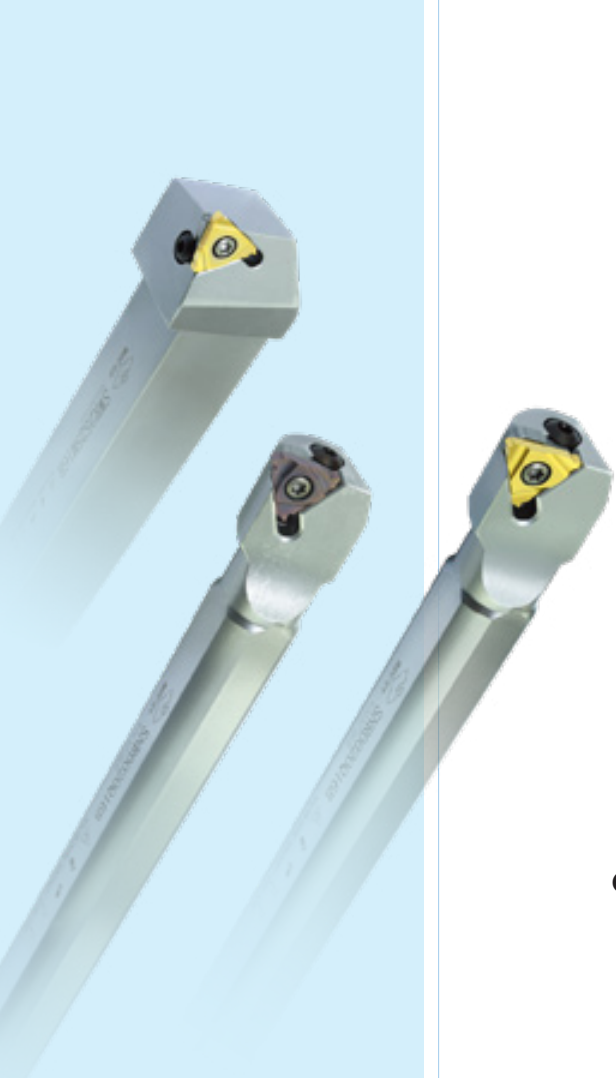


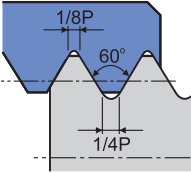
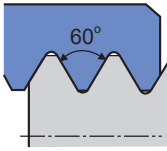
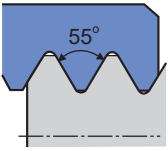


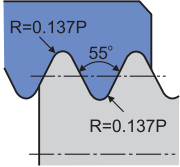
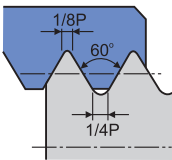
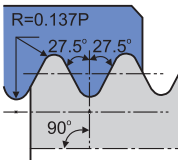
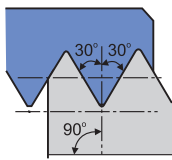


THREADING TOOLS

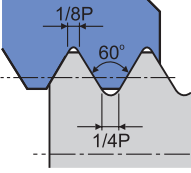
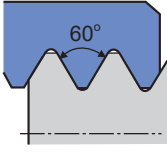
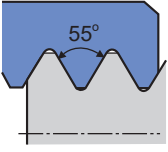
Threading tools overview	C170-C173
Code key for threading inserts	C175
ISO metric threading insert	C176-C177
General pitch threading insert without end	C178
Whitworth thread insert	C179
Unified thread insert with a shoulder	C180
British standard taper pipe thread insert	C181
NPT American standard taper pipe thread	C182
ISO metric threading insert (Thin type)	C183-C184
General pitch threading insert without end (Thin type)	C185
Whitworth thread insert (Thin type)	C186
Unified thread insert with a shoulder (Thin type)	C187
British standard taper pipe thread insert (Thin type)	C188
NPT American standard taper pipe thread insert (Thin type)	C189
External threading tools code key	C190
Internal threading tools code key	C191
External threading tools	C192, C194
Internal threading tools	C193, C194
Recommended cutting parameters list	C197
Common problems in threading and solutions	C199

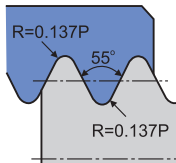
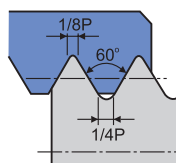
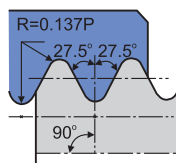
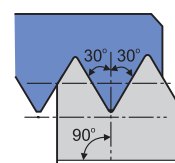
Threading tools overview

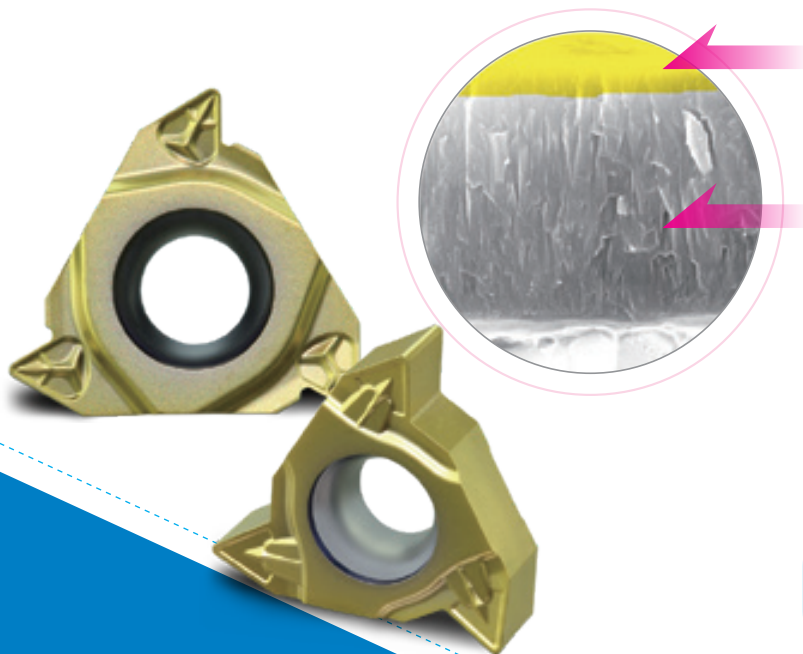
Applications			For general		
Cutline					
Thread name			ISO metric thread With end	General pitch thread Without end	General pitch thread Without end
Profile			GM	60	55
Shape of insert (length: 0.43, 0.63, 0.87inch)			As picture shows R type external threads  C176-C177	As picture shows R type external threads  C178	As picture shows R type external threads  C178
Tool holder	Pitch	Dimensions (inch) (H×W×L) (Dia×L×Min. dia)	Pitch/inch	Pitch/inch(teeth/inch)	Pitch/inch(teeth/inch)
External thread	 C192	0.625×0.625×4 0.750×0.750×5 1.00×1.00×6 1.25×1.35×7	0.039~0.236	0.02~0.197 (5~48)	0.02~0.197(5~48)
Internal thread	 C193	0.625×6×0.630 0.750×7×1.00 1.00×6×1.25 1.25×8×1.50 1.50×12×2.00 2.00×14×2.50	0.039~0.236	0.02~0.197 (5~48)	0.02~0.197 (5~48)

Applications		For general	For aerospace and aviation industries	Pipe thread for heater, gas and water	For connecting between pipe fitting and coupling of gas and water
Cutline					
Thread name		Whitworth thread	Unified thread (American standard threads)	British standard taper pipe threads	American standard taper pipe threads
Profile		W	UN	BSPT	NPT
Shape of insert (length: 0.43, 0.63, 0.87inch)		As picture shows R type external threads  C179	As picture shows R type external threads  C180	As picture shows R type external threads  C181	As picture shows R type external threads  C182
Dimensions (inch) (H×W×L) (Dia×L×Min. dia)		Teeth/inch	Teeth/inch	Teeth/inch	Teeth/inch
External thread	0.625×0.625×4	8~16	8~20	11~28	8~27
	0.750×0.750×5				
	1.00×1.00×6				
	1.25×1.35×7				
Internal thread	0.625×6×0.630	8~16	8~20	11~28	8~27
	0.750×7×1.00				
	1.00×6×1.25				
	1.25×8×1.50				
	1.05×12×2.00				
	2.00×14×2.50				

Threading tools overview

Applications			For general		
Cutline					
Thread name			ISO metric thread With end (Thin type)	General pitch thread Without end (Thin type)	General pitch thread Without end (Thin type)
Profile			GM	60	55
Shape of insert (length: 0.43, 0.63, 0.87inch)			As picture shows R type external threads  C183-C184	As picture shows R type external threads  C185	As picture shows R type external threads  C185
Tool holder	Pitch	Dimensions (inch) (H×W×L) (Dia×L×Min. dia)	Pitch/inch	Pitch/inch(teeth/inch)	Pitch/inch(teeth/inch)
External thread	 C194	0.625×0.625×4 0.750×0.750×5 1.00×1.00×6 1.25×1.35×7	0.019~0.118	0.019~0.118(8~48)	0.019~0.118(8~48)
Internal thread	 C194	0.625×6×0.630 0.750×7×1.00 1.00×6×1.25 1.25×8×1.50 1.50×12×2.00 2.00×14×2.50	0.019~0.118	0.019~0.118(8~48)	0.019~0.118(8~48)

Applications			For general	For aerospace and aviation industries	Pipe thread for heater, gas and water	For connecting between pipe fitting and coupling of gas and water
Cutline						
Thread name			Whitworth thread (Thin type)	Unified thread (American standard threads, Thin type)	British standard taper piper threads (Thin type)	American standard taper pipe threads (Thin type)
Profile			W	UN	BSPT	NPT
Shape of insert (length: 0.43, 0.63, 0.87inch)			As picture shows R type external threads  C186	As picture shows R type external threads  C187	As picture shows R type external threads  C188	As picture shows R type external threads  C189
Pitch		Dimensions (inch) (H×W×L) (Dia×L×Min. dia)	Teeth/inch	Teeth/inch	Teeth/inch	Teeth/inch
Tool holder						
External thread	 C194	0.625×0.625×4 0.750×0.750×5 1.00×1.00×6 1.25×1.35×7	8~16	8~20	11~28	8~27
	 C194	0.625×6×0.630 0.750×7×1.00 1.00×6×1.25 1.25×8×1.50 1.50×12×2.00 2.00×14×2.50	8~16	8~24	11~28	8~27



Gold TiN coating reduces friction between cutting edge and workpiece and allows observation of flank wear.

The inner layer nc-TiAlN coating has outstanding wear resistance.

Threading Grade YBG201 is upgraded to be nc-TiAlN

YBG201

PVD coating alloy has good toughness and wear resistance, it's the unique threading grade for machining of carbon steel, stainless steel and cast iron etc.

The function and application of full form threading

Reduce machining procedures

Not necessary to finish machine workpiece prior to threading. Full form insert tops the thread on the last pass and thereby finishes the thread and thread form. No burrs remain and the surface quality is good.

Automatically remove burrs

The wiper on threading insert finishes major diameter of machined surface, eliminating need for burr removal after machining.

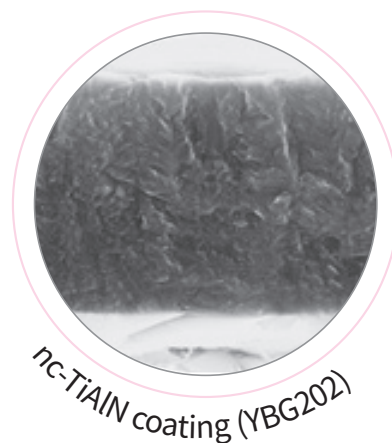
Chipbreaker in Threading insert

Outstanding chip breaking performance

Wavy chipbreaker is built into rake face of threading insert. Chips are directed up and away from cutting edge and workpiece to enhance surface finish and overall efficiency.

Good universal purpose chipbreaker

Due to the chipbreaker design, which controls and manages the formation of the chip, different workpiece materials can be threaded successfully.



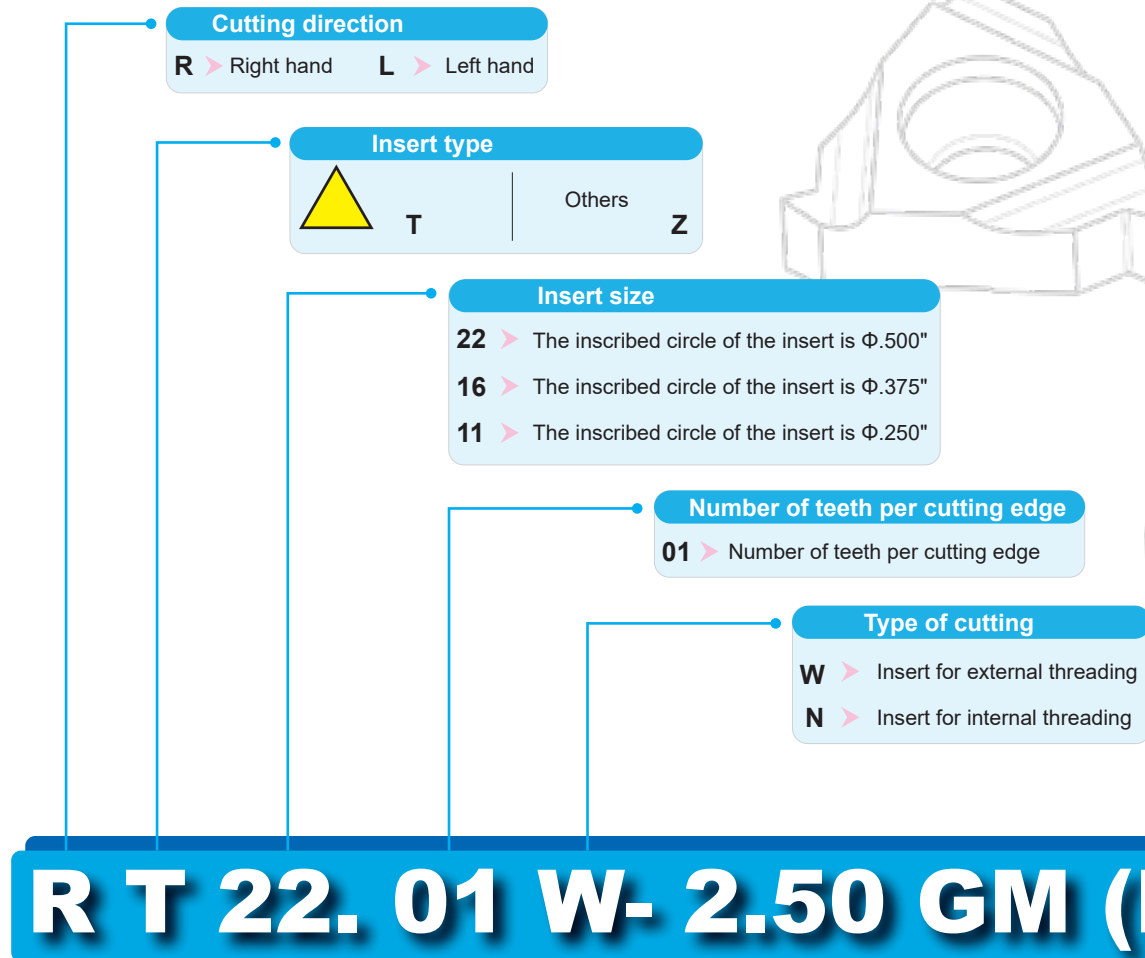
High-performance nanostructure coating guarantees good toughness and hardness of inserts. Special coating technology guarantees smooth surface and excellent wear resistance. Outstanding thermal stability and chemical stability effectively protect cutting edge.

YBG202

nc-TiAlN coating and ultra-fine grain substrate makes it suitable for finishing and semi-finishing of various materials and turning of super alloy.



Code key for threading inserts



Pitch width

Omni-tooth(Range of pitch indicated in numerals)

inch	TPI
0.014-0.354	72-2

V-tooth(Range of pitch indicated in letters)

	A	AG	G	N	Q
inch	0.019-0.059	0.019-0.118	0.069-0.118	0.138-0.197	0.217-0.236
TPI	48-16	48-8	14-8	7-5	41/2-4

Thread profile

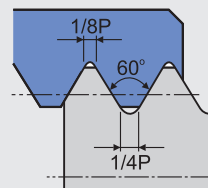
GM	60° ISO metric threads
60	60° general pitch threads
55	55° general pitch threads
W	Whitworth threads
UN	Unified threads(American standard)
BSPT	British standard taper pipe threads
NPT	American standard taper pipe threads

Chip-breakers are indicated by P

(P is omitted when it is metric thread)

ISO metric threading insert

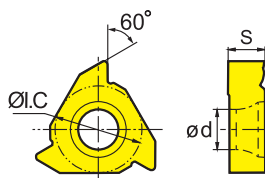
ISO 965-1980 DIN 13
GB/T 197-2003 Tolerance class: 6g/6H



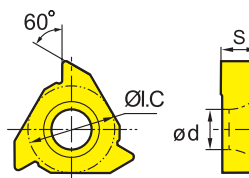
External threading



R type



L type



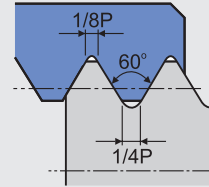
* With chipbreaker

Type		Dimension(inch)				Grade
Right hand type	Left hand type	Pitch width (inch)	S	ØI.C	Ød	Coated
RT16.01W-1.00GM	LT16.01W-1.00GM	0.039	0.156	0.375	0.173	●
RT16.01W-1.25GM	LT16.01W-1.25GM	0.049	0.156	0.375	0.173	●
RT16.01W-1.50GM	LT16.01W-1.50GM	0.059	0.156	0.375	0.173	●
RT16.01W-1.75GM	LT16.01W-1.75GM	0.069	0.156	0.375	0.173	●
RT16.01W-2.00GM	LT16.01W-2.00GM	0.079	0.156	0.375	0.173	●
RT16.01W-2.50GM	LT16.01W-2.50GM	0.098	0.156	0.375	0.173	●
RT16.01W-3.00GM	LT16.01W-3.00GM	0.118	0.156	0.375	0.173	●
RT22.01W-3.50GM	LT22.01W-3.50GM	0.138	0.217	0.500	0.217	●
RT22.01W-4.00GM	LT22.01W-4.00GM	0.157	0.217	0.500	0.217	●
RT22.01W-4.50GM	LT22.01W-4.50GM	0.177	0.217	0.500	0.217	●
RT22.01W-5.00GM	LT22.01W-5.00GM	0.197	0.217	0.500	0.217	●
RT22.01W-5.50GM	LT22.01W-5.50GM	0.217	0.217	0.500	0.217	●
RT22.01W-6.00GM	LT22.01W-6.00GM	0.236	0.217	0.500	0.217	●

● Always stock available ○ Produce according to order

ISO metric threading insert

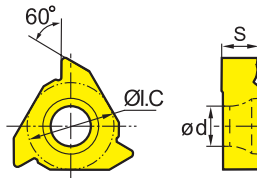
ISO 965-1980 DIN 13
GB/T 197-2003 Tolerance class: 6g/6H



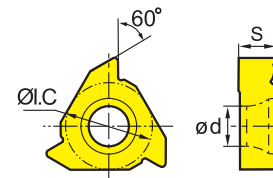
Internal threading



R type



L type



* With chipbreaker

Type		Dimension(inch)				Grade
Right hand type	Left hand type	Pitch width (inch)	S	ØI.C	ød	Coated
RT11.01N-1.00GM	LT11.01N-1.00GM	0.039	0.125	0.250	0.110	●
RT11.01N-1.25GM	LT11.01N-1.25GM	0.049	0.125	0.250	0.110	●
RT11.01N-1.50GM	LT11.01N-1.50GM	0.059	0.125	0.250	0.110	●
RT11.01N-1.75GM	LT11.01N-1.75GM	0.069	0.125	0.250	0.110	●
RT11.01N-2.00GM	LT11.01N-2.00GM	0.079	0.125	0.250	0.110	●
RT16.01N-1.00GM	LT16.01N-1.00GM	0.039	0.156	0.375	0.173	●
RT16.01N-1.25GM	LT16.01N-1.25GM	0.049	0.156	0.375	0.173	●
RT16.01N-1.50GM	LT16.01N-1.50GM	0.059	0.156	0.375	0.173	●
RT16.01N-1.75GM	LT16.01N-1.75GM	0.069	0.156	0.375	0.173	●
RT16.01N-2.00GM	LT16.01N-2.00GM	0.079	0.156	0.375	0.173	●
RT16.01N-2.50GM	LT16.01N-2.50GM	0.098	0.156	0.375	0.173	●
RT16.01N-3.00GM	LT16.01N-3.00GM	0.118	0.156	0.375	0.173	●
RT22.01N-3.50GM	LT22.01N-3.50GM	0.138	0.217	0.500	0.217	●
RT22.01N-4.00GM	LT22.01N-4.00GM	0.157	0.217	0.500	0.217	●
RT22.01N-4.50GM	LT22.01N-4.50GM	0.177	0.217	0.500	0.217	●
RT22.01N-5.00GM	LT22.01N-5.00GM	0.197	0.217	0.500	0.217	●
RT22.01N-5.50GM	LT22.01N-5.50GM	0.217	0.217	0.500	0.217	●
RT22.01N-6.00GM	LT22.01N-6.00GM	0.236	0.217	0.500	0.217	●

● Always stock available ○ Produce according to order

General pitch threading insert without end

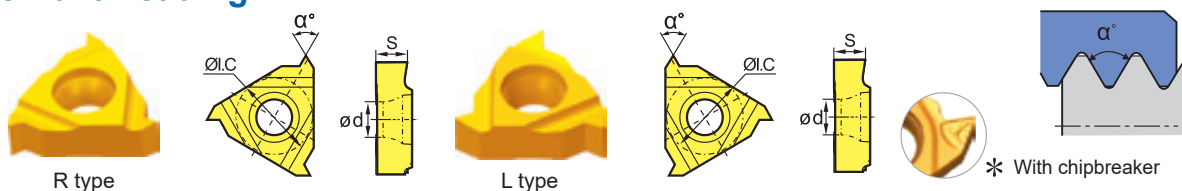
External threading



Type		Dimension(inch)						Grade
								Coated
	Right hand type	Left hand type	Pitch width (teeth/inch)	S	ØI.C	ød	α°	YBG201
60°	RT16.01W-A60	LT16.01W-A60	48-16(0.02-0.059)	0.156	0.375	0.173	60°	●
	RT16.01W-G60	LT16.01W-G60	14-8(0.069-0.118)	0.156	0.375	0.173	60°	●
	RT16.01W-G60P*	LT16.01W-G60P*	14-8(0.069-0.118)	0.156	0.375	0.173	60°	●
	RT16.01W-AG60	LT16.01W-AG60	48-8(0.02-0.118)	0.156	0.375	0.173	60°	●
	RT22.01W-N60	LT22.01W-N60	7-5(0.138-0.197)	0.219	0.500	0.217	60°	●
55°	RT16.01W-A55	LT16.01W-A55	48-16(0.02-0.059)	0.156	0.375	0.173	55°	●
	RT16.01W-G55	LT16.01W-G55	14-8(0.069-0.118)	0.156	0.375	0.173	55°	●
	RT16.01W-G55P*	LT16.01W-G55P*	14-8(0.069-0.118)	0.156	0.375	0.173	55°	●
	RT16.01W-AG55	LT16.01W-AG55	48-8(0.02-0.118)	0.156	0.375	0.173	55°	●
	RT22.01W-N55	LT22.01W-N55	7-5(0.138-0.197)	0.219	0.500	0.217	55°	●

● Always stock available ○ Produce according to order

Internal threading

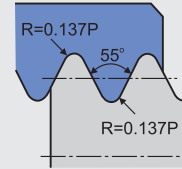


Type		Dimension(inch)						Grade
								Coated
	Right hand type	Left hand type	Pitch width (teeth/inch)	S	ØI.C	ød	α°	YBG201
60°	RT16.01N-A60	LT16.01N-A60	48-16(0.02-0.059)	0.156	0.375	0.173	60°	●
	RT16.01N-G60	LT16.01N-G60	14-8(0.069-0.118)	0.156	0.375	0.173	60°	●
	RT16.01N-G60P*	LT16.01N-G60P*	14-8(0.069-0.118)	0.156	0.375	0.173	60°	●
	RT16.01N-AG60	LT16.01N-AG60	48-8(0.02-0.118)	0.156	0.375	0.173	60°	●
	RT22.01N-N60	LT22.01N-N60	7-5(0.138-0.197)	0.219	0.500	0.217	60°	●
55°	RT16.01N-A55	LT16.01N-A55	48-16(0.02-0.059)	0.156	0.375	0.173	55°	●
	RT16.01N-G55	LT16.01N-G55	14-8(0.069-0.118)	0.156	0.375	0.173	55°	●
	RT16.01N-G55P*	LT16.01N-G55P*	14-8(0.069-0.118)	0.156	0.375	0.173	55°	●
	RT16.01N-AG55	LT16.01N-AG55	48-8(0.02-0.118)	0.156	0.375	0.173	55°	●
	RT22.01N-N55	LT22.01N-N55	7-5(0.138-0.197)	0.219	0.500	0.217	55°	●

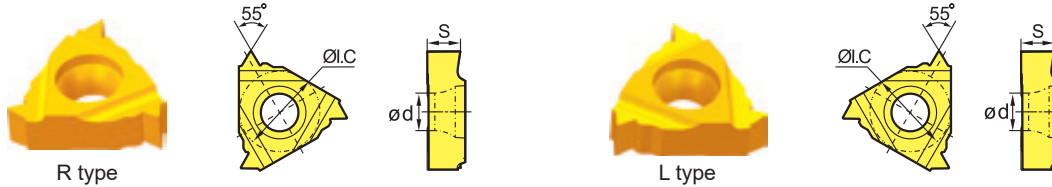
● Always stock available ○ Produce according to order

Whitworth threading insert

ISO 228/1:1982,
DIN 259, B.S.84:1956
Tolerance class: Medium class A



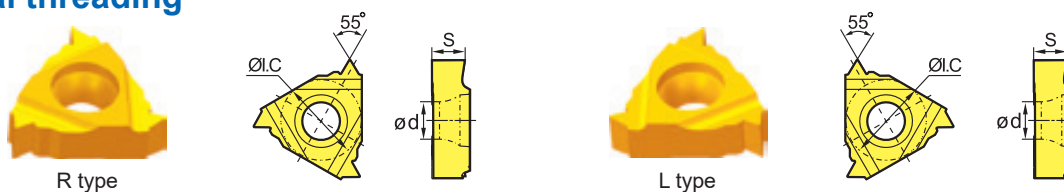
External threading



Type		Dimension(inch)				Grade
		Pitch width (teeth/inch)	S	ØI.C	ød	Coated
Right hand type	Left hand type					YBG201
RT16.01W-8W	LT16.01W-8W	8	0.156	0.375	0.173	●
RT16.01W-9W	LT16.01W-9W	9	0.156	0.375	0.173	●
RT16.01W-10W	LT16.01W-10W	10	0.156	0.375	0.173	●
RT16.01W-11W	LT16.01W-11W	11	0.156	0.375	0.173	●
RT16.01W-12W	LT16.01W-12W	12	0.156	0.375	0.173	●
RT16.01W-14W	LT16.01W-14W	14	0.156	0.375	0.173	●
RT16.01W-16W	LT16.01W-16W	16	0.156	0.375	0.173	●

● Always stock available ○ Produce according to order

Internal threading

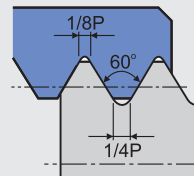


Type		Dimension(inch)				Grade
		Pitch width (teeth/inch)	S	ØI.C	ød	Coated
Right hand type	Left hand type					YBG201
RT16.01N-8W	LT16.01N-8W	8	0.156	0.375	0.173	●
RT16.01N-9W	LT16.01N-9W	9	0.156	0.375	0.173	●
RT16.01N-10W	LT16.01N-10W	10	0.156	0.375	0.173	●
RT16.01N-11W	LT16.01N-11W	11	0.156	0.375	0.173	●
RT16.01N-12W	LT16.01N-12W	12	0.156	0.375	0.173	●
RT16.01N-14W	LT16.01N-14W	14	0.156	0.375	0.173	●
RT16.01N-16W	LT16.01N-16W	16	0.156	0.375	0.173	●

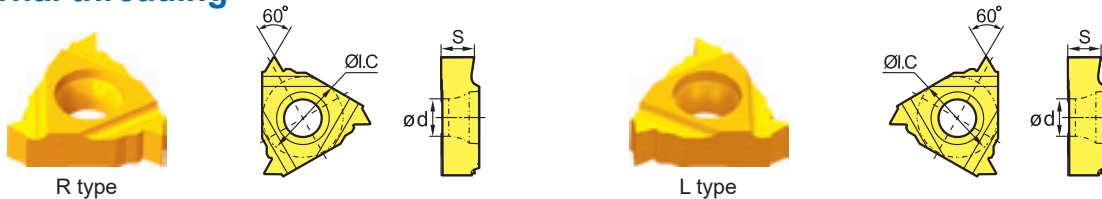
● Always stock available ○ Produce according to order

Unified (UN) threading insert

ASME B1.1-1989
Tolerance class: 2A/2B



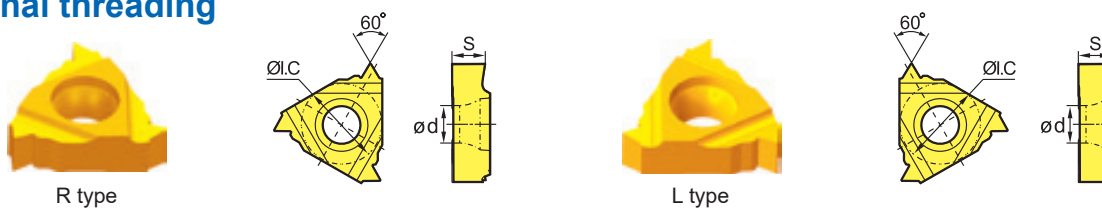
External threading



Type		Dimension(inch)				Grade
						Coated
Right hand type	Left hand type	Pitch width (teeth/inch)	S	ØI.C	ød	YBG201
RT16.01W-8UN	LT16.01W-8UN	8	0.156	0.375	0.173	●
RT16.01W-10UN	LT16.01W-10UN	10	0.156	0.375	0.173	●
RT16.01W-12UN	LT16.01W-12UN	12	0.156	0.375	0.173	●
RT16.01W-14UN	LT16.01W-14UN	14	0.156	0.375	0.173	●
RT16.01W-16UN	LT16.01W-16UN	16	0.156	0.375	0.173	●
RT16.01W-18UN	LT16.01W-18UN	18	0.156	0.375	0.173	●
RT16.01W-20UN	LT16.01W-20UN	20	0.156	0.375	0.173	●

● Always stock available ○ Produce according to order

Internal threading

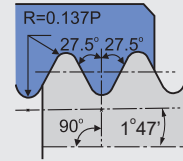


Type		Dimension(inch)				Grade
						Coated
Right hand type	Left hand type	Pitch width (teeth/inch)	S	ØI.C	ød	YBG201
RT16.01N-8UN	LT16.01N-8UN	8	0.156	0.375	0.173	●
RT16.01N-10UN	LT16.01N-10UN	10	0.156	0.375	0.173	●
RT16.01N-12UN	LT16.01N-12UN	12	0.156	0.375	0.173	●
RT16.01N-14UN	LT16.01N-14UN	14	0.156	0.375	0.173	●
RT16.01N-16UN	LT16.01N-16UN	16	0.156	0.375	0.173	●
RT16.01N-18UN	LT16.01N-18UN	18	0.156	0.375	0.173	●
RT16.01N-20UN	LT16.01N-20UN	20	0.156	0.375	0.173	●

● Always stock available ○ Produce according to order

British standard taper pipe threading insert

ISO 7/1:1994
B.S.21:1985
Standard BSPT



External threading



Type		Dimension(inch)				Grade
						Coated
Right hand type	Left hand type	Pitch width (teeth/inch)	S	ØI.C	ød	YBG201
RT16.01W-11 BSPT	LT16.01W-11 BSPT	11	0.156	0.375	0.173	●
RT16.01W-14 BSPT	LT16.01W-14 BSPT	14	0.156	0.375	0.173	●
RT16.01W-19 BSPT	LT16.01W-19 BSPT	19	0.156	0.375	0.173	●
RT16.01W-28 BSPT	LT16.01W-28 BSPT	28	0.156	0.375	0.173	●

● Always stock available ○ Produce according to order

Internal threading

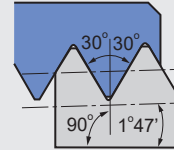


Type		Dimension(inch)				Grade
						Coated
Right hand type	Left hand type	Pitch width (teeth/inch)	S	ØI.C	ød	YBG201
RT16.01N-11 BSPT	LT16.01N-11 BSPT	11	0.156	0.375	0.173	●
RT16.01N-14 BSPT	LT16.01N-14 BSPT	14	0.156	0.375	0.173	●
RT16.01N-19 BSPT	LT16.01N-19 BSPT	19	0.156	0.375	0.173	●
RT16.01N-28 BSPT	LT16.01N-28 BSPT	28	0.156	0.375	0.173	●

● Always stock available ○ Produce according to order

NPT American standard taper pipe threading insert

ASME B1.20.1-1983
Standard NPT



External threading



Type		Dimension(inch)				Grade
						Coated
Right hand type	Left hand type	Pitch width (teeth/inch)	S	ØI.C	ød	YBG201
RT16.01W-8 NPT	LT16.01W-8 NPT	8	0.156	0.375	0.173	●
RT16.01W-11.5 NPT	LT16.01W-11.5 NPT	11.5	0.156	0.375	0.173	●
RT16.01W-14 NPT	LT16.01W-14 NPT	14	0.156	0.375	0.173	●
RT16.01W-18 NPT	LT16.01W-18 NPT	18	0.156	0.375	0.173	●
RT16.01W-27 NPT	LT16.01W-27 NPT	27	0.156	0.375	0.173	●

● Always stock available ○ Produce according to order

Internal threading

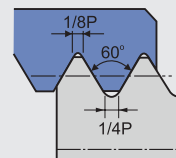


Type		Dimension(inch)				Grade
						Coated
Right hand type	Left hand type	Pitch width (teeth/inch)	S	ØI.C	ød	YBG201
RT16.01N-8 NPT	LT16.01N-8 NPT	8	0.156	0.375	0.173	●
RT16.01N-11.5 NPT	LT16.01N-11.5 NPT	11.5	0.156	0.375	0.173	●
RT16.01N-14 NPT	LT16.01N-14 NPT	14	0.156	0.375	0.173	●
RT16.01N-18 NPT	LT16.01N-18 NPT	18	0.156	0.375	0.173	●
RT16.01N-27 NPT	LT16.01N-27 NPT	27	0.156	0.375	0.173	●

● Always stock available ○ Produce according to order

ISO metric threading insert (thin type)

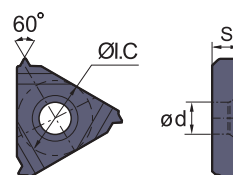
ISO 965-1980, DIN 13, GB/T 197-2003
Tolerance class: 6g/6H



External threading

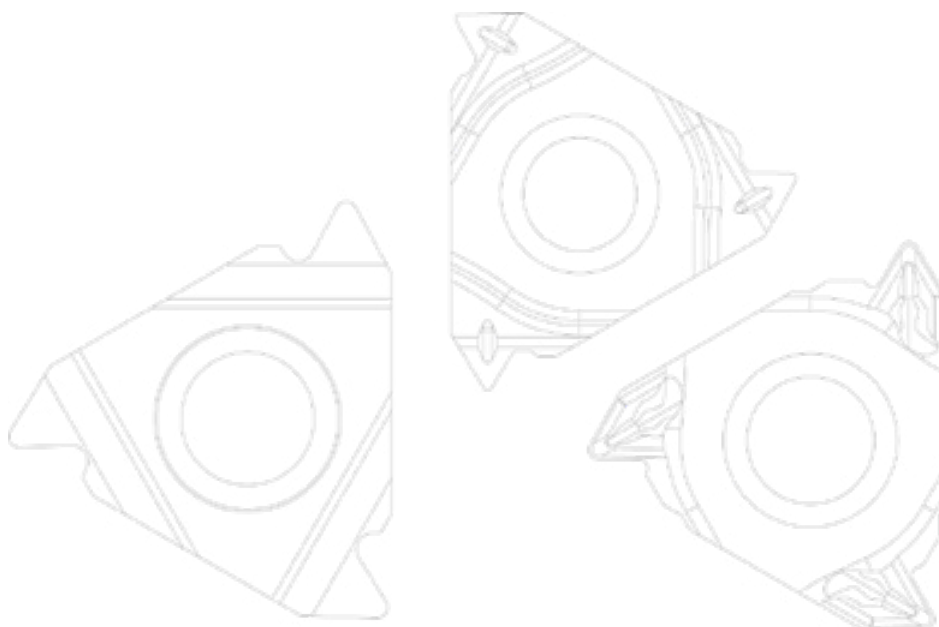


R type



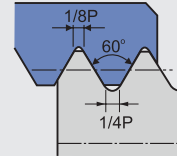
Type	Dimension(inch)				Coated
Right hand type	Pitch width	S	ØI.C	ød	YBG202
RT16.01W-0.5GMB	0.019	0.139	0.375	0.157	●
RT16.01W-0.75GMB	0.030	0.139	0.375	0.157	●
RT16.01W-1.00GMB	0.039	0.139	0.375	0.157	●
RT16.01W-1.25GMB	0.049	0.139	0.375	0.157	●
RT16.01W-1.50GMB	0.059	0.139	0.375	0.157	●
RT16.01W-1.75GMB	0.069	0.139	0.375	0.157	●
RT16.01W-2.00GMB	0.079	0.139	0.375	0.157	●
RT16.01W-2.50GMB	0.098	0.139	0.375	0.157	●
RT16.01W-3.00GMB	0.118	0.139	0.375	0.157	●

● Always stock available ○ Produce according to order



ISO metric threading insert (thin type)

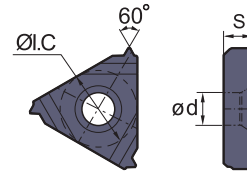
ISO 965-1980, DIN 13, GB/T 197-2003
Tolerance class: 6g/6H



Internal threading



R type



Type	Dimension(inch)				Coated
Right hand type	Pitch width	S	ØI.C	ød	YBG202
RT16.01N-0.5GMB	0.019	0.139	0.375	0.157	●
RT16.01N-0.75GMB	0.030	0.139	0.375	0.157	●
RT16.01N-1.00GMB	0.039	0.139	0.375	0.157	●
RT16.01N-1.25GMB	0.049	0.139	0.375	0.157	●
RT16.01N-1.50GMB	0.059	0.139	0.375	0.157	●
RT16.01N-1.75GMB	0.069	0.139	0.375	0.157	●
RT16.01N-2.00GMB	0.079	0.139	0.375	0.157	●
RT16.01N-2.50GMB	0.098	0.139	0.375	0.157	●
RT16.01N-3.00GMB	0.118	0.139	0.375	0.157	●

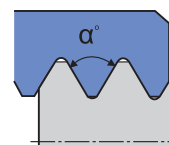
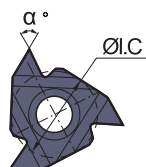
● Always stock available ○ Produce according to order

General pitch threading insert without end (thin type)

External threading



R type



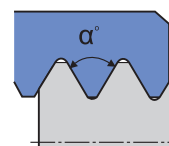
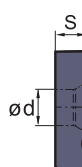
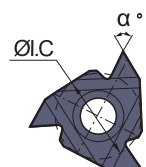
Type		Dimension(inch)					Coated
	Right hand type	Pitch width (teeth/inch)	S	ØI.C	ød	α°	YBG202
60°	RT16.01W- A60B	0.5 ~1.5(48~16)	0.139	0.375	0.157	60°	●
	RT16.01W- G60B	1.75 ~3.0(14~8)	0.139	0.375	0.157	60°	●
	RT16.01W- AG60B	0.5 ~3.0(48~8)	0.139	0.375	0.157	60°	●
55°	RT16.01W- A55B	0.5 ~1.5(48~16)	0.139	0.375	0.157	55°	●
	RT16.01W- G55B	1.75 ~3.0(14~8)	0.139	0.375	0.157	55°	●
	RT16.01W- AG55B	0.5 ~3.0(48~8)	0.139	0.375	0.157	55°	●

● Always stock available ○ Produce according to order

Internal threading



R type

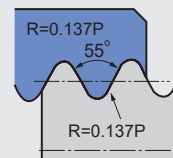


Type		Dimension(inch)					Coated
	Right hand type	Pitch width (teeth/inch)	S	ØI.C	ød	α°	YBG202
60°	RT16.01N- A60B	0.5 ~1.5(48~16)	0.139	0.375	0.157	60°	●
	RT16.01N- G60B	1.75 ~3.0(14~8)	0.139	0.375	0.157	60°	●
	RT16.01N- AG60B	0.5 ~3.0(48~8)	0.139	0.375	0.157	60°	●
55°	RT16.01N- A55B	0.5 ~1.5(48~16)	0.139	0.375	0.157	55°	●
	RT16.01N- G55B	1.75 ~3.0(14~8)	0.139	0.375	0.157	55°	●
	RT16.01N- AG55B	0.5 ~3.0(48~8)	0.139	0.375	0.157	55°	●

● Always stock available ○ Produce according to order

Whitworth threading insert (thin type)

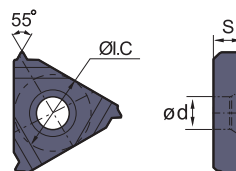
ISO 228/1:1982, DIN 259, B.S.84:1956
Tolerance class: Medium class A



External threading



R type



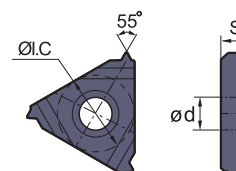
Type	Dimension(inch)				Coated
Right hand type	Pitch width (teeth/inch)	S	ØI.C	ød	YBG202
RT16.01W-8WB	8	0.139	0.375	0.157	●
RT16.01W-9WB	9	0.139	0.375	0.157	●
RT16.01W-10WB	10	0.139	0.375	0.157	●
RT16.01W-11WB	11	0.139	0.375	0.157	●
RT16.01W-12WB	12	0.139	0.375	0.157	●
RT16.01W-14WB	14	0.139	0.375	0.157	●
RT16.01W-16WB	16	0.139	0.375	0.157	●

● Always stock available ○ Produce according to order

Internal threading



R type

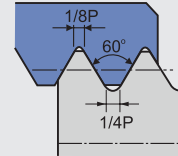


Type	Dimension(inch)				Coated
Right hand type	Pitch width (teeth/inch)	S	ØI.C	ød	YBG202
RT16.01N-8WB	8	0.139	0.375	0.157	●
RT16.01N-9WB	9	0.139	0.375	0.157	●
RT16.01N-10WB	10	0.139	0.375	0.157	●
RT16.01N-11WB	11	0.139	0.375	0.157	●
RT16.01N-12WB	12	0.139	0.375	0.157	●
RT16.01N-14WB	14	0.139	0.375	0.157	●
RT16.01N-16WB	16	0.139	0.375	0.157	●

● Always stock available ○ Produce according to order

Unified (UN) threading insert (thin type)

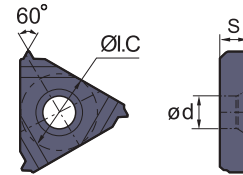
ASME B1.1-1989
Tolerance class: 2A/2B



External threading



R type



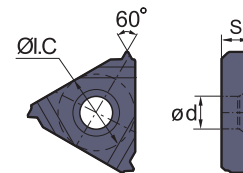
Type	Dimension(inch)				Coated
Right hand type	Pitch width (teeth/inch)	S	ØI.C	ød	YBG202
RT16.01W-8UNB	8	0.139	0.375	0.157	●
RT16.01W-10UNB	10	0.139	0.375	0.157	●
RT16.01W-12UNB	12	0.139	0.375	0.157	●
RT16.01W-14UNB	14	0.139	0.375	0.157	●
RT16.01W-16UNB	16	0.139	0.375	0.157	●
RT16.01W-18UNB	18	0.139	0.375	0.157	●
RT16.01W-20UNB	20	0.139	0.375	0.157	●

● Always stock available ○ Produce according to order

Internal threading



R type

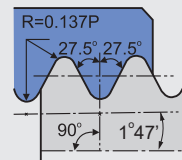


Type	Dimension(inch)				Coated
Right hand type	Pitch width (teeth/inch)	S	ØI.C	ød	YBG202
RT16.01N-8UNB	8	0.139	0.375	0.157	●
RT16.01N-10UNB	10	0.139	0.375	0.157	●
RT16.01N-12UNB	12	0.139	0.375	0.157	●
RT16.01N-14UNB	14	0.139	0.375	0.157	●
RT16.01N-16UNB	16	0.139	0.375	0.157	●
RT16.01N-18UNB	18	0.139	0.375	0.157	●
RT16.01N-20UNB	20	0.139	0.375	0.157	●
RT16.01N-24UNB	24	0.139	0.375	0.157	●

● Always stock available ○ Produce according to order

British standard taper pipe threading insert (thin type)

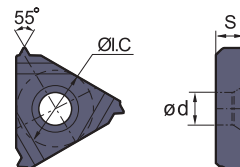
ISO 7/1:1994, B.S.21:1985
Standard BSPT



External threading



R type



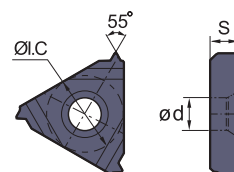
Type	Dimension(inch)				Coated
Right hand type	Pitch width (teeth/inch)	S	ØI.C	ød	YBG202
RT16.01W-11BSPTB	11	0.139	0.375	0.157	●
RT16.01W-14BSPTB	14	0.139	0.375	0.157	●
RT16.01W-19BSPTB	19	0.139	0.375	0.157	●
RT16.01W-28BSPTB	28	0.139	0.375	0.157	●

● Always stock available ○ Produce according to order

Internal threading



R type

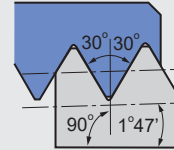


Type	Dimension(inch)				Coated
Right hand type	Pitch width (teeth/inch)	S	ØI.C	ød	YBG202
RT16.01N-11BSPTB	11	0.139	0.375	0.157	●
RT16.01N-14BSPTB	14	0.139	0.375	0.157	●
RT16.01N-19BSPTB	19	0.139	0.375	0.157	●
RT16.01N-28BSPTB	28	0.139	0.375	0.157	●

● Always stock available ○ Produce according to order

NPT American standard taper pipe threading insert (thin type)

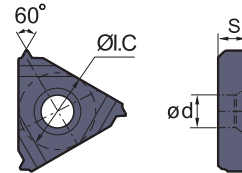
ASME B1.20.1-1983
Standard NPT



External threading



R type



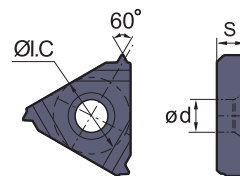
Type	Dimension(inch)				Coated
Right hand type	Pitch width (teeth/inch)	S	ØI.C	ød	YBG202
RT16.01W-8NPTB	8	0.139	0.375	0.157	●
RT16.01W-11.5NPTB	11.5	0.139	0.375	0.157	●
RT16.01W-14NPTB	14	0.139	0.375	0.157	●
RT16.01W-18NPTB	18	0.139	0.375	0.157	●
RT16.01W-27NPTB	27	0.139	0.375	0.157	●

● Always stock available ○ Produce according to order

Internal threading



R type

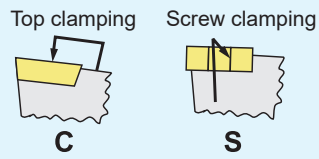


Type	Dimension(inch)				Coated
Right hand type	Pitch width (teeth/inch)	S	ØI.C	ød	YBG202
RT16.01N-8NPTB	8	0.139	0.375	0.157	●
RT16.01N-11.5NPTB	11.5	0.139	0.375	0.157	●
RT16.01N-14NPTB	14	0.139	0.375	0.157	●
RT16.01N-18NPTB	18	0.139	0.375	0.157	●
RT16.01N-27NPTB	27	0.139	0.375	0.157	●

● Always stock available ○ Produce according to order

External threading tools code key

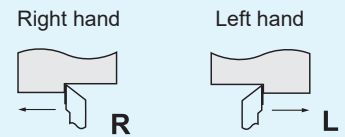
Clamping system



Thread type

- N** > Internal thread
- W** > External thread

Cutting direction



S W R 12 C 03 B

Shank height and width

Code	10	12	16	20
Tool body dimension(inch)	0.625×0.625	0.750×0.750	1.000×1.000	1.250×1.250

Tool length

Code	J	A	B	C	D	E	R
Length(inch)	3-1/2	4	4-1/2	5	6	7	8

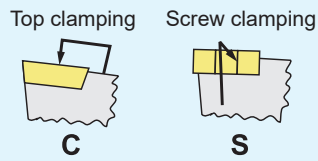
Cutting edge length

Number of 1/8" of I.C	I.C inch	C	D	R	S	T	V	W
						09		
2	1/4	06	07			11	11	
3	3/8	09	11	09	09	16	16	06
4	1/2	12	15	12	12	22	22	08
5	5/8	16	09	15	15	27		
6	3/4	19		19	19	33		
8	1	25		25	25	44		

Thin type threading tools

Internal threading tools code key

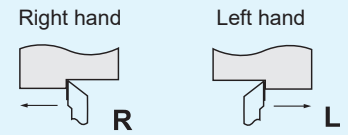
Clamping system



Thread type

- N** ▶ Internal thread
W ▶ External thread

Cutting direction



S N R 0750 M 03 B

Shank diameter

Code	0625	0750	1000	1500
Tool body dimension(inch)	0.625	0.750	1.000	1.500

Tool length

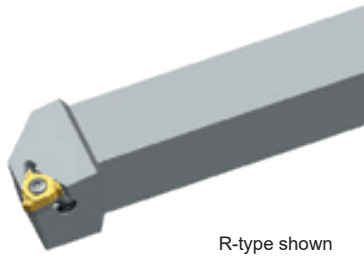
Code	H	K	M	Q	R	S	T
Length(inch)	4	5	6	7	8	10	12

Cutting edge length

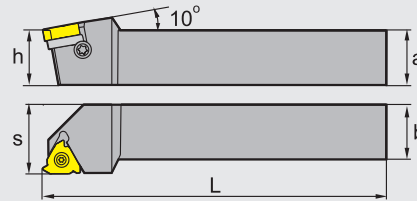
Number of 1/8" of I.C	I.C inch	C	D	R	S	T	V	W
						09		
2	1/4	06	07			11	11	
3	3/8	09	11	09	09	16	16	06
4	1/2	12	15	12	12	22	22	08
5	5/8	16	09	15	15	27		
6	3/4	19		19	19	33		
8	1	25		25	25	44		

Thin type threading tools

External threading tools



R-type shown

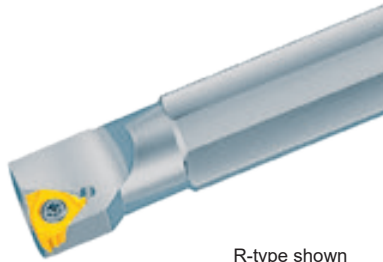


Type		Stock	Basic dimensions(inch)					Applicable inserts	Inserts screw	Shim	Shim screw	Wrench
			a	h	b	L	s					
SWR	10A03	▲	0.625	0.625	0.625	4	0.75	RT16.01W-□□□□	I60M3.5×12	MT16-□□M	SM4×8C	WT15IP
	12C03	▲	0.750	0.750	0.750	5	1.00					
	16D03	▲	1.000	1.000	1.000	6	1.25					
	20E03	▲	1.250	1.250	1.250	7	1.50	RT22.01W-□□□□	I60M5×17	MT22-□□M	SM4×8C	WT20IP
	16D04	▲	1.000	1.000	1.000	6	1.25					
	16E04	▲	1.000	1.000	1.000	7	1.25					
	20E04	▲	1.250	1.250	1.250	7	1.50					
SWL	10A03	▲	0.625	0.625	0.625	4	0.75	LT16.01W-□□□□	I60M3.5×12	MT16-□□M	SM4×8C	WT15IP
	12C03	▲	0.750	0.750	0.750	5	1.00					
	16D03	▲	1.000	1.000	1.000	6	1.25					
	20E03	▲	1.250	1.250	1.250	7	1.75	LT22.01W-□□□□	I60M5×17	MT22-□□M	SM4×8C	WT20IP
	16D04	▲	1.000	1.000	1.000	6	1.25					
	16E04	▲	1.000	1.000	1.000	7	1.25					
	20E04	▲	1.250	1.250	1.250	7	1.50					

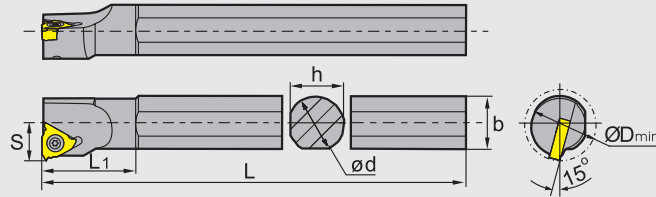
▲ Stock available

△ Make-to-order

Internal threading tools



R-type shown

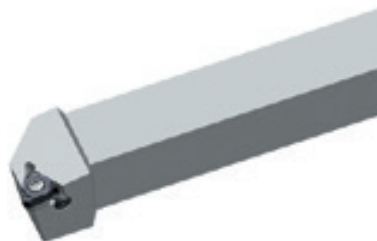


Type		Stock	Basic dimensions(inch)							Applicable inserts	Inserts screw	Shim	Shim screw	Wrench
			ød	L	b	ØD _{min}	s	h	L ₁					
SNR	0625K02	▲	0.625	5	0.63	0.50	0.394	0.591	0.823	RT11.01N-□□□□	I60 M2.5×6.5	--	SM4×8C	WT07IP
	0625M02	▲	0.625	6	0.61	0.63	0.413	0.591	1.020		I60 M3.5×8			WT15IP
	0625M03	▲	0.625	6	0.61	0.80	0.472	0.591	1.063	RT16.01N-□□□□	I60 M3.5×12	MT16-□□M		WT15IP
	0750M03	▲	0.75	6	0.748	1.00	0.551	0.709	1.130					
	0750Q03	▲	0.75	7	0.748	1.00	0.551	0.709	1.339					
	1000M03	▲	1.00	6	0.945	1.25	0.669	0.906	1.134					
	1250R03	▲	1.25	8	1.22	1.50	0.866	1.181	1.217					
	1250S03	▲	1.25	10	1.22	1.50	0.866	1.181	1.217					
	1500T03	▲	1.50	12	1.516	2.00	1.063	1.457	1.240					
	2000U03	▲	2.00	14	1.949	2.50	1.378	1.929	1.583					
	0750Q04	▲	0.75	7	0.846	1.00	0.591	0.709	1.378	RT22.01N-□□□□	I60 M5×10			WT20IP
	1000R04	▲	1.00	8	0.945	1.25	0.748	0.906	1.535		I60 M5×17	MT22-□□M		WT20IP
	1250S04	▲	1.25	10	1.22	1.50	0.866	1.181	1.433					
	1500T04	▲	1.50	12	1.516	2.00	1.063	1.457	1.465					
	2000U04	▲	2.00	14	1.909	2.50	1.378	1.85	1.677					
SNL	0625K02	▲	0.625	5	0.63	0.50	0.394	0.591	0.823	LT11.01N-□□□□	I60 M2.5×6.5	--	SM4×8C	WT07IP
	0625M02	▲	0.625	6	0.61	0.63	0.413	0.591	1.020	LT16.01N-□□□□	I60 M3.5×8			WT15IP
	0625M03	▲	0.625	6	0.61	0.80	0.472	0.591	1.063		I60 M3.5×12	MT16-□□M		WT15IP
	0750M03	▲	0.75	6	0.748	1.00	0.551	0.709	1.130					
	0750Q03	▲	0.75	7	0.748	1.00	0.551	0.709	1.339					
	1000M03	▲	1.00	6	0.945	1.25	0.669	0.906	1.134					
	1250R03	▲	1.25	8	1.22	1.50	0.866	1.181	1.217					
	1250S03	▲	1.25	10	1.22	1.50	0.866	1.181	1.217					
	1500T03	▲	1.50	12	1.516	2.00	1.063	1.457	1.240	LT22.01N-□□□□	I60 M5×10			WT20IP
	2000U03	▲	2.00	14	1.949	2.50	1.378	1.929	1.583		I60 M5×17	MT22-□□M		WT20IP
	0750Q04	▲	0.75	7	0.846	1.00	0.591	0.709	1.378					
	1000R04	▲	1.00	8	0.945	1.25	0.748	0.906	1.535					
	1250S04	▲	1.25	10	1.22	1.50	0.866	1.181	1.433					
	1500T04	▲	1.50	12	1.516	2.00	1.063	1.457	1.465					
	2000U04	▲	2.00	14	1.909	2.50	1.378	1.85	1.677					

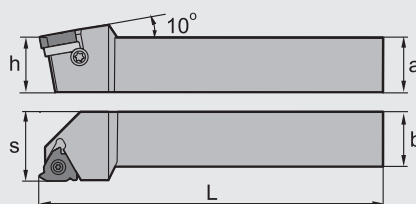
▲ Stock available

△ Make-to-order

External threading tools (For thin type threading)



Right hand

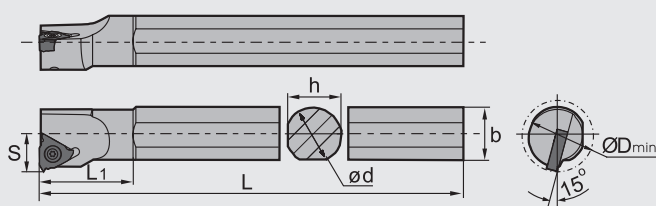


Type		Dimensions(inch)					Applicable inserts	Inserts screw	Shim	Shim screw	Wrench
		a	h	b	L	s					
SWR	10A03B	0.625	0.625	0.625	4	0.75	RT16.01W-□□□□B	I60M3.5×12TT	MT16-□□M	SM4×8C	WT15IP
	12C03B	0.750	0.750	0.750	5	1.00					
	16D03B	1.00	1.00	1.00	6	1.25					
	20E03B	1.25	1.25	1.25	7	1.50					

Internal threading tools (For thin type threading)



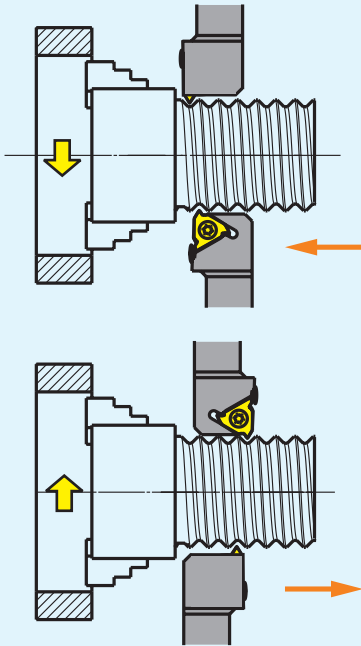
Right hand



Type		Dimensions(inch)							Applicable inserts	Inserts screw	Shim	Shim screw	Wrench
		ød	L	b	ØD _{min}	S	h	L ₁					
SNR	0625M03B	0.625	6.00	0.610	0.75	0.472	0.591	1.063	RT16.01W-□□□B	I60M3.5×8TT	MT16-□□M	SM4×8C	WT15IP
	0750Q03B	0.75	7.00	0.748	1.00	0.551	0.709	1.339					
	1000M03B	1.00	6.00	0.945	1.25	0.669	0.906	1.134					
	1250R03B	1.25	8.00	1.220	1.50	0.866	1.181	1.217					
	1250S03B	1.25	10.00	1.220	1.50	0.866	1.181	1.217					

Machining way of threading tools

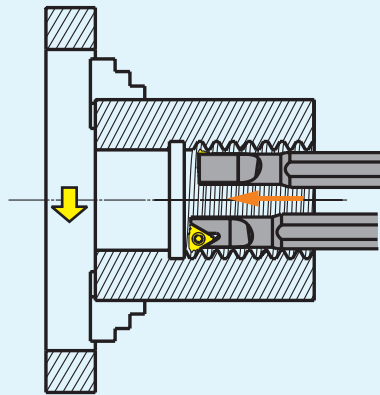
External threading machining (Right thread)



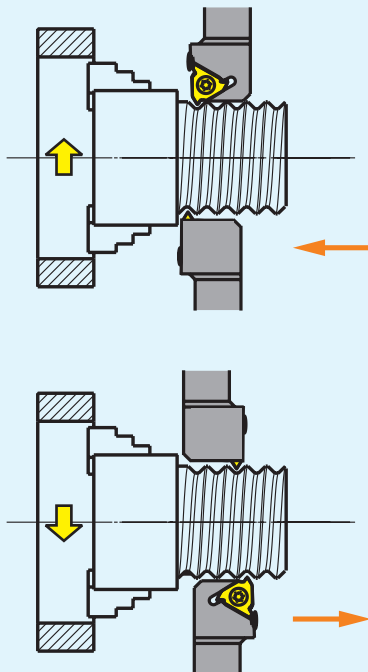
Please follow the following steps to get the best threading result:

- ① Select proper thread machining method.
- ② Decide helical angle, select shim.
- ③ Choose proper insert and toolholder size.
- ④ By checking reference table of standard threading program, select feasible cutting parameters.
- ⑤ Selection feed way.

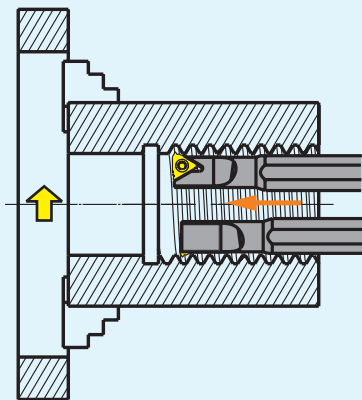
Internal threading machining (Right thread)



External threading machining (Left thread)



Internal threading machining (Left thread)



Decide helical angle, select shim

The cutting edge clearance angle affects the dissipation of heat, balance of insert wear, thread pitch quality, and security of the cutting edge. The clearance angle of thread pitch on clearance face is determined by thread helical angle. These two angles are similar to each other. If the inclined angle of the insert is different from the helical angle, then clearance angle won't be the same. The pitch of the helical angle must be the same as the inclined angle of the insert in order to prevent premature wear on the clearance face. The helical angle is calculated as below:

$$\rho = \arctan \frac{P}{d_2 \times \pi}$$

P=Pitch

d₂=pitch diameter

The common inclined angle is 1°, MT standard shim and its inclined angle is 1° too

The calculation of clearance angle:

Clearance angle B is calculated as below:

$$\beta = \arccos(\tan \theta \times \tan \alpha)$$

2θ=Thread profile angle

α=The rake angle of external standard

threading tools is 10°; The rake angle of internal standard threading tools is 15°

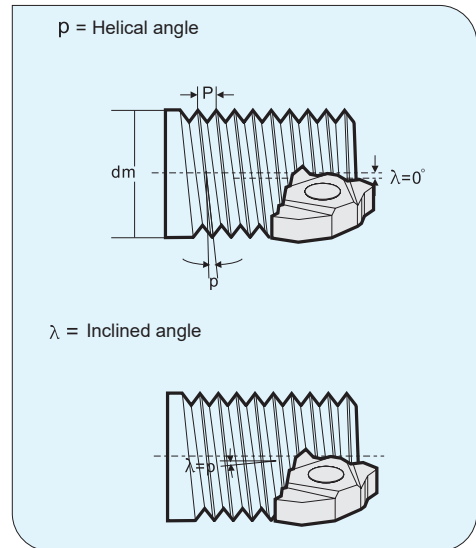
The shim has to be changed when helical angle of thread is ≤ clearance angle of the insert, which would cause interference with insert flank. Please change shim to adjust the difference between helical angle of thread and inclined angle of shim to be within 2°~0°.

For Example: when P=1.5mm, d₂=24mm
Helical Angle 1.14°-(2°~0°)=Inclined Angle
(-0.86°~1.14°)
It's feasible by using standard shim 1°.

Shim specification table are as following:

Screw pitch range	Insert dimensions	Inclined angle	Shim
0.5-3.0	16	0	MT16-00M
		1	MT16-01M
		2	MT16-02M
		3	MT16-03M
3.5-6.0	22	0	MT22-00M
		1	MT22-01M
		2	MT22-02M
		3	MT22-03M

Note: The standard angle of shim for our threading tools is 1°
(MT16-01M or MT22-01M)



Please refer to table below for actual value:

Thread profile angle 2θ	β	
	External thread	Internal thread
60°	5.8°	8.79°
55°	5.24°	7.94°
30°	2.7°	4.1°
29°	2.6°	3.96°

Select shim:

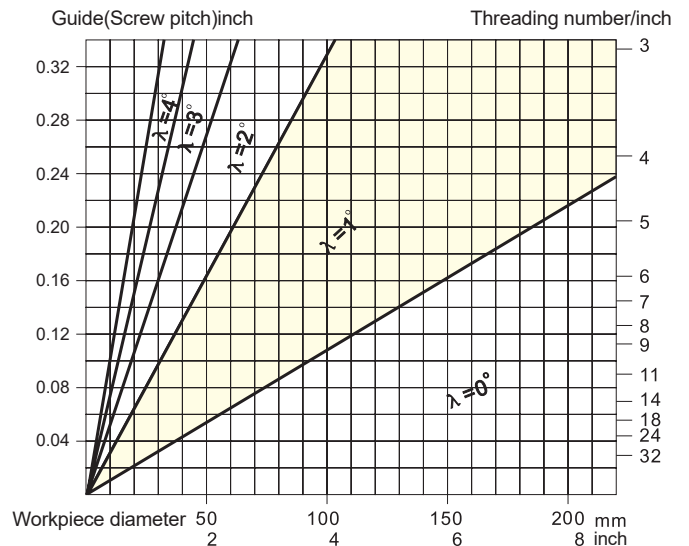


Table of recommended cutting parameters

ISO	Material		Unit cutting force Kc0.4 N/mm ²	Hardness HB	Grade
					YBG201 YBG202 YBG203 YBG205
					Cutting speed(SFPM)
P	Carbon steel	C=0.15%	1900	125	500-600
		C=0.35%	2100	150	450-500
		C=0.60%	2250	200	400-500
	Alloy steel	Anneal	2100	180	360-400
		Hardened	2600	275	260-300
		Hardened	2700	300	230-300
		Hardened	2850	350	200-260
	High alloy steel	Anneal	2600	200	300-400
		Hardened	3900	325	230-300
	Cast steel	Non-alloy	2000	180	600-700
		low alloy	2500	200	300-400
		high alloy	2700	225	300-400
		Martensite steel 12%Mn	3600	250	130-160
M	Stainless steel	Austenite	2450	180	360-400
		Martensite/Ferrite	2300	200	400-550
K	Malleable cast iron	Ferrite	1100	130	360-450
		Pearlite	1100	230	300-300
	Gray cast iron	Low tensile-strength	1100	180	360-450
		High tensile-strength	1500	260	300-350
	Nodular cast iron	Ferrite Pearlite	1100 1800	160 250	360-400 260-300
N	Al alloy	Non-aging treatment	500	60	4300-4800
		Aging treatment	800	100	1500-1600
	Cast aluminum alloy	Non-aging treatment	750	75	1400-1500
		Aging treatment	900	90	800-1000
S	Heat resistant alloy	Iron base	Anneal	200	100-150
			Aging	280	90-110
		Ni- or Co- base	Anneal	250	50-80
			Aging	350	30-60
			Casting	320	30-50
H	Hardened steel	Hardened steel	4500	HRC55	130-160

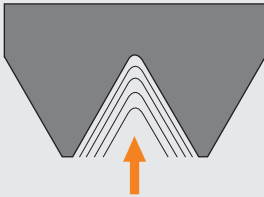
Note:

- The values in the above table are range values. High values in the range could be considered in actual cutting. When trying new cutting speed, please check the cutting edge condition before operation.
- In stainless steel threading, high cutting speed should be used to prevent built-up edge.
- The cutting parameters should be reduced when cutting small pitch thread and when using tools with small nose radius.
- When cutting thread by tools with small nose radius, such as NPT standard thread, it is advisable to use tools with big nose radius first to rough, so as to improve the life of tools with small nose radius.



In-feed way of threading tools

Radial in-feed



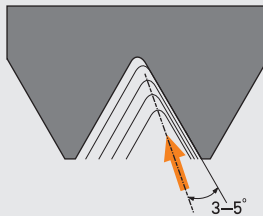
- Easy operation, high versatility.
- V-shape chip caused by long chip steel workpiece will produce big bend stress on cutting edge.
- It requires low cutting depth, sharp cutting edge and good tough material.
- Big quantity of heat when cutting, V-shape chip is hard to control.
- Because the interface of cutting chips on the right and left side is long, so it is easy to cause vibration and make the cutting edge suffer more overloading.

Flank in-feed



- Cutting edge suffer small bend stress, stable estate, it is easy for chips formation in deep cutting depth.
- There are enough space to leave chips flow when flank in-feed.
- Big abrasion on right flank.

Modified flank in-feed



- Right Cutting Edge also engage on cutting depth to a certain extent, it can reduce the abrasion on right side of clearance face.
- Cutting edge suffer small bend stress, stable estate, it is easy for chips formation in deep cutting depth.
- Good Cutting Performance.

Alternate flank in-feed



- Cutting edge trade off when machining, equality abrasion on left and right side of clearance face on cutting edge, it can improve the life of tools.
- Chips are flowing from both of right and left side, good chips flowing.
- Recommend using in big screw-pitch thread cutting.



Recommend adopting flank in-feed or alternate flank in-feed under allowable range of machining equipment or programmer, it can eliminate the machining vibration effectively, and it has enough space discharge the chips between pitch. Cutting edge suffer a small stress, machining stable, it likes the general turning process when machining thread, good chip control without extra chips.

Common problems in threading and solutions

Problem	Cause	Solutions
Wear on clearance face	Cutting speed too high.	Reduce cutting speed.
	Low cutting depth, abrasion.	Reduce frequency of feed and friction of cutting edge.
	Inserts are over the center line.	Adopt correct center height.
Asymmetric wear on right and left cutting edge	The inclined angle of insert is different from the helical angle of thread.	Change to proper shim to get correct inclined angle.
	Flank in-feed is not correct.	Change the way of flank in-feed.
Breakage	Cutting speed too low.	Increase cutting speed.
	Cutting force too high.	Increase frequency of feed and reduce Max in-feed.
	Unstable clamping.	Check if workpiece vibrates. Reduce overhang of tool. Verify clamping of workpiece and tool.
	Chip twisting.	Increase the pressure of cooling liquid to blow away chips.
Plastic deformation	High cutting speed, high temperature on cutting area.	Reduce cutting speed. Increase feed frequency and reduce Max cutting depth.
	Insufficient cooling fluid.	Increase cooling fluid supply.
Low thread surface quality	Cutting speed too low. The insert is over the center line. Chips are not under control.	Increase cutting speed. Adjust centre height. Change the operation way of tools to well control chips.
Incorrect profile	Incorrect center height.	Adjust centre height.
	Pitch on machine is not correct.	Adjust machine.
Shallow profile	Cutting speed set wrong.	Adjust cutting depth.
Surface damage	Chips involved or contacted.	Change to flank in-feed to control chip flow direction.
Built-up edge	Temperature of cutting edge is too low. Usually occur when machining stainless steel and low carbon steel.	Increase cutting speed as well as pressure and concentration of cooling fluid. Choose inserts with good toughness.
Crack on surface	Cutting force too high.	Reduce the cutting depth of each feed.
Vibration	Incorrect clamping of workpiece or tool.	Verify clamping of workpiece and tool. Minimize overhang of tool.
	Incorrect cutting parameters.	Increase cutting speed or reduce it substantially.
	Incorrect tool clamping.	Adjust center height.