

Threading





Product
Expansion
Pages 64-89

Precise and Efficient Threading Products




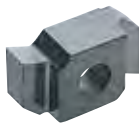



CLASSIFICATION


EXTERNAL CUTTING

Name of Tool Holder	Insert Shape	Features
<p>MMTE Holder</p> 		<ul style="list-style-type: none"> ● Various insert types. ● Precision class insert for precise thread forms. ● Available with a pressed breaker for chip control. ● Able to change lead angle by replacing the shim.
<p>MTVO Holder</p> 		<ul style="list-style-type: none"> ● Multi-clamp type. ● Precision class insert. ● Positive insert produces a good finished surface. ● Holder is capable of performing both grooving and threading. ● Economical due to the use of 3 cutting edges.



INTERNAL CUTTING

Name of Tool Holder	Insert Shape	Features
MMTI 		<ul style="list-style-type: none"> ● Minimum cutting diameter .500 inch. ● Various insert types. ● Precision class insert for precise thread forms. ● Available with a pressed breaker for chip control. ● Able to change lead angle by replacing the shim.
STHN/O 		<ul style="list-style-type: none"> ● Screw-on type. ● Precision class insert. ● Positive insert produces a good finished surface. ● Holder is capable of performing both grooving and threading. ● Economical due to the use of 3 cutting edges.
FSL5 S-SL5 		<ul style="list-style-type: none"> ● Screw-on type. ● Precision class insert. ● Holder is capable of performing both grooving and threading. ● Maximum groove depth .118inch.
MICRO-MINI TWIN Boring Bars 	<p style="text-align: center;">-</p>	<ul style="list-style-type: none"> ● Solid carbide type. ● Economical due to single holder with two cutting edges.
MICRO-MINI Boring Bars 	<p style="text-align: center;">-</p>	<ul style="list-style-type: none"> ● Solid carbide type. ● Insert can be ground to suit the application.

PIPE CUTTING INSERTS

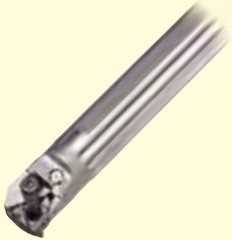


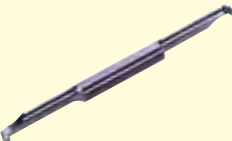
Name of Tool Holder	Insert Shape	Features
Threading inserts for specialty pipe threading ID/OD		<ul style="list-style-type: none"> ● Chaser ● Laydown ● On Edge

CROSS REFERENCE THREAD PITCH

Application		General machining				Pipe fittings and couplings for gas and water	
Type		Partial Profile 60°	Partial Profile 55°	ISO Metric	American UN	Parallel Pipe Thread Whitworth for BSW, BSP	American NPT
Symbol		M UNC UNF	W	M	UNC UNF	G(PF) W	NPT
Pitch	Holder	mm (thread/inch)	thread/inch	mm	thread/inch	thread/inch	thread/inch
MMT Holder 	Full form	–	–	0.5 2.5 0.75 3.0 1.0 3.5 1.25 4.0 1.5 4.5 1.75 5.0 2.0	32 12 28 11 24 10 20 9 18 8 16 7 14 6 13 5	28 11 26 10 20 9 19 8 18 7 16 6 14 5 12	27 18 14 11.5 8
	Partial form	0.5 –1.5(48–16) 1.75–3.0(14– 8) 0.5 –3.0(48– 8) 3.5 –5.0(07– 5)	48–16 14– 8 48– 8 7– 5	0.5 –1.5 1.75–3.0 0.5 –3.0 3.5 –5.0	48–16 14– 8 48– 8 7– 5	–	–
MTVO Holder 	Partial form	0.5–3.0 0.5–4.5 0.5–6.0	–	0.5–3.0 0.5–4.5 0.5–6.0	48–8 48–6 48–4	–	–

	Steam, gas and water pipes		Pipe couplings for food and fire fighting industries	Motion transmission		Aircraft and aerospace	Oil and gas	
	Taper Pipe Thread BSPT	American NPTF	Round DIN 405	ISO Trapezoidal 30°	American ACME	UNJ	API Buttress Casing	API Round Casing & Tubing
	BSPT R(PT) Rc(PS) Rp	NPTF	Rd	Tr (TM)	ACME (Tw)	UNJ	BCSG	CSG LCSG
	thread/inch	thread/inch	thread/inch	mm	thread/inch	thread/inch	thread/inch	thread/inch
	28 19 14 11	27 18 14 11.5 8	10 8 6 4	1.5 2.0 3.0 4.0 5.0	12 10 8 6 5	32 16 28 14 24 12 20 10 18 8	5	10 8
	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—

CROSS REFERENCE THREAD PITCH

Application		General machining				Pipe fittings and couplings for gas and water	
Type		Partial Profile 60°	Partial Profile 55°	ISO Metric	American UN	Parallel Pipe Thread Whitworth for BSW, BSP	American NPT
Symbol		M UNC UNF	W	M	UNC UNF	G(PF) W	NPT
Pitch	Holder	mm (thread/inch)	thread/inch	mm	thread/inch	thread/inch	thread/inch
MMT Boring Bars 	Full form	—	—	0.5 2.5 0.75 3.0 1.0 3.5 1.25 4.0 1.5 4.5 1.75 5.0 2.0	32 12 28 11 24 10 20 9 18 8 16 7 14 6 13 5	28 11 26 10 20 9 19 8 18 7 16 6 14 5 12	27 18 14 11.5 8
	Partial form	0.5 -1.5(48-16) 1.75-3.0(14- 8) 0.5 -3.0(48- 8) 3.5 -5.0(07- 5)	48-16 14- 8 48- 8 7- 5	0.5 -1.5 1.75-3.0 0.5 -3.0 3.5 -5.0	48-16 14- 8 48- 8 7- 5	—	—
STHN/O Boring Bars 	Partial form	0.5-3.0 0.5-4.5 0.5-6.0	—	0.5-3.0 0.5-4.5 0.5-6.0	48-8 48-6 48-4	—	—
FSL5 SLSN Boring Bars 	Partial form	1.5-2.0 1.5-2.5 1.5-3.5	—	1.5-2.0 1.5-2.5 1.5-3.5	48-13 48-11 48- 8	—	—
MICRO-MINI TWIN 	Partial form	0.5 -1.0 (36-24) 0.75-1.25(28-20) 0.75-1.5 (24-18) 0.75-1.75(24-16)	—	0.5 -1.0 0.75-1.25 0.75-1.5 0.75-1.75	36-24 28-20 24-18 24-16	—	—

	Steam, gas and water pipes		Pipe couplings for food and fire fighting industries	Motion transmission		Aircraft and aerospace	Oil and gas	
	Taper Pipe Thread BSPT	American NPTF	Round DIN 405	ISO Trapezoidal 30°	American ACME	UNJ	API Buttress Casing	API Round Casing & Tubing
	BSPT R(PT) Rc(PS) Rp	NPTF	Rd	Tr (TM)	ACME (Tw)	UNJ	BCSG	CSG LCSG
	thread/inch	thread/inch	thread/inch	mm	thread/inch	thread/inch	thread/inch	thread/inch
	19 14 11	14 11.5 8	10 8 6 4	1.5 2.0 3.0 4.0 5.0	12 10 8 6 5	* — —	5	10 8
	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—

* When machining an internal UNJ thread, cut an internal hole with the appropriate diameter. Then machine with 60° American UN. In this case, a full form type insert cannot be used.

STANDARD THREAD AND CORRESPONDING INSERT

Thread Name	Standard Thread Type	Symbol	Thread Name	Standard Thread Type	Symbol
ISO Metric / American UN		M UNC UNF	BSPT		BSPT R (PT) Rc (PS) Rp
Parallel Pipe Thread Whitworth for BSW, BSP		W G (PF)	Round DIN405		Rd
American NPT		NPT	ISO Trapezoidal 30°		Tr (TM)
API Round Casing & Tubing		CSG LCSG	American ACME		ACME (Tw)
API Buttress Casing		BCSG			

PIPE THREADS AND TOOL SELECTION

● Parallel Pipe Threads G(PF)

Thread Type	Number of threads	Standard internal diameter
G1/16	28	.258"
G1/8		.337"
G1/4	19	.451"
G3/8		.589"
G1/2	14	.734"
G5/8		.811"
G3/4		.949"
G7/8		1.098"
G1	11	1.193"
G1-1/8		1.376"
G1-1/4		1.534"

Note) Same as PF.

● Taper Pipe Threads R(PT), Rc(PS)

Thread Type	Number of threads	Standard internal diameter
R1/16	28	.258"
R1/8		.337"
R1/4	19	.451"
R3/8		.589"
R1/2	14	.734"
-	-	-
R3/4	14	.949"
-	-	-
R1	11	1.193"
-	-	-
R1-1/4	11	1.534"

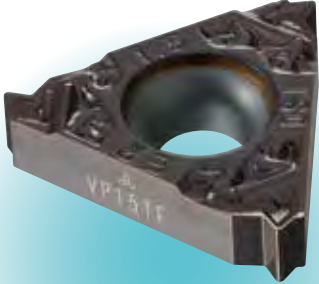
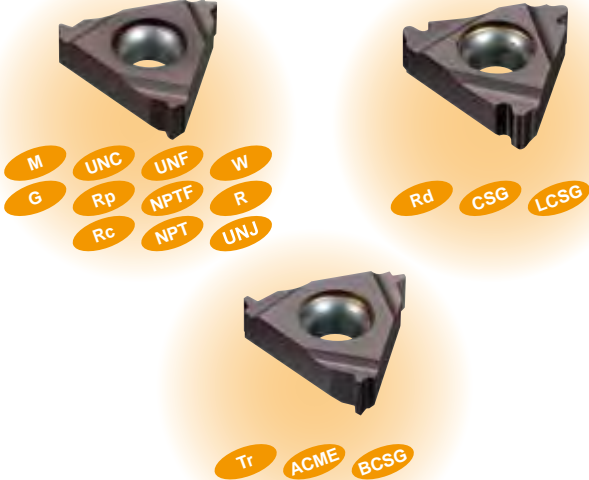
Note) Same as Rc and PT.

- The pitch is pre-determined for each nominal diameter. Note the minimum machining diameter especially when internal threading.

FEATURES OF MMT SERIES



A WIDE VARIETY OF CHOICES

Mitsubishi Miracle Threading (MMT) series contains 297 inserts and 23 holders.

M-CLASS INSERTS WITH 3-D CHIP BREAKERS	G-CLASS GROUND INSERTS
 <p>M UNC UNF W G Rp R Rc</p>	 <p>M UNC UNF W G Rp NPTF R Rc NPT UNJ Rd CSG LCSG Tr ACME BCSG</p>

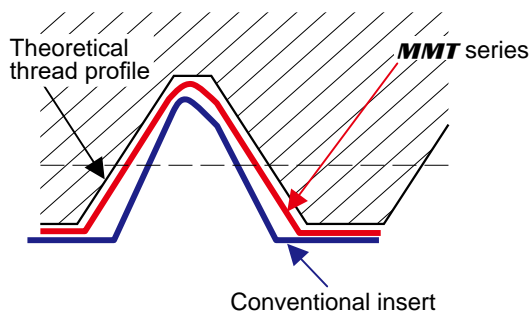
IDEAL CHIP CONTROL EVEN IN THE LATTER HALF OF PASSES WHEN CONTINUOUS CHIPS ARE USUALLY PRODUCED. (M-CLASS INSERTS WITH 3-D CHIP BREAKERS)

ISO metric external thread pitch 1.5mm Final pass (6th pass)

Competitor	MMT
	

<Cutting Conditions>
 Workpiece : AISI 4140
 Insert : MMT16ER150ISO-S
 Grade : VP15TF
 Cutting speed : 395SFM
 Cutting method : Radial Infeed
 Depth of cut : Fixed cut area
 Pass : 6 times
 Coolant : Wet

A HIGHER LEVEL OF PRECISION THAN CONVENTIONAL INSERTS (G-CLASS GROUND INSERTS)

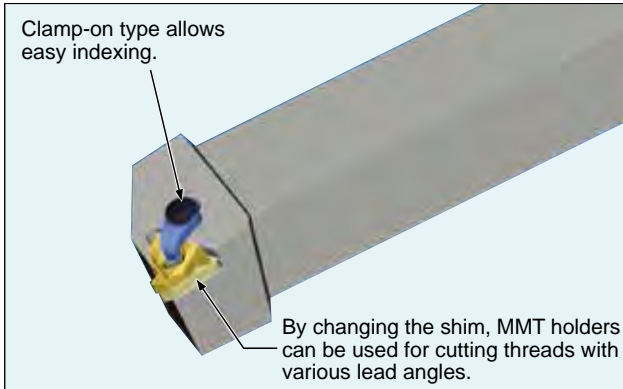


High precision threading can be achieved by using MMT inserts that feature a ground rake face and peripheral cutting edge.

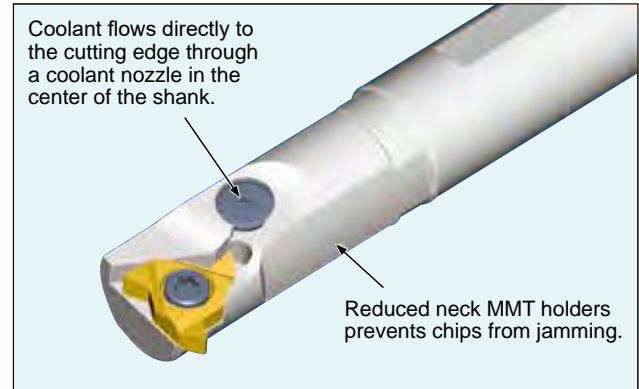
Thread Type	Threading Tolerance
ISO Metric	6g / 6H
American UN	2A / 2B
Whitworth for BSW, BSP	Medium Class A
BSPT	Standard BSPT
Round DIN 405	7h / 7H
ISO Trapezoidal 30°	7e / 7H
American ACME	3G
UNJ	3A
API Buttress Casing	Standard API
API Rounded Casing & Tubing	Standard API RD
American NPT	Standard NPT
American NPTF	Class 2

■ HOLDER (With special surface treatment)

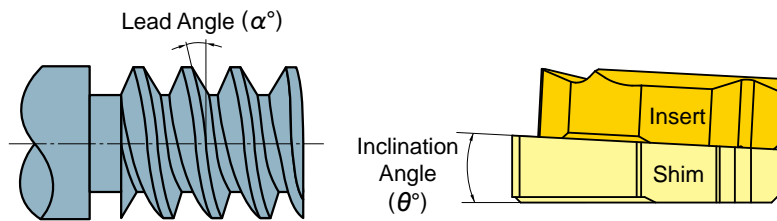
External



Internal



■ SUITABLE FOR THREADING WITH A LARGE LEAD ANGLE



By changing only the shim, MMT holders can be used for turning of threads with various lead angles as well as the turning of left hand threads. (Please refer to page G022, page G025 and page G026)

Lead Angle (α°)	Inclination Angle (θ°)
-1.5°	-3°
-0.5°	-2°
0.5°	-1°
1.5°	0°
2.5°	1°
3.5°	2°
4.5°	3°

■ Delivered with the holder.

■ **VP10MF** (G-class ground inserts only)

- Superior wear and plastic deformation resistance
- Suitable for continuous high precision machining with extensive tool life.

- High wear and plastic deformation resistance for threading when maintaining the thread form is important.
- Effective in combination with G-class inserts for high precision threading.

■ **VP15TF** (G-class ground inserts, M-class inserts with 3-D chip breakers)



- Wide versatility
- Able to withstand harsh conditions for long periods where conventional inserts would be liable to breakage.

- High fracture resistance during low rigidity applications such as bar feed machining.
- Effective combination of high cost performance M-class inserts with 3-D chip breakers.

■ **VP20RT** (M-class inserts with 3-D chip breakers)

- Excellent fracture resistance
- Suitable for stainless steel boring and unstable machining where inserts are vulnerable to fracturing.
- Effective combination of high cost performance M-class inserts with 3-D chip breakers.

■ CHOOSING M-CLASS INSERTS WITH 3-D CHIP BREAKERS OR G-CLASS INSERTS

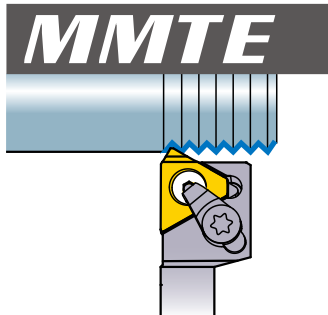
Insert	Chip control	Precise Threads	Insert	Chip control	Precise Threads
M-class inserts with 3-D chip breakers 	◎	○	G-class inserts 	○	◎

◎ : 1st recommendation
○ : 2nd recommendation

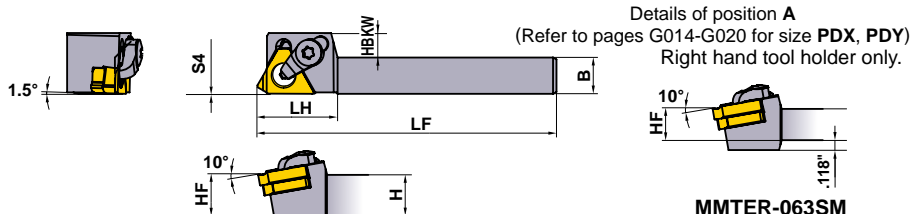
- For ideal chip control and a high cost performance ratio, M-class inserts with 3-D chip breakers are recommended.
- G-class inserts are recommended where highest precision is required.

MMTE HOLDER

- Various insert types.
- Precision class insert for precise thread forms.
- Available with a pressed breaker for chip control.
- Able to change lead angle by replacing the shim.



(External threading)



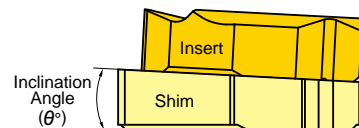
Order Number	Stock R	Insert Number	Dimensions (inch)						Accessories					
			H	B	LF	LH	HF	WF	Clamp Bridge	Clamp Screw *2	Stop Ring	Shim Screw *2	Shim *1	Wrench
MMTER-063SM	●	MMT16ER ○○○○○	.375	.375	4.724	.875	.375	.625	SETK51	SETS51	CR4	HFC03008	CTE32TP15	①TKY15F ②HKY20R
MMTER-083SM	●		.500	.500	4.724	.875	.500	.625	SETK51	SETS51	CR4	HFC03008	CTE32TP15	①TKY15F ②HKY20R
MMTER-083	●		.500	.500	4.000	1.000	.500	.625	SETK51	SETS51	CR4	HFC03008	CTE32TP15	①TKY15F ②HKY20R
MMTER-103	●		.625	.625	4.000	1.000	.625	.750	SETK51	SETS51	CR4	HFC03008	CTE32TP15	①TKY15F ②HKY20R
MMTER-123	●		.750	.750	5.000	1.000	.750	1.000	SETK51	SETS51	CR4	HFC03008	CTE32TP15	①TKY15F ②HKY20R
MMTER-163	●		1.000	1.000	6.000	1.000	1.000	1.250	SETK51	SETS51	CR4	HFC03008	CTE32TP15	①TKY15F ②HKY20R
MMTER-124	●	MMT22ER ○○○○○	.750	.750	5.000	1.250	.750	1.000	SETK61	SETS61	CR5	HFC04010	CTE43TP15	①TKY20F ②HKY25R
MMTER-164	●		1.000	1.000	6.000	1.250	1.000	1.250	SETK61	SETS61	CR5	HFC04010	CTE43TP15	①TKY20F ②HKY25R
MMTER-204	●		1.250	1.250	6.000	1.250	1.250	1.500	SETK61	SETS61	CR5	HFC04010	CTE43TP15	①TKY20F ②HKY25R

*1 Select and use an alternate shim from list below (sold separately), dependant on the lead angle.
 *2 Clamp Torque (lbf-in) : SETS51=31, SETS61=44, HFC03008=13, HFC04010=19

SHIM

Lead Angle (α°)	Order Number	Stock R	Inclination Angle (θ°)	Applicable Holder
-1.5°	CTE32TN15	●	-3°	MMTER ○○3
-0.5°	CTE32TN05	●	-2°	
0.5°	CTE32TP05	●	-1°	
1.5°	CTE32TP15	●	0°	
2.5°	CTE32TP25	●	1°	
3.5°	CTE32TP35	●	2°	
4.5°	CTE32TP45	●	3°	

Lead Angle (α°)	Order Number	Stock R	Inclination Angle (θ°)	Applicable Holder
-1.5°	CTE43TN15	●	-3°	MMTER ○○4
-0.5°	CTE43TN05	●	-2°	
0.5°	CTE43TP05	●	-1°	
1.5°	CTE43TP15	●	0°	
2.5°	CTE43TP25	●	1°	
3.5°	CTE43TP35	●	2°	
4.5°	CTE43TP45	●	3°	



Standard shim delivered with the holder.
 * See page G025 and page G026 for shim selection guide lines.

IDENTIFICATION

MMT		E	R	08	3	-SM				
Designation	Application	Hand of Tool		Tool Size (inch) (Height and Width)		Insert Size				
	E External	R	Right	06	.375	12	.750	3	MMT16	SM Non-offset
				08	.500	16	1.000	4	MMT22	
				10	.625	20	1.250			

RECOMMENDED CUTTING CONDITIONS

Work Material	Hardness	Grade	Cutting Speed (SFM)
P Mild Steel	≤180HB	VP10MF	490 (230-755)
		VP15TF	330 (195-460)
		VP20RT	260 (195-330)
		VP10MF	460 (260-655)
Carbon Steel Alloy Steel	180-280HB	VP15TF	330 (195-460)
		VP20RT	260 (195-330)
		VP10MF	425 (260-590)
M Stainless Steel	≤200HB	VP15TF	260 (130-395)
		VP20RT	195 (130-260)

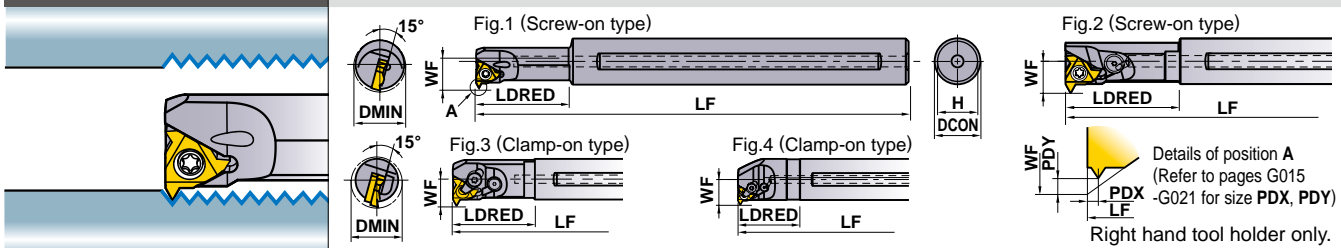
Work Material	Hardness	Grade	Cutting Speed (SFM)
K Cast Iron	Tensile Strength ≤350MPa	VP10MF	460 (260-655)
		VP15TF	295 (195-395)
S Heat-Resistant Alloy	-	VP10MF	150 (50-230)
		VP15TF	100 (65-130)
Titanium Alloy	-	VP10MF	195 (130-260)
		VP15TF	150 (80-210)
H Hardened Steel	45-55HRC	VP10MF	165 (100-230)
		VP15TF	130 (65-195)

MMTI TYPE BORING BARS

- Minimum cutting diameter .500".
- Various insert types.
- Precision class insert for precise thread forms.
- Available with a pressed breaker for chip control.
- Able to change lead angle by replacing the shim.

MMTI

(Internal threading)



Order Number	Stock R	Insert Number	Lead Angle	Dimensions (inch)						Clamp Bridge	Clamp Screw *2	Stop Ring	Shim Screw	Shim *1	Wrench	Fig.
				DCON	LF	LDRED	WF	H	DMIN							
MMTIR102-0.50-1.5-C	●	MMT11IR	1.5°	.625	5.000	1.000	.340	.586	.500	-	TS25	-	-	-	ⓉTKY08F	1
MMTIR102-0.50-2.5-C	●		2.5°	.625	5.000	1.000	.340	.586	.500	-	TS25	-	-	-	ⓉTKY08F	1
MMTIR102-0.60-1.5-C	●		1.5°	.625	6.000	1.250	.380	.586	.600	-	TS25	-	-	-	ⓉTKY08F	1
MMTIR102-0.60-2.5-C	●	2.5°	.625	6.000	1.250	.380	.586	.600	-	TS25	-	-	-	ⓉTKY08F	1	
MMTIR103-0.75-1.5-C	●	MMT16IR	1.5°	.625	6.000	1.500	.480	.586	.750	-	CS350860T	-	-	-	ⓉTKY15F	2
MMTIR103-0.75-2.5-C	●		2.5°	.625	6.000	1.500	.480	.586	.750	-	CS350860T	-	-	-	ⓉTKY15F	2
MMTIR123-0.90-1.5-C	●		1.5°	.750	7.000	1.500	.510	.711	.900	SETK51	SETS51	CR4	HFC03006	CTI32TP15	ⓉTKY15F ⓉHKY20R	3
MMTIR163-1.15-1.5-C	●	1.5°	1.000	10.000	2.500	.660	.937	1.150	SETK51	SETS51	CR4	HFC03006	CTI32TP15	ⓉTKY15F ⓉHKY20R	3	
MMTIR203-1.45-1.5-C	●	1.5°	1.250	10.000	2.000	.810	1.187	1.450	SETK51	SETS51	CR4	HFC03006	CTI32TP15	ⓉTKY15F ⓉHKY20R	4	
MMTIR124-0.95-1.5-C	●	MMT22IR	1.5°	.750	7.000	2.000	.610	.711	.950	-	TS43	-	-	-	ⓉTKY15F	2
MMTIR124-0.95-2.5-C	●		2.5°	.750	7.000	2.000	.610	.711	.950	-	TS43	-	-	-	ⓉTKY15F	2
MMTIR164-1.20-1.5-C	●		1.5°	1.000	8.000	1.500	.700	.937	1.200	SETK61	SETS61	CR5	HFC04008	CTI43TP15	ⓉTKY20F ⓉHKY25R	4
MMTIR204-1.50-1.5-C	●	1.5°	1.250	10.000	2.000	.860	1.187	1.500	SETK61	SETS61	CR5	HFC04008	CTI43TP15	ⓉTKY20F ⓉHKY25R	4	
MMTIR244-1.75-1.5-C	●	1.5°	1.500	12.000	2.500	.980	1.437	1.750	SETK61	SETS61	CR5	HFC04008	CTI43TP15	ⓉTKY20F ⓉHKY25R	4	

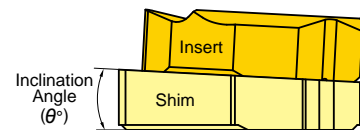
*1 Select and use an alternate shim from list below (sold separately), dependant on the lead angle.
 *2 Clamp Torque (lbf-in) : TS25=8.9, CS350860T=31, SETS51=31, TS43=31, SETS61=44, HFC03006=13, HFC04008=19
 Note 1) The screw-on type has no shim. The holder has an in-built lead angle. Please select a holder with the appropriate lead angle.
 Note 2) The minimum cutting diameter (DMIN) indicates the prepared hole diameter, not the nominal thread diameter.

SHIM

Lead Angle (α°)	Order Number	Stock R	Inclination Angle (θ°)	Applicable Holder
-1.5°	CTI32TN15	●	-3°	MMTIR ○○○-○○○ ○○-C
-0.5°	CTI32TN05	●	-2°	
0.5°	CTI32TP05	●	-1°	
1.5°	CTI32TP15	●	0°	
2.5°	CTI32TP25	●	1°	
3.5°	CTI32TP35	●	2°	
4.5°	CTI32TP45	●	3°	

Standard shim delivered with the holder.

* See page G025 and page G026 for shim selection guide lines.



IDENTIFICATION

Designation	Application	Shank Diameter (inch)	Insert Size	Min. Cutting Diameter (inch)	Lead Angle	Coolant
MMT I R 10 2 - 0.50 - 1.5 - C	I Internal	10 .625	2 MMT11	0.50 .500 1.15 1.150	1.5 1.5°	C With
	Hand of Tool R Right	12 .750	3 MMT16	0.60 .600 1.20 1.200	2.5 2.5°	
16 1.000		4 MMT22	0.75 .750 1.45 1.450			
		20 1.250		0.90 .900 1.50 1.500		
		24 1.500		0.95 .950 1.75 1.750		

RECOMMENDED CUTTING CONDITIONS

Work Material	Hardness	Grade	Cutting Speed (SFM)
P Mild Steel	≤180HB	VP10MF	490 (230-755)
		VP15TF	330 (195-460)
		VP20RT	260 (195-330)
Carbon Steel Alloy Steel	180-280HB	VP10MF	460 (260-655)
		VP15TF	330 (195-460)
		VP20RT	260 (195-330)
M Stainless Steel	≤200HB	VP10MF	425 (260-590)
		VP15TF	260 (130-395)
		VP20RT	195 (130-260)

Work Material	Hardness	Grade	Cutting Speed (SFM)
K Cast Iron	Tensile Strength ≤350MPa	VP10MF	460 (260-655)
		VP15TF	295 (195-395)
S Heat-Resistant Alloy	-	VP10MF	150 (50-230)
		VP15TF	100 (65-130)
		VP10MF	195 (130-260)
Titanium Alloy	-	VP15TF	150 (80-210)
		VP10MF	165 (100-230)
H Hardened Steel	45-55HRC	VP15TF	130 (65-195)

MMT M-CLASS INSERTS WITH 3-D CHIP BREAKERS

EXTERNAL THREADING INSERTS

Type	Order Number	Coated		Pitch		Dimensions (mm)					Total depth of cut (mm)	Geometry
		VP15TF	VP20RT	mm	thread/inch	IC	S	PDY	PDX	RE		
Partial Profile 60°	MMT16ERA60-S	●		0.5-1.5	48-16	9.525	3.44	0.8	0.9	0.06	—	
	MMT16ERG60-S	●		1.75-3.0	14-8	9.525	3.44	1.2	1.7	0.23	—	
Partial Profile 55°	MMT16ERA55-S	★			48-16	9.525	3.44	0.8	0.9	0.07	—	
	MMT16ERG55-S	★			14-8	9.525	3.44	1.2	1.7	0.23	—	
ISO Metric	MMT16ER100ISO-S	●	★	1.0		9.525	3.44	0.7	0.7	0.13	0.61	
	MMT16ER125ISO-S	●	★	1.25		9.525	3.44	0.8	0.9	0.16	0.77	
	MMT16ER150ISO-S	●	★	1.5		9.525	3.44	0.8	1.0	0.20	0.92	
	MMT16ER175ISO-S	●	★	1.75		9.525	3.44	0.9	1.2	0.22	1.07	
	MMT16ER200ISO-S	●	★	2.0		9.525	3.44	1.0	1.3	0.26	1.23	
	MMT16ER250ISO-S	●	★	2.5		9.525	3.44	1.1	1.5	0.33	1.53	
	MMT16ER300ISO-S	●	★	3.0		9.525	3.44	1.2	1.6	0.40	1.84	
American UN	MMT16ER160UN-S	●			16	9.525	3.44	0.9	1.1	0.23	0.97	
	MMT16ER140UN-S	●			14	9.525	3.44	1.0	1.2	0.26	1.11	
	MMT16ER120UN-S	●			12	9.525	3.44	1.1	1.4	0.30	1.30	
Whitworth for BSW, BSP	MMT16ER190W-S	★			19	9.525	3.44	0.8	1.0	0.18	0.86	
	MMT16ER140W-S	★			14	9.525	3.44	1.0	1.2	0.25	1.16	
	MMT16ER110W-S	★			11	9.525	3.44	1.1	1.5	0.32	1.48	
BSPT	MMT16ER190BSPT-S	★			19	9.525	3.44	0.8	0.9	0.18	0.86	
	MMT16ER140BSPT-S	★			14	9.525	3.44	1.0	1.2	0.25	1.16	
	MMT16ER110BSPT-S	★			11	9.525	3.44	1.1	1.5	0.32	1.48	

IDENTIFICATION

MMT	16	E	R	100	ISO	-	S	S M-class inserts with 3-D chip breakers
Designation	Diameter of Inscribed Circle (mm)	Application	Hand of Tool	Pitch	Threading Type			
	11 6.35	E External I Internal	R Right	100 1.0mm 125 1.25mm 150 1.5mm 175 1.75mm 200 2.0mm 250 2.5mm 300 3.0mm	60 Partial Profile 60° 55 Partial Profile 55° ISO ISO Metric W Whitworth for BSW, BSP BSPT BSPT UN American UN			
	16 9.525			A 0.5-1.5mm or 48-16 thread/inch G 1.75-3.0mm or 14-8 thread/inch				

● : Inventory maintained. ★ : Inventory maintained in Japan.
<5 inserts in one case>

INTERNAL THREADING INSERTS

Type	Order Number	Coated		Pitch		Dimensions (mm)					Total depth of cut (mm)	Geometry
		VP15TF	VP20RT			IC	S	PDY	PDX	RE		
				mm	thread/inch							
Partial Profile 60°	MMT11IRA60-S	★		0.5—1.5	48—16	6.35	3.04	0.8	0.9	0.03	—	
	MMT16IRA60-S	●		0.5—1.5	48—16	9.525	3.44	0.8	0.9	0.03	—	
	MMT16IRG60-S	●		1.75—3.0	14—8	9.525	3.44	1.2	1.7	0.11	—	
Partial Profile 55°	MMT11IRA55-S	★			48—16	6.35	3.04	0.8	0.9	0.07	—	
	MMT16IRA55-S	★			48—16	9.525	3.44	0.8	0.9	0.07	—	
	MMT16IRG55-S	★			14—8	9.525	3.44	1.2	1.7	0.21	—	
ISO Metric	MMT11IR100ISO-S	★		1.0		6.35	3.04	0.6	0.7	0.06	0.58	
	MMT11IR125ISO-S	★		1.25		6.35	3.04	0.8	0.9	0.08	0.72	
	MMT11IR150ISO-S	★		1.5		6.35	3.04	0.8	1.0	0.10	0.87	
	MMT16IR100ISO-S	●	★	1.0		9.525	3.44	0.6	0.7	0.06	0.58	
	MMT16IR125ISO-S	●	★	1.25		9.525	3.44	0.8	0.9	0.08	0.72	
	MMT16IR150ISO-S	●	★	1.5		9.525	3.44	0.8	1.0	0.10	0.87	
	MMT16IR175ISO-S	●	★	1.75		9.525	3.44	0.9	1.2	0.11	1.01	
	MMT16IR200ISO-S	●	★	2.0		9.525	3.44	1.0	1.3	0.13	1.15	
	MMT16IR250ISO-S	●	★	2.5		9.525	3.44	1.1	1.5	0.17	1.44	
MMT16IR300ISO-S	●	★	3.0		9.525	3.44	1.1	1.5	0.20	1.73		
American UN	MMT16IR160UN-S	●			16	9.525	3.44	0.9	1.1	0.11	0.92	
	MMT16IR140UN-S	●			14	9.525	3.44	0.9	1.2	0.12	1.05	
	MMT16IR120UN-S	●			12	9.525	3.44	1.1	1.4	0.14	1.22	
Whitworth for BSW, BSP	MMT16IR190W-S	★			19	9.525	3.44	0.8	1.0	0.18	0.86	
	MMT16IR140W-S	★			14	9.525	3.44	1.0	1.2	0.25	1.16	
	MMT16IR110W-S	★			11	9.525	3.44	1.1	1.5	0.32	1.48	
BSPT	MMT16IR190BSPT-S	★			19	9.525	3.44	0.8	0.9	0.18	0.86	
	MMT16IR140BSPT-S	★			14	9.525	3.44	1.0	1.2	0.25	1.16	
	MMT16IR110BSPT-S	★			11	9.525	3.44	1.1	1.5	0.32	1.48	

MMT G-CLASS GROUND INSERTS

EXTERNAL THREADING INSERTS

Type	Thread Tolerance	Order Number	Coated		Pitch		Dimensions (mm)					Total depth of cut (mm)	Geometry	
			VP10MF	VP15TF	mm	thread/inch	IC	S	PDY	PDX	RE			
Partial Profile 60°	-	MMT16ERA60	★	★	0.5-1.5	48-16	9.525	3.44	0.8	0.9	0.05	-		
		MMT16ERG60	★	★	1.75-3.0	14-8	9.525	3.44	1.2	1.7	0.27			
		MMT16ERAG60	★		0.5-3.0	48-8	9.525	3.44	1.2	1.7	0.08			
		MMT22ERN60	★		3.5-5.0	7-5	12.7	4.64	1.7	2.5	0.53			
Partial Profile 55°	-	MMT16ERA55	★	★		48-16	9.525	3.44	0.8	0.9	0.05	-		
		MMT16ERG55	★	★		14-8	9.525	3.44	1.2	1.7	0.21			
		MMT16ERAG55	★			48-8	9.525	3.44	1.2	1.7	0.07			
		MMT22ERN55	★			7-5	12.7	4.64	1.7	2.5	0.44			
ISO Metric	6g	MMT16ER050ISO	●		0.5		9.525	3.44	0.6	0.4	0.06	0.31	Full form	
		MMT16ER075ISO	●		0.75		9.525	3.44	0.6	0.6	0.10			0.46
		MMT16ER100ISO	●	★	1.0		9.525	3.44	0.7	0.7	0.16			0.61
		MMT16ER125ISO	●	★	1.25		9.525	3.44	0.8	0.9	0.19			0.77
		MMT16ER150ISO	●	★	1.5		9.525	3.44	0.8	1.0	0.23			0.92
		MMT16ER175ISO	●	★	1.75		9.525	3.44	0.9	1.2	0.21			1.07
		MMT16ER200ISO	●	★	2.0		9.525	3.44	1.0	1.3	0.31			1.23
		MMT16ER250ISO	●	★	2.5		9.525	3.44	1.1	1.5	0.32			1.53
		MMT16ER300ISO	●	★	3.0		9.525	3.44	1.2	1.6	0.46			1.84
		MMT22ER350ISO	★		3.5		12.7	4.64	1.6	2.3	0.45			2.15
		MMT22ER400ISO	★		4.0		12.7	4.64	1.6	2.3	0.52			2.45
		MMT22ER450ISO	★		4.5		12.7	4.64	1.7	2.4	0.58			2.76
		MMT22ER500ISO	★		5.0		12.7	4.64	1.7	2.5	0.63			3.07

IDENTIFICATION

MMT	16	E	R	050	ISO
Designation	Hand of Tool	Pitch	Threading Type		
	R Right	050 0.5mm	60 Partial Profile 60°		
Diameter of Inscribed Circle (mm)	Application	075 0.75mm	55 Partial Profile 55°		
11 6.35	E External	100 1.0mm	ISO ISO Metric		
16 9.525	I Internal	125 1.25mm	W Whitworth for BSW, BSP		
22 12.7		150 1.5mm	BSPT BSPT		
		175 1.75mm	UN American UN		
		200 2.0mm	RD Round DIN 405		
		250 2.5mm	TR ISO Trapezoidal 30°		
		300 3.0mm	ACME American ACME		
		350 3.5mm	UNJ UNJ		
		400 4.0mm	APBU API Buttress Casing		
		450 4.5mm	APRD API Round Casing & Tubing		
		500 5.0mm	NPT NPT		
			NPTF NPTF		

● : Inventory maintained. ★ : Inventory maintained in Japan.

<5 inserts in one case>

INTERNAL THREADING INSERTS

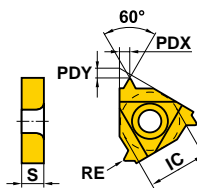
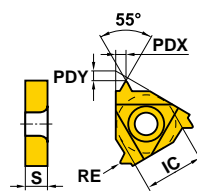
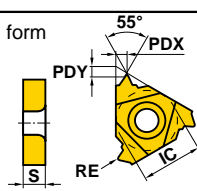
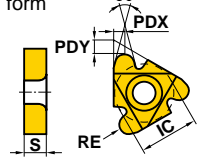
Type	Thread Tolerance	Order Number	Coated		Pitch		Dimensions (mm)					Total depth of cut (mm)	Geometry
			VP10MF	VP15TF	mm	thread/inch	IC	S	PDY	PDX	RE		
Partial Profile 60°	-	MMT11IRA60	★	★	0.5-1.5	48-16	6.35	3.04	0.8	0.9	0.05	—	
		MMT16IRA60	★	★	0.5-1.5	48-16	9.525	3.44	0.8	0.9	0.05	—	
		MMT16IRG60	★	★	1.75-3.0	14-8	9.525	3.44	1.2	1.7	0.16	—	
		MMT16IRAG60	★		0.5-3.0	48-8	9.525	3.44	1.2	1.7	0.05	—	
		MMT22IRN60	★		3.5-5.0	7-5	12.7	4.64	1.7	2.5	0.30	—	
Partial Profile 55°	-	MMT11IRA55	★	★		48-16	6.35	3.04	0.8	0.9	0.05	—	
		MMT16IRA55	★	★		48-16	9.525	3.44	0.8	0.9	0.05	—	
		MMT16IRG55	★	★		14-8	9.525	3.44	1.2	1.7	0.21	—	
		MMT16IRAG55	★			48-8	9.525	3.44	1.2	1.7	0.07	—	
		MMT22IRN55	★			7-5	12.7	4.64	1.7	2.5	0.44	—	
ISO Metric	6H	MMT11IR050ISO	★		0.5		6.35	3.04	0.6	0.4	0.03	0.29	
		MMT11IR075ISO	★		0.75		6.35	3.04	0.6	0.6	0.04	0.43	
		MMT11IR100ISO	★	★	1.0		6.35	3.04	0.6	0.7	0.10	0.58	
		MMT11IR125ISO	★	★	1.25		6.35	3.04	0.8	0.9	0.12	0.72	
		MMT11IR150ISO	★	★	1.5		6.35	3.04	0.8	1.0	0.14	0.87	
		MMT11IR175ISO	★		1.75		6.35	3.04	0.9	1.1	0.10	1.01	
		MMT11IR200ISO	★		2.0		6.35	3.04	0.9	1.1	0.18	1.15	
		MMT16IR050ISO	★		0.5		9.525	3.44	0.6	0.4	0.03	0.29	
		MMT16IR075ISO	★		0.75		9.525	3.44	0.6	0.6	0.04	0.43	
		MMT16IR100ISO	●	★	1.0		9.525	3.44	0.6	0.7	0.10	0.58	
		MMT16IR125ISO	●	★	1.25		9.525	3.44	0.8	0.9	0.12	0.72	
		MMT16IR150ISO	●	★	1.5		9.525	3.44	0.8	1.0	0.14	0.87	
		MMT16IR175ISO	●	★	1.75		9.525	3.44	0.9	1.2	0.10	1.01	
		MMT16IR200ISO	●	★	2.0		9.525	3.44	1.0	1.3	0.18	1.15	
		MMT16IR250ISO	●	★	2.5		9.525	3.44	1.1	1.5	0.15	1.44	
		MMT16IR300ISO	●	★	3.0		9.525	3.44	1.1	1.5	0.26	1.73	
		MMT22IR350ISO	★		3.5		12.7	4.64	1.6	2.3	0.22	2.02	
		MMT22IR400ISO	★		4.0		12.7	4.64	1.6	2.3	0.25	2.31	
		MMT22IR450ISO	★		4.5		12.7	4.64	1.6	2.4	0.28	2.60	
		MMT22IR500ISO	★		5.0		12.7	4.64	1.6	2.3	0.32	2.89	

IDENTIFICATION

MMT	16	E	R	050	ISO
Designation			Hand of Tool		
			R Right		
	Diameter of Inscribed Circle (mm)	Application		Pitch	Threading Type
	11 6.35	E External		050 0.5mm	60 Partial Profile 60°
	16 9.525	I Internal		075 0.75mm	55 Partial Profile 55°
	22 12.7			100 1.0mm	ISO ISO Metric
				125 1.25mm	W Whitworth for BSW, BSP
				150 1.5mm	BSPT BSPT
				175 1.75mm	UN American UN
				200 2.0mm	RD Round DIN 405
				250 2.5mm	TR ISO Trapezoidal 30°
				300 3.0mm	ACME American ACME
				350 3.5mm	UNJ UNJ
				400 4.0mm	APBU API Buttress Casing
				450 4.5mm	APRD API Round Casing & Tubing
				500 5.0mm	NPT NPT
					NPTF NPTF

MMT G-CLASS GROUND INSERTS

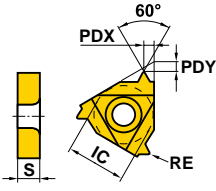
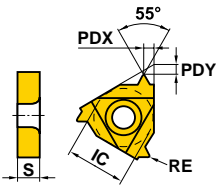
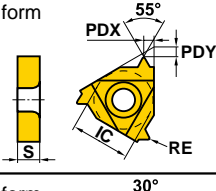
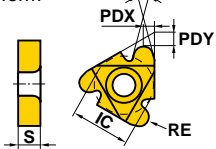
EXTERNAL THREADING INSERTS

Type	Thread Tolerance	Order Number	Coated		Pitch		Dimensions (mm)					Total depth of cut (mm)	Geometry
			VP10MF	VP15TF	mm	thread/inch	IC	S	PDY	PDX	RE		
American UN	2A	MMT16ER320UN	●			32	9.525	3.44	0.6	0.6	0.09	0.49	Full form 
		MMT16ER280UN	●			28	9.525	3.44	0.6	0.7	0.10	0.56	
		MMT16ER240UN	●			24	9.525	3.44	0.7	0.8	0.16	0.65	
		MMT16ER200UN	●			20	9.525	3.44	0.8	0.9	0.19	0.78	
		MMT16ER180UN	●			18	9.525	3.44	0.8	1.0	0.21	0.87	
		MMT16ER160UN	●	★		16	9.525	3.44	0.9	1.1	0.24	0.97	
		MMT16ER140UN	●	★		14	9.525	3.44	1.0	1.2	0.22	1.11	
		MMT16ER130UN	●			13	9.525	3.44	1.0	1.3	0.24	1.20	
		MMT16ER120UN	●	★		12	9.525	3.44	1.1	1.4	0.32	1.30	
		MMT16ER110UN	●			11	9.525	3.44	1.1	1.5	0.29	1.42	
		MMT16ER100UN	●			10	9.525	3.44	1.1	1.5	0.32	1.56	
		MMT16ER090UN	●			9	9.525	3.44	1.2	1.7	0.35	1.73	
		MMT16ER080UN	●			8	9.525	3.44	1.2	1.6	0.48	1.95	
		MMT22ER070UN	★			7	12.7	4.64	1.6	2.3	0.47	2.22	
		MMT22ER060UN	★			6	12.7	4.64	1.6	2.3	0.53	2.60	
MMT22ER050UN	★			5	12.7	4.64	1.7	2.5	0.64	3.12			
Whitworth for BSW, BSP	Medium Class A	MMT16ER280W	★			28	9.525	3.44	0.6	0.7	0.09	0.58	Full form 
		MMT16ER260W	★			26	9.525	3.44	0.7	0.8	0.10	0.63	
		MMT16ER200W	★			20	9.525	3.44	0.8	0.9	0.18	0.81	
		MMT16ER190W	★	★		19	9.525	3.44	0.8	1.0	0.19	0.86	
		MMT16ER180W	★			18	9.525	3.44	0.8	1.0	0.20	0.90	
		MMT16ER160W	★			16	9.525	3.44	0.9	1.1	0.23	1.02	
		MMT16ER140W	★	★		14	9.525	3.44	1.0	1.2	0.26	1.16	
		MMT16ER120W	★			12	9.525	3.44	1.1	1.4	0.30	1.36	
		MMT16ER110W	★	★		11	9.525	3.44	1.1	1.5	0.33	1.48	
		MMT16ER100W	★			10	9.525	3.44	1.1	1.5	0.37	1.63	
		MMT16ER090W	★			9	9.525	3.44	1.2	1.7	0.34	1.81	
		MMT16ER080W	★			8	9.525	3.44	1.2	1.5	0.39	2.03	
		MMT22ER070W	★			7	12.7	4.64	1.6	2.3	0.46	2.32	
		MMT22ER060W	★			6	12.7	4.64	1.6	2.3	0.53	2.71	
		MMT22ER050W	★			5	12.7	4.64	1.7	2.4	0.66	3.25	
BSPT	Standard BSPT	MMT16ER280BSPT	★			28	9.525	3.44	0.6	0.6	0.09	0.58	Full form 
		MMT16ER190BSPT	★	★		19	9.525	3.44	0.8	0.9	0.14	0.86	
		MMT16ER140BSPT	★	★		14	9.525	3.44	1.0	1.2	0.26	1.16	
		MMT16ER110BSPT	★	★		11	9.525	3.44	1.1	1.5	0.33	1.48	
Round DIN 405	7h	MMT16ER100RD	★			10	9.525	3.44	1.1	1.2	0.60	1.27	Full form 
		MMT16ER080RD	★			8	9.525	3.44	1.4	1.3	0.75	1.59	
		MMT16ER060RD	★			6	9.525	3.44	1.5	1.7	1.00	2.12	
		MMT22ER040RD	★			4	9.525	3.44	2.2	2.3	1.51	3.18	

● : Inventory maintained. ★ : Inventory maintained in Japan.

<5 inserts in one case>

INTERNAL THREADING INSERTS

Type	Thread Tolerance	Order Number	Coated		Pitch		Dimensions (mm)					Total depth of cut (mm)	Geometry
			VP10MF	VP15TF			IC	S	PDY	PDX	RE		
					mm	thread/inch							
American UN	2B	MMT11IR320UN	★			32	6.35	3.04	0.6	0.6	0.04	0.46	Full form 
		MMT11IR280UN	★			28	6.35	3.04	0.6	0.7	0.05	0.52	
		MMT11IR240UN	★			24	6.35	3.04	0.7	0.8	0.09	0.61	
		MMT11IR200UN	★			20	6.35	3.04	0.8	0.9	0.11	0.73	
		MMT11IR180UN	★			18	6.35	3.04	0.8	1.0	0.12	0.81	
		MMT11IR160UN	★			16	6.35	3.04	0.9	1.1	0.14	0.92	
		MMT11IR140UN	★			14	6.35	3.04	0.9	1.1	0.11	1.05	
		MMT16IR320UN	●			32	9.525	3.44	0.6	0.6	0.04	0.46	
		MMT16IR280UN	●			28	9.525	3.44	0.6	0.7	0.05	0.52	
		MMT16IR240UN	●			24	9.525	3.44	0.7	0.8	0.09	0.61	
		MMT16IR200UN	●			20	9.525	3.44	0.8	0.9	0.11	0.73	
		MMT16IR180UN	●			18	9.525	3.44	0.8	1.0	0.12	0.81	
		MMT16IR160UN	●★			16	9.525	3.44	0.9	1.1	0.14	0.92	
		MMT16IR140UN	●★			14	9.525	3.44	0.9	1.2	0.11	1.05	
		MMT16IR130UN	●			13	9.525	3.44	1.0	1.3	0.10	1.13	
		MMT16IR120UN	●★			12	9.525	3.44	1.1	1.4	0.18	1.22	
		MMT16IR110UN	●			11	9.525	3.44	1.1	1.5	0.13	1.33	
		MMT16IR100UN	●			10	9.525	3.44	1.1	1.5	0.15	1.47	
		MMT16IR090UN	●			9	9.525	3.44	1.2	1.7	0.17	1.63	
		MMT16IR080UN	●			8	9.525	3.44	1.1	1.5	0.27	1.83	
MMT22IR070UN	★			7	12.7	4.64	1.6	2.3	0.23	2.09			
MMT22IR060UN	★			6	12.7	4.64	1.6	2.3	0.26	2.44			
MMT22IR050UN	★			5	12.7	4.64	1.6	2.3	0.32	2.93			
Whitworth for BSW, BSP	Medium Class A	MMT11IR190W	★			19	6.35	3.04	0.8	1.0	0.19	0.86	Full form 
		MMT11IR140W	★			14	6.35	3.04	0.9	1.1	0.26	1.16	
		MMT16IR280W	★			28	9.525	3.44	0.6	0.7	0.09	0.58	
		MMT16IR260W	★			26	9.525	3.44	0.7	0.8	0.10	0.63	
		MMT16IR200W	★			20	9.525	3.44	0.8	0.9	0.18	0.81	
		MMT16IR190W	★★			19	9.525	3.44	0.8	1.0	0.19	0.86	
		MMT16IR180W	★			18	9.525	3.44	0.8	1.0	0.20	0.90	
		MMT16IR160W	★			16	9.525	3.44	0.9	1.1	0.23	1.02	
		MMT16IR140W	★★			14	9.525	3.44	1.0	1.2	0.26	1.16	
		MMT16IR120W	★			12	9.525	3.44	1.1	1.4	0.30	1.36	
		MMT16IR110W	★★			11	9.525	3.44	1.1	1.5	0.33	1.48	
		MMT16IR100W	★			10	9.525	3.44	1.1	1.5	0.37	1.63	
		MMT16IR090W	★			9	9.525	3.44	1.2	1.7	0.34	1.81	
		MMT16IR080W	★			8	9.525	3.44	1.2	1.5	0.39	2.03	
		MMT22IR070W	★			7	12.7	4.64	1.6	2.3	0.46	2.32	
		MMT22IR060W	★			6	12.7	4.64	1.6	2.3	0.53	2.71	
MMT22IR050W	★			5	12.7	4.64	1.7	2.4	0.66	3.25			
BSPT	Standard BSPT	MMT11IR190BSPT	★			19	6.35	3.04	0.8	0.9	0.14	0.86	Full form 
		MMT11IR140BSPT	★			14	6.35	3.04	0.9	1.0	0.26	1.16	
		MMT16IR190BSPT	★★			19	9.525	3.44	0.8	0.9	0.14	0.86	
		MMT16IR140BSPT	★★			14	9.525	3.44	1.0	1.2	0.26	1.16	
		MMT16IR110BSPT	★★			11	9.525	3.44	1.1	1.5	0.33	1.48	
Round DIN 405	7H	MMT16IR100RD	★			10	9.525	3.44	1.1	1.2	0.55	1.27	Full form 
		MMT16IR080RD	★			8	9.525	3.44	1.4	1.4	0.70	1.59	
		MMT16IR060RD	★			6	9.525	3.44	1.4	1.5	0.93	2.12	
		MMT22IR040RD	★			4	12.7	4.64	2.2	2.3	1.40	3.18	

MMT G-CLASS GROUND INSERTS

EXTERNAL THREADING INSERTS

Type	Thread Tolerance	Order Number	Coated	Pitch		Dimensions (mm)					Total depth of cut (mm)	Geometry
			VP10MF	mm	thread/inch	IC	S	PDY	PDX	RE		
ISO Trapezoidal 30°	7e	MMT16ER150TR	★	1.5		9.525	3.44	1.0	1.1	0.08	0.90	Semi-full form
		MMT16ER200TR	★	2.0		9.525	3.44	1.1	1.3	0.15	1.25	
		MMT16ER300TR	★	3.0		9.525	3.44	1.3	1.5	0.15	1.75	
		MMT22ER400TR	★	4.0		12.7	4.64	1.7	1.9	0.15	2.25	
		MMT22ER500TR	★	5.0		12.7	4.64	2.1	2.5	0.15	2.75	
American ACME	3G	MMT16ER120ACME	●		12	9.525	3.44	1.1	1.2	0.08	1.19	Semi-full form
		MMT16ER100ACME	●		10	9.525	3.44	1.3	1.4	0.08	1.52	
		MMT16ER080ACME	●		8	9.525	3.44	1.4	1.5	0.10	1.84	
		MMT22ER060ACME	●		6	12.7	4.64	1.8	2.1	0.10	2.37	
		MMT22ER050ACME	●		5	12.7	4.64	2.0	2.3	0.10	2.79	
UNJ	3A	MMT16ER320UNJ	★		32	9.525	3.44	0.6	0.7	0.13	0.46	Full form
		MMT16ER280UNJ	★		28	9.525	3.44	0.7	0.7	0.14	0.52	
		MMT16ER240UNJ	★		24	9.525	3.44	0.7	0.8	0.17	0.61	
		MMT16ER200UNJ	★		20	9.525	3.44	0.8	0.9	0.20	0.73	
		MMT16ER180UNJ	★		18	9.525	3.44	0.8	1.0	0.22	0.81	
		MMT16ER160UNJ	★		16	9.525	3.44	0.9	1.1	0.25	0.92	
		MMT16ER140UNJ	★		14	9.525	3.44	1.0	1.2	0.29	1.05	
		MMT16ER120UNJ	★		12	9.525	3.44	1.1	1.3	0.33	1.22	
		MMT16ER100UNJ	★		10	9.525	3.44	1.2	1.5	0.40	1.47	
		MMT16ER080UNJ	★		8	9.525	3.44	1.2	1.6	0.51	1.83	
API Buttress Casing	Standard API	MMT22ER050APBU	★		5	12.7	4.64	3.1	1.9	0.18	1.55	Full form
API Round Casing & Tubing	Standard API RD	MMT16ER100APRD	●		10	9.525	3.44	1.2	1.4	0.34	1.41	Full form
		MMT16ER080APRD	●		8	9.525	3.44	1.3	1.5	0.41	1.81	
American NPT	Standard NPT	MMT16ER270NPT	●		27	9.525	3.44	0.7	0.8	0.04	0.66	Full form
		MMT16ER180NPT	●		18	9.525	3.44	0.8	1.0	0.08	1.01	
		MMT16ER140NPT	●		14	9.525	3.44	0.9	1.2	0.09	1.33	
		MMT16ER115NPT	●		11.5	9.525	3.44	1.1	1.5	0.11	1.64	
		MMT16ER080NPT	●		8	9.525	3.44	1.3	1.8	0.14	2.42	
American NPTF	Class 2	MMT16ER270NPTF	★		27	9.525	3.44	0.7	0.8	0.04	0.64	Full form
		MMT16ER180NPTF	★		18	9.525	3.44	0.8	1.0	0.04	1.00	
		MMT16ER140NPTF	★		14	9.525	3.44	0.9	1.2	0.04	1.35	
		MMT16ER115NPTF	★		11.5	9.525	3.44	1.1	1.5	0.04	1.63	
		MMT16ER080NPTF	★		8	9.525	3.44	1.3	1.8	0.04	2.38	

● : Inventory maintained. ★ : Inventory maintained in Japan.

<5 inserts in one case>

INTERNAL THREADING INSERTS

Type	Thread Tolerance	Order Number	Coated		Pitch		Dimensions (mm)					Total depth of cut (mm)	Geometry
			VP10MF		mm	thread/inch	IC	S	PDY	PDX	RE		
ISO Trapezoidal 30°	7H	MMT16R150TR	★		1.5		9.525	3.44	1.0	1.1	0.08	0.90	Semi-full form
		MMT16R200TR	★		2.0		9.525	3.44	1.1	1.3	0.15	1.25	
		MMT16R300TR	★		3.0		9.525	3.44	1.3	1.5	0.15	1.75	
		MMT22R400TR	★		4.0		12.7	4.64	1.7	1.9	0.15	2.25	
		MMT22R500TR	★		5.0		12.7	4.64	2.1	2.5	0.15	2.75	
American ACME	3G	MMT16R120ACME	●			12	9.525	3.44	1.2	1.3	0.05	1.19	Semi-full form
		MMT16R100ACME	●			10	9.525	3.44	1.2	1.3	0.08	1.52	
		MMT16R080ACME	●			8	9.525	3.44	1.4	1.5	0.10	1.84	
		MMT22R060ACME	●			6	12.7	4.64	1.8	2.1	0.10	2.37	
		MMT22R050ACME	●			5	12.7	4.64	2.0	2.3	0.10	2.79	
UNJ		When machining an internal UNJ thread, cut an internal hole with the appropriate diameter. Then machine with 60° American UN. In this case, a full form type insert cannot be used.											
API Buttress Casing	Standard API	MMT22R050APBU	★			5	12.7	4.64	2.8	1.9	0.18	1.55	Full form
API Round Casing & Tubing	Standard API RD	MMT16R100APRD	●		10	9.525	3.44	1.2	1.4	0.34	1.41	Full form 	
		MMT16R080APRD	●		8	9.525	3.44	1.3	1.5	0.41	1.81		
American NPT	Standard NPT	MMT16R270NPT	●		27	9.525	3.44	0.7	0.8	0.04	0.66	Full form 	
		MMT16R180NPT	●		18	9.525	3.44	0.8	1.0	0.08	1.01		
		MMT16R140NPT	●		14	9.525	3.44	0.9	1.2	0.09	1.33		
		MMT16R115NPT	●		11.5	9.525	3.44	1.1	1.5	0.11	1.64		
		MMT16R080NPT	●		8	9.525	3.44	1.3	1.8	0.14	2.42		
American NPTF	Class 2	MMT16R140NPTF	★		14	9.525	3.44	0.9	1.2	0.04	1.35	Full form 	
		MMT16R115NPTF	★		11.5	9.525	3.44	1.1	1.5	0.04	1.63		
		MMT16R080NPTF	★		8	9.525	3.44	1.3	1.8	0.04	2.38		

THREADING METHODS

	Right Hand Thread	Left Hand Thread
EXTERNAL		*change the shim
INTERNAL		*change the shim

- Usually, threads are cut feeding the insert towards the chuck.
- When machining left hand threads, note that clamping rigidity is lowered due the application of back turning.
- When machining left hand threads, the lead angle is negative. Ensure an appropriate lead angle by changing the shim.

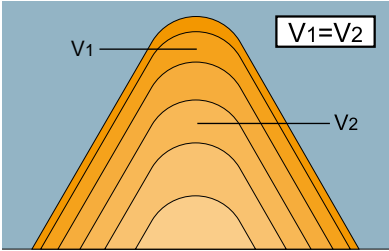
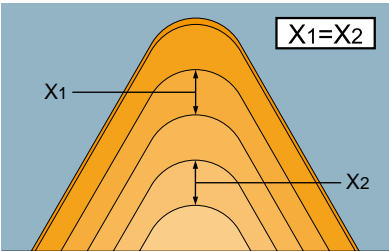
INSERT TYPES

Partial Form	Full Form	Semi Full Form (Trapezoidal threads only)
<ul style="list-style-type: none"> ● The same insert can be used for a range of pitches. ● Shorter tool life because the nose radius of the insert is smaller than that of a full form insert. ● Finishing with another operation may be necessary. 	<ul style="list-style-type: none"> ● No deburring needed after threading. ● Requires specific insert for each thread form and pitch. 	<ul style="list-style-type: none"> ● No deburring needed after threading. ● Requires specific insert for each thread form and pitch. ● Finishing with another operation may be necessary.
<p>Crest Radius (Additional turning necessary to finish the thread crest.)</p>	<p>Crest Radius (Finished by insert form.)</p>	<p>Crest Radius (Additional turning necessary to finish the thread crest.)</p>

INFEEED METHODS

	Radial Infeed	Flank Infeed	Modified Flank Infeed	Incremental Infeed
Features				
Advantages	<ul style="list-style-type: none"> ● Easiest to use. (Standard program for threading) ● Wide application. (Cutting conditions easy to change.) ● Uniform wear of the right and left sides of the cutting edge. 	<ul style="list-style-type: none"> ● Relatively easy to use. (Semi-standard program for threading.) ● Reduced cutting force. ● Suitable for large pitch threads or materials that peel easily. ● Good chip discharge. 	<ul style="list-style-type: none"> ● Preventing flank wear on the right side of the cutting edge. ● Reduced cutting force. ● Good for large pitch or materials that peel easily. ● Good chip discharge. 	<ul style="list-style-type: none"> ● Uniform wear of the right and left sides of the cutting edge. ● Reduced cutting force. ● Good for large pitch or materials that peel easily.
Disadvantages	<ul style="list-style-type: none"> ● Difficult chip control. ● Subject to vibration in the later passes due to long cutting edge in contact with workpiece. ● Ineffective for large pitch threading. ● Heavy load on the nose radius. 	<ul style="list-style-type: none"> ● Large flank wear of the right side of a cutting edge. ● Relatively difficult to change cutting depth. (Re-programming necessary) 	<ul style="list-style-type: none"> ● Complex machining programming. ● Difficult to change cutting depth. (NC programming necessary) 	<ul style="list-style-type: none"> ● Complex machining programming. ● Difficult to change cutting depth. (Re-programming necessary) ● Chip control is difficult.

THREADING DEPTH

	Features	
	Advantages	Disadvantages
 <p>Fixed cut area</p>	<ul style="list-style-type: none"> • Easy to use. (Standard program for threading.) • Superior resistance to vibration. (Constant cutting force.) 	<ul style="list-style-type: none"> • Long chips generated during the final pass. • Complex calculation of cutting depth when changing the number of passes.
 <p>Fixed cutting depth</p>	<ul style="list-style-type: none"> • Reduced load on nose radius during the first half of the passes. • Easy chip control. (Optional setting of chip thickness) • Easy to calculate cutting depth when changing the number of passes. • Good chip control. 	<ul style="list-style-type: none"> • Subject to vibration in the later stages of cutting. (Increased cutting force) • In some cases, changing the NC program is necessary.

* It is recommended to set the depth of cut of the final pass to 0.05mm–0.025mm. Large cutting depths can cause vibration, leading to a poor surface finish.

Formulas

Formulas to calculate infeed for each pass in a reduced series.

$\Delta ap_n = \frac{ap}{\sqrt{n_{ap}-1}} \times \sqrt{b}$	<p>Example) External threading (ISO metric) Pitch : 1.0mm ap : 0.6mm nap : 5</p>
<p>Δap_n : Depth of cut n : Actual pass ap : Total depth of cut nap : Number of passes b : 1st pass 0.3 2nd pass 2-1=1 3rd pass 3-1=2 . . nth pass</p>	<p>1st pass $\Delta ap_1 = \frac{0.60}{\sqrt{5-1}} \times \sqrt{0.3} = 0.16 \rightarrow \mathbf{0.16}$ (Δap_1) 2nd pass $\Delta ap_2 = \frac{0.60}{\sqrt{5-1}} \times \sqrt{2-1} = 0.3 \rightarrow \mathbf{0.14}$ ($\Delta ap_2 - \Delta ap_1$) 3rd pass $\Delta ap_3 = \frac{0.60}{\sqrt{5-1}} \times \sqrt{3-1} = 0.42 \rightarrow \mathbf{0.12}$ ($\Delta ap_3 - \Delta ap_2$) 4th pass $\Delta ap_4 = \frac{0.60}{\sqrt{5-1}} \times \sqrt{4-1} = 0.52 \rightarrow \mathbf{0.1}$ ($\Delta ap_4 - \Delta ap_3$) 5th pass $\Delta ap_5 = \frac{0.60}{\sqrt{5-1}} \times \sqrt{5-1} = 0.6 \rightarrow \mathbf{0.08}$ ($\Delta ap_5 - \Delta ap_4$)</p>

NC Program for Modified Flank Infeed

Example:- M12×1.0 5 passes modified 1°-3° (mm)

External Threading	Internal Threading
G00 Z = 5.0 X = 14.0	G00 Z = 5.0 X = 10.0
G92 U-4.34 Z-13.0 F1.0	G92 U4.34 Z-13.0 F1.0
G00 W-0.07	G00 W-0.07
G92 U-4.64 Z-13.0 F1.0	G92 U4.64 Z-13.0 F1.0
G00 W-0.06	G00 W-0.05
G92 U-4.88 Z-13.0 F1.0	G92 U4.84 Z-13.0 F1.0
G00 W-0.05	G00 W-0.04
G92 U-5.08 Z-13.0 F1.0	G92 U5.02 Z-13.0 F1.0
G00 W-0.03	G00 W-0.03
G92 U-5.20 Z-13.0 F1.0	G92 U5.14 Z-13.0 F1.0
G00	G00

RECOMMENDED CUTTING METHODS AND CONDITIONS

Selecting Cutting Conditions

		Priority					
		Tool life	Cutting force	Surface finish	Precision of thread	Chips discharge	Efficiency (Reduced passes)
Threading methods	Radial	○		○	○		○
	Flank	(△ : Modified)	○	(△ : Modified)		○	
Cutting depth	Fixed cutting depth					○	
	Fixed cut area	○	○	○	○		○

Note) • Tool life and surface finish accuracy can be increased by changing the threading method from flank infeed to modified flank infeed.
 • Chip control can be improved by increasing the cutting depth in the later half of passes.

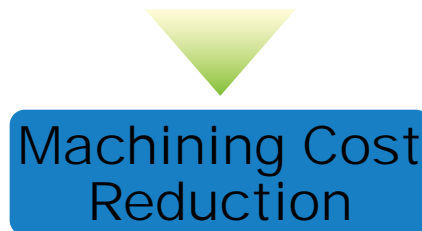
Cutting depth and the number of passes

Selection of the appropriate cutting depth and the right number of passes is vital for threading.

- For most threading, use a "threading cycle program," which has originally been installed on machines, and specify "total cutting depth" and "cutting depth in the first or final pass."
- Cutting depth and the number of passes are easy to change for the radial infeed method, thus making it easy to determine the appropriate cutting conditions.

Feature and benefits of Mitsubishi products

- Insert grades, specially produced for threading tools, ensure highly efficient cutting by enabling high-speed machining and a reduced number of passes.



Advice on improved threading

Increasing tool life

- To prevent damage to the nose radius - Recommended method - Modified flank infeed.
- To have uniform flank wear on both sides of a cutting edge - Recommended method - Radial infeed
- To prevent crater wear - Recommended method - Flank infeed

Preventing chip problems

- Change to flank or modified infeed.
- During radial infeed cutting, use an inverted holder and change the coolant supply to a downward direction.
- When using the radial infeed method, set the minimum cutting depth at around .008 inch to make the chips thicker.
- Tangled chips during internal threading can damage the insert. In these cases, pause slightly away from the start point and clear the chips with coolant before every pass.
- Change to M-class inserts with a 3-D chip breaker.

To achieve highly efficient machining

- Increase cutting speed. (Dependant on the maximum revolution and rigidity of the machine.)
- Reduce the number of passes. (Reduce by 30-40%.)
- A reduced number of passes can improve chip discharge because of the thicker chips generated.

Preventing vibration

- Change to flank or modified infeed.
- When using radial infeed, reduce cutting depth in the later half of passes and lower the cutting speed.

Increased surface finish accuracy

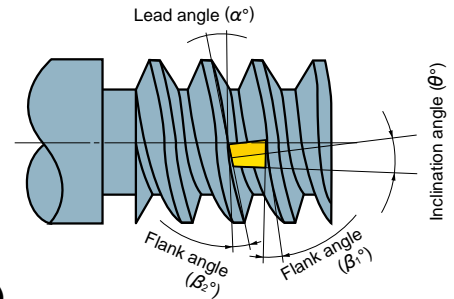
- A final pass should be performed at the same depth of cut as the last regular pass.
- When using the flank infeed method, change to radial infeed only during the final pass.

Selecting a Shim for the MMT Series

Flank angle and lead angle

Lead angle (α) depends on a combination of thread diameter and pitch.

Select a shim so that the lead angle of the thread can coincide with the flank angles of the thread and insert (β_1, β_2). When threading with a small diameter or large pitch, change the shim depending on the lead angle, referring to the table and graph below. When threading left hand threads, change to a shim with a negative inclination angle.



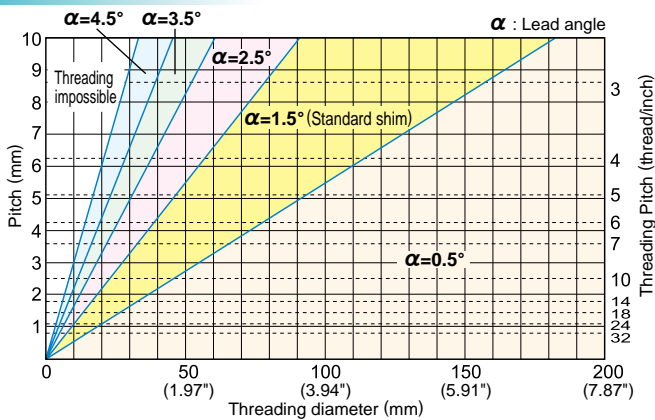
Shim reference table (Threading diameter—Thread angle 60° and 55°)

Lead Angle	Right Hand Thread (mm)						Left Hand Thread (mm)		
	Threading impossible	4.5°	3.5°	2.5°	1.5°	0.5°	Threading impossible	-1.5°	-0.5°
0.5	$\leq \phi 1.7$	$\phi 1.7 - \phi 2.3$	$\phi 2.3 - \phi 3.0$	$\phi 3.0 - \phi 4.6$	$\phi 4.6 - \phi 9.1$	$\geq \phi 9.1$	$\leq \phi 3.6$	$\phi 3.6 - \phi 9.1$	$\geq \phi 9.1$
0.75	$\leq \phi 2.5$	$\phi 2.5 - \phi 3.4$	$\phi 3.4 - \phi 4.6$	$\phi 4.6 - \phi 6.8$	$\phi 6.8 - \phi 13.7$	$\geq \phi 13.7$	$\leq \phi 5.5$	$\phi 5.5 - \phi 13.7$	$\geq \phi 13.7$
1	$\leq \phi 3.3$	$\phi 3.3 - \phi 4.6$	$\phi 4.6 - \phi 6.1$	$\phi 6.1 - \phi 9.1$	$\phi 9.1 - \phi 18.2$	$\geq \phi 18.2$	$\leq \phi 7.3$	$\phi 7.3 - \phi 18.2$	$\geq \phi 18.2$
1.25	$\leq \phi 4.1$	$\phi 4.1 - \phi 5.7$	$\phi 5.7 - \phi 7.6$	$\phi 7.6 - \phi 11.4$	$\phi 11.4 - \phi 22.8$	$\geq \phi 22.8$	$\leq \phi 9.1$	$\phi 9.1 - \phi 22.8$	$\geq \phi 22.8$
1.5	$\leq \phi 5.0$	$\phi 5.0 - \phi 6.8$	$\phi 6.8 - \phi 9.1$	$\phi 9.1 - \phi 13.7$	$\phi 13.7 - \phi 27.4$	$\geq \phi 27.4$	$\leq \phi 10.9$	$\phi 10.9 - \phi 27.4$	$\geq \phi 27.4$
1.75	$\leq \phi 5.8$	$\phi 5.8 - \phi 8.0$	$\phi 8.0 - \phi 10.6$	$\phi 10.6 - \phi 16.0$	$\phi 16.0 - \phi 31.9$	$\geq \phi 31.9$	$\leq \phi 12.8$	$\phi 12.8 - \phi 31.9$	$\geq \phi 31.9$
2	$\leq \phi 6.6$	$\phi 6.6 - \phi 9.1$	$\phi 9.1 - \phi 12.1$	$\phi 12.1 - \phi 18.2$	$\phi 18.2 - \phi 36.5$	$\geq \phi 36.5$	$\leq \phi 14.6$	$\phi 14.6 - \phi 36.5$	$\geq \phi 36.5$
2.5	$\leq \phi 8.3$	$\phi 8.3 - \phi 11.4$	$\phi 11.4 - \phi 15.2$	$\phi 15.2 - \phi 22.8$	$\phi 22.8 - \phi 45.6$	$\geq \phi 45.6$	$\leq \phi 18.2$	$\phi 18.2 - \phi 45.6$	$\geq \phi 45.6$
3	$\leq \phi 9.9$	$\phi 9.9 - \phi 13.7$	$\phi 13.7 - \phi 18.2$	$\phi 18.2 - \phi 27.3$	$\phi 27.3 - \phi 54.7$	$\geq \phi 54.7$	$\leq \phi 21.9$	$\phi 21.9 - \phi 54.7$	$\geq \phi 54.7$
3.5	$\leq \phi 11.6$	$\phi 11.6 - \phi 15.9$	$\phi 15.9 - \phi 21.3$	$\phi 21.3 - \phi 31.9$	$\phi 31.9 - \phi 63.8$	$\geq \phi 63.8$	$\leq \phi 25.5$	$\phi 25.5 - \phi 63.8$	$\geq \phi 63.8$
4	$\leq \phi 13.2$	$\phi 13.2 - \phi 18.2$	$\phi 18.2 - \phi 24.3$	$\phi 24.3 - \phi 36.5$	$\phi 36.5 - \phi 72.9$	$\geq \phi 72.9$	$\leq \phi 29.2$	$\phi 29.2 - \phi 72.9$	$\geq \phi 72.9$
4.5	$\leq \phi 14.9$	$\phi 14.9 - \phi 20.5$	$\phi 20.5 - \phi 27.3$	$\phi 27.3 - \phi 41.0$	$\phi 41.0 - \phi 82.1$	$\geq \phi 82.1$	$\leq \phi 32.8$	$\phi 32.8 - \phi 82.1$	$\geq \phi 82.1$
5	$\leq \phi 16.5$	$\phi 16.5 - \phi 22.8$	$\phi 22.8 - \phi 30.4$	$\phi 30.4 - \phi 45.6$	$\phi 45.6 - \phi 91.2$	$\geq \phi 91.2$	$\leq \phi 36.5$	$\phi 36.5 - \phi 91.2$	$\geq \phi 91.2$

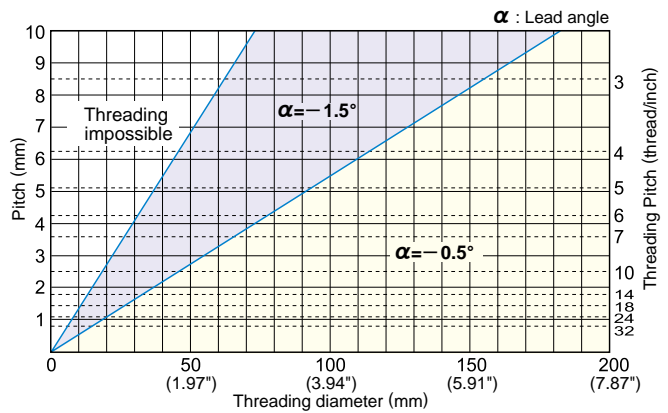
(Note) Back turning in the case of left hand threads.

Shim reference graph(Thread angle 60° and 55°)

Right Hand Thread



Left Hand Thread



Note) When a thread lead angle \leq the tool flank angle, change the shim to prevent side interference with the insert.
(Refer to the table below for the calculation of thread lead angle and tool flank angle.)

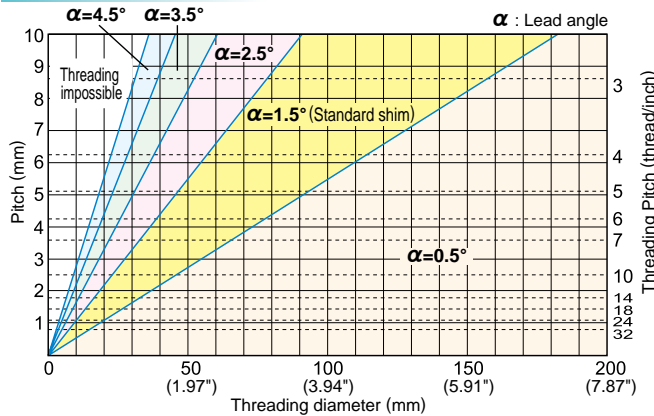
Shim reference table (Threading diameter—Thread angle 30° and 29°)

Lead Angle	Right Hand Thread (mm)						Left Hand Thread (mm)		
	Threading impossible	4.5°	3.5°	2.5°	1.5°	0.5°	Threading impossible	-1.5°	-0.5°
0.5	$\leq \phi 1.8$	$\phi 1.8 - \phi 2.3$	$\phi 2.3 - \phi 3.0$	$\phi 3.0 - \phi 4.6$	$\phi 4.6 - \phi 9.1$	$\geq \phi 9.1$	$\leq \phi 4.6$	$\phi 4.6 - \phi 9.1$	$\geq \phi 9.1$
0.75	$\leq \phi 2.7$	$\phi 2.7 - \phi 3.4$	$\phi 3.4 - \phi 4.6$	$\phi 4.6 - \phi 6.8$	$\phi 6.8 - \phi 13.7$	$\geq \phi 13.7$	$\leq \phi 6.8$	$\phi 6.8 - \phi 13.7$	$\geq \phi 13.7$
1	$\leq \phi 3.6$	$\phi 3.6 - \phi 4.6$	$\phi 4.6 - \phi 6.1$	$\phi 6.1 - \phi 9.1$	$\phi 9.1 - \phi 18.2$	$\geq \phi 18.2$	$\leq \phi 9.1$	$\phi 9.1 - \phi 18.2$	$\geq \phi 18.2$
1.25	$\leq \phi 4.5$	$\phi 4.5 - \phi 5.7$	$\phi 5.7 - \phi 7.6$	$\phi 7.6 - \phi 11.4$	$\phi 11.4 - \phi 22.8$	$\geq \phi 22.8$	$\leq \phi 11.4$	$\phi 11.4 - \phi 22.8$	$\geq \phi 22.8$
1.5	$\leq \phi 5.5$	$\phi 5.5 - \phi 6.8$	$\phi 6.8 - \phi 9.1$	$\phi 9.1 - \phi 13.7$	$\phi 13.7 - \phi 27.4$	$\geq \phi 27.4$	$\leq \phi 13.7$	$\phi 13.7 - \phi 27.4$	$\geq \phi 27.4$
1.75	$\leq \phi 6.4$	$\phi 6.4 - \phi 8.0$	$\phi 8.0 - \phi 10.6$	$\phi 10.6 - \phi 16.0$	$\phi 16.0 - \phi 31.9$	$\geq \phi 31.9$	$\leq \phi 16.0$	$\phi 16.0 - \phi 31.9$	$\geq \phi 31.9$
2	$\leq \phi 7.3$	$\phi 7.3 - \phi 9.1$	$\phi 9.1 - \phi 12.1$	$\phi 12.1 - \phi 18.2$	$\phi 18.2 - \phi 36.5$	$\geq \phi 36.5$	$\leq \phi 18.2$	$\phi 18.2 - \phi 36.5$	$\geq \phi 36.5$
2.5	$\leq \phi 9.1$	$\phi 9.1 - \phi 11.4$	$\phi 11.4 - \phi 15.2$	$\phi 15.2 - \phi 22.8$	$\phi 22.8 - \phi 45.6$	$\geq \phi 45.6$	$\leq \phi 22.8$	$\phi 22.8 - \phi 45.6$	$\geq \phi 45.6$
3	$\leq \phi 10.9$	$\phi 10.9 - \phi 13.7$	$\phi 13.7 - \phi 18.2$	$\phi 18.2 - \phi 27.3$	$\phi 27.3 - \phi 54.7$	$\geq \phi 54.7$	$\leq \phi 27.3$	$\phi 27.3 - \phi 54.7$	$\geq \phi 54.7$
3.5	$\leq \phi 12.7$	$\phi 12.7 - \phi 15.9$	$\phi 15.9 - \phi 21.3$	$\phi 21.3 - \phi 31.9$	$\phi 31.9 - \phi 63.8$	$\geq \phi 63.8$	$\leq \phi 31.9$	$\phi 31.9 - \phi 63.8$	$\geq \phi 63.8$
4	$\leq \phi 14.6$	$\phi 14.6 - \phi 18.2$	$\phi 18.2 - \phi 24.3$	$\phi 24.3 - \phi 36.5$	$\phi 36.5 - \phi 72.9$	$\geq \phi 72.9$	$\leq \phi 36.5$	$\phi 36.5 - \phi 72.9$	$\geq \phi 72.9$
4.5	$\leq \phi 16.4$	$\phi 16.4 - \phi 20.5$	$\phi 20.5 - \phi 27.3$	$\phi 27.3 - \phi 41.0$	$\phi 41.0 - \phi 82.1$	$\geq \phi 82.1$	$\leq \phi 41.0$	$\phi 41.0 - \phi 82.1$	$\geq \phi 82.1$
5	$\leq \phi 18.2$	$\phi 18.2 - \phi 22.8$	$\phi 22.8 - \phi 30.4$	$\phi 30.4 - \phi 45.6$	$\phi 45.6 - \phi 91.2$	$\geq \phi 91.2$	$\leq \phi 45.6$	$\phi 45.6 - \phi 91.2$	$\geq \phi 91.2$

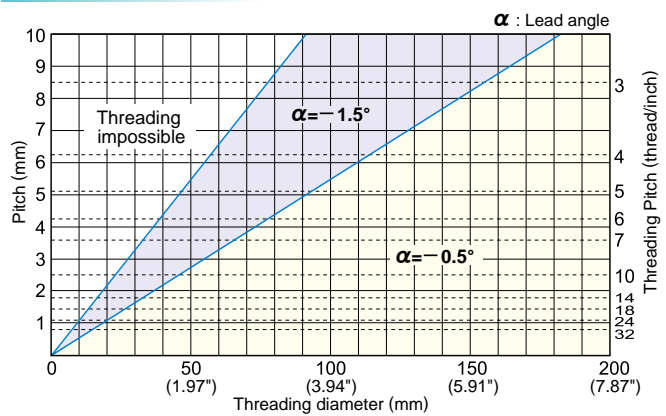
(Note) Back turning in the case of left hand threads.

Shim reference graph (Thread angle 30° and 29°)

Right Hand Thread



Left Hand Thread



Note) When a thread lead angle \leq the tool flank angle, change the shim to prevent side interference with the insert.
(Refer to the table below for the calculation of thread lead angle and tool flank angle.)

Shim selection table

Lead angle	Threading angle 60°/55° Right Hand Thread		Threading angle 60°/55° Left Hand Thread		Threading angle 30°/29° Right Hand Thread		Threading angle 30°/29° Left Hand Thread	
0	P05	P05	N05	N05	P05	P05	N05	N05
0.5	P05	P05	N05	N05	P05	P05	N05	N05
1	P15	P15	N15	N15	P15	P15	N15	N15
1.5	P15	P15	N15	N15	P15	P15	N15	N15
2	P25	P25	N15	N15	P25	P25	Not Available	Not Available
2.5	P25	P25	Not Available	Not Available	P25	P25	Not Available	Not Available
3	P35	P35	Not Available	Not Available	P35	P35	Not Available	Not Available
3.5	P35	P35	Not Available	Not Available	P35	P35	Not Available	Not Available
4	P45	P45	Not Available	Not Available	P45	P45	Not Available	Not Available
4.5	P45	P45	Not Available	Not Available	P45	P45	Not Available	Not Available
5	P45	P45	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
5.5	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available

(Note) Back turning in the case of left hand threads.

When replacing a shim, check if the difference between the thread lead angle and shim inclination angle is within: 2.5° - 0.5° where thread angle is 60° (55°) 2° - 1° where thread angle is 30° (29°)

- * Inclination angle of a standard shim is 0°.
- * The holder has a 1.5° lead angle.

Calculation of thread lead angle

$$\tan \alpha = \frac{l}{\pi d} = \frac{nP}{\pi d}$$

α : Lead angle
 l : Lead
 n : Number of thread starts
 P : Pitch
 d : Pitch diameter of thread

Example of selecting a shim

- When the thread lead angle is 2.2°
 - In the case when the thread angle is 60°
 (2.2° lead angle) - (2.5° - 0.5°) = -0.3° - 1.7° shim inclination angle is appropriate.
 Threading with a standard shim (0° inclination angle) is possible. But, replacing with a shim with a 1° inclination angle is recommended, refer to Standard Shim List on pages G012 and G013.
 - In the case when the thread angle is 30°
 (2.2° lead angle) - (2° - 1°) = 0.2° - 1.2° shim inclination angle is appropriate.
 Replacing with a shim with a 1° inclination angle is recommended, referring to Standard Shim List on pages G012 and G013.

Relief angle of an insert set on a holder

Thread helix angle	Internal relief angle	External relief angle
60°	8.8°	5.8°
55°	7.9°	5.2°
30°	4.1°	2.7°
29°	4°	2.6°

- Relief angles (β_2, β_1) of an insert become small when the thread helix angle of a trapezoidal, round, or other thread is small. Take care when selecting a shim.

Standard of Depth of Cut (External Threading)

EXTERNAL (RADIAL INFEED)

ISO Metric

(mm)

Pitch (mm)	Total Cutting Depth	Number of Passes														Insert Type		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	G-class ground inserts	M-class inserts with 3-D chip breakers	
0.5	0.31	0.10	0.08	0.07	0.06												MMT16ER050ISO	-
0.75	0.46	0.16	0.14	0.10	0.06												MMT16ER075ISO	-
1.0	0.61	0.18	0.15	0.12	0.10	0.06											MMT16ER100ISO	MMT16ER100ISO-S
1.25	0.77	0.19	0.17	0.14	0.11	0.10	0.06										MMT16ER125ISO	MMT16ER125ISO-S
1.5	0.92	0.22	0.21	0.17	0.14	0.12	0.06										MMT16ER150ISO	MMT16ER150ISO-S
1.75	1.07	0.22	0.21	0.16	0.13	0.11	0.09	0.09	0.06								MMT16ER175ISO	MMT16ER175ISO-S
2.0	1.23	0.24	0.23	0.17	0.16	0.14	0.12	0.11	0.06								MMT16ER200ISO	MMT16ER200ISO-S
2.5	1.53	0.26	0.23	0.19	0.17	0.15	0.13	0.12	0.11	0.11	0.06						MMT16ER250ISO	MMT16ER250ISO-S
3.0	1.84	0.27	0.25	0.20	0.18	0.16	0.14	0.13	0.12	0.12	0.11	0.10	0.06				MMT16ER300ISO	MMT16ER300ISO-S
3.5	2.15	0.33	0.30	0.24	0.21	0.18	0.17	0.15	0.14	0.14	0.12	0.11	0.06				MMT22ER350ISO	-
4.0	2.45	0.34	0.31	0.24	0.22	0.19	0.17	0.16	0.14	0.14	0.13	0.12	0.12	0.11	0.06		MMT22ER400ISO	-
4.5	2.76	0.38	0.34	0.28	0.24	0.22	0.20	0.18	0.16	0.16	0.15	0.14	0.13	0.12	0.06		MMT22ER450ISO	-
5.0	3.07	0.42	0.38	0.32	0.27	0.24	0.22	0.20	0.18	0.18	0.17	0.16	0.15	0.12	0.06		MMT22ER500ISO	-

American UN

(inch)

Pitch (thread inch)	Total Cutting Depth	Number of Passes														Insert Type		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	G-class ground inserts	M-class inserts with 3-D chip breakers	
32	.019	.007	.006	.004	.002												MMT16ER320UN	-
28	.022	.007	.006	.004	.003	.002											MMT16ER280UN	-
24	.026	.007	.006	.006	.005	.002											MMT16ER240UN	-
20	.031	.008	.007	.005	.004	.002	.002										MMT16ER200UN	-
18	.034	.009	.008	.006	.005	.004	.002										MMT16ER180UN	-
16	.038	.009	.008	.006	.005	.004	.004	.002									MMT16ER160UN	MMT16ER160UN-S
14	.044	.009	.008	.006	.005	.005	.005	.004	.002								MMT16ER140UN	MMT16ER140UN-S
13	.047	.010	.009	.007	.006	.005	.005	.003	.002								MMT16ER130UN	-
12	.051	.011	.009	.007	.006	.006	.005	.005	.002								MMT16ER120UN	MMT16ER120UN-S
11	.056	.011	.009	.007	.006	.006	.006	.005	.004	.002							MMT16ER110UN	-
10	.061	.011	.009	.007	.006	.006	.006	.005	.005	.004	.002						MMT16ER100UN	-
9	.068	.013	.011	.009	.007	.006	.006	.005	.005	.004	.002						MMT16ER090UN	-
8	.077	.014	.012	.009	.007	.006	.006	.006	.006	.005	.004	.002					MMT16ER080UN	-
7	.087	.015	.013	.011	.009	.008	.007	.006	.006	.005	.005	.002					MMT22ER070UN	-
6	.102	.017	.014	.011	.010	.008	.007	.007	.006	.006	.005	.005	.004	.002			MMT22ER060UN	-
5	.123	.017	.015	.012	.011	.009	.009	.008	.007	.007	.007	.007	.006	.006	.002		MMT22ER050UN	-

Whitworth for BSW, BSP

(inch)

Pitch (thread inch)	Total Cutting Depth	Number of Passes														Insert Type		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	G-class ground inserts	M-class inserts with 3-D chip breakers	
28	.023	.007	.006	.004	.004	.002											MMT16ER280W	-
26	.025	.007	.006	.005	.005	.002											MMT16ER260W	-
20	.032	.008	.007	.006	.005	.004	.002										MMT16ER200W	-
19	.034	.008	.007	.006	.006	.005	.002										MMT16ER190W	MMT16ER190W-S
18	.035	.010	.007	.006	.005	.005	.002										MMT16ER180W	-
16	.040	.008	.007	.006	.005	.004	.004	.004	.002								MMT16ER160W	-
14	.046	.009	.008	.007	.006	.005	.005	.004	.002								MMT16ER140W	MMT16ER140W-S
12	.054	.011	.010	.008	.006	.006	.006	.005	.002								MMT16ER120W	-
11	.058	.011	.009	.008	.007	.006	.006	.005	.005	.002							MMT16ER110W	MMT16ER110W-S
10	.064	.011	.010	.008	.007	.006	.006	.005	.005	.004	.002						MMT16ER100W	-
9	.071	.011	.010	.008	.007	.006	.006	.006	.005	.005	.005	.002					MMT16ER090W	-
8	.080	.012	.011	.009	.007	.007	.006	.006	.006	.005	.005	.004	.002				MMT16ER080W	-
7	.091	.013	.013	.010	.009	.008	.007	.007	.006	.006	.006	.004	.002				MMT22ER070W	-
6	.107	.014	.013	.011	.009	.008	.008	.007	.007	.006	.006	.006	.005	.005	.002		MMT22ER060W	-
5	.128	.017	.016	.014	.011	.010	.009	.009	.008	.007	.007	.007	.006	.005	.002		MMT22ER050W	-

(Note) · Set the finishing allowance on a diameter at approx. .004 inch when using a full form insert.

· Please note the cutting depth and the number of passes when a nose radius of a partial or semi-full form insert or of an internal threading insert is small to prevent damage to the insert nose.

· Please set the cutting depth sufficiently deep enough on materials such as hardened steel or austenitic stainless steel to help prevent premature wear and chipping caused by the outer layer of the material.

Standard of Depth of Cut (External Threading)

EXTERNAL (RADIAL INFEEED)

BSPT

(inch)

Pitch (thread/inch)	Total Cutting Depth	Number of Passes										Insert Type					
		1	2	3	4	5	6	7	8	9			G-class ground inserts	M-class inserts with 3-D chip breakers			
28	.023	.007	.006	.004	.004	.002										MMT16ER280BSPT	–
19	.034	.009	.007	.006	.005	.005	.002									MMT16ER190BSPT	MMT16ER190BSPT-S
14	.046	.009	.008	.007	.006	.005	.005	.004	.002							MMT16ER140BSPT	MMT16ER140BSPT-S
11	.058	.010	.009	.008	.007	.006	.006	.005	.005	.002						MMT16ER110BSPT	MMT16ER110BSPT-S

Round DIN 405

(inch)

Pitch (thread/inch)	Total Cutting Depth	Number of Passes												Insert Type			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	G-class ground inserts	
10	.050	.009	.008	.008	.007	.006	.005	.005	.002								MMT16ER100RD
8	.063	.009	.008	.008	.007	.007	.006	.006	.005	.005	.002						MMT16ER080RD
6	.083	.010	.010	.009	.009	.008	.007	.007	.006	.006	.005	.004	.002				MMT16ER060RD
4	.125	.013	.013	.013	.012	.011	.010	.009	.009	.008	.007	.007	.006	.005	.002		MMT22ER040RD

ISO Trapezoidal 30°

(mm)

Pitch (mm)	Total Cutting Depth	Number of Passes												Insert Type			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	G-class ground inserts	
1.5	0.90	0.23	0.21	0.16	0.13	0.11	0.06										MMT16ER150TR
2.0	1.25	0.29	0.26	0.21	0.17	0.14	0.12	0.06									MMT16ER200TR
3.0	1.75	0.32	0.31	0.24	0.19	0.18	0.17	0.15	0.13	0.06							MMT16ER300TR
4.0	2.25	0.33	0.32	0.24	0.22	0.21	0.17	0.16	0.15	0.14	0.13	0.12	0.06				MMT22ER400TR
5.0	2.75	0.35	0.32	0.26	0.24	0.22	0.21	0.19	0.19	0.17	0.15	0.14	0.13	0.12	0.06		MMT22ER500TR

American ACME

(inch)

Pitch (thread/inch)	Total Cutting Depth	Number of Passes												Insert Type			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	G-class ground inserts	
12	.047	.011	.009	.008	.007	.006	.004	.002									MMT16ER120ACME
10	.060	.011	.010	.008	.007	.006	.006	.005	.005	.002							MMT16ER100ACME
8	.072	.012	.010	.009	.007	.006	.006	.006	.005	.005	.004	.002					MMT16ER080ACME
6	.093	.013	.012	.011	.009	.008	.007	.006	.006	.005	.005	.004	.005	.002			MMT22ER060ACME
5	.110	.014	.013	.012	.010	.009	.008	.007	.007	.006	.006	.006	.005	.005	.002		MMT22ER050ACME

UNJ

(inch)

Pitch (thread/inch)	Total Cutting Depth	Number of Passes											Insert Type				
		1	2	3	4	5	6	7	8	9	10	11	G-class ground inserts				
32	.018	.006	.006	.004	.002												MMT16ER320UNJ
28	.020	.006	.005	.004	.003	.002											MMT16ER280UNJ
24	.024	.007	.006	.006	.003	.002											MMT16ER240UNJ
20	.029	.007	.006	.005	.005	.004	.002										MMT16ER200UNJ
18	.032	.009	.007	.006	.004	.004	.002										MMT16ER180UNJ
16	.036	.010	.008	.006	.005	.004	.003										MMT16ER160UNJ
14	.041	.010	.009	.007	.005	.004	.004	.002									MMT16ER140UNJ
12	.048	.011	.011	.008	.007	.005	.004	.002									MMT16ER120UNJ
10	.058	.012	.011	.008	.006	.005	.005	.005	.004	.002							MMT16ER100UNJ
8	.072	.012	.012	.009	.007	.006	.006	.005	.005	.004	.004	.002					MMT16ER080UNJ

API Buttress Casing

(inch)

Pitch (thread/inch)	Total Cutting Depth	Number of Passes										Insert Type					
		1	2	3	4	5	6	7	8	9	10	11	G-class ground inserts				
5	.061	.010	.009	.007	.006	.005	.005	.005	.004	.004	.004	.002					MMT22ER050APBU

- (Note) · Set the finishing allowance on a diameter at approx. .004 inch when using a full form insert.
 · Please note the cutting depth and the number of passes when a nose radius of a partial or semi-full form insert or of an internal threading insert is small to prevent damage to the insert nose.
 · Please set the cutting depth sufficiently deep enough on materials such as hardened steel or austenitic stainless steel to help prevent premature wear and chipping caused by the outer layer of the material.

API Round Casing & Tubing

(inch)

Pitch (thread/ inch)	Total Cutting Depth	Number of Passes														Insert Type	
		1	2	3	4	5	6	7	8	9	10	11	12				
10	.056	.010	.009	.006	.006	.005	.005	.005	.004	.004	.002						G-class ground inserts
8	.071	.010	.009	.007	.006	.006	.006	.005	.005	.005	.005	.005	.002				MMT16ER100APRD MMT16ER080APRD

American NPT

(inch)

Pitch (thread/ inch)	Total Cutting Depth	Number of Passes															Insert Type
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
27	.026	.006	.005	.005	.004	.004	.002										G-class ground inserts
18	.040	.008	.006	.006	.005	.005	.004	.004	.002								MMT16ER270NPT MMT16ER180NPT
14	.052	.009	.007	.006	.006	.005	.005	.004	.004	.002							MMT16ER140NPT
11.5	.065	.009	.007	.007	.006	.006	.005	.005	.005	.005	.004	.004	.002				MMT16ER115NPT
8	.095	.013	.011	.009	.008	.007	.006	.006	.006	.005	.005	.005	.004	.004	.004	.002	MMT16ER080NPT

American NPTF

(inch)

Pitch (thread/ inch)	Total Cutting Depth	Number of Passes															Insert Type
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
27	.025	.006	.006	.004	.004	.003	.002										G-class ground inserts
18	.039	.007	.006	.006	.005	.005	.004	.004	.002								MMT16ER270NPTF MMT16ER180NPTF
14	.053	.009	.008	.006	.006	.005	.005	.004	.004	.004	.002						MMT16ER140NPTF
11.5	.064	.009	.009	.007	.006	.005	.005	.005	.004	.004	.004	.004	.002				MMT16ER115NPTF
8	.094	.013	.011	.009	.007	.007	.006	.006	.006	.005	.005	.005	.004	.004	.004	.002	MMT16ER080NPTF

- (Note) · Set the finishing allowance on a diameter at approx. .004 inch when using a full form insert.
 · Please note the cutting depth and the number of passes when a nose radius of a partial or semi-full form insert or of an internal threading insert is small to prevent damage to the insert nose.
 · Please set the cutting depth sufficiently deep enough on materials such as hardened steel or austenitic stainless steel to help prevent premature wear and chipping caused by the outer layer of the material.

Standard of Depth of Cut (Internal Threading)

INTERNAL (RADIAL INFEEED)

ISO Metric

(mm)

Pitch (mm)	Total Cutting Depth	Number of Passes														Insert Type			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	G-class ground inserts		M-class inserts with 3-D chip breakers	
0.5	0.29	0.09	0.07	0.07	0.06											MMT11R050ISO	MMT16R050ISO	—	—
0.75	0.43	0.15	0.13	0.09	0.06											MMT11R075ISO	MMT16R075ISO	—	—
1.0	0.58	0.17	0.15	0.11	0.09	0.06										MMT11R100ISO	MMT16R100ISO	MMT11R100ISO-S	MMT16R100ISO-S
1.25	0.72	0.18	0.16	0.12	0.11	0.09	0.06									MMT11R125ISO	MMT16R125ISO	MMT11R125ISO-S	MMT16R125ISO-S
1.5	0.87	0.21	0.20	0.16	0.13	0.11	0.06									MMT11R150ISO	MMT16R150ISO	MMT11R150ISO-S	MMT16R150ISO-S
1.75	1.01	0.21	0.20	0.15	0.12	0.10	0.09	0.08	0.06							MMT11R175ISO	MMT16R175ISO	—	MMT16R175ISO-S
2.0	1.15	0.24	0.22	0.18	0.14	0.12	0.10	0.09	0.06							MMT11R200ISO	MMT16R200ISO	—	MMT16R200ISO-S
2.5	1.44	0.25	0.24	0.21	0.15	0.13	0.12	0.10	0.09	0.09	0.06					—	MMT16R250ISO	—	MMT16R250ISO-S
3.0	1.73	0.26	0.25	0.22	0.17	0.14	0.13	0.12	0.11	0.10	0.09	0.08	0.06			—	MMT16R300ISO	—	MMT16R300ISO-S
3.5	2.02	0.32	0.30	0.23	0.19	0.17	0.15	0.14	0.13	0.12	0.11	0.10	0.06			—	MMT22R350ISO	—	—
4.0	2.31	0.33	0.31	0.24	0.22	0.18	0.15	0.14	0.13	0.12	0.12	0.11	0.10	0.10	0.06	—	MMT22R400ISO	—	—
4.5	2.60	0.36	0.33	0.28	0.24	0.21	0.19	0.16	0.15	0.14	0.13	0.12	0.12	0.11	0.06	—	MMT22R450ISO	—	—
5.0	2.89	0.41	0.38	0.32	0.27	0.24	0.21	0.18	0.16	0.15	0.14	0.13	0.12	0.12	0.06	—	MMT22R500ISO	—	—

American UN

(inch)

Pitch (thread/inch)	Total Cutting Depth	Number of Passes														Insert Type			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	G-class ground inserts		M-class inserts with 3-D chip breakers	
32	.018	.006	.006	.004	.002											MMT11R320UN	MMT16R320UN	—	—
28	.020	.006	.005	.004	.003	.002										MMT11R280UN	MMT16R280UN	—	—
24	.024	.007	.006	.005	.004	.002										MMT11R240UN	MMT16R240UN	—	—
20	.029	.007	.006	.005	.005	.004	.002									MMT11R200UN	MMT16R200UN	—	—
18	.032	.008	.007	.006	.005	.004	.002									MMT11R180UN	MMT16R180UN	—	—
16	.036	.008	.007	.006	.005	.004	.004	.002								MMT11R160UN	MMT16R160UN	MMT16R160UN-S	—
14	.041	.008	.007	.006	.005	.005	.004	.004	.002							MMT11R140UN	MMT16R140UN	MMT16R140UN-S	—
13	.044	.009	.007	.006	.006	.005	.005	.004	.002							—	MMT16R130UN	—	—
12	.048	.009	.009	.007	.006	.005	.005	.005	.002							—	MMT16R120UN	MMT16R120UN-S	—
11	.052	.009	.009	.008	.006	.005	.005	.004	.004	.002						—	MMT16R110UN	—	—
10	.058	.010	.009	.008	.006	.005	.005	.005	.004	.004	.002					—	MMT16R100UN	—	—
9	.064	.012	.009	.008	.007	.006	.006	.005	.005	.004	.002					—	MMT16R090UN	—	—
8	.072	.012	.010	.008	.007	.006	.006	.006	.005	.005	.005	.002				—	MMT16R080UN	—	—
7	.082	.014	.012	.009	.008	.007	.007	.006	.006	.006	.005	.002				—	MMT22R070UN	—	—
6	.096	.016	.013	.010	.009	.007	.007	.006	.006	.006	.005	.005	.004	.002		—	MMT22R060UN	—	—
5	.115	.016	.014	.012	.010	.009	.008	.008	.007	.007	.006	.006	.005	.005	.002	—	MMT22R050UN	—	—

Whitworth for BSW, BSP

(inch)

Pitch (thread/inch)	Total Cutting Depth	Number of Passes														Insert Type			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	G-class ground inserts		M-class inserts with 3-D chip breakers	
28	.023	.007	.006	.004	.004	.002										—	MMT16R280W	—	—
26	.025	.007	.006	.005	.005	.002										—	MMT16R260W	—	—
20	.032	.008	.007	.006	.005	.004	.002									—	MMT16R200W	—	—
19	.034	.008	.007	.006	.006	.005	.002									MMT11R190W	MMT16R190W	MMT16R190W-S	—
18	.035	.010	.007	.006	.005	.005	.002									—	MMT16R180W	—	—
16	.040	.008	.007	.006	.005	.004	.004	.004	.002							—	MMT16R160W	—	—
14	.046	.009	.008	.007	.006	.005	.005	.004	.002							MMT11R140W	MMT16R140W	MMT16R140W-S	—
12	.054	.011	.010	.008	.006	.006	.006	.005	.002							—	MMT16R120W	MMT16R120W-S	—
11	.058	.011	.009	.008	.007	.006	.006	.005	.004	.002						—	MMT16R110W	—	—
10	.064	.011	.010	.008	.007	.006	.006	.005	.005	.004	.002					—	MMT16R100W	—	—
9	.071	.011	.010	.008	.007	.006	.006	.006	.005	.005	.005	.002				—	MMT16R090W	—	—
8	.080	.012	.011	.009	.007	.007	.006	.006	.006	.005	.005	.004	.002			—	MMT16R080W	—	—
7	.091	.013	.013	.010	.009	.008	.007	.007	.006	.006	.006	.004	.002			—	MMT22R070W	—	—
6	.107	.014	.013	.011	.009	.008	.008	.007	.007	.006	.006	.006	.005	.005	.002	—	MMT22R060W	—	—
5	.128	.017	.016	.014	.011	.010	.009	.009	.008	.007	.007	.006	.006	.005	.002	—	MMT22R050W	—	—

(Note) · Set the finishing allowance on a diameter at approx. .004 inch when using a full form insert.
 · Please note the cutting depth and the number of passes when a nose radius of a partial or semi-full form insert or of an internal threading insert is small to prevent damage to the insert nose.
 · Please set the cutting depth sufficiently deep enough on materials such as hardened steel or austenitic stainless steel to help prevent premature wear and chipping caused by the outer layer of the material.

BSPT

(inch)

Pitch (thread/inch)	Total Cutting Depth	Number of Passes													Insert Type				
		1	2	3	4	5	6	7	8	9							G-class ground inserts	M-class inserts with 3-D chip breakers	
19	.034	.009	.007	.006	.005	.005	.002										MMT11IR190BSPT	MMT16IR190BSPT	MMT16IR190BSPT-S
14	.046	.009	.008	.007	.006	.005	.005	.004	.002								MMT11IR140BSPT	MMT16IR140BSPT	MMT16IR140BSPT-S
11	.058	.010	.009	.008	.007	.006	.006	.005	.005	.002							—	MMT16IR110BSPT	MMT16IR110BSPT-S

Round DIN 405

(inch)

Pitch (thread/inch)	Total Cutting Depth	Number of Passes														Insert Type		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	G-class ground inserts		
10	.050	.009	.008	.008	.007	.006	.005	.005	.002									MMT16IR100RD
8	.063	.009	.008	.008	.007	.007	.006	.006	.005	.005	.002							MMT16IR080RD
6	.083	.010	.010	.009	.009	.008	.007	.007	.006	.006	.005	.004	.002					MMT16IR060RD
4	.125	.013	.013	.013	.012	.011	.010	.009	.009	.008	.007	.007	.006	.005	.002			MMT22IR040RD

ISO Trapezoidal 30°

(mm)

Pitch (mm)	Total Cutting Depth	Number of Passes														Insert Type		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	G-class ground inserts		
1.5	0.90	0.23	0.21	0.16	0.13	0.11	0.06											MMT16IR150TR
2	1.25	0.29	0.26	0.21	0.17	0.14	0.12	0.06										MMT16IR200TR
3	1.75	0.32	0.31	0.24	0.19	0.18	0.17	0.15	0.13	0.06								MMT16IR300TR
4	2.25	0.33	0.32	0.24	0.22	0.21	0.17	0.16	0.15	0.14	0.13	0.12	0.06					MMT22IR400TR
5	2.75	0.35	0.32	0.26	0.24	0.22	0.21	0.19	0.19	0.17	0.15	0.14	0.13	0.12	0.06			MMT22IR500TR

American ACME

(inch)

Pitch (thread/inch)	Total Cutting Depth	Number of Passes														Insert Type		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	G-class ground inserts		
12	.047	.011	.009	.008	.007	.006	.004	.002										MMT16IR120ACME
10	.060	.011	.010	.008	.007	.006	.006	.005	.005	.002								MMT16IR100ACME
8	.072	.012	.010	.009	.007	.006	.006	.006	.005	.005	.004	.002						MMT16IR080ACME
6	.093	.013	.012	.011	.009	.008	.007	.006	.006	.005	.005	.005	.004	.002				MMT22IR060ACME
5	.110	.014	.013	.012	.010	.009	.008	.007	.007	.006	.006	.006	.005	.005	.002			MMT22IR050ACME

API Buttress Casing

(inch)

Pitch (thread/inch)	Total Cutting Depth	Number of Passes											Insert Type					
		1	2	3	4	5	6	7	8	9	10	11	G-class ground inserts					
5	.061	.010	.009	.007	.006	.005	.005	.005	.004	.004	.004	.002						MMT22IR050APBU

API Round Casing & Tubing

(inch)

Pitch (thread/inch)	Total Cutting Depth	Number of Passes												Insert Type				
		1	2	3	4	5	6	7	8	9	10	11	12	G-class ground inserts				
10	.056	.010	.009	.006	.006	.005	.005	.005	.004	.004	.002							MMT16IR100APRD
8	.071	.010	.009	.007	.006	.006	.006	.005	.005	.005	.005	.005	.002					MMT16IR080APRD

- (Note) · Set the finishing allowance on a diameter at approx. .004 inch when using a full form insert.
 · Please note the cutting depth and the number of passes when a nose radius of a partial or semi-full form insert or of an internal threading insert is small to prevent damage to the insert nose.
 · Please set the cutting depth sufficiently deep enough on materials such as hardened steel or austenitic stainless steel to help prevent premature wear and chipping caused by the outer layer of the material.

Standard of Depth of Cut (Internal Threading)

INTERNAL (RADIAL INFEED)

American NPT

(inch)

Pitch (thread/ inch)	Total Cutting Depth	Number of Passes														Insert Type	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14		15
																	G-class ground inserts
27	.026	.006	.005	.005	.004	.004	.002										MMT16IR270NPT
18	.040	.008	.006	.006	.005	.005	.004	.004	.002								MMT16IR180NPT
14	.052	.009	.007	.006	.006	.005	.005	.004	.004	.004	.002						MMT16IR140NPT
11.5	.065	.009	.007	.007	.006	.006	.005	.005	.005	.005	.004	.004	.002				MMT16IR115NPT
8	.095	.013	.011	.009	.008	.007	.006	.006	.006	.005	.005	.005	.004	.004	.004	.002	MMT16IR080NPT

American NPTF

(inch)

Pitch (thread/ inch)	Total Cutting Depth	Number of Passes														Insert Type	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14		15
																	G-class ground inserts
14	.053	.009	.008	.006	.006	.005	.005	.004	.004	.004	.002						MMT16IR140NPTF
11.5	.064	.009	.009	.007	.006	.005	.005	.005	.004	.004	.004	.004	.002				MMT16IR115NPTF
8	.094	.013	.011	.009	.007	.007	.006	.006	.006	.005	.005	.005	.004	.004	.004	.002	MMT16IR080NPTF

- (Note) · Set the finishing allowance on a diameter at approx. .004 inch when using a full form insert.
- Please note the cutting depth and the number of passes when a nose radius of a partial or semi-full form insert or of an internal threading insert is small to prevent damage to the insert nose.
 - Please set the cutting depth sufficiently deep enough on materials such as hardened steel or austenitic stainless steel to help prevent premature wear and chipping caused by the outer layer of the material.

TROUBLE SHOOTING

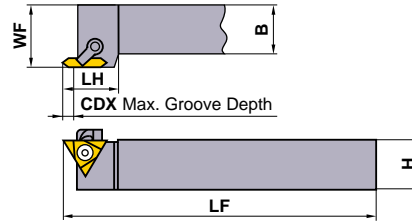
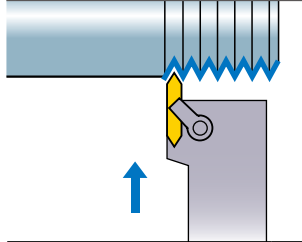
Problems	Observation	Causes	Solutions	
Low thread precision.	Threads do not mesh with each other.	Incorrect tool installation.	Set the insert center height at 0".	
			Check holder inclination (Lateral).	
	Shallow thread.	Incorrect depth of cut. Lack of insert wear or plastic deformation resistance.	Modify the depth of cut.	
Refer to "Quickly generated flank wear." and "Large plastic deformation." below.				
Poor surface finish.	Surface damage.	Chips wrap around or clog the work pieces.	Change to flank infeed and control the chip discharge direction.	
			Change to an M-class insert with a 3-D chip breaker.	
		The side of the insert cutting edge interferes with the workpiece.	Check the lead angle and select an appropriate shim.	
	Surface tears.	Built-up edge (Welding).	Increase cutting speed.	
		Cutting resistance too high.	Increase coolant pressure and volume. Decrease depth of cut per pass.	
	Surface vibrations.	Cutting speed too high.	Decrease the cutting speed.	
		Insufficient work piece or tool clamping.	Re-check work piece and tool clamping. (Chuck pressure, clamping allowance)	
		Incorrect tool installation.	Set the insert center height at 0".	
	Short tool life.	Flank wear quickly generated.	Cutting speed too high.	Decrease the cutting speed.
			Too many passes causes abrasive wear.	Reduce the number of passes.
Small depth of cut for the finishing pass.			Do not re-cut at 0" depth of cut. Depth of cut larger than .002" is recommended.	
Non-uniform wear of the right and left sides of the cutting edge.		The work piece lead angle and the tool lead angle do not match.	Check the work piece lead angle and select an appropriate shim.	
		Chipping and fracture.	Cutting speed too low.	Increase cutting speed.
			Cutting resistance too high.	Increase the number of passes and decrease the cutting resistance per pass.
			Unstable clamping.	Check work piece deflection.
				Shorten tool overhang.
				Recheck work piece and tool clamping. (Chuck pressure, clamping allowance)
			Chip packing.	Increase coolant pressure to blow away chips.
				Change the tool pass to control chips. (Lengthen each pass to allow the coolant to clear the chips.) Change from standard internal cutting to back turning to prevent chip jamming.
Non-chamfered work pieces causes high resistance at the start of each pass.		Chamfer the workpiece entry and exit faces.		
Large plastic deformation.		High cutting speed and large heat generation.	Decrease the cutting speed.	
		Lack of coolant supply.	Check coolant is supply is sufficient.	
			Increase coolant pressure and volume.	
Cutting resistance too high.	Increase the number of passes and decrease the cutting resistance per pass.			

MTVVO HOLDER

- Multi-clamp type.
- Precision class insert.
- Positive insert produces a good finished surface.

- Holder is capable of performing both grooving and threading.
- Economical due to the use of 3 cutting edges.

MTVVO External grooving, Threading



Right hand tool holder shown.

Order Number	Stock		Insert Number	Dimensions (inch)						Insert Screw	Clamp Screw	Clamp	
	R	L		H	B	LF	LH	WF	CDX				
MTVOR/L-8-3B	●	●	TNMC	32	.500	.500	4.500	1.000	.750	.057 / .156	GTS1	XNS35	CL6
MTVOR/L-10-3B	●	●		32	.625	.625	4.500	1.000	.875	.057 / .156	GTS1	XNS35	CL6
MTVOR/L-12-3B	●	●		32	.750	.750	4.500	1.000	1.000	.057 / .156	GTS1	XNS35	CL6
MTVOR/L-12-4B	●	●		43	.750	.750	4.500	1.063	1.000	.156 / .234	GTS2	XNS36	CL6
MTVOR/L-16-4D	●	●		43	1.000	1.000	6.000	1.063	1.250	.156 / .234	GTS2	XNS36	CL6
MTVOR/L-16-5D	●	●		54	1.000	1.000	6.000	1.250	1.250	.297	GTS3	XNS36	CL6
MTVOR/L-20-4D	●	●		43	1.250	1.250	6.000	1.063	1.500	.156 / .234	GTS2	XNS36	CL6

(Note) Please use right hand insert for right hand holder and left hand insert for left hand holder.

INSERTS (THREADING)

Order Number	Class	Stock		Min. Pitch (T.P.I)	Dimensions (inch)			Geometry
		Coated	Carbide		IC	S	RE	
		UP20M	UTi20T					
TNMC32NV	E	●	●	8	.375	.125	.004	
TNMC43NV	E	●	●	6	.500	.187	.004	
TNMC54NV	E	●	●	4	.625	.250	.004	

INSERTS (GROOVING)

Order Number	Class	Stock		Dimensions (inch)					Geometry
		Coated	Carbide	CW	IC	S	PDPT	RE	
		UP20M	UTi20T						
TNMC32NGR032	E	●	●	.032	.375	.125	.057	≤.003	
TNMC32NGL032	E	●	●	.032	.375	.125	.057	≤.003	
TNMC32NGR063	E	●	●	.063	.375	.125	.156	≤.003	
TNMC32NGL063	E	●	●	.063	.375	.125	.156	≤.003	
TNMC43NGR063	E	●	●	.063	.500	.188	.156	≤.003	
TNMC43NGL063	E	●	●	.063	.500	.188	.156	≤.003	
TNMC43NGR094	E	●	●	.094	.500	.188	.156	≤.003	
TNMC43NGL094	E	●	●	.094	.500	.188	.156	≤.003	
TNMC43NGR125	E	●	●	.125	.500	.188	.234	≤.003	
TNMC43NGL125	E	●	●	.125	.500	.188	.234	≤.003	
TNMC43NGR156	E	●	●	.156	.500	.188	.234	≤.003	
TNMC43NGL156	E	●	●	.156	.500	.188	.234	≤.003	
TNMC54NGR187	E	●	●	.187	.625	.250	.297	≤.003	
TNMC54NGL187	E	●	●	.187	.625	.250	.297	≤.003	

Right hand insert shown.

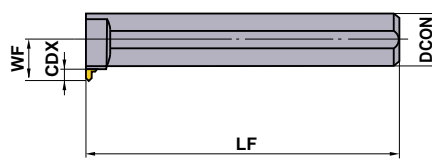
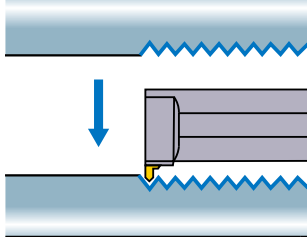
STHN/O TYPE

- Multi-clamp type.
- Precision class insert.
- Positive insert produces a good finished surface.

- Holder is capable of performing both grooving and threading.
- Economical due to the use of 3 cutting edges.

S-STHN/O

Internal grooving, Threading, Boring



Right hand tool holder shown.

Order Number	Stock		Insert Number	Dimensions (inch)						Clamp Screw	Wrench	
	R	L		DCON	LF	WF	GAMF	DMIN	CDX			
S16-STHNR/L-3	●	●	TNMC	32	1.000	10.000	.656	10°	1.250	.060 / .156	GTS1	TKY10F
S20-STHNR/L-4	●	●		43	1.250	12.000	.843	10°	1.750	.156 / .234	GTS2	TKY20F
S24-STHNR/L-4	●	●		43	1.500	14.000	.968	10°	2.250	.156 / .234	GTS2	TKY20F
S32-STHNR/L-4	●	●		43	2.000	14.000	1.218	10°	3.000	.156 / .234	GTS2	TKY20F
S32-STHOR/L-5	●	●		54	2.000	14.000	1.250	0	4.000	.297	GTS3	TKY20F

(Note) Please use left hand insert for right hand holder and right hand insert for left hand holder.

INSERTS (THREADING)

Order Number	Class	Stock		Min. Pitch (T.P.I.)	Dimensions (inch)			Geometry
		Coated	Carbide		IC	S	RE	
		UP20M	UTi20T					
TNMC32NV	E	●	●	8	.375	.125	.004	
TNMC43NV	E	●	●	6	.500	.187	.004	
TNMC54NV	E	●	●	4	.625	.250	.004	

INSERTS (GROOVING)

Order Number	Class	Stock		Dimensions (inch)					Geometry
		Coated	Carbide	CW	IC	S	PDPT	RE	
		UP20M	UTi20T						
TNMC32NGR032	E	●	●	.032	.375	.125	.057	≤.003	
TNMC32NGL032	E	●	●	.032	.375	.125	.057	≤.003	
TNMC32NGR063	E	●	●	.063	.375	.125	.156	≤.003	
TNMC32NGL063	E	●	●	.063	.375	.125	.156	≤.003	
TNMC43NGR063	E	●	●	.063	.500	.188	.156	≤.003	
TNMC43NGL063	E	●	●	.063	.500	.188	.156	≤.003	
TNMC43NGR094	E	●	●	.094	.500	.188	.156	≤.003	
TNMC43NGL094	E	●	●	.094	.500	.188	.156	≤.003	
TNMC43NGR125	E	●	●	.125	.500	.188	.234	≤.003	
TNMC43NGL125	E	●	●	.125	.500	.188	.234	≤.003	
TNMC43NGR156	E	●	●	.156	.500	.188	.234	≤.003	
TNMC43NGL156	E	●	●	.156	.500	.188	.234	≤.003	
TNMC54NGR187	E	●	●	.187	.625	.250	.297	≤.003	
TNMC54NGL187	E	●	●	.187	.625	.250	.297	≤.003	

Right hand insert shown.

THREADING

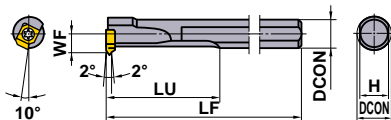
F TYPE

- Min. cutting diameter 10mm.
- Screw-on type.
- Usable for various applications.
- Max. groove depth: 3mm.

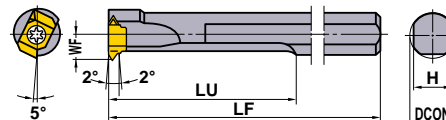
FSL51

Internal grooving, Threading

1 Corner type (FSL5108R,5110R)





2 Corner type (FSL5112R,5114R,5116R)



Metric Standard

Right hand tool holder only.

Order Number	Stock	Insert Number			Dimensions (mm)								Max. Groove Depth (mm)	 Clamp Screw	 Wrench
		R	Grooving	Threading	DCON	H	LF	LU	WF	CW ^{*2}	DMIN ^{*1}				
FSL5108R	★				1001L	8	7	125	30	4.8	1.2	10	1.0	TS25	TKY08F
FSL5110R	★	MLG	10 \odot L	MLT	1001L	10	9	150	40	5.8	1.5	12	1.0	TS25	TKY08F
FSL5112R	★				1401L	12	10.8	180	50	6.8	1.5	14	2.0	TS32	TKY08F
FSL5114R	★	MLG	14 \odot L	MLT	1401L	14	12.4	180	60	7.8	2.0	16	2.0	TS32	TKY08F
FSL5116R	★	MLG	20 \odot L	MLT	2001L	16	14	200	70	9.7	3.0	20	3.0	TS43	TKY15F

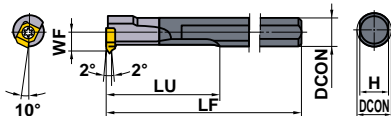
*1 DMIN : Min. Cutting Diameter

*2 CW : Please refer to page G038.

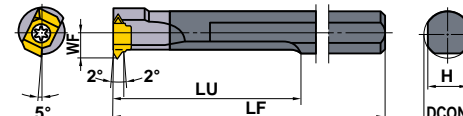
FSL52

Carbide shank

1 Corner type (FSL5208R,5210R)





2 Corner type (FSL5212R,5214R,5216R)



Metric Standard

Right hand tool holder only.

Order Number	Stock	Insert Number			Dimensions (mm)								Max. Groove Depth (mm)	 Clamp Screw	 Wrench
		R	Grooving	Threading	DCON	H	LF	LU	WF	CW ^{*2}	DMIN ^{*1}				
FSL5208R	★				1001L	8	7	125	60	4.8	1.2	10	1.0	TS25	TKY08F
FSL5210R	★	MLG	10 \odot L	MLT	1001L	10	9	150	70	5.8	1.5	12	1.0	TS25	TKY08F
FSL5212R	★				1401L	12	10.8	180	80	6.8	1.5	14	2.0	TS32	TKY08F
FSL5214R	★	MLG	14 \odot L	MLT	1401L	14	12.4	180	85	7.8	2.0	16	2.0	TS32	TKY08F
FSL5216R	★	MLG	20 \odot L	MLT	2001L	16	14	200	115	9.7	3.0	20	3.0	TS43	TKY15F

*1 DMIN : Min. Cutting Diameter

*2 CW : Please refer to page G038.

RECOMMENDED CUTTING CONDITIONS

Work Material	Hardness	Grade	Cutting Speed (SFM)	Feed (inch/rev)
P Carbon Steel	180—280HB	UP20M • UTI20T	295 (195—390)	.002 (.0008—.003)
Alloy Steel	280—350HB	UP20M • UTI20T	260 (165—330)	.001 (.0008—.0015)

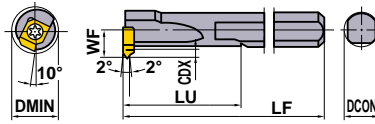
F TYPE

- Min. cutting diameter .390inch.
- Screw-on type.
- Usable for various applications.
- Max. groove depth: .118inch.

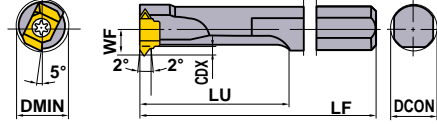
S-SL5N

Internal grooving, Threading



1 Corner type (S-SL5NR05 / 06)



2 Corner type (S-SL5NR08 / 10 / 12)



Right hand tool holder only.

Order Number	Stock R	Insert Number		Dimensions (inch)								
		Grooving	Threading	DCON	LF	LU	WF	CW ^{*2}	DMIN ^{*1}	CDX		
S-SL5NR05	●	MLG10W○○○L	MLT1001L	.313	5.000	1.250	.188	.062 .094	.390	.039	TS25	TKY08F
S-SL5NR06	●	MLG10W○○○L	MLT1001L	.375	6.000	1.500	.219	.062 .094 .125	.449	.039	TS25	TKY08F
S-SL5NR08	●	MLG14W○○○L	MLT1401L	.500	7.000	2.000	.281	.062 .094 .125	.579	.079	TS32	TKY08F
S-SL5NR10	●	MLG20W○○○L	MLT2001L	.625	8.000	3.000	.375	.094 .125	.791	.118	TS43	TKY15F
S-SL5NR12	●	MLG20W○○○L	MLT2001L	.750	10.000	4.000	.438	.125 .156	.902	.118	TS43	TKY15F

*1 DMIN : Min. Cutting Diameter

*2 CW : Please refer to page G038.

RECOMMENDED CUTTING CONDITIONS

Work Material	Hardness	Grade	Cutting Speed (SFM)	Feed (inch/rev)
P Carbon Steel Alloy Steel	180—280HB	UP20M • UTi20T	295 (195—390)	.002 (.0008—.003)
	280—350HB	UP20M • UTi20T	260 (165—330)	.001 (.0008—.0015)

THREADING

F TYPE

- Min. cutting diameter .390inch.
- Screw-on type.
- Usable for various applications.
- Max. groove depth: .118inch.

INSERTS

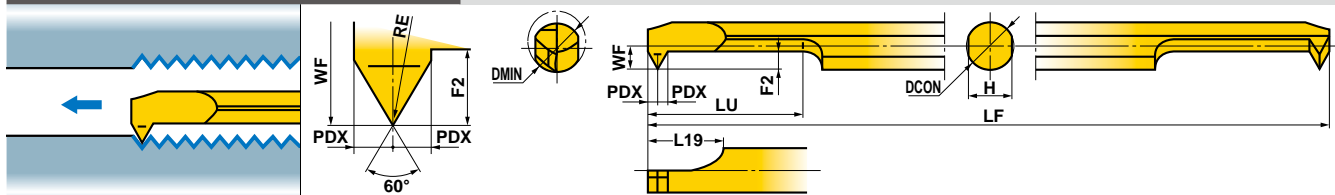
Application	CW (inch)	Order Number	Carbide		Dimensions (inch)					Geometry		
			UTi20T	HT110	L	W1	PDPT	S	BCH			
Grooving	Inch	.062	MLG10W062L		●	.276	.197	.039	.094	.004	MLG...L (1 Corner type) 	
		Metric	.047 (1.2mm)	MLG1012L	●		.276	.197	.039	.094		.004
			.059 (1.5mm)	MLG1015L	●		.276	.197	.039	.094		.004
	.079 (2.0mm)		MLG1020L	●		.276	.197	.039	.094	.004		
	Metric	.062	MLG14W062L		▲	.465	.256	.079	.187	.004		MLG...L (2 Corner type)
		.059 (1.5mm)	MLG1415L	●		.465	.256	.079	.187	.004		
		.079 (2.0mm)	MLG1420L	●		.465	.256	.079	.187	.004		
		.118 (3.0mm)	MLG1430L	●		.465	.256	.079	.187	.004		
		.079 (2.0mm)	MLG2020L	●		.661	.356	.118	.250	.004		
		.118 (3.0mm)	MLG2030L	●		.661	.356	.118	.250	.004		
.157 (4.0mm)		MLG2040L	●		.661	.356	.118	.250	.004			

Application	Min.Pitch	Order Number	Coated		Carbide		Dimensions (inch)				Geometry
			UP20M	UTi20T	L	W1	S	RE			
Threading	13T.P.I	MLT1001L	●	●	.276	.197	.094	.004	MLT1001L (1 Corner type) 		
	11T.P.I	MLT1401L	●	●	.465	.256	.187	.004			
	8T.P.I	MLT2001L	●	●	.661	.356	.250	.004			
											MLT1401L /2001L (2 Corner type)

MICRO-MINI TWIN

CT

Internal Threading



Order Number	Stock		Breaker	Threads				Dimensions (mm)									
	Micro Grain Carbide	Coated		Metric Screw		Unified Screw		DMIN	RE	DCON	LF	LU	L19	WF	PDX	F2	H
				TF15	VP15TF	Thread	Pitch (mm)										
CT0305RS-M4	●	●	Without	≥ M4	0.5-1.0	≥ NO.8-32UNC	36-24	3	0.03	3	50	5.2	6	1.3	0.6	1.2	2.7
CT03RS-M4	●	●	Without	≥ M4	0.5-1.0	≥ NO.8-36UNF	36-24	3	0.03	3	50	10.2	6	1.3	0.6	1.2	2.7
CT03RS-M4B	●	●	With	≥ M4	0.5-1.0		36-24	3	0.03	3	50	10.2	6	1.3	0.6	1.2	2.7
CT0407RS-M6	●	●	Without	≥ M6	0.75-1.25	≥ 1/4-20UNC	28-20	4.5	0.05	4	60	7.6	7	1.8	0.8	1.7	3.6
CT04RS-M6	●	●	Without	≥ M6	0.75-1.25	≥ 1/4-28UNF	28-20	4.5	0.05	4	60	15.6	7	1.8	0.8	1.7	3.6
CT04RS-M6B	●	●	With	≥ M6	0.75-1.25		28-20	4.5	0.05	4	60	15.6	7	1.8	0.8	1.7	3.6
CT0511RS-M8	●	●	Without	≥ M8	0.75-1.5	≥ 5/16-18UNC	24-18	6	0.05	5	70	11	8	2.3	1	2.2	4.5
CT05RS-M8	●	●	Without	≥ M8	0.75-1.5	≥ 5/16-24UNF	24-18	6	0.05	5	70	21	8	2.3	1	2.2	4.5
CT05RS-M8B	●	●	With	≥ M8	0.75-1.5		24-18	6	0.05	5	70	21	8	2.3	1	2.2	4.5
CT0611RS-M10	●	●	Without	≥ M10	0.75-1.75	≥ 3/8-16UNC	24-16	7	0.05	6	75	11	8	2.8	1	2.2	5.4
CT06RS-M10	●	●	Without	≥ M10	0.75-1.75	≥ 3/8-24UNF	24-16	7	0.05	6	75	21	8	2.8	1	2.2	5.4
CT06RS-M10B	●	●	With	≥ M10	0.75-1.75		24-16	7	0.05	6	75	21	8	2.8	1	2.2	5.4

THREAD PITCH FOR THE CT TYPE

Order Number	Metric Thread								Unified Thread						
	P (mm)								P (thread/inch)						
	0.50	0.70	0.75	0.80	1.00	1.25	1.50	1.75	36	32	28	24	20	18	16
CT03RS-M4/M4B	○	○	○	○	○	-	-	-	○	○	○	○	-	-	-
CT04RS-M6/M6B	-	-	○	-	○	○	-	-	-	-	○	○	○	-	-
CT05RS-M8/M8B	-	-	○	-	○	○	○	-	-	-	-	○	○	○	-
CT06RS-M10/M10B	-	-	○	-	○	○	○	○	-	-	-	○	○	○	○

(Note) For internal threads that are larger than the minimum diameter of the Micro Mini Twin (CT type), it is possible to machine the above thread pitches. For the minimum diameter, please refer to the standards.

DEPTH OF CUT FOR THE CT TYPE

● Metric Thread

P (pitch)	0.5	0.7	0.75	0.8	1	1.25	1.5	1.75
D.O.C. (mm)	0.3	0.43	0.46	0.44	0.49	0.62	0.6	0.76
Re* (Corner radius)	0.03	0.03	0.03	0.05	0.03	0.03	0.05	0.05
Number of Passes	1	0.06	0.06	0.06	0.06	0.07	0.07	0.07
	2	0.05	0.06	0.06	0.06	0.07	0.07	0.07
	3	0.05	0.06	0.06	0.05	0.06	0.06	0.07
	4	0.04	0.05	0.05	0.05	0.06	0.06	0.07
	5	0.04	0.05	0.05	0.05	0.05	0.06	0.06
	6	0.03	0.04	0.04	0.04	0.05	0.05	0.06
	7	0.03	0.04	0.04	0.04	0.05	0.05	0.06
	8		0.04	0.04	0.03	0.04	0.04	0.05
	9		0.03	0.03	0.03	0.04	0.04	0.05
	10			0.03	0.03	0.04	0.04	0.05
	11				0.03	0.03	0.04	0.05
	12					0.03	0.04	0.05
	13						0.04	0.05
	14						0.03	0.04
	15							0.04
	16							0.04
	17							0.03
	18							0.04
	19							0.04
	20							0.03

● Unified Thread

P (thread/inch)	36	32	28	24	20	18	16
D.O.C. (inch)	.0169	.0193	.0220	.0213	.0260	.0252	.0307
Re* (Corner radius)	.0012	.0012	.0012	.0020	.0012	.0020	.0020
Number of Passes	1	.0024	.0024	.0028	.0024	.0028	.0028
	2	.0024	.0024	.0024	.0024	.0028	.0028
	3	.0024	.0024	.0024	.0024	.0024	.0028
	4	.0020	.0020	.0024	.0020	.0024	.0024
	5	.0020	.0020	.0020	.0020	.0024	.0024
	6	.0016	.0016	.0020	.0020	.0020	.0024
	7	.0016	.0016	.0016	.0016	.0020	.0024
	8	.0016	.0016	.0016	.0016	.0016	.0020
	9	.0012	.0012	.0016	.0016	.0016	.0020
	10		.0012	.0012	.0012	.0016	.0020
	11		.0012	.0012	.0012	.0012	.0016
	12			.0012	.0012	.0012	.0016
	13				.0012	.0012	.0016
	14					.0012	.0016
	15						.0012
	16						.0012
	17						.0012
	18						.0012
	19						.0012
	20						.0012

* Even though the pitch maybe the same, the depth of cut varies according to the corner radius. For the Micro Mini Twin CT type CT03RS-M4, and CT03RS-M4B the corner radius is 0.03mm(.0012inch), for other types it is 0.05mm(.0020inch). For further details please refer to the standards section.

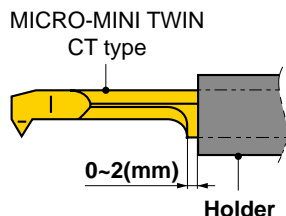
HOLDER

HOLDER CROSS REFERENCE LIST OF INCH SHANK STANDARD

Holder		MICRO-MINI TWIN		Machine Makers
Type	Order Number	CT		
Round Type Holder φ.625inch	ID : Metric Type	RBH10189A	0305RS-M4, 03RS-M4(B)	Citizen Precision Machinery Co., Ltd. NC lathes
		RBH10252A	0407RS-M6, 04RS-M6(B)	
		RBH10315A	0511RS-M8, 05RS-M8(B)	
		RBH10378A	0611RS-M10, 06RS-M10(B)	
		RBH10441A	—	
Round Type Holder φ.750inch	ID : Metric Type	RBH19030N	0305RS-M4, 03RS-M4(B)	Citizen Precision Machinery Co., Ltd.
		RBH19040N	0407RS-M6, 04RS-M6(B)	
		RBH19050N	0511RS-M8, 05RS-M8(B)	
		RBH19060N	0611RS-M10, 06RS-M10(B)	
		RBH19070N	—	
Round Type Holder φ1.000inch	ID : Metric Type	RBH16189A	0305RS-M4, 03RS-M4(B)	Citizen Precision Machinery Co., Ltd. NC lathes
		RBH16252A	0407RS-M6, 04RS-M6(B)	
		RBH16315A	0511RS-M8, 05RS-M8(B)	
		RBH16378A	0611RS-M10, 06RS-M10(B)	
		RBH16441A	—	

* Mitsubishi Materials obtained the makers' approval before entering their names in the list.

RECOMMENDED TOOL OVERHANG



(Note) For LU, refer to page G039(CTtype).

RECOMMENDED CUTTING CONDITIONS

Work Material	Cutting Speed (SFM)
P General Steel	100—260
M Stainless Steel	100—260
K Cast Iron	100—260
N Non Ferrous Materials	165—330

(Note 1) Recommend wet machining.

(Note 2) Please remember when machining small diameters and high speeds there is the possibility that the machine can not keep up with the set feed.

HOLDER CROSS REFERENCE LIST OF METRIC SHANK STANDARD

Holder		MICRO-MINI TWIN	Machine Makers
Type	Order Number	CT	
Round Type Holder φ16mm	RBH1630N	0305RS-M4, 03RS-M4(B)	MIYANO MACHINERY JAPAN INC. NC lathes
	RBH1640N	0407RS-M6, 04RS-M6(B)	
	RBH1650N	0511RS-M8, 05RS-M8(B)	
	RBH1660N	0611RS-M10, 06RS-M10(B)	
	RBH1670N	—	
Round Type Holder φ20mm	RBH2030N	0305RS-M4, 03RS-M4(B)	Citizen Precision Machinery Co., Ltd. Tsugami Corporation MIYANO MACHINERY JAPAN INC. NC lathes
	RBH2040N	0407RS-M6, 04RS-M6(B)	
	RBH2050N	0511RS-M8, 05RS-M8(B)	
	RBH2060N	0611RS-M10, 06RS-M10(B)	
	RBH2070N	—	
Round Type Holder φ22mm	RBH2230N	0305RS-M4, 03RS-M4(B)	STAR MICRONICS CO., LTD.
	RBH2240N	0407RS-M6, 04RS-M6(B)	
	RBH2250N	0511RS-M8, 05RS-M8(B)	
	RBH2260N	0611RS-M10, 06RS-M10(B)	
	RBH2270N	—	
Round Type Holder φ25mm	RBH2530N	0305RS-M4, 03RS-M4(B)	Tsugami Corporation MIYANO MACHINERY JAPAN INC. NC lathes
	RBH2540N	0407RS-M6, 04RS-M6(B)	
	RBH2550N	0511RS-M8, 05RS-M8(B)	
	RBH2560N	0611RS-M10, 06RS-M10(B)	
	RBH2570N	—	
Square Type Holder □10mm	SBH1030R	0305RS-M4, 03RS-M4(B)	NC lathes
	SBH1040R	0407RS-M6, 04RS-M6(B)	
	SBH1050R	0511RS-M8, 05RS-M8(B)	
	SBH1060R	0611RS-M10, 06RS-M10(B)	
	SBH1070R	—	

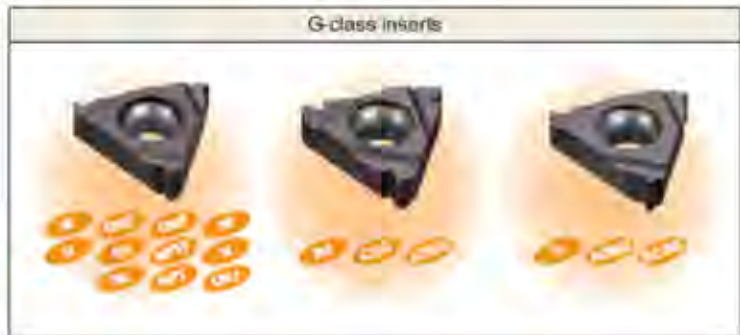
* Mitsubishi Materials obtained the makers' approval before entering their names in the list.

THREAD PROFILES AVAILABLE

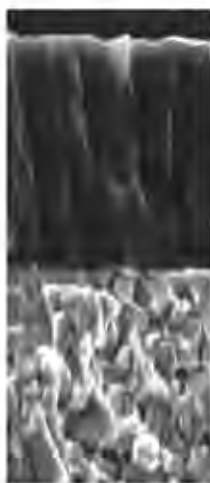
API ROUND API BUTTRESS API H90 API ROTARY ACME STUB ACME



- Mitsubishi Threading series contains 144 new on-edge, 104 new lay down and 10 new thread chaser profiles.
- This insert series will allow for the threading of a wide range of work materials, from alloy steels to some HRSA's.
- Can be used across a broad range of industries including Oil and Gas, Automotive, and Aerospace.



Features of the CP1025 grade



MIRACLE coating
(Al,Ti)N

Micro-grain
cemented
carbide



MIRACLE coating plus a special multi-purpose base carbide is suited for machining a wide variety of metal materials.

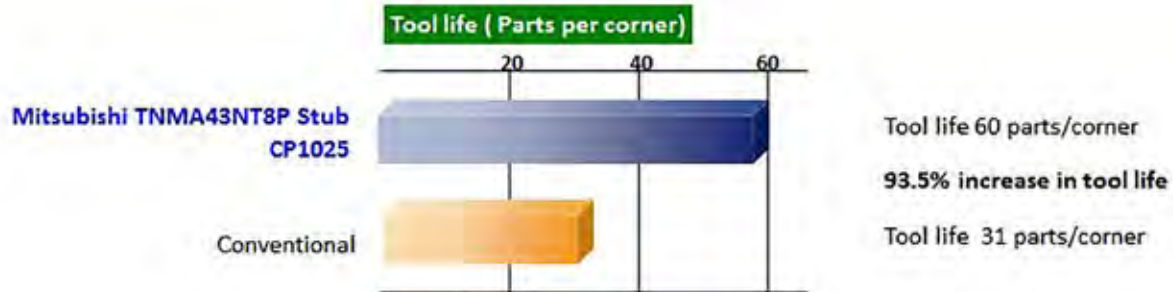
High fracture resistance during low rigidity applications such as bar feed machining. Able to withstand harsh conditions for long periods where conventional inserts would be liable to breakage.

APPLICATIONS

Part Name	Outer Barrel	Machining	Threading
Workpiece	2.5" Steel Bar		
Insert	TNMA 43 NT 8P STUB	Grade	CP1025
Work Material	Alloy Steel	Work Hardness	32HRC
Cutting Speed (vc)	504 SFM		
Feed per Revolution (f)	.1250 IPR	Depth of Cut (ap)	.004 inch
Coolant	External Flood		

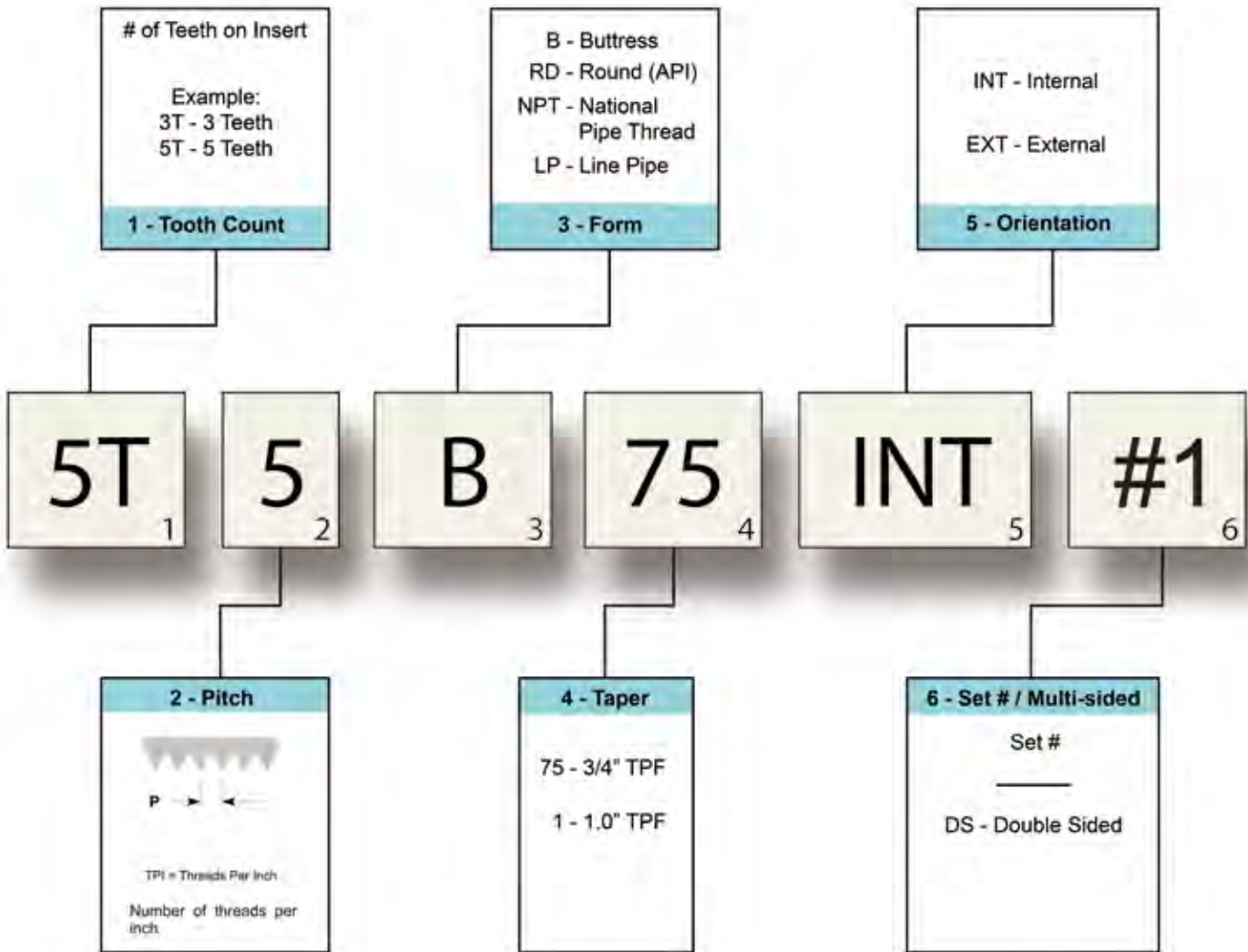
Key Point on Machining

- CP1025 showed excellent flank wear resistance.
- CP1025 can greatly extend tool life as VP coating prevents flank wear more readily.



IDENTIFICATION

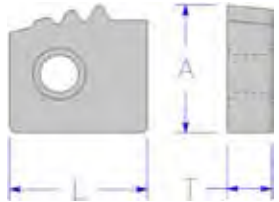
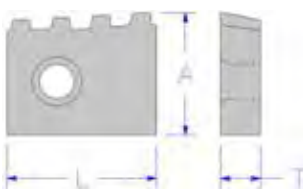
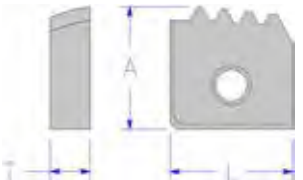
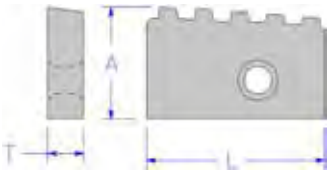
■ Chaser Inserts



Chipbreakers

Geometry	DESCRIPTION	Stock	ANGLE	L	T	A	USED WITH
		CP102					
	5/8 EXTERNAL	●	3°	5/8	.125	.480	
	5/8 EXTERNAL MOD	●	3° X 10°	5/8	.125	.480	
	3/4 EXTERNAL	●	3°	4/5	.125	.500	
	5/8 INTERNAL	●	3°	5/8	.125	.470	
	1 INCH INTERNAL	●	3°	1	.125	.470	
	5/8 NEUTRAL	●	0°	5/8	.125	.420	SPECIALS

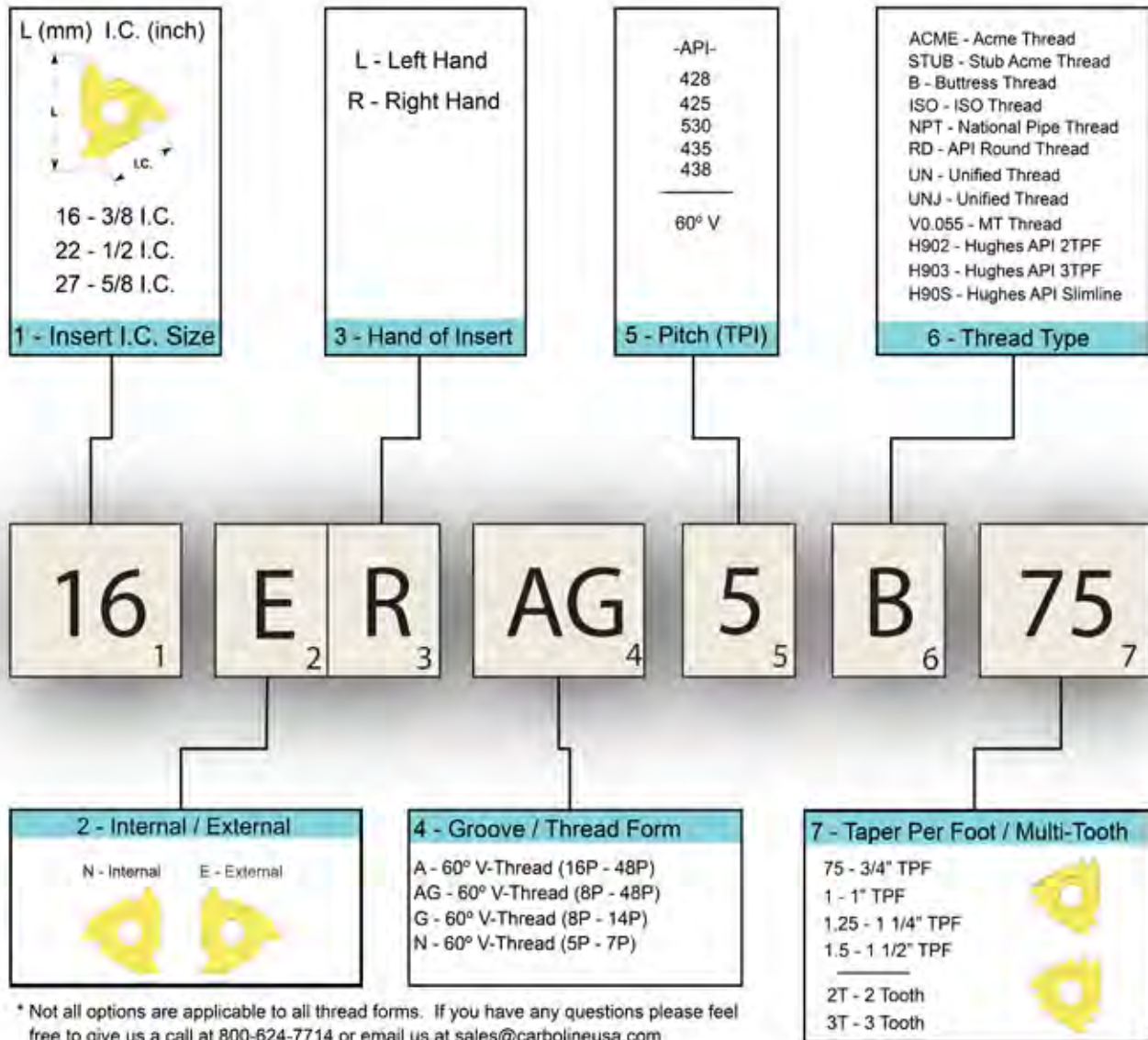
CHASER INSERTS

Geometry	Description	Stock	No. of Teeth	PITCH	TPF	L	T	A
		CP1025						
EXTERNAL ROUND 	3T8RD75E	●	3	8	3/4	.625	.204	.595
	3T10RD75E	●	3	10	3/4	.625	.204	.625
EXTERNAL BUTTRESS 	4T5B75E	●	4	5	3/4	.750	.204	.625
	4T5B1E	●	4	5	1	.750	.204	.625
INTERNAL ROUND 	4T8RD75I	●	4	8	3/4	.625	.204	.625
	7T8RD75I	●	7	8	3/4	1.000	.204	.625
	3T10RD75I	●	3	10	3/4	.625	.204	.625
INTERNAL BUTTRESS 	2T5B75I	●	2	5	3/4	.625	.204	.625
	5T5B75I	●	5	5	3/4	1.000	.204	.625
	5T5B1I	●	5	5	1	1.000	.204	.625

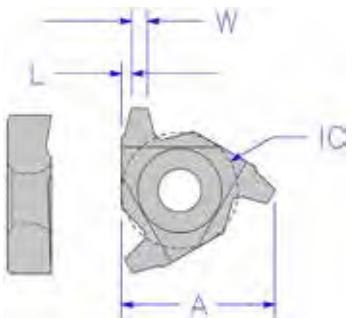
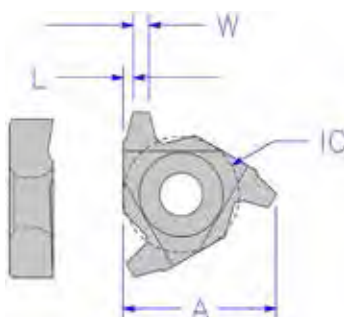
● : Inventory maintained

IDENTIFICATION

■ LAYDOWN THREADING

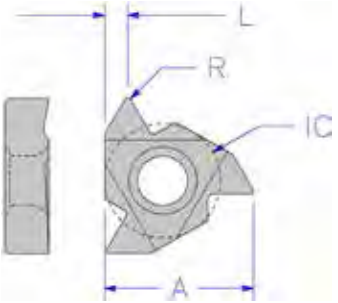
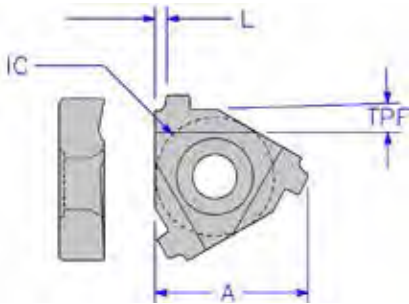


LAYDOWN THREADING

Geometry	Description	Stock	Pitch	Width	IC	A	L
		CP1025					
LAYDOWN ACME THREADING 	16ER 16P ACME	●	16	.0206	.375	.491	.036
	16ER 14P ACME	●	14	.0239	.375	.491	.036
	16ER 12P ACME	●	12	.0283	.375	.491	.036
	16ER 10P ACME	●	10	.0319	.375	.491	.036
	16ER 8P ACME	●	8	.0411	.375	.491	.036
	22ER 6P ACME	●	6	.0566	.500	.657	.043
	22ER 5P ACME	●	5	.0689	.500	.657	.043
	27ER 4P ACME	●	4	.0875	.625	.833	.050
	16NR 16P ACME	●	16	.0206	.375	.491	.036
	16NR 14P ACME	●	14	.0239	.375	.491	.036
	16NR 12P ACME	●	12	.0283	.375	.491	.036
	16NR 10P ACME	●	10	.0319	.375	.491	.036
	16NR 8P ACME	●	8	.0411	.375	.491	.036
	22NR 6P ACME	●	6	.0566	.500	.657	.043
	22NR 5P ACME	●	5	.0689	.500	.657	.043
	27NR 4P ACME	●	4	.0875	.625	.833	.050
LAYDOWN STUB ACME THREADING 	16ER 16P STUB	●	16	.0238	.375	.491	.036
	16ER 14P STUB	●	14	.0276	.375	.491	.036
	16ER 12P STUB	●	12	.0326	.375	.491	.036
	16ER 10P STUB	●	10	.0370	.375	.491	.036
	16ER 8P STUB	●	8	.0476	.375	.491	.036
	22ER 6P STUB	●	6	.0652	.500	.657	.043
	22ER 5P STUB	●	5	.0793	.500	.657	.043
	27ER 4P STUB	●	4	.1004	.625	.833	.050
	16NR 16P STUB	●	16	.0238	.375	.491	.036
	16NR 14P STUB	●	14	.0276	.375	.491	.036
	16NR 12P STUB	●	12	.0326	.375	.491	.036
	16NR 10P STUB	●	10	.0370	.375	.491	.036
	16NR 8P STUB	●	8	.0476	.375	.491	.036
	22NR 6P STUB	●	6	.0652	.500	.657	.043
	22NR 5P STUB	●	5	.0793	.500	.657	.043
	27NR 4P STUB	●	4	.1004	.625	.833	.050

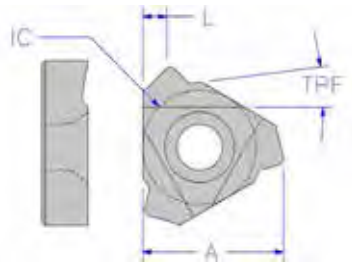
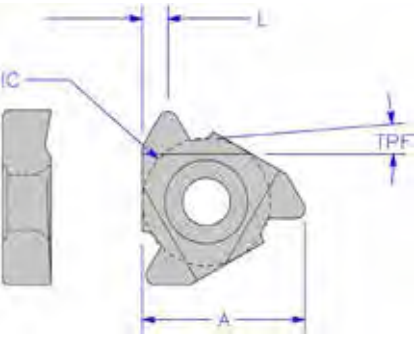
● : Inventory maintained

LAYDOWN THREADING

Geometry	Description	Stock	PITCH	R	IC	A	L
		CP1025					
LAYDOWN 60° THREADING 	16ER A60	35402	16-48	.003	.375	.517	.040
	16ER AG60	35412	8-48	.003	.375	.492	.060
	16ER G60	35422	8-14	.007	.375	.485	.070
	22ER N60	35432	5-7	.015	.500	.641	.100
	27ER K60	35442	4.5-4	.028	.625	.817	.110
	16NR A60	35501	16-48	.003	.375	.517	.040
	16NR AG60	35511	8-48	.003	.375	.492	.060
	16NR G60	35521	8-14	.007	.375	.485	.070
	22NR N60	35531	5-7	.010	.500	.641	.100
	27NR K60	35541	4-4.5	.015	.625	.815	.110
	LAYDOWN API ROTARY THREADING 	16ER 8B75	59482	8	0.75	.375	.458
22ER 8B75		35602	8	0.75	.500	.649	.069
22ER 5B75		58012	5	0.75	.500	.645	.048
22ER 5B1		69842	5	1	.500	.645	.048
16NR 8B75		59491	8	0.75	.375	.458	.069
22NR 8B75		35611	8	0.75	.500	.649	.069
22NR 5B75		59471	5	0.75	.500	.644	.040
22NR 5B1		69881	5	1	.500	.644	.040

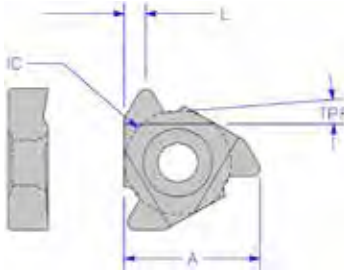
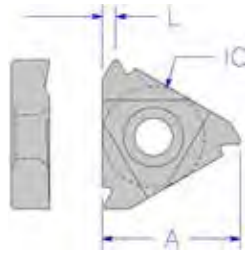
● : Inventory maintained

LAYDOWN THREADING

Geometry	Description	Stock	Pitch	TPF	IC	A	L
		CP1025					
	27ER H902	●	3.5	2	.625	.775	.134
	27ER H903	●	3.5	3	.625	.775	.134
	27ER H90S	●	3	1.25	.625	.765	.114
	27NR H902	●	3.5	2	.625	.775	.134
	27NR H903	●	3.5	3	.625	.775	.134
	27NR H90S	●	3	1.25	.625	.765	.114
	22ER 425	●	4	2	.500	.635	.110
	22ER 428	●	4	2	.500	.635	.110
	22ER 435	●	4	3	.500	.635	.110
	22ER 438	●	4	3	.500	.635	.110
	22ER 530	●	5	3	.500	.635	.100
	22ER PAC	●	4	1.5	.500	.624	.100
	22NR 425	●	4	2	.500	.635	.110
	22NR 428	●	4	2	.500	.635	.110
	22NR 435	●	4	3	.500	.635	.110
	22NR 438	●	4	3	.500	.635	.110
	22NR 530	●	5	3	.500	.635	.100
	22NR PAC	●	4	1.5	.500	.624	.100

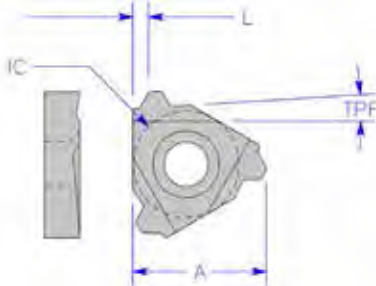
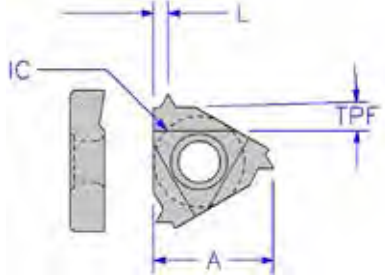
● : Inventory maintained

LAYDOWN THREADING

Geometry	Description	Stock	Pitch	TPF	IC	A	L
		CP1025					
LAYDOWN API ROTARY THREADING 	27ER 425	●	4	2	.625	.775	.126
	27ER 428	●	4	2	.625	.775	.126
	27ER 435	●	4	3	.625	.775	.126
	27ER 438	●	4	3	.625	.775	.126
	27ER 530	●	5	3	.625	.775	.126
	27ER PAC	●	4	1.5	.625	.809	.100
	27NR 425	●	4	2	.625	.775	.126
	27NR 428	●	4	2	.625	.775	.126
	27NR 435	●	4	3	.625	.775	.126
	27NR 438	●	4	3	.625	.775	.126
	27NR 530	●	5	3	.625	.775	.126
	27NR PAC	●	4	1.5	.625	.809	.100
	LAYDOWN API ROUND THREADING 	16ER 8RD	●	8	0.75	.375	.487
16ER 10RD		●	10	0.75	.375	.487	.060
16NR 8RD		●	8	0.75	.375	.487	.060
16NR 10RD		●	10	0.75	.375	.487	.060
22ER 8RD		●	8	0.75	.500	.676	.065
22ER 10RD		●	10	0.75	.500	.676	.065
22NR 8RD		●	8	0.75	.500	.676	.065
22NR 10RD		●	10	0.75	.500	.676	.065
27ER 8RD		●	8	0.75	.625	.843	.060
27ER 10RD		●	10	0.75	.625	.843	.060
27NR 8RD		●	8	0.75	.625	.843	.060
27NR 10RD		●	10	0.75	.625	.843	.060

● : Inventory maintained

LAYDOWN THREADING

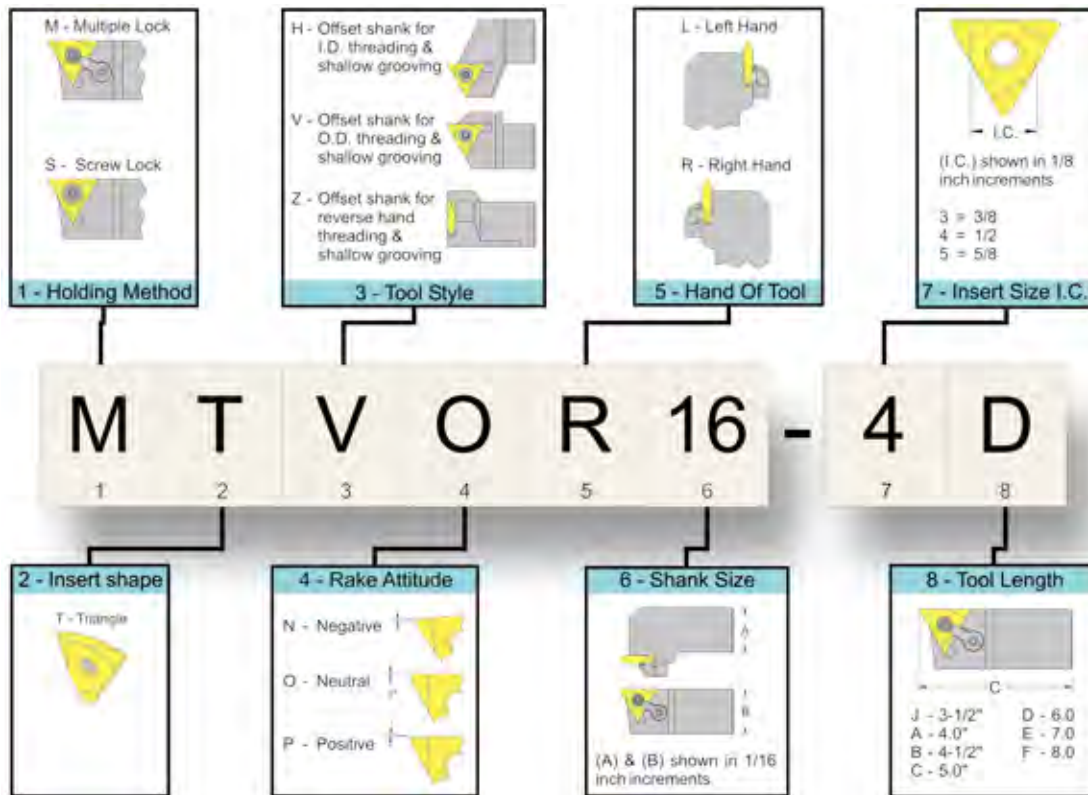
Geometry	Description	Stock	Pitch	TPF	IC	A	L
		CP1025					
LAYDOWN V055 THREADING 	16ER V0.055	●	6	1.5	.375	.472	.055
	22ER V0.055	●	6	1.5	.500	.660	.055
	16NR V0.055	●	6	1.5	.375	.472	.055
	22NR V0.055	●	6	1.5	.500	.660	.055
LAYDOWN NPT THREADING 	16ER 18NPT	●	18	.750	.375	.523	.031
	16ER 14NPT	●	14	.750	.375	.494	.060
	16ER 11.5NPT	●	11.5	.750	.375	.494	.060
	16ER 8NPT	●	8	.750	.375	.487	.068
	16NR 18NPT	●	18	.750	.375	.523	.031
	16NR 14NPT	●	14	.750	.375	.494	.060
	16NR 11.5NPT	●	11.5	.750	.375	.494	.060
	16NR 8NPT	●	8	.750	.375	.487	.068

● : Inventory maintained

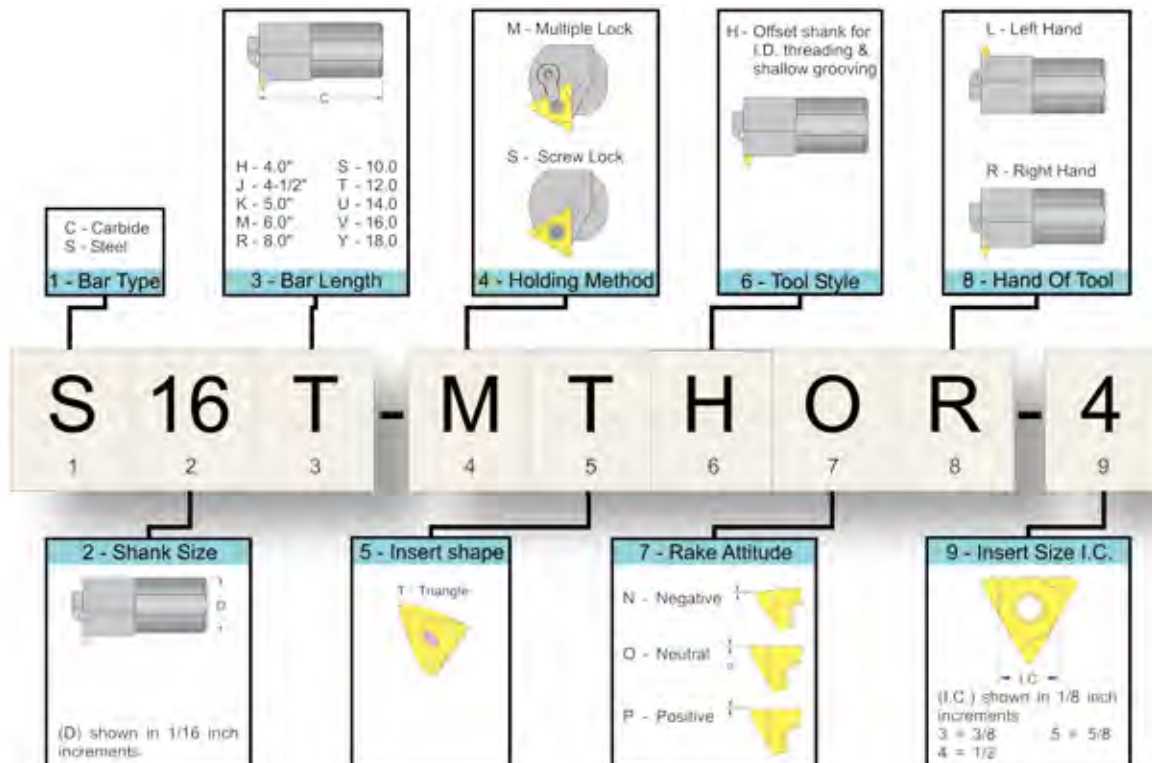
IDENTIFICATION

■ On Edge

Square Shanks



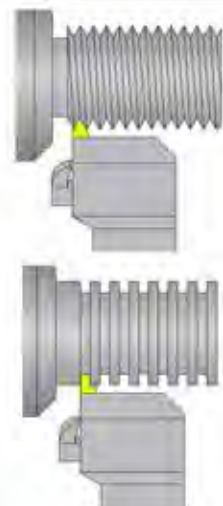
Boring Bars



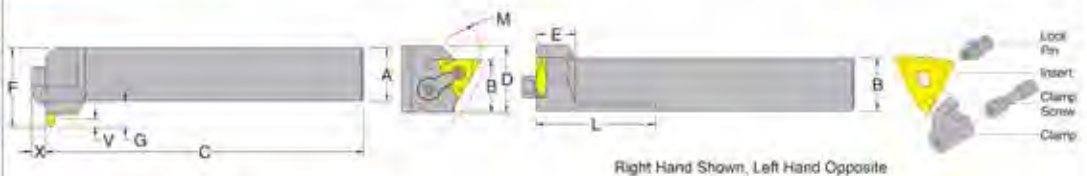
MTVO-A R/L Threading Toolholder- Style V - O.D. Threading and Shallow Grooving for triangle TNMA inserts



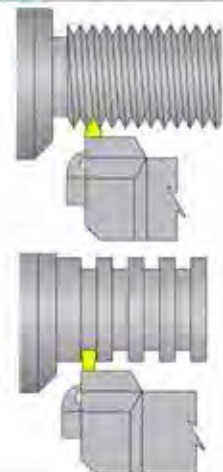
Description	Stock		A	B	C	E	F	G	Max. GRV Depth V	TNMA Gage Insert	Lock Pin	Clamp	Clamp Screw
	R.H.	L.H.											
MTVOR/L06-3A-A	■	■	0.500	0.500	4.000	1.020	0.625	0.250	0.150				
MTVOR/L08-3B-A	■	■	0.500	0.500	4.500	1.020	0.625	0.250	0.150				
MTVOR/L10-3B-A	■	■	0.625	0.625	4.500	1.020	0.750	0.250	0.150	322	NL-33	CL-6	XNS-36
MTVOR/L12-3B-A	■	■	0.750	0.750	4.500	1.020	0.875	0.250	0.150				
MTVOR/L16-3D-A	■	■	1.000	1.000	6.000	1.155	1.250	0.250	0.150				
MTVOR/L12-4B-A	■	■	0.750	0.750	4.500	1.250	0.875	0.250	0.230				
MTVOR/L16-4D-A	■	■	1.000	1.000	6.000	1.250	1.250	0.250	0.230	432	NL-44	CL-6	XNS-36
MTVOR/L20-4D-A	■	■	1.250	1.250	6.000	1.250	1.500	0.250	0.230				
MTVOR/L24-4E-A	■	■	1.500	1.500	7.000	1.250	1.750	0.250	0.230				
MTVOR/L16-5D-A	■	■	1.000	1.000	6.000	1.500	1.250	0.250	0.292	543	NL-56	CL-6	XNS-36
MTVOR/L20-5D-A	■	■	1.250	1.250	6.000	1.500	1.500	0.250	0.292				
MTVOR/L20-64D-A	■	■	1.250	1.250	6.000	1.750	1.500	0.316	0.360	643	NL-66	CL-12	XNS-59
MTVOR/L20-66D-A	■	■	1.250	1.250	6.000	1.750	1.500	0.316	0.360	663	NL-66L	CL-12	XNS-59



MTHO-A R/L Threading Toolholder- Style H - Gang Toolholder for Shallow Grooving or I.D. Threading for triangle TNMA inserts



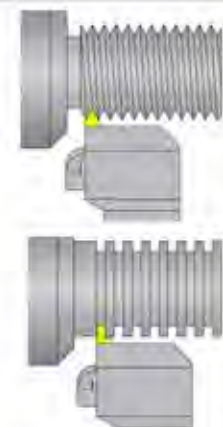
Description	Stock		A	B	C	E	F	G	X	L	Min Bore M	Max. GRV Depth V		TNMA Gage Insert	Lock Pin	Clamp	Clamp Screw
	R.H.	L.H.										Min. I.D.	O.D.				
MTHOR/L10-3B	■	■	0.625	0.625	4.500	0.875	1.000	0.375	0.250	-	2.0	100	125	322	NL-33	CL-5	XNS-35
MTHOR/L12-3B	■	■	0.750	0.750	4.500	0.875	1.125	0.375	0.250	1.50							
MTHOR/L12-4B	■	■	0.750	0.750	4.500	0.875	1.250	0.500	0.250	-							
MTHOR/L16-4D	■	■	1.000	1.000	6.000	0.875	1.500	0.500	0.250	2.00	3.0	125	194	432	NL-44	CL-6	XNS-36
MTHOR/L20-4D	■	■	1.250	1.250	6.000	0.875	1.750	0.500	0.250	2.00							
MTHOR/L16-5D	■	■	1.000	1.000	6.000	1.000	1.500	0.625	0.250	2.50	3.0	170	242	543	NL-56	CL-6	XNS-36
MTHOR/L20-5D	■	■	1.250	1.250	6.000	1.000	1.750	0.625	0.250	2.50							



MTZO R/L Threading Toolholder- Style Z - Reverse Hand Threading for triangle TNMA inserts



Description	Stock		A	B	C	E	F	G	Max. GRV Depth V	TNMA Gage Insert	Lock Pin	Clamp	Clamp Screw
	R.H.	L.H.											
MTZOR/L12-3B	■	■	0.750	0.750	4.500	1.000	1.000	0.250	0.150				
MTZOR/L16-3D	■	■	1.000	1.000	6.000	1.000	1.250	0.250	0.150	322	NL-33	CL-6	XNS-36
MTZOR/L16-4D	■	■	1.000	1.000	6.000	1.320	1.250	0.250	0.230	432	NL-44	CL-7	XNS-36
MTZOR/L20-4D	■	■	1.250	1.250	6.000	1.320	1.500	0.250	0.230				
MTZOR/L16-5D	■	■	1.000	1.000	6.000	1.500	1.250	0.250	0.292	543	NL-56	CL-7	XNS-36
MTZOR/L20-5D	■	■	1.250	1.250	6.000	1.500	1.500	0.250	0.292				
MTZOR/L20-66D	■	■	1.250	1.250	6.000	1.750	1.500	0.250	0.360	663	NL-66L	CL-30	XNS-510
MTZOR/L24-66E	■	■	1.500	1.500	7.000	1.750	2.000	0.500	0.360				

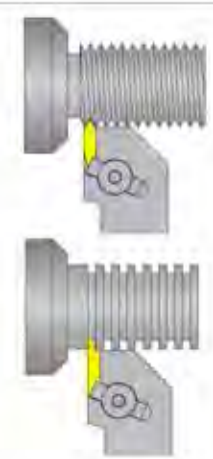


■ : Typical 1 to 2 week delivery

MTVO-CN R/L Threading Toolholder- Style V - O.D. Threading and Shallow Grooving for triangle TNMC inserts



Description	Stock		A	B	C	E	F	G	Max. GRV Depth V	TNMC Gage Insert	Insert Torx Screw	Torx key	Clamp	Clamp Clo.	Clamp Screw
	R.H.	L.H.													
MTVOR/L08-3A-CN	■	■	0.500	0.900	4.000	1.020	0.625	0.125	0.150	322	GTS-1M	T-10	HC-9	CL-9	CS-8E
MTVOR/L08-3B-CN	■	■	0.500	0.500	4.500	1.020	0.625	0.125	0.150						
MTVOR/L10-3B-CN	■	■	0.625	0.625	4.500	1.020	0.750	0.125	0.150						
MTVOR/L12-3B-CN	■	■	0.750	0.750	4.500	1.020	0.875	0.125	0.150						
MTVOR/L16-3D-CN	■	■	1.000	1.000	6.000	1.155	1.250	0.250	0.150	432	GTS-2	T-20	HC-12	CL-12	CS-126
MTVOR/L12-4B-CN	■	■	0.750	0.750	4.500	1.250	0.875	0.125	0.230						
MTVOR/L16-4D-CN	■	■	1.000	1.000	6.000	1.250	1.250	0.250	0.230						
MTVOR/L20-4D-CN	■	■	1.250	1.250	6.000	1.250	1.500	0.250	0.230						
MTVOR/L24-4E-CN	■	■	1.500	1.500	7.000	1.250	1.750	0.250	0.230	543	GTS-3	T-20	HC-12	CL-12	CS-126
MTVOR/L16-5D-CN	■	■	1.000	1.000	6.000	1.500	1.250	0.250	0.292						
MTVOR/L20-5D-CN	■	■	1.250	1.250	6.000	1.500	1.500	0.250	0.292						
MTVOR/L20-5D-CN	■	■	1.250	1.250	6.000	1.500	1.500	0.250	0.292						



STVO R/L Threading Toolholder- Style V - O.D. Threading and Shallow Grooving for triangle TNMC inserts

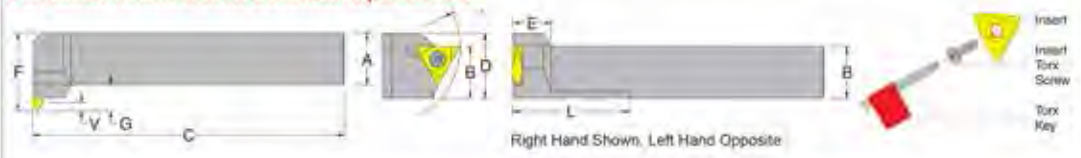


Description	Stock		A	B	C	E	F	G	Max. GRV Depth V	TNMC Gage Insert	Insert Torx Screw	Torx Key
	R.H.	L.H.										
STVOR/L08-3A	■	■	0.500	0.500	4.000	1.000	0.625	0.125	0.150	322	GTS-1M	T-10
STVOR/L10-3B	■	■	0.625	0.625	4.500	1.000	0.750	0.125	0.150			
STVOR/L12-3B	■	■	0.750	0.750	4.500	1.000	0.875	0.125	0.150			
STVOR/L16-3D	■	■	1.000	1.000	6.000	1.250	1.250	0.250	0.150			
STVOR/L12-4B	■	■	0.750	0.750	4.500	1.250	0.875	0.125	0.230	432	GTS-2	T-20
STVOR/L16-4D	■	■	1.000	1.000	6.000	1.430	1.250	0.250	0.230			
STVOR/L20-4D	■	■	1.250	1.250	6.000	1.250	1.500	0.250	0.230			
STVOR/L24-4E	■	■	1.500	1.500	7.000	1.250	1.750	0.250	0.230			
STVOR/L16-5D	■	■	1.000	1.000	6.000	1.500	1.250	0.250	0.292	543	GTS-3	T-20
STVOR/L20-5D	■	■	1.250	1.250	6.000	1.500	1.500	0.250	0.292			
STVOR/L20-64D	■	■	1.250	1.250	6.000	1.750	1.500	0.250	0.360			
STVOR/L20-66D	■	■	1.250	1.250	6.000	1.750	1.500	0.250	0.360			



STHO R/L Threading Toolholder- Style H - Gang Toolholder for Shallow Grooving for I.D. Threading for triangle TNMC inserts

For Both Internal and External Operations

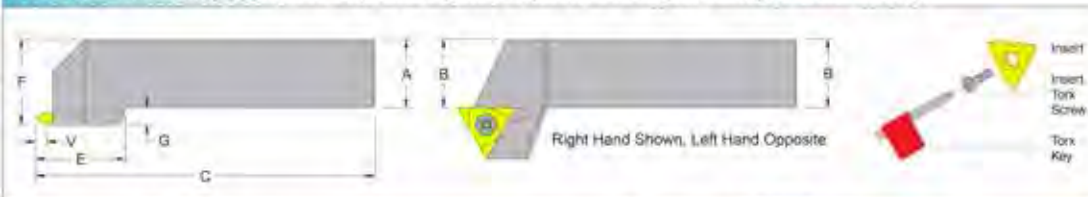


Description	Stock		A	B	C	E	F	G	L	Min. Bore M	Max. GRV Depth V		TNMC Gage Insert	Insert Torx Screw	Torx Key
	R.H.	L.H.									Min. I.D.	O.D.			
STHOR/L08-3B	■	■	0.500	0.900	4.500	0.875	0.875	0.375	-	2.0	0.100	0.125	322	GTS-1M	T-10
STHOR/L10-3B	■	■	0.625	0.625	4.500	0.875	1.000	0.375	-						
STHOR/L12-3B	■	■	0.750	0.750	4.500	0.875	1.125	0.375	1.600						
STHOR/L12-4B	■	■	0.750	0.750	4.500	0.875	1.250	0.500	-	3.0	0.125	0.194	432	GTS-2	T-20
STHOR/L16-4D	■	■	1.000	1.000	6.000	0.875	1.500	0.500	2.000						
STHOR/L20-4D	■	■	1.250	1.250	6.000	0.875	1.750	0.500	2.000						
STHOR/L16-5D	■	■	1.000	1.000	6.000	1.000	1.750	0.825	2.500	3.0	0.170	0.242	543	GTS-3	T-20
STHOR/L20-5D	■	■	1.250	1.250	6.000	1.000	1.750	0.825	2.500						



■ : Typical 1 to 2 week delivery

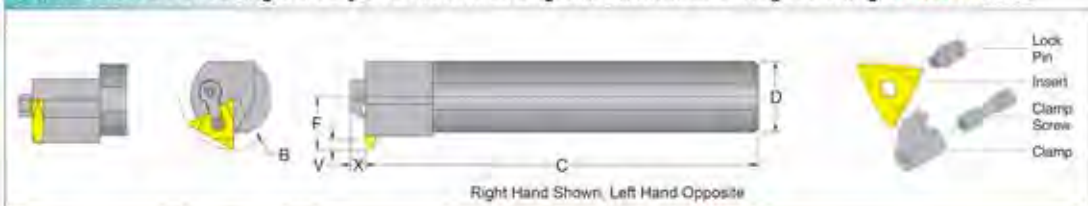
STZO R/L Threading Toolholder-Style Z - Reverse Hand Threading for triangle TNMC inserts



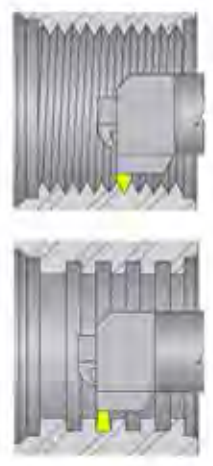
Description	Stock		A	B	C	E	F	G	Max. GRV Depth V	TNMC Gauge Insert	Insert Torx Screw	Torx key
	R.H.	L.H.										
STZOR/L12-3B	■	■	0.750	0.750	4.500	1.000	1.000	0.250	0.150	322	GTS-1M	T-10
STZOR/L16-3D	■	■	1.000	1.000	6.000	1.000	1.250	0.250	0.150			
STZOR/L16-4D	■	■	1.000	1.000	6.000	1.320	1.250	0.250	0.230	432	GTS-2	T-20
STZOR/L20-4D	■	■	1.250	1.250	6.000	1.320	1.500	0.250	0.230			
STZOR/L16-5D	■	■	1.000	1.000	6.000	1.500	1.250	0.250	0.292	543	GTS-3	T-20
STZOR/L20-5D	■	■	1.250	1.250	6.000	1.500	1.500	0.250	0.292			



S-MTHO-A R/L Threading Bar- Style H - I.D. Threading and Shallow Grooving for triangle TNMA inserts



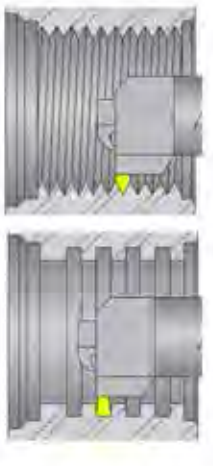
Description	Stock		Min. Bore B	C	D	F	Max. GRV Depth V	X	TNMA Gauge Insert	Lock Pin	Clamp	Clamp Screw
	R.H.	L.H.										
S16T-MTHOR/L-3-A	■	■	1.388	12.00	1.000	0.687	0.120	0.250	322	NL-33	CL-5	XNS-36
S20U-MTHOR/L-3-A	■	■	1.656	14.00	1.250	0.828	0.120	0.250				
S20U-MTHOR/L-4-A	■	■	1.812	14.00	1.250	0.875	0.190	0.250	432	NL-44	CL-6	XNS-37
S24U-MTHOR/L-4-A	■	■	2.250	14.00	1.500	1.000	0.190	0.250				
S32V-MTHOR/L-4-A	■	■	3.000	16.00	2.000	1.328	0.190	0.250				
S32V-MTHOR/L-5-A	■	■	3.500	16.00	2.000	1.375	0.250	0.250				
S40V-MTHOR/L-5-A	■	■	3.750	16.00	2.500	1.687	0.250	0.250	543	NL-56	CL-6	XNS-37
S48Y-MTHOR/L-5-A	■	■	4.000	18.00	3.000	1.891	0.250	0.250				
S40V-MTHOR/L-86-A	■	■	4.000	16.00	2.500	1.750	0.312	0.312	663	NL-66L	CL-12	XNS-59
S48Y-MTHOR/L-86-A	■	■	4.500	18.00	3.000	2.000	0.312	0.312				



S-MTHO-C R/L Threading Bar- Style H - I.D. Threading and Shallow Grooving for triangle TNMC inserts



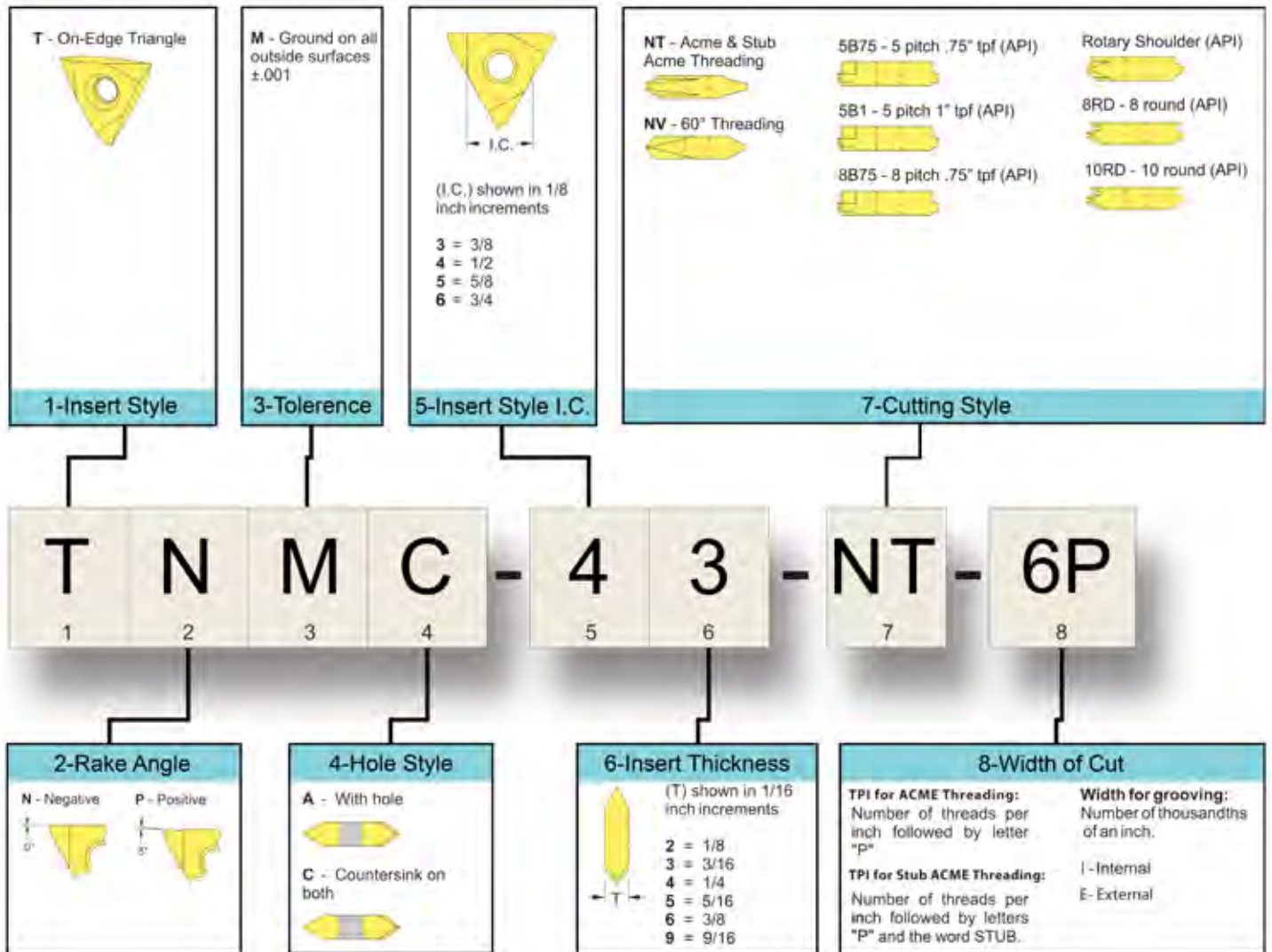
Description	Stock		Min. Bore B	C	D	F	Max. GRV Depth V	X	TNMC Gauge Insert	Insert Torx Screw	Torx Key	Clamp	Clamp Screw
	R.H.	L.H.											
S16T-MTHOR/L-3-C	■	■	1.388	12.00	1.000	0.687	0.120	0.250	322	GTS-1M	T-10	CL-19	XNS-36
S20U-MTHOR/L-3-C	■	■	1.656	14.00	1.250	0.828	0.120	0.250					
S20U-MTHOR/L-4-C	■	■	1.812	14.00	1.250	0.875	0.190	0.250	432	GTS-2	T-20	CL-7	XNS-36
S24U-MTHOR/L-4-C	■	■	2.250	14.00	1.500	1.000	0.190	0.250					
S32V-MTHOR/L-4-C	■	■	3.000	16.00	2.000	1.328	0.190	0.250					
S32V-MTHOR/L-5-C	■	■	3.500	16.00	2.000	1.375	0.250	0.250					
S40V-MTHOR/L-5-C	■	■	3.750	16.00	2.500	1.687	0.250	0.250	543	GTS-3	T-20	CL-20	XNS-47
S48Y-MTHOR/L-5-C	■	■	4.000	18.00	3.000	1.891	0.250	0.250					
S40V-MTHOR/L-86-C	■	■	4.000	16.00	2.500	1.750	0.312	0.312	663	GTS-4	T-30	CL-12	XNS-59
S48Y-MTHOR/L-86-C	■	■	4.500	18.00	3.000	2.000	0.312	0.312					



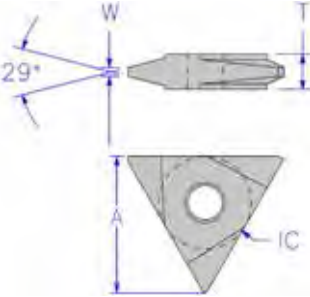
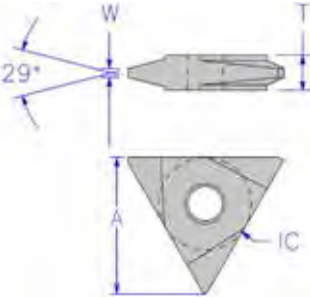
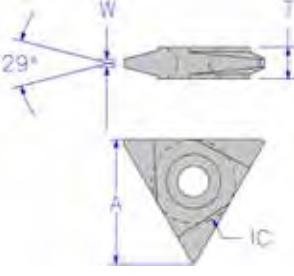
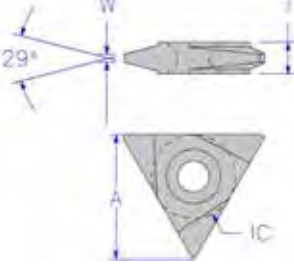
■ : Typical 1 to 2 week delivery

IDENTIFICATION

■ On Edge

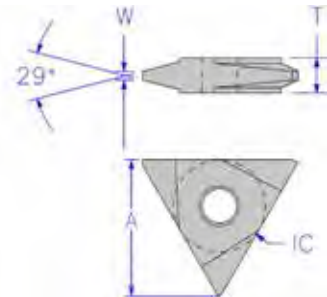
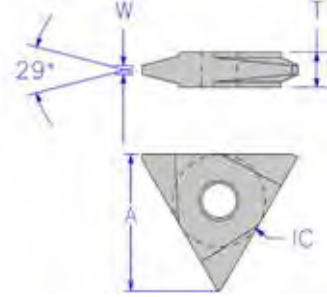


ON EDGE

Geometry	Description	Stock	Pitch	Width	IC	T	A
		CP1025					
	TNMA 32 NT 6P	●	6	.0566	.375	.127	.550
	TNMA 32 NT 8P	●	8	.0411	.375	.127	.550
	TNMA 32 NT 10P	●	10	.0319	.375	.127	.550
	TNMA 32 NT 12P	●	12	.0283	.375	.127	.550
	TNMA 32 NT 14P	●	14	.0239	.375	.127	.550
	TNMA 32 NT 16P	●	16	.0206	.375	.127	.550
	TNMA 32 NT 6P STUB	●	6	.0652	.375	.127	.550
	TNMA 32 NT 8P STUB	●	8	.0476	.375	.127	.550
	TNMA 32 NT 10P STUB	●	10	.037	.375	.127	.550
	TNMA 32 NT 12P STUB	●	12	.0326	.375	.127	.550
	TNMA 32 NT 14P STUB	●	14	.0276	.375	.127	.550
	TNMA 32 NT 16P STUB	●	16	.0238	.375	.127	.550
	TNMC 32 NT 6P	●	6	.0566	.375	.127	.550
	TNMC 32 NT 8P	●	8	.0411	.375	.127	.550
	TNMC 32 NT 10P	●	10	.0319	.375	.127	.550
	TNMC 32 NT 12P	●	12	.0283	.375	.127	.550
	TNMC 32 NT 14P	●	14	.0239	.375	.127	.550
	TNMC 32 NT 16P	●	16	.0206	.375	.127	.550
	TNMC 32 NT 6P STUB	●	6	.0652	.375	.127	.550
	TNMC 32 NT 8P STUB	●	8	.0476	.375	.127	.550
	TNMC 32 NT 10P STUB	●	10	.037	.375	.127	.550
	TNMC 32 NT 12P STUB	●	12	.0326	.375	.127	.550
	TNMC 32 NT 14P STUB	●	14	.0276	.375	.127	.550
	TNMC 32 NT 16P STUB	●	16	.0238	.375	.127	.550

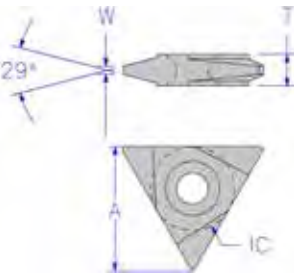
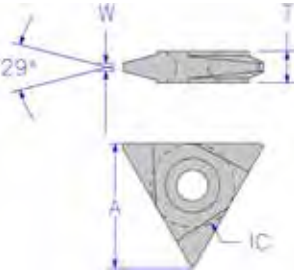
● : Inventory maintained

ON EDGE

Geometry	Description	Stock	Pitch	Width	IC	T	A
		CP1025					
TNMA 43 ACME 	TNMA 43 NT 4P	●	4	.0875	.500	.190	.737
	TNMA 43 NT 5P	●	5	.0689	.500	.190	.737
	TNMA 43 NT 6P	●	6	.0566	.500	.190	.737
	TNMA 43 NT 8P	●	8	.0411	.500	.190	.737
	TNMA 43 NT 10P	●	10	.0319	.500	.190	.737
	TNMA 43 NT 12P	●	12	.0283	.500	.190	.737
	TNMA 43 NT 14P	●	14	.0239	.500	.190	.737
	TNMA 43 NT 16P	●	16	.0206	.500	.190	.737
TNMA 43 STUB ACME 	TNMA 43 NT 4P STUB	●	4	.1004	.500	.190	.737
	TNMA 43 NT 5P STUB	●	5	.0793	.500	.190	.737
	TNMA 43 NT 6P STUB	●	6	.0652	.500	.190	.737
	TNMA 43 NT 8P STUB	●	8	.0476	.500	.190	.737
	TNMA 43 NT 10P STUB	●	10	.037	.500	.190	.737
	TNMA 43 NT 12P STUB	●	12	.0326	.500	.190	.737
	TNMA 43 NT 14P STUB	●	14	.0276	.500	.190	.737
	TNMA 43 NT 16P STUB	●	16	.0238	.500	.190	.737

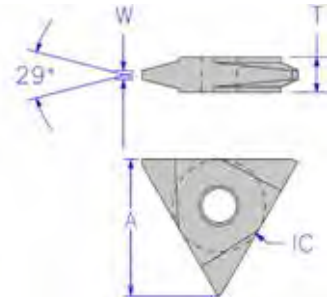
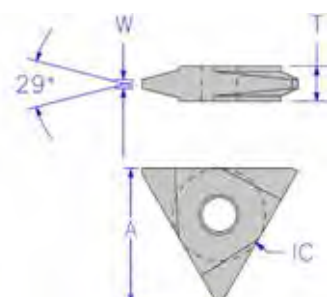
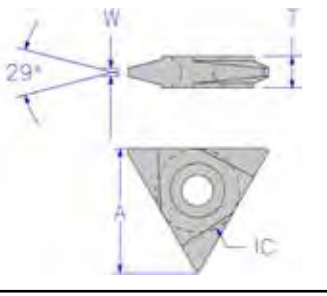
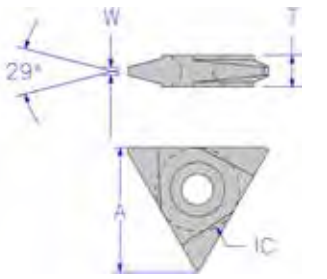
● : Inventory maintained

ON EDGE

Geometry	Description	Stock	Pitch	Width	IC	T	A
		CP1025					
TNMC 43 ACME 	TNMC 43 NT 4P	●	4	.0875	.500	.190	.737
	TNMC 43 NT 5P	●	5	.0689	.500	.190	.737
	TNMC 43 NT 6P	●	6	.0566	.500	.190	.737
	TNMC 43 NT 8P	●	8	.0411	.500	.190	.737
	TNMC 43 NT 10P	●	10	.0319	.500	.190	.737
	TNMC 43 NT 12P	●	12	.0283	.500	.190	.737
	TNMC 43 NT 14P	●	14	.0239	.500	.190	.737
	TNMC 43 NT 16P	●	16	.0206	.500	.190	.737
TNMC 43 STUB ACME 	TNMC 43 NT 4P STUB	●	4	.1004	.500	.190	.737
	TNMC 43 NT 5P STUB	●	5	.0793	.500	.190	.737
	TNMC 43 NT 6P STUB	●	6	.0652	.500	.190	.737
	TNMC 43 NT 8P STUB	●	8	.0476	.500	.190	.737
	TNMC 43 NT 10P STUB	●	10	.037	.500	.190	.737
	TNMC 43 NT 12P STUB	●	12	.0326	.500	.190	.737
	TNMC 43 NT 14P STUB	●	14	.0276	.500	.190	.737
	TNMC 43 NT 16P STUB	●	16	.0238	.500	.190	.737

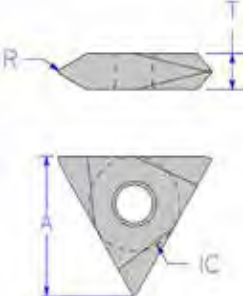
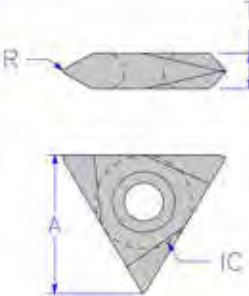
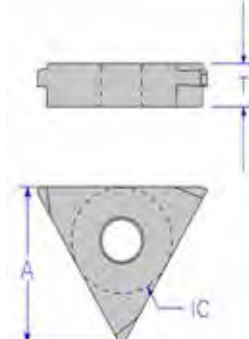
● : Inventory maintained

ON EDGE

Geometry	Description	Stock	Pitch	Width	IC	T	A
		CP1025					
TNMA 54 ACME 	TNMA 54 NT 3P	●	3	.1184	.625	.252	.925
	TNMA 54 NT 3.5P	●	3.5	.1007	.625	.252	.925
	TNMA 54 NT 4P	●	4	.0875	.625	.252	.925
	TNMA 54 NT 5P	●	5	.0689	.625	.252	.925
	TNMA 54 NT 6P	●	6	.0566	.625	.252	.925
	TNMA 54 NT 8P	●	8	.0411	.625	.252	.925
TNMA 54 STUB ACME 	TNMA 54 NT 3P STUB	●	3	.1356	.625	.252	.925
	TNMA 54 NT 3.5P STUB	●	3.5	.1155	.625	.252	.925
	TNMA 54 NT 4P STUB	●	4	.1004	.625	.252	.925
	TNMA 54 NT 5P STUB	●	5	.0793	.625	.252	.925
	TNMA 54 NT 6P STUB	●	6	.0652	.625	.252	.925
	TNMA 54 NT 8P STUB	●	8	.0476	.625	.252	.925
TNMC 54 ACME 	TNMC 54 NT 3P	●	3	.1184	.625	.252	.925
	TNMC 54 NT 3.5P	●	3.5	.1007	.625	.252	.925
	TNMC 54 NT 4P	●	4	.0875	.625	.252	.925
	TNMC 54 NT 5P	●	5	.0689	.625	.252	.925
	TNMC 54 NT 6P	●	6	.0566	.625	.252	.925
	TNMC 54 NT 8P	●	8	.0411	.625	.252	.925
TNMC 54 STUB ACME 	TNMC 54 NT 3P STUB	●	3	.1356	.625	.252	.925
	TNMC 54 NT 3.5P STUB	●	3.5	.1155	.625	.252	.925
	TNMC 54 NT 4P STUB	●	4	.1004	.625	.252	.925
	TNMC 54 NT 5P STUB	●	5	.0793	.625	.252	.925
	TNMC 54 NT 6P STUB	●	6	.0652	.625	.252	.925
	TNMC 54 NT 8P STUB	●	8	.0476	.625	.252	.925

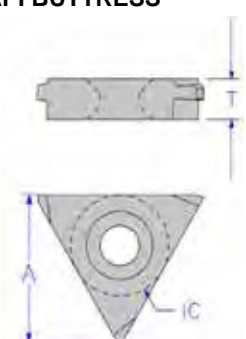
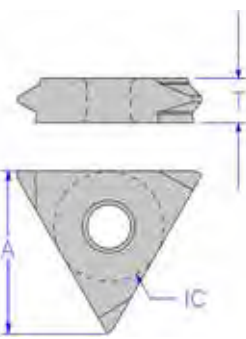
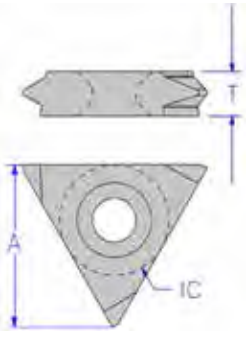
● : Inventory maintained

ON EDGE

Geometry	Description	Stock	Pitch	R	IC	T	A
		CP1025					
TNMA NV 60° V-THREADING 	TNMA 32 NV	●	8-36	.003	.375	.127	.550
	TNMA 43 NV	●	5-24	.004	.500	.190	.737
	TNMA 43 NV .010R	●	4-20	.010	.500	.190	.737
	TNMA 54 NV	●	4-20	.008	.625	.252	.925
	TNMA 54 NV .010R	●	4-20	.010	.625	.252	.925
	TNMA 54 NV .020R	●	4-12	.020	.625	.252	.925
	TNMA 54 NV .025R	●	4-8	.025	.625	.252	.925
	TNMA 54 NV .038R	●	4-6	.038	.625	.252	.925
TNMC NV 60° V-THREADING 	TNMC 32 NV	●	8-36	.003	.375	.127	.550
	TNMC 43 NV	●	5-24	.004	.500	.190	.737
	TNMC 43 NV .010R	●	4-20	.010	.500	.190	.737
	TNMC 54 NV	●	4-20	.008	.625	.252	.925
	TNMC 54 NV .010R	●	4-20	.010	.625	.252	.925
	TNMC 54 NV .020R	●	4-12	.020	.625	.252	.925
	TNMC 54 NV .025R	●	4-8	.025	.625	.252	.925
	TNMC 54 NV .038R	●	4-6	.038	.625	.252	.925
TNMA API BUTTRESS 	TNMA 43 8B75 INT	●	8	3/4	.500	.190	.737
	TNMA 43 8B75 EXT	●	8	3/4	.500	.190	.737
	TNMA 54 5B75 INT	●	5	3/4	.625	.252	.925
	TNMA 54 5B75 EXT	●	5	3/4	.625	.252	.925
	TNMA 54 5B1 INT	●	5	1	.625	.252	.925
	TNMA 54 5B1 EXT	●	5	1	.625	.252	.925

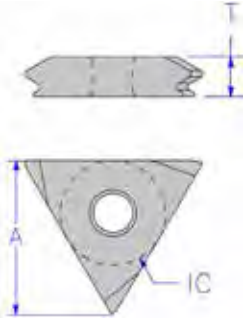
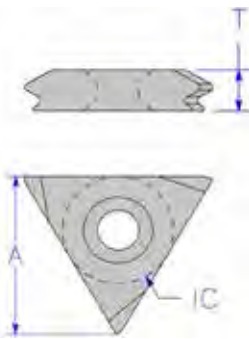
● : Inventory maintained

ON EDGE

Geometry	Description	Stock	PITCH	TPF	IC	T	A
		CP1025					
	TNMC 43 8B75 INT	●	8	3/4	.500	.190	.737
	TNMC 43 8B75 EXT	●	8	3/4	.500	.190	.737
	TNMC 54 5B75 INT	●	5	3/4	.625	.252	.925
	TNMC 54 5B75 EXT	●	5	3/4	.625	.252	.925
	TNMC 54 5B1 INT	●	5	1	.625	.252	.925
	TNMC 54 5B1 EXT	●	5	1	.625	.252	.925
	TNMA 54 530 INT	●	5	3	.625	.252	.925
	TNMA 54 530 EXT	●	5	3	.625	.252	.925
	TNMA 55 425 INT	●	4	2	.625	.315	.925
	TNMA 55 425 EXT	●	4	2	.625	.315	.925
	TNMA 55 428 INT	●	4	2	.625	.315	.925
	TNMA 55 428 EXT	●	4	2	.625	.315	.925
	TNMA 55 435 INT	●	4	3	.625	.315	.925
	TNMA 55 435 EXT	●	4	3	.625	.315	.925
	TNMA 55 438 INT	●	4	3	.625	.315	.925
	TNMA 55 438 EXT	●	4	3	.625	.315	.925
		TNMC 54 530 INT	●	5	3	.625	.252
TNMC 54 530 EXT		●	5	3	.625	.252	.925
TNMC 55 425 INT		●	4	2	.625	.315	.925
TNMC 55 425 EXT		●	4	2	.625	.315	.925
TNMC 55 428 INT		●	4	2	.625	.315	.925
TNMC 55 428 EXT		●	4	2	.625	.315	.925
TNMC 55 435 INT		●	4	3	.625	.315	.925
TNMC 55 435 EXT		●	4	3	.625	.315	.925
TNMC 55 438 INT		●	4	3	.625	.315	.925
TNMC 55 438 EXT		●	4	3	.625	.315	.925

● : Inventory maintained

ON EDGE

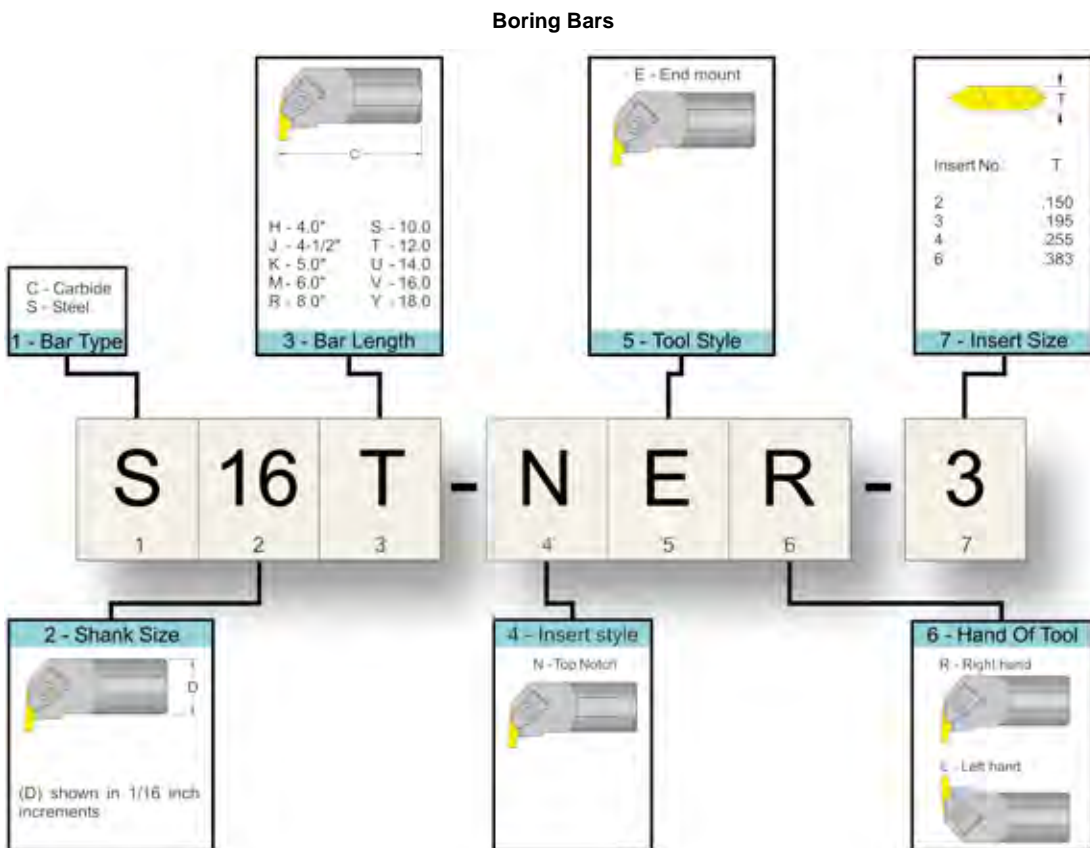
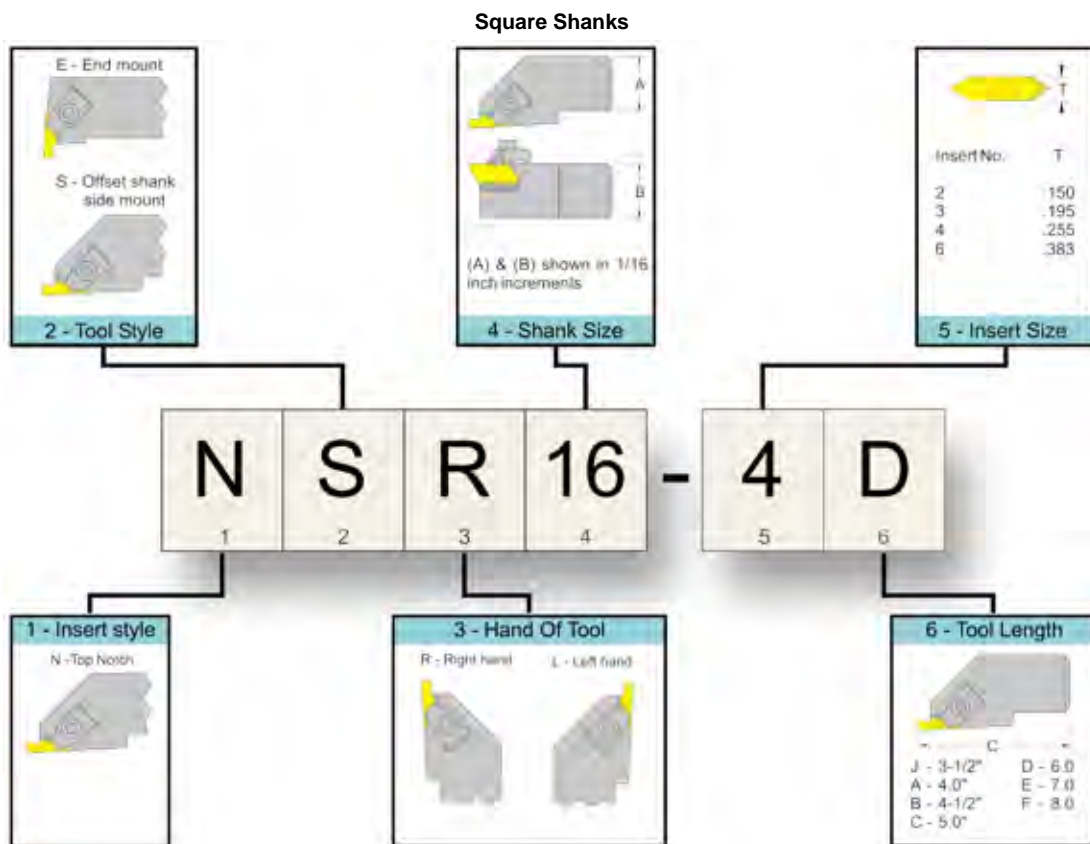
Geometry	Description	Stock	PITCH	TPF	IC	T	A
		CP1025					
TNMA API ROUND THREADING 	TNMA 43 8RD INT	●	8	3/4	.500	.190	.737
	TNMA 43 8RD EXT	●	8	3/4	.500	.190	.737
	TNMA 43 10RD INT	●	10	3/4	.500	.190	.737
	TNMA 43 10RD EXT	●	10	3/4	.500	.190	.737
	TNMA 54 8RD INT	●	8	3/4	.625	.252	.925
	TNMA 54 8RD EXT	●	8	3/4	.625	.252	.925
	TNMA 54 10RD INT	●	10	3/4	.625	.252	.925
TNMC API ROUND THREADING 	TNMC 43 8RD INT	●	8	3/4	.500	.190	.737
	TNMC 43 8RD EXT	●	8	3/4	.500	.190	.737
	TNMC 43 10RD INT	●	10	3/4	.500	.190	.737
	TNMC 43 10RD EXT	●	10	3/4	.500	.190	.737
	TNMC 54 8RD INT	●	8	3/4	.625	.252	.925
	TNMC 54 8RD EXT	●	8	3/4	.625	.252	.925
	TNMC 54 10RD INT	●	10	3/4	.625	.252	.925
TNMC 54 10RD EXT	●	10	3/4	.625	.252	.925	

● : Inventory maintained

IDENTIFICATION

NEW

TOP NOTCH HOLDERS AND BARS



NS R/L Threading & Grooving Toolholder-Style - External Top Notch Toolholder for threading and grooving Top Notch inserts

Right Hand Shown, Left Hand Opposite

Inch Description	Stock		A	B	C	D	E	F	Gage Insert	Clamp	Clamp Screw
	R.H.	L.H.									
NSR/L08-2	■	■	0.375	0.375	2.500	0.138	0.750	0.562	NG-2R* NG-2L**	CM-74* CM-75**	S-310
NSR/L08-2J	■	■	0.500	0.500	3.500	0.138	0.750	0.750			
NSR/L10-2B	■	■	0.625	0.625	4.500	0.138	0.750	0.975			
NSR/L12-2B	■	■	0.750	0.750	5.500	0.138	0.750	1.000			
NSR/L10-2C	■	■	1.000	1.000	5.000	0.138	0.750	1.250	NG-3R* NG-3L**	CM-72* CM-73**	S-412
NSR/L12-3A	■	■	0.750	0.750	4.000	0.210	1.250	1.000			
NSR/L12-3B	■	■	0.750	0.750	4.500	0.210	1.250	1.000			
NSR/L16-3C	■	■	1.000	1.000	3.000	0.210	1.250	1.250			
NSR/L16-3D	■	■	1.000	1.000	6.000	0.210	1.250	1.250	NG-4R* NG-4L**	CM-72* CM-73**	S-412
NSR/L20-3D	■	■	1.250	1.250	6.000	0.210	1.250	1.500			
NSR/L16-4C	■	■	1.000	1.000	5.000	0.294	1.380	1.250			
NSR/L16-4D	■	■	1.000	1.000	6.000	0.294	1.380	1.250			
NSR/L20-4C	■	■	1.250	1.250	5.000	0.294	1.380	1.500	NG-4R* NG-4L**	CM-72* CM-73**	S-412
NSR/L20-4D	■	■	1.250	1.250	6.000	0.294	1.380	1.500			
NSR/L24-4D	■	■	1.500	1.500	6.000	0.294	1.380	1.750			

*For right hand tools. ** For left hand tools.

NE R/L Threading & Grooving Toolholder-Style - Gang External Top Notch Toolholder for threading and grooving Top Notch inserts

Right Hand Shown, Left Hand Opposite

Inch Description	Stock		A	B	C	D	E	F	I	Gage Insert	Clamp	Clamp Screw
	R.H.	L.H.										
NER/L08-2	■	■	0.375	0.375	2.500	0.138	0.500	0.750	1.000	NG-2L* NG-2R**	CM-74* CM-75**	S-310
NER/L08-2J	■	■	0.500	0.500	3.500	0.138	0.500	0.750	1.000			
NER/L10-2B	■	■	0.625	0.625	4.500	0.138	-	0.750	1.000	NG-3L* NG-3R**	CM-72* CM-73**	S-412
NER/L12-2B	■	■	0.750	0.750	4.500	0.138	0.500	1.000	1.000			
NER/L12-3B	■	■	0.750	0.750	4.500	0.210	0.750	1.125	2.000			
NER/L16-3D	■	■	1.000	1.000	6.000	0.210	0.750	1.250	2.000			
NER/L20-3D	■	■	1.250	1.250	6.000	0.210	0.750	1.500	2.000	NG-4L* NG-4R**	CM-72* CM-73**	S-412
NER/L16-4D	■	■	1.000	1.000	6.000	0.294	0.750	1.375	2.000			
NER/L20-4D	■	■	1.250	1.250	6.000	0.294	0.750	1.625	2.000			

*For right hand tools. ** For left hand tools.

■ : Typical 1 to 2 week delivery

NR R/L Grooving Gang Toolholder- Style - Corner Grooving External Top Notch Toolholder for grooving Top Notch inserts

Right Hand Shown, Left Hand Opposite

Inch Description	Stock		A	B	C	E	F	Gage Insert	Clamp	Clamp Screw
	R.H	L.H								
NRR/L12-3B	■	■	0.750	0.750	4.500	1.250	1.000	*NG-3L **NG-3R	*CM-73 **CM-72	S-412
NRR/L16-3C	■	■	1.000	1.000	5.000	1.250	1.250			
NRR/L16-3D	■	■	1.000	1.000	6.000	1.250	1.250			
NRR/L20-3D	■	■	1.250	1.250	6.000	1.375	1.500			
NRR/L24-3D	■	■	1.500	1.500	6.000	1.375	2.000			

For Corner Grooving

*For right hand tools. ** For left hand tools

S-NE R/L Threading & Grooving Bar - Style - Internal Top Notch Bar for threading and grooving Top Notch inserts

Right Hand Shown, Left Hand Opposite

Inch Description	Stock		Min Bore B	C	D'	F	Gage Insert	Clamp	Clamp Screw
	R.H	L.H							
S10S-NER/L-2	■	■	1.000	10.00	0.625	0.500	*NG-2L	*CM-74	S-310
S12S-NER/L-2	■	■	1.125	10.00	0.750	0.562	**NG-2R	**CM-75	
S16T-NER/L-3	■	■	1.375	12.00	1.000	0.688	*NG-3L **NG-3R	*CM-72	S-412
S20U-NER/L-3	■	■	1.750	14.00	1.250	0.875		*CM-73	
S24U-NER/L-3	■	■	2.000	14.00	1.500	1.000			
S26U-NER/L-3	■	■	2.250	14.00	1.750	1.125			
S28U-NER/L-3	■	■	2.500	14.00	1.750	1.250			
S28U-NER/L-4	■	■	2.500	16.00	2.000	1.375	*NG-4L **NG-4R	*CM-72 **CM-73	S-412

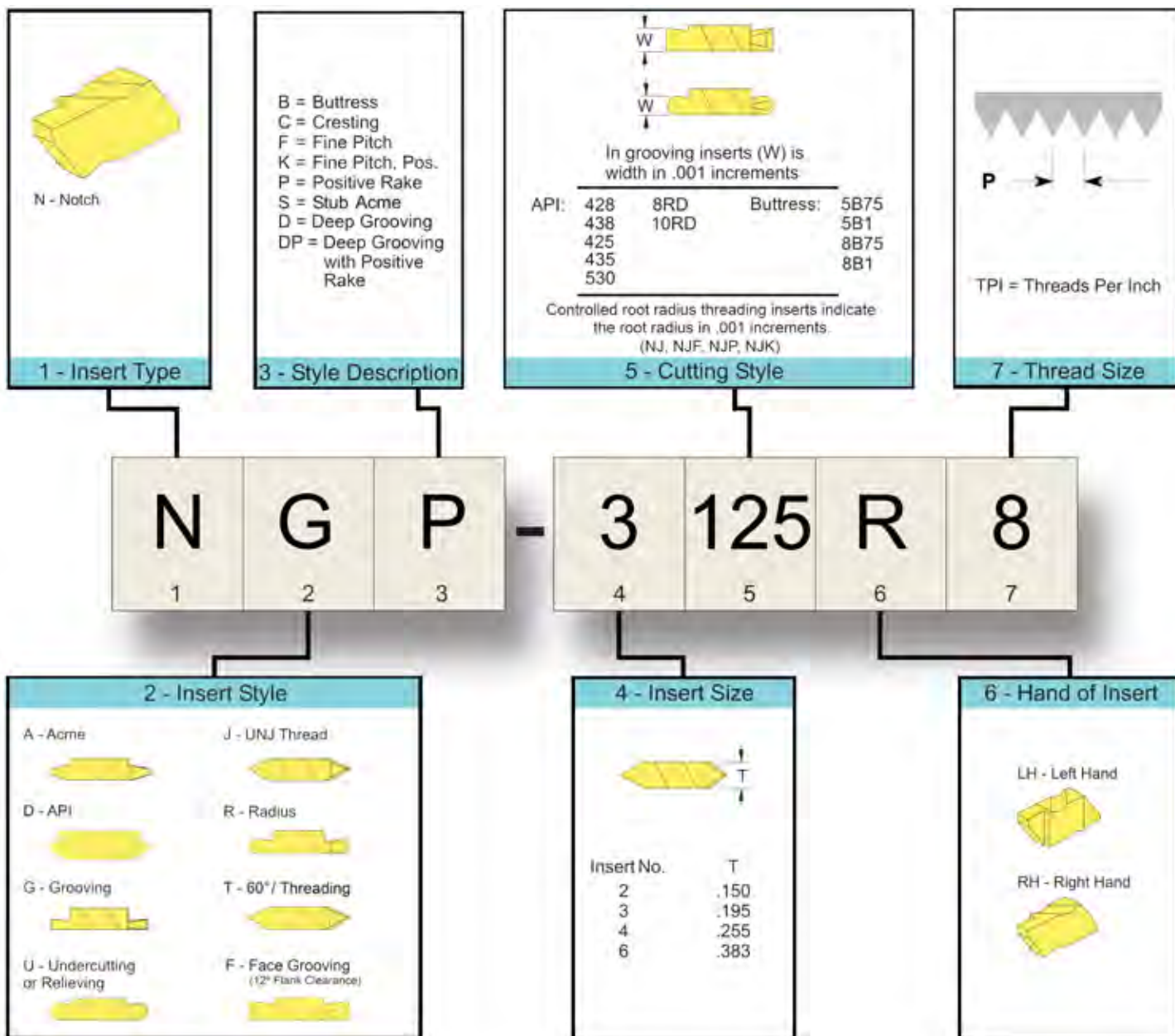
*For right hand tools. ** For left hand tools

■ : Typical 1 to 2 week delivery

IDENTIFICATION



TOP NOTCH GROOVING & THREADING



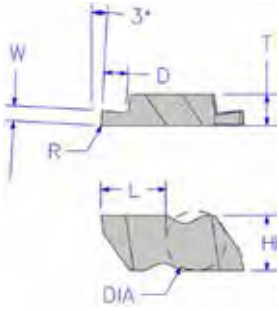
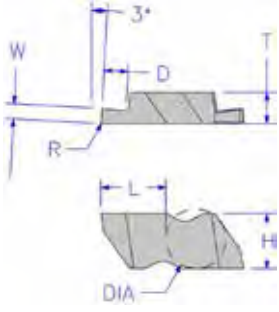
Threading Grades

Grade	Description	Uses	Stock
MP230	TiAlN coated tough submicron - wear & heat resistant	Non-ferrous, stainless steel, nickel-based & high-temp alloys at medium to high speed	Standard
MP613	TiN coated premium substrate for threading	4140 and similar steels at slow to medium speeds - most popular threading grade	Standard
MP633	TiAlN coated premium substrate for threading	All steels at high speeds - medium heat protection	Standard

Grooving Grades

Grade	Description	Uses	Stock
MP230	TiAlN coated tough submicron - wear & heat resistant	Non-ferrous, stainless steel, nickel-based & high-temp alloys at high speeds - most popular grooving grade	Standard
MP612	TiN coated medium tough - long lasting, smooth cutting	4140 and similar steels medium speeds - most common steel cutting grade	Standard

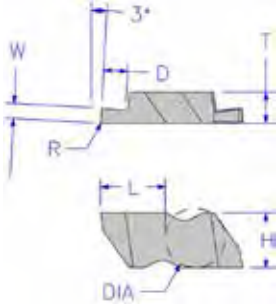
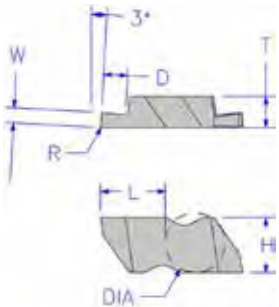
TOP NOTCH

Geometry	Description	Stock	Stock	Width	R	D	T	H	L	DIA
		MP230	MP612							
 <p>#2 TOP NOTCH GROOVING</p>	NG2031R	■	■	.031	.004	.075	.150	.219	.270	.1875
	NG2031L	■	■	.031	.004	.075	.150	.219	.270	.1875
	NG2047R	■	■	.047	.004	.090	.150	.219	.270	.1875
	NG2047L	■	■	.047	.004	.090	.150	.219	.270	.1875
	NG2062R	■	■	.062	.008	.110	.150	.219	.270	.1875
	NG2062L	■	■	.062	.008	.110	.150	.219	.270	.1875
	NG2094R	■	■	.094	.008	.110	.150	.219	.270	.1875
	NG2094L	■	■	.094	.008	.110	.150	.219	.270	.1875
	NG2125R	■	■	.125	.008	.110	.150	.219	.270	.1875
	NG2125L	■	■	.125	.008	.110	.150	.219	.270	.1875
 <p>#3 TOP NOTCH GROOVING</p>	NG3031R	■	■	.031	.004	.075	.195	.344	.405	.375
	NG3031L	■	■	.031	.004	.075	.195	.344	.405	.375
	NG3047R	■	■	.047	.004	.100	.195	.344	.405	.375
	NG3047L	■	■	.047	.004	.100	.195	.344	.405	.375
	NG3062R	■	■	.062	.008	.150	.195	.344	.405	.375
	NG3062L	■	■	.062	.008	.150	.195	.344	.405	.375
	NG3072R	■	■	.072	.008	.120	.195	.344	.405	.375
	NG3072L	■	■	.072	.008	.120	.195	.344	.405	.375
	NG3078R	■	■	.078	.008	.120	.195	.344	.405	.375
	NG3078L	■	■	.078	.008	.120	.195	.344	.405	.375
	NG3088R	■	■	.088	.008	.120	.195	.344	.405	.375
	NG3088L	■	■	.088	.008	.120	.195	.344	.405	.375
	NG3094R	■	■	.094	.008	.150	.195	.344	.405	.375
	NG3094L	■	■	.094	.008	.150	.195	.344	.405	.375
NG3097R	■	■	.097	.008	.150	.195	.344	.405	.375	
NG3097L	■	■	.097	.008	.150	.195	.344	.405	.375	

■ : Typical 1 to 2 week delivery

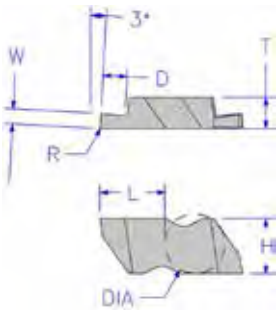
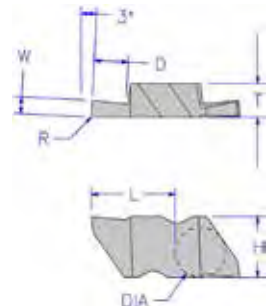
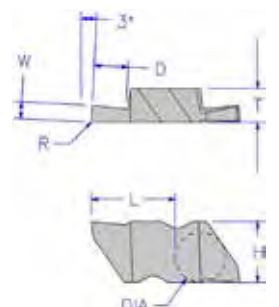
GROOVING INSERTS

TOP NOTCH

Geometry	Description	Stock	Stock	Width	R	D	T	H	L	DIA	
		MP230	MP612								
#3 TOP NOTCH GROOVING CONTINUED 	NG3105R	■	■	.105	.008	.150	.195	.344	.405	.375	
	NG3105L	■	■	.105	.008	.150	.195	.344	.405	.375	
	NG3110R	■	■	.110	.008	.150	.195	.344	.405	.375	
	NG3110L	■	■	.110	.008	.150	.195	.344	.405	.375	
	NG3125R	■	■	.125	.008	.190	.195	.344	.405	.375	
	NG3125L	■	■	.125	.008	.190	.195	.344	.405	.375	
	NG3142R	■	■	.142	.008	.190	.195	.344	.405	.375	
	NG3142L	■	■	.142	.008	.190	.195	.344	.405	.375	
	NG3156R	■	■	.156	.008	.190	.195	.344	.405	.375	
	NG3156L	■	■	.156	.008	.190	.195	.344	.405	.375	
	NG3178R	■	■	.178	.008	.190	.195	.344	.405	.375	
	NG3178L	■	■	.178	.008	.190	.195	.344	.405	.375	
	NG3185R	■	■	.185	.022	.190	.195	.344	.405	.375	
	NG3185L	■	■	.185	.022	.190	.195	.344	.405	.375	
	NG3189R	■	■	.189	.022	.190	.195	.344	.405	.375	
	NG3189L	■	■	.189	.022	.190	.195	.344	.405	.375	
	NG3250R	■	■	.250	.022	.190	.195	.344	.405	.375	
	NG3250L	■	■	.250	.022	.190	.195	.344	.405	.375	
	#4 TOP NOTCH GROOVING 	NG4125R	■	■	.125	.008	.250	.255	.453	.636	.375
		NG4125L	■	■	.125	.008	.250	.255	.453	.636	.375
NG4189R		■	■	.189	.022	.250	.255	.453	.636	.375	
NG4189L		■	■	.189	.022	.250	.255	.453	.636	.375	
NG4250R		■	■	.250	.022	.250	.255	.453	.636	.375	
NG4250L		■	■	.250	.022	.250	.255	.453	.636	.375	
NG4312R		○	○	.312	.032	.250	.255	.453	.636	.375	
NG4312L		○	○	.312	.032	.250	.255	.453	.636	.375	

■ : Typical 1 to 2 week delivery
 ○ : Non-stock, Special order only

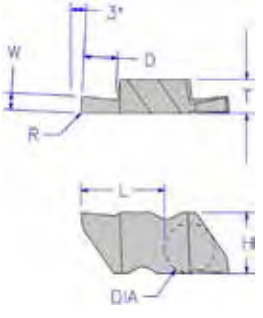
TOP NOTCH

Geometry	Description	Stock	Stock	Width	R	D	T	H	L	DIA
		MP230	MP612							
#6 TOP NOTCH GROOVING 	NG6281R	■	■	.281	.032	.250	.383	.453	.636	.375
	NG6281L	■	■	.281	.032	.250	.383	.453	.636	.375
	NG6312R	■	■	.312	.032	.250	.383	.453	.636	.375
	NG6312L	■	■	.312	.032	.250	.383	.453	.636	.375
	NG6375R	■	■	.375	.032	.250	.383	.453	.636	.375
	NG6375L	■	■	.375	.032	.250	.383	.453	.636	.375
#2 TOP NOTCH GROOVING 5° POSITIVE RAKE 	NGP2031R	○	○	.031	.004	.075	.150	.219	.270	.1875
	NGP2031L	○	○	.031	.004	.075	.150	.219	.270	.1875
	NGP2047R	○	○	.047	.004	.090	.150	.219	.270	.1875
	NGP2047L	○	○	.047	.004	.090	.150	.219	.270	.1875
	NGP2062R	○	○	.062	.008	.110	.150	.219	.270	.1875
	NGP2062L	○	○	.062	.008	.110	.150	.219	.270	.1875
	NGP2094R	○	○	.094	.008	.110	.150	.219	.270	.1875
	NGP2094L	○	○	.094	.008	.110	.150	.219	.270	.1875
	NGP2125R	○	○	.125	.008	.110	.150	.219	.270	.1875
NGP2125L	○	○	.125	.008	.110	.150	.219	.270	.1875	
#3 TOP NOTCH GROOVING 5° POSITIVE RAKE 	NGP3031R	○	○	.031	.004	.075	.195	.344	.405	.375
	NGP3031L	○	○	.031	.004	.075	.195	.344	.405	.375
	NGP3047R	○	○	.047	.004	.100	.195	.344	.405	.375
	NGP3047L	○	○	.047	.004	.100	.195	.344	.405	.375
	NGP3062R	○	○	.062	.008	.150	.195	.344	.405	.375
	NGP3062L	○	○	.062	.008	.150	.195	.344	.405	.375
	NGP3072R	○	○	.072	.008	.120	.195	.344	.405	.375
	NGP3072L	○	○	.072	.008	.120	.195	.344	.405	.375

■ : Typical 1 to 2 week delivery
 ○ : Non-stock, Special order only

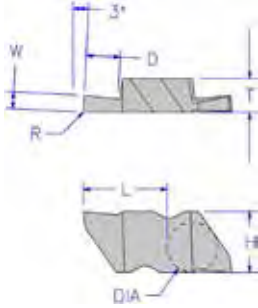
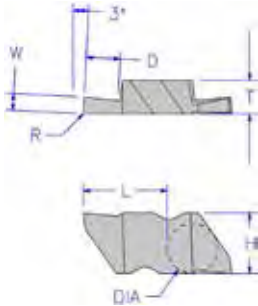
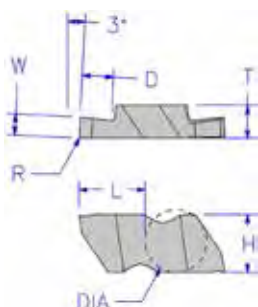
GROOVING INSERTS

TOP NOTCH

Geometry	Description	Stock	Stock	Width	R	D	T	H	L	DIA
		MP230	MP612							
#3 TOP NOTCH GROOVING CONTINUED 5° POSITIVE RAKE 	NGP3078R	○	○	.078	.008	.120	.195	.344	.405	.375
	NGP3078L	○	○	.078	.008	.120	.195	.344	.405	.375
	NGP3088R	○	○	.088	.008	.120	.195	.344	.405	.375
	NGP3088L	○	○	.088	.008	.120	.195	.344	.405	.375
	NGP3094R	○	○	.094	.008	.150	.195	.344	.405	.375
	NGP3094L	○	○	.094	.008	.150	.195	.344	.405	.375
	NGP3097R	○	○	.097	.008	.150	.195	.344	.405	.375
	NGP3097L	○	○	.097	.008	.150	.195	.344	.405	.375
	NGP3105R	○	○	.105	.008	.150	.195	.344	.405	.375
	NGP3105L	○	○	.105	.008	.150	.195	.344	.405	.375
	NGP3110R	○	○	.110	.008	.150	.195	.344	.405	.375
	NGP3110L	○	○	.110	.008	.150	.195	.344	.405	.375
	NGP3125R	○	○	.125	.008	.190	.195	.344	.405	.375
	NGP3125L	○	○	.125	.008	.190	.195	.344	.405	.375
	NGP3142R	○	○	.142	.008	.190	.195	.344	.405	.375
	NGP3142L	○	○	.142	.008	.190	.195	.344	.405	.375
	NGP3156R	○	○	.156	.008	.190	.195	.344	.405	.375
	NGP3156L	○	○	.156	.008	.190	.195	.344	.405	.375
	NGP3178R	○	○	.178	.008	.190	.195	.344	.405	.375
	NGP3178L	○	○	.178	.008	.190	.195	.344	.405	.375
	NGP3185R	○	○	.185	.022	.190	.195	.344	.405	.375
	NGP3185L	○	○	.185	.022	.190	.195	.344	.405	.375
	NGP3189R	○	○	.189	.022	.190	.195	.344	.405	.375
	NGP3189L	○	○	.189	.022	.190	.195	.344	.405	.375
	NGP3250R	○	○	.250	.022	.190	.195	.344	.405	.375
	NGP3250L	○	○	.250	.022	.190	.195	.344	.405	.375

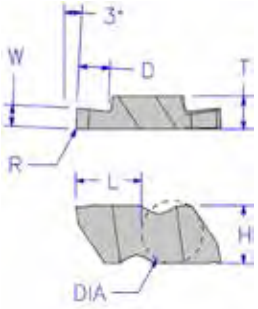
○ : Non-stock, Special order only

TOP NOTCH

Geometry	Description	Stock	Stock	Width	R	D	T	H	L	DIA
		MP230	MP612							
#4 TOP NOTCH GROOVING 5° POSITIVE RAKE 	NGP4125R	○	○	.125	.008	.250	.255	.453	.636	.375
	NGP4125L	○	○	.125	.008	.250	.255	.453	.636	.375
	NGP4189R	○	○	.189	.022	.250	.255	.453	.636	.375
	NGP4189L	○	○	.189	.022	.250	.255	.453	.636	.375
	NGP4250R	○	○	.250	.022	.250	.255	.453	.636	.375
	NGP4250L	○	○	.250	.022	.250	.255	.453	.636	.375
	NGP4312R	○	○	.312	.032	.250	.255	.453	.636	.375
	NGP4312L	○	○	.312	.032	.250	.255	.453	.636	.375
	#6 TOP NOTCH GROOVING 5° POSITIVE RAKE 	NGP6281R	○	○	.281	.032	.250	.383	.453	.636
NGP6281L		○	○	.281	.032	.250	.383	.453	.636	.375
NGP6312R		○	○	.312	.032	.250	.383	.453	.636	.375
NGP6312L		○	○	.312	.032	.250	.383	.453	.636	.375
NGP6375R		○	○	.375	.032	.250	.383	.453	.636	.375
NGP6375L		○	○	.375	.032	.250	.383	.453	.636	.375
#2 TOP NOTCH GROOVING K-STYLE CHIP CURLER 	NG2031RK	■	■	.031	.004	.075	.150	.219	.270	.1875
	NG2031LK	■	■	.031	.004	.075	.150	.219	.270	.1875
	NG2047RK	■	■	.047	.004	.090	.150	.219	.270	.1875
	NG2047LK	■	■	.047	.004	.090	.150	.219	.270	.1875
	NG2062RK	■	■	.062	.008	.110	.150	.219	.270	.1875
	NG2062LK	■	■	.062	.008	.110	.150	.219	.270	.1875
	NG2094RK	■	■	.094	.008	.110	.150	.219	.270	.1875
	NG2094LK	■	■	.094	.008	.110	.150	.219	.270	.1875
	NG2125RK	■	■	.125	.008	.110	.150	.219	.270	.1875
	NG2125LK	■	■	.125	.008	.110	.150	.219	.270	.1875

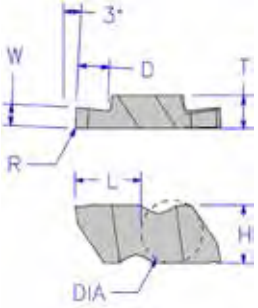
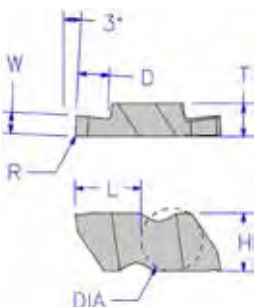
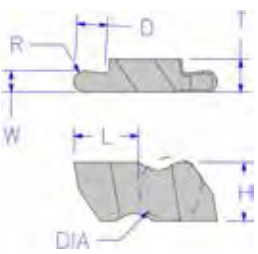
■ : Typical 1 to 2 week delivery
 ○ : Non-stock, Special order only

TOP NOTCH

Geometry	Description	Stock	Stock	Width	R	D	T	H	L	DIA
		MP230	MP612							
<p>#3 TOP NOTCH GROOVING K-STYLE CHIP CURLER</p> 	NG3031RK	■	■	.031	.004	.075	.195	.344	.405	.375
	NG3031LK	■	■	.031	.004	.075	.195	.344	.405	.375
	NG3047RK	■	■	.047	.004	.100	.195	.344	.405	.375
	NG3047LK	■	■	.047	.004	.100	.195	.344	.405	.375
	NG3062RK	■	■	.062	.008	.150	.195	.344	.405	.375
	NG3062LK	■	■	.062	.008	.150	.195	.344	.405	.375
	NG3072RK	■	■	.072	.008	.120	.195	.344	.405	.375
	NG3072LK	■	■	.072	.008	.120	.195	.344	.405	.375
	NG3078RK	■	■	.078	.008	.120	.195	.344	.405	.375
	NG3078LK	■	■	.078	.008	.120	.195	.344	.405	.375
	NG3088RK	■	■	.088	.008	.120	.195	.344	.405	.375
	NG3088LK	■	■	.088	.008	.120	.195	.344	.405	.375
	NG3094RK	■	■	.094	.008	.150	.195	.344	.405	.375
	NG3094LK	■	■	.094	.008	.150	.195	.344	.405	.375
	NG3097RK	■	■	.097	.008	.150	.195	.344	.405	.375
	NG3097LK	■	■	.097	.008	.150	.195	.344	.405	.375
	NG3105RK	■	■	.105	.008	.150	.195	.344	.405	.375
	NG3105LK	■	■	.105	.008	.150	.195	.344	.405	.375
	NG3110RK	■	■	.110	.008	.150	.195	.344	.405	.375
	NG3110LK	■	■	.110	.008	.150	.195	.344	.405	.375
	NG3125RK	■	■	.125	.008	.190	.195	.344	.405	.375
	NG3125LK	■	■	.125	.008	.190	.195	.344	.405	.375
	NG3142RK	■	■	.142	.008	.190	.195	.344	.405	.375
	NG3142LK	■	■	.142	.008	.190	.195	.344	.405	.375
	NG3156RK	■	■	.156	.008	.190	.195	.344	.405	.375
	NG3156LK	■	■	.156	.008	.190	.195	.344	.405	.375
	NG3178RK	■	■	.178	.008	.190	.195	.344	.405	.375
	NG3178LK	■	■	.178	.008	.190	.195	.344	.405	.375
	NG3185RK	■	■	.185	.022	.190	.195	.344	.405	.375
	NG3185LK	■	■	.185	.022	.190	.195	.344	.405	.375
	NG3189RK	■	■	.189	.022	.190	.195	.344	.405	.375
	NG3189LK	■	■	.189	.022	.190	.195	.344	.405	.375
NG3250RK	■	■	.250	.022	.190	.195	.344	.405	.375	
NG3250LK	■	■	.250	.022	.190	.195	.344	.405	.375	

■ : Typical 1 to 2 week delivery

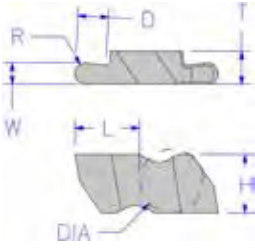
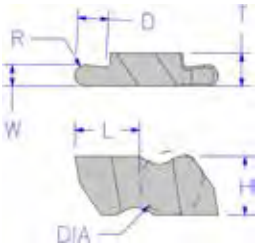
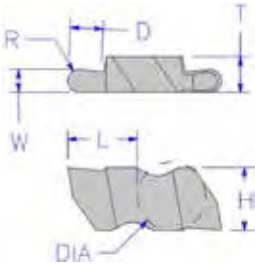
TOP NOTCH

Geometry	Description	Stock		Width	R	D	T	H	L	DIA
		MP230	MP612							
#4 TOP NOTCH GROOVING K-STYLE CHIP CURLER 	NG4125RK	■	■	.125	.008	.250	.255	.453	.636	.375
	NG4125LK	■	■	.125	.008	.250	.255	.453	.636	.375
	NG4189RK	■	■	.189	.022	.250	.255	.453	.636	.375
	NG4189LK	■	■	.189	.022	.250	.255	.453	.636	.375
	NG4250RK	■	■	.250	.022	.250	.255	.453	.636	.375
	NG4250LK	■	■	.250	.022	.250	.255	.453	.636	.375
	NG4312RK	○	○	.312	.032	.250	.255	.453	.636	.375
	NG4312LK	○	○	.312	.032	.250	.255	.453	.636	.375
#6 TOP NOTCH GROOVING K-STYLE CHIP CURLER 	NG6281RK	■	■	.281	.032	.250	.383	.453	.636	.375
	NG6281LK	■	■	.281	.032	.250	.383	.453	.636	.375
	NG6312RK	■	■	.312	.032	.250	.383	.453	.636	.375
	NG6312LK	■	■	.312	.032	.250	.383	.453	.636	.375
	NG6375RK	■	■	.375	.032	.250	.383	.453	.636	.375
	NG6375LK	■	■	.375	.032	.250	.383	.453	.636	.375
#2 TOP NOTCH GROOVING FULL NOSE RADIUS 	NR2031R	■	■	.062	.031	.110	.150	.219	.2683	.1875
	NR2031L	■	■	.062	.031	.110	.150	.219	.2683	.1875
	NR2047R	■	■	.094	.047	.110	.150	.219	.2675	.1875
	NR2047L	■	■	.094	.047	.110	.150	.219	.2675	.1875
	NR2062R	■	■	.125	.062	.110	.150	.219	.2667	.1875
	NR2062L	■	■	.125	.062	.110	.150	.219	.2667	.1875

■ : Typical 1 to 2 week delivery

○ : Non-stock, Special order only

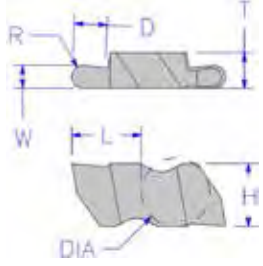
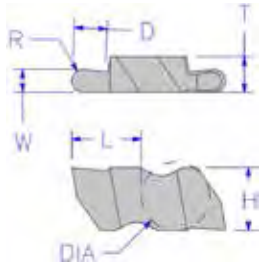
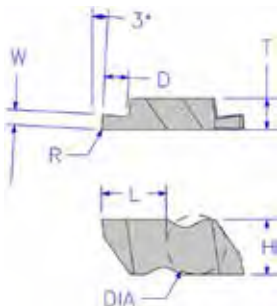
TOP NOTCH

Geometry	Description	Stock	Stock	Width	R	D	T	H	L	DIA
		MP230	MP612							
#3 TOP NOTCH GROOVING FULL NOSE RADIUS 	NR3031R	■	■	.062	.031	.125	.195	.344	.4033	.375
	NR3031L	■	■	.062	.031	.125	.195	.344	.4033	.375
	NR3047R	■	■	.094	.047	.180	.195	.344	.4025	.375
	NR3047L	■	■	.094	.047	.180	.195	.344	.4025	.375
	NR3062R	■	■	.125	.062	.180	.195	.344	.4017	.375
	NR3062L	■	■	.125	.062	.180	.195	.344	.4017	.375
	NR3078R	■	■	.156	.078	.180	.195	.344	.4008	.375
	NR3078L	■	■	.156	.078	.180	.195	.344	.4008	.375
	NR3094R	■	■	.188	.094	.180	.195	.344	.4000	.375
	NR3094L	■	■	.188	.094	.180	.195	.344	.4000	.375
#4 TOP NOTCH GROOVING FULL NOSE RADIUS 	NR4062R	■	■	.125	.062	.250	.255	.453	.6327	.375
	NR4062L	■	■	.125	.062	.250	.255	.453	.6327	.375
	NR4094R	■	■	.189	.094	.250	.255	.453	.6310	.375
	NR4094L	■	■	.189	.094	.250	.255	.453	.6310	.375
	NR4125R	■	■	.250	.125	.250	.255	.453	.6293	.375
	NR4125L	■	■	.250	.125	.250	.255	.453	.6293	.375
#2 TOP NOTCH GROOVING FULL NOSE RADIUS 5° POSITIVE RAKE 	NRP2031R	○	○	.062	.031	.110	.150	.219	.2683	.1875
	NRP2031L	○	○	.062	.031	.110	.150	.219	.2683	.1875
	NRP2047R	○	○	.094	.047	.110	.150	.219	.2675	.1875
	NRP2047L	○	○	.094	.047	.110	.150	.219	.2675	.1875
	NRP2062R	○	○	.125	.062	.110	.150	.219	.2667	.1875
	NRP2062L	○	○	.125	.062	.110	.150	.219	.2667	.1875

■ : Typical 1 to 2 week delivery

○ : Non-stock, Special order only

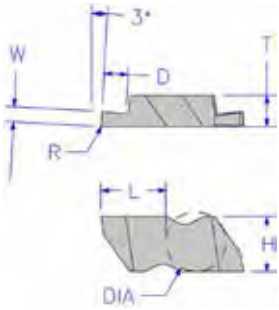

TOP NOTCH

Geometry	Description	Stock	Stock	Width	R	D	T	H	L	DIA
		MP230	MP612							
#3 TOP NOTCH GROOVING FULL NOSE RADIUS 5° POSITIVE RAKE 	NRP3031R	○	○	.062	.031	.125	.195	.344	.4033	.375
	NRP3031L	○	○	.062	.031	.125	.195	.344	.4033	.375
	NRP3047R	○	○	.094	.047	.180	.195	.344	.4025	.375
	NRP3047L	○	○	.094	.047	.180	.195	.344	.4025	.375
	NRP3062R	○	○	.125	.062	.180	.195	.344	.4017	.375
	NRP3062L	○	○	.125	.062	.180	.195	.344	.4017	.375
	NRP3078R	○	○	.156	.078	.180	.195	.344	.4008	.375
	NRP3078L	○	○	.156	.078	.180	.195	.344	.4008	.375
	NRP3094R	○	○	.188	.094	.180	.195	.344	.4000	.375
	NRP3094L	○	○	.188	.094	.180	.195	.344	.4000	.375
#4 TOP NOTCH GROOVING FULL NOSE RADIUS 5° POSITIVE RAKE 	NRP4062R	○	○	.125	.062	.250	.255	.453	.6327	.375
	NRP4062L	○	○	.125	.062	.250	.255	.453	.6327	.375
	NRP4094R	○	○	.189	.094	.250	.255	.453	.6310	.375
	NRP4094L	○	○	.189	.094	.250	.255	.453	.6310	.375
	NRP4125R	○	○	.250	.125	.250	.255	.453	.6293	.375
	NRP4125L	○	○	.250	.125	.250	.255	.453	.6293	.375
TOP NOTCH FACE GROOVING 	NF3031R	■	■	.031	.004	.075	.195	.344	.405	.375
	NF3031L	■	■	.031	.004	.075	.195	.344	.405	.375
	NF3047R	■	■	.047	.004	.100	.195	.344	.405	.375
	NF3047L	■	■	.047	.004	.100	.195	.344	.405	.375
	NF3062R	■	■	.062	.008	.120	.195	.344	.405	.375
	NF3062L	■	■	.062	.008	.120	.195	.344	.405	.375
	NF3094R	■	■	.094	.008	.150	.195	.344	.405	.375
	NF3094L	■	■	.094	.008	.150	.195	.344	.405	.375
	NF3125R	■	■	.125	.008	.190	.195	.344	.405	.375
	NF3125L	■	■	.125	.008	.190	.195	.344	.405	.375
	NF3189R	■	■	.189	.022	.190	.195	.344	.405	.375
	NF3189L	■	■	.189	.022	.190	.195	.344	.405	.375

■ : Typical 1 to 2 week delivery
 ○ : Non-stock, Special order only

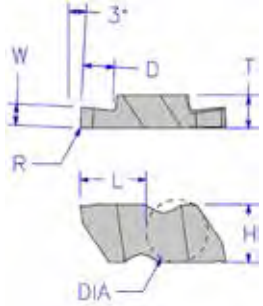
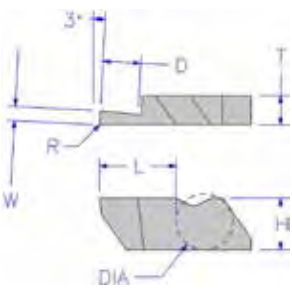
GROOVING INSERTS

TOP NOTCH

Geometry	Description	Stock		Width	R	D	T	H	L	DIA
		MP230	MP612							
TOP NOTCH FACE GROOVING 	NF4125R	■	■	.125	.008	.250	.255	.453	.636	.375
	NF4125L	■	■	.125	.008	.250	.255	.453	.636	.375
	NF4189R	■	■	.189	.022	.250	.255	.453	.636	.375
	NF4189L	■	■	.189	.022	.250	.255	.453	.636	.375
	NF4250R	■	■	.250	.022	.250	.255	.453	.636	.375
	NF4250L	■	■	.250	.022	.250	.255	.453	.636	.375
	NF6312R	■	■	.312	.032	.250	.383	.453	.636	.375
	NF6312L	■	■	.312	.032	.250	.383	.453	.636	.375
	NF6375R	■	■	.375	.032	.250	.383	.453	.636	.375
	NF6375L	■	■	.375	.032	.250	.383	.453	.636	.375
TOP NOTCH FACE GROOVING 5° POSITIVE RAKE 	NFP3031R	○	○	.031	.004	.075	.195	.344	.405	.375
	NFP3031L	○	○	.031	.004	.075	.195	.344	.405	.375
	NFP3047R	○	○	.047	.004	.100	.195	.344	.405	.375
	NFP3047L	○	○	.047	.004	.100	.195	.344	.405	.375
	NFP3062R	○	○	.062	.008	.120	.195	.344	.405	.375
	NFP3062L	○	○	.062	.008	.120	.195	.344	.405	.375
	NFP3094R	○	○	.094	.008	.150	.195	.344	.405	.375
	NFP3094L	○	○	.094	.008	.150	.195	.344	.405	.375
	NFP3125R	○	○	.125	.008	.190	.195	.344	.405	.375
	NFP3125L	○	○	.125	.008	.190	.195	.344	.405	.375
NFP3189R	○	○	.189	.022	.190	.195	.344	.405	.375	
NFP3189L	○	○	.189	.022	.190	.195	.344	.405	.375	

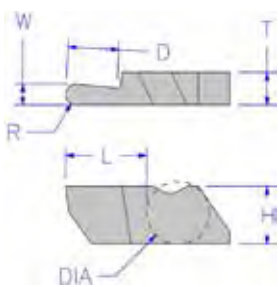
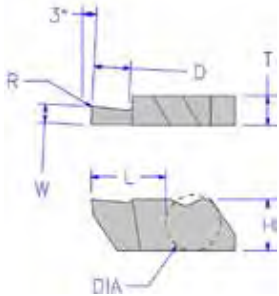
■ : Typical 1 to 2 week delivery
 ○ : Non-stock, Special order only

TOP NOTCH

Geometry	Description	Stock	Stock	Width	R	D	T	H	L	DIA
		MP230	MP612							
TOP NOTCH FACE GROOVING K-STYLE CHIP CURLER 	NF3031RK	■	■	.031	.004	.075	.195	.344	.405	.375
	NF3031LK	■	■	.031	.004	.075	.195	.344	.405	.375
	NF3047RK	■	■	.047	.004	.100	.195	.344	.405	.375
	NF3047LK	■	■	.047	.004	.100	.195	.344	.405	.375
	NF3062RK	■	■	.062	.008	.120	.195	.344	.405	.375
	NF3062LK	■	■	.062	.008	.120	.195	.344	.405	.375
	NF3094RK	■	■	.094	.008	.150	.195	.344	.405	.375
	NF3094LK	■	■	.094	.008	.150	.195	.344	.405	.375
	NF3125RK	■	■	.125	.008	.190	.195	.344	.405	.375
	NF3125LK	■	■	.125	.008	.190	.195	.344	.405	.375
	NF3189RK	■	■	.189	.022	.190	.195	.344	.405	.375
	NF3189LK	■	■	.189	.022	.190	.195	.344	.405	.375
	TOP NOTCH DEEP GROOVING SINGLE ENDED 	NGD3062R	■	■	.062	.008	.250	.195	.344	.505
NGD3062L		■	■	.062	.008	.250	.195	.344	.505	.375
NGD3094R		■	■	.094	.008	.250	.195	.344	.505	.375
NGD3094L		■	■	.094	.008	.250	.195	.344	.505	.375
NGD3125R		■	■	.125	.008	.250	.195	.344	.505	.375
NGD3125L		■	■	.125	.008	.250	.195	.344	.505	.375
NGD3189R		■	■	.189	.022	.300	.195	.344	.505	.375
NGD3189L		■	■	.189	.022	.300	.195	.344	.505	.375
NGD4125R		■	■	.125	.008	.250	.255	.453	.886	.375
NGD4125L		■	■	.125	.008	.250	.255	.453	.886	.375
NGD4189R		■	■	.189	.022	.400	.255	.453	.886	.375
NGD4189L		■	■	.189	.022	.400	.255	.453	.886	.375
NGD4250R		■	■	.250	.022	.500	.255	.453	.886	.375
NGD4250L	■	■	.250	.022	.500	.255	.453	.886	.375	

■ : Typical 1 to 2 week delivery

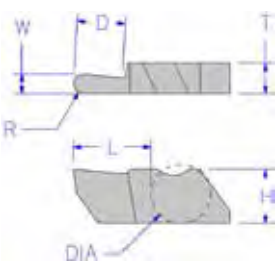
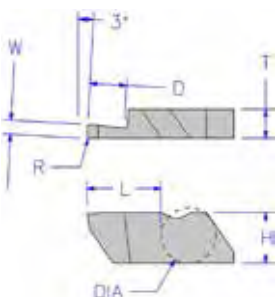
TOP NOTCH

Geometry	Description	Stock	Stock	Width	R	D	T	H	L	DIA
		MP230	MP612							
TOP NOTCH DEEP GROOVING SINGLE ENDED FULL NOSE RADIUS 	NRD3031R	■	■	.062	.031	.250	.195	.344	.505	.375
	NRD3031L	■	■	.062	.031	.250	.195	.344	.505	.375
	NRD3062R	■	■	.125	.062	.300	.195	.344	.505	.375
	NRD3062L	■	■	.125	.062	.300	.195	.344	.505	.375
	NRD3094R	■	■	.188	.094	.300	.195	.344	.505	.375
	NRD3094L	■	■	.188	.094	.300	.195	.344	.505	.375
	NRD4094R	■	■	.188	.094	.400	.255	.453	.886	.375
	NRD4094L	■	■	.188	.094	.400	.255	.453	.886	.375
	NRD4125R	■	■	.250	.125	.500	.255	.453	.886	.375
	NRD4125L	■	■	.250	.125	.500	.255	.453	.886	.375
TOP NOTCH DEEP GROOVING SINGLE ENDED 5° POSITIVE RAKE 	NGDP3062R	○	○	.062	.008	.250	.195	.344	.505	.375
	NGDP3062L	○	○	.062	.008	.250	.195	.344	.505	.375
	NGDP3094R	○	○	.094	.008	.250	.195	.344	.505	.375
	NGDP3094L	○	○	.094	.008	.250	.195	.344	.505	.375
	NGDP3125R	○	○	.125	.008	.250	.195	.344	.505	.375
	NGDP3125L	○	○	.125	.008	.250	.195	.344	.505	.375
	NGDP3189R	○	○	.189	.022	.300	.195	.344	.505	.375
	NGDP3189L	○	○	.189	.022	.300	.195	.344	.505	.375
	NGDP4125R	○	○	.125	.008	.250	.255	.453	.886	.375
	NGDP4125L	○	○	.125	.008	.250	.255	.453	.886	.375
NGDP4189R	○	○	.189	.022	.400	.255	.453	.886	.375	
NGDP4189L	○	○	.189	.022	.400	.255	.453	.886	.375	
NGDP4250R	○	○	.250	.022	.500	.255	.453	.886	.375	
NGDP4250L	○	○	.250	.022	.500	.255	.453	.886	.375	

■ : Typical 1 to 2 week delivery

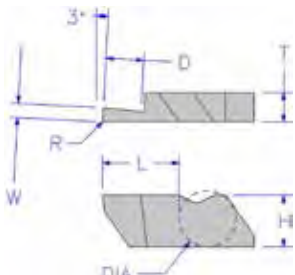
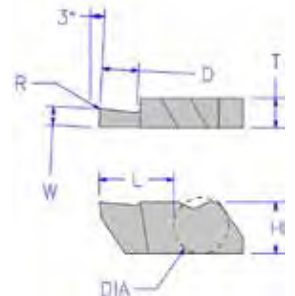
○ : Non-stock, Special order only

TOP NOTCH

Geometry	Description	Stock	Stock	Width	R	D	T	H	L	DIA
		MP230	MP612							
TOP NOTCH DEEP GROOVING SINGLE ENDED FULL NOSE RADIUS 5° POSITIVE RAKE 	NRDP3031R	○	○	.062	.031	.250	.195	.344	.505	.375
	NRDP3031L	○	○	.062	.031	.250	.195	.344	.505	.375
	NRDP3062R	○	○	.125	.062	.250	.195	.344	.505	.375
	NRDP3062L	○	○	.125	.062	.250	.195	.344	.505	.375
	NRDP3094R	○	○	.188	.094	.300	.195	.344	.505	.375
	NRDP3094L	○	○	.188	.094	.300	.195	.344	.505	.375
	NRDP4094R	○	○	.188	.094	.400	.255	.453	.886	.375
	NRDP4094L	○	○	.188	.094	.400	.255	.453	.886	.375
	NRDP4125R	○	○	.250	.125	.500	.255	.453	.886	.375
	NRDP4125L	○	○	.250	.125	.500	.255	.453	.886	.375
TOP NOTCH DEEP GROOVING SINGLE ENDED K-STYLE CHIP CURLER 	NGD3062RK	■	■	.062	.008	.250	.195	.344	.505	.375
	NGD3062LK	■	■	.062	.008	.250	.195	.344	.505	.375
	NGD3094RK	■	■	.094	.008	.250	.195	.344	.505	.375
	NGD3094LK	■	■	.094	.008	.250	.195	.344	.505	.375
	NGD3125RK	■	■	.125	.008	.250	.195	.344	.505	.375
	NGD3125LK	■	■	.125	.008	.250	.195	.344	.505	.375
	NGD3189RK	■	■	.189	.022	.300	.195	.344	.505	.375
	NGD3189LK	■	■	.189	.022	.300	.195	.344	.505	.375
	NGD4125RK	■	■	.125	.008	.250	.255	.453	.886	.375
	NGD4125LK	■	■	.125	.008	.250	.255	.453	.886	.375
	NGD4189RK	■	■	.189	.022	.400	.255	.453	.886	.375
	NGD4189LK	■	■	.189	.022	.400	.255	.453	.886	.375
NGD4250RK	■	■	.250	.022	.500	.255	.453	.886	.375	
NGD4250LK	■	■	.250	.022	.500	.255	.453	.886	.375	

■ : Typical 1 to 2 week delivery
○ : Non-stock, Special order only

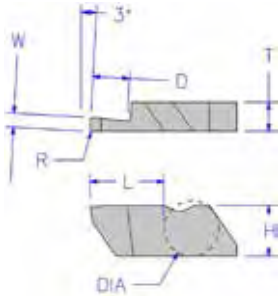
TOP NOTCH

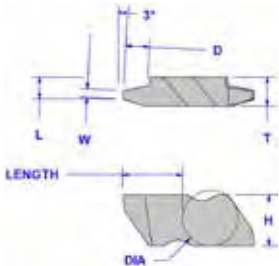
Geometry	Description	Stock	Stock	Width	R	D	T	H	L	DIA
		MP230	MP612							
<p>TOP NOTCH DEEP FACE GROOVING</p> 	NFD3062R	■	■	.062	.008	.250	.195	.344	.505	.375
	NFD3062L	■	■	.062	.008	.250	.195	.344	.505	.375
	NFD3094R	■	■	.094	.008	.250	.195	.344	.505	.375
	NFD3094L	■	■	.094	.008	.250	.195	.344	.505	.375
	NFD3125R	■	■	.125	.008	.250	.195	.344	.505	.375
	NFD3125L	■	■	.125	.008	.250	.195	.344	.505	.375
	NFD3189R	■	■	.189	.022	.300	.195	.344	.505	.375
	NFD3189L	■	■	.189	.022	.300	.195	.344	.505	.375
	NFD4125R	■	■	.125	.008	.250	.255	.453	.886	.375
	NFD4125L	■	■	.125	.008	.250	.255	.453	.886	.375
	NFD4189R	■	■	.189	.022	.400	.255	.453	.886	.375
	NFD4189L	■	■	.189	.022	.400	.255	.453	.886	.375
	NFD4250R	■	■	.250	.022	.500	.255	.453	.886	.375
	NFD4250L	■	■	.250	.022	.500	.255	.453	.886	.375
<p>TOP NOTCH DEEP FACE GROOVING 5° POSITIVE RAKE</p> 	NFDP3062R	○	○	.062	.008	.250	.195	.344	.505	.375
	NFDP3062L	○	○	.062	.008	.250	.195	.344	.505	.375
	NFDP3094R	○	○	.094	.008	.250	.195	.344	.505	.375
	NFDP3094L	○	○	.094	.008	.250	.195	.344	.505	.375
	NFDP3125R	○	○	.125	.008	.250	.195	.344	.505	.375
	NFDP3125L	○	○	.125	.008	.250	.195	.344	.505	.375
	NFDP3189R	○	○	.189	.022	.300	.195	.344	.505	.375
	NFDP3189L	○	○	.189	.022	.300	.195	.344	.505	.375
	NFDP4125R	○	○	.125	.008	.250	.255	.453	.886	.375
	NFDP4125L	○	○	.125	.008	.250	.255	.453	.886	.375
	NFDP4189R	○	○	.189	.022	.400	.255	.453	.886	.375
	NFDP4189L	○	○	.189	.022	.400	.255	.453	.886	.375
	NFDP4250R	○	○	.250	.022	.500	.255	.453	.886	.375
	NFDP4250L	○	○	.250	.022	.500	.255	.453	.886	.375

■ : Typical 1 to 2 week delivery
 ○ : Non-stock, Special order only

THREADING & GROOVING INSERTS

TOP NOTCH

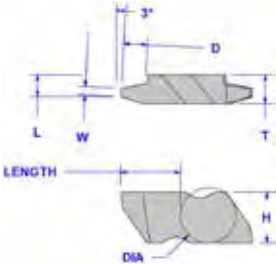
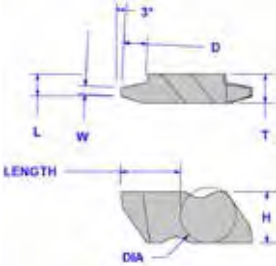
Geometry	Description	Stock	Stock	Width	R	D	T	H	L	DIA
		MP230	MP612							
TOP NOTCH DEEP FACE GROOVING K-STYLE CHIP CURLER 	NFD3062RK	■	■	.062	.008	.250	.195	.344	.505	.375
	NFD3062LK	■	■	.062	.008	.250	.195	.344	.505	.375
	NFD3094RK	■	■	.094	.008	.250	.195	.344	.505	.375
	NFD3094LK	■	■	.094	.008	.250	.195	.344	.505	.375
	NFD3125RK	■	■	.125	.008	.250	.195	.344	.505	.375
	NFD3125LK	■	■	.125	.008	.250	.195	.344	.505	.375
	NFD3189RK	■	■	.189	.022	.300	.195	.344	.505	.375
	NFD3189LK	■	■	.189	.022	.300	.195	.344	.505	.375
	NFD4125RK	■	■	.125	.008	.250	.255	.453	.886	.375
	NFD4125LK	■	■	.125	.008	.250	.255	.453	.886	.375
	NFD4189RK	■	■	.189	.022	.400	.255	.453	.886	.375
	NFD4189LK	■	■	.189	.022	.400	.255	.453	.886	.375
	NFD4250RK	■	■	.250	.022	.500	.255	.453	.886	.375
	NFD4250LK	■	■	.250	.022	.500	.255	.453	.886	.375

Geometry	Description	Stock	Stock	TPI	Width	L	D	T	H	L	DIA
		MP230	MP613								
TOP NOTCH 29° ACME THREADING 	NA3R16	■	■	16	.0206	.149	.175	.195	.344	.405	.375
	NA3RL16	■	■	16	.0206	.149	.175	.195	.344	.405	.375
	NA3R14	■	■	14	.0239	.149	.175	.195	.344	.405	.375
	NA3L14	■	■	14	.0239	.149	.175	.195	.344	.405	.375
	NA3R12	■	■	12	.0283	.149	.175	.195	.344	.405	.375
	NA3L12	■	■	12	.0283	.149	.175	.195	.344	.405	.375
	NA3R10	■	■	10	.0319	.149	.175	.195	.344	.405	.375
	NA3L10	■	■	10	.0319	.149	.175	.195	.344	.405	.375
	NA3R8	■	■	8	.0411	.149	.175	.195	.344	.405	.375
	NA3L8	■	■	8	.0411	.149	.175	.195	.344	.405	.375
	NA3R6	■	■	6	.0566	.149	.175	.195	.344	.405	.375
	NA3L6	■	■	6	.0566	.149	.175	.195	.344	.405	.375
	NA3R5	■	■	5	.0689	.149	.175	.195	.344	.405	.375
	NA3L5	■	■	5	.0689	.149	.175	.195	.344	.405	.375
	NA3R4	■	■	4	.0875	.133	.200	.195	.344	.405	.375
	NA3L4	■	■	4	.0875	.133	.200	.195	.344	.405	.375
	NA4R8	■	■	8	.0411	.202	.200	.255	.453	.636	.375
	NA4L8	■	■	8	.0411	.202	.200	.255	.453	.636	.375

■ : Typical 1 to 2 week delivery

THREADING INSERTS

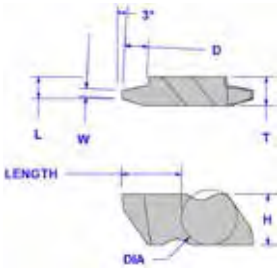
TOP NOTCH

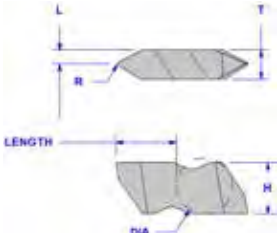
Geometry	Description	Stock	Stock	TPI	Width	L	D	T	H	L	DIA
		MP230	MP613								
TOP NOTCH 29° ACME THREADING CONTINUED 	NA4R6	■	■	6	.0566	.202	.200	.255	.453	.636	.375
	NA4L6	■	■	6	.0566	.202	.200	.255	.453	.636	.375
	NA4R5	■	■	5	.0689	.202	.200	.255	.453	.636	.375
	NA4L5	■	■	5	.0689	.202	.200	.255	.453	.636	.375
	NA4R4	■	■	4	.0875	.202	.200	.255	.453	.636	.375
	NA4L4	■	■	4	.0875	.202	.200	.255	.453	.636	.375
	NA4R3.5	■	■	3.5	.1007	.202	.200	.255	.453	.636	.375
	NA4L3.5	■	■	3.5	.1007	.202	.200	.255	.453	.636	.375
	NA4R3	■	■	3	.1184	.202	.200	.255	.453	.636	.375
	NA4L3	■	■	3	.1184	.202	.200	.255	.453	.636	.375
	NA6R3	■	■	3	.1184	.283	.300	.383	.453	.636	.375
	NA6L3	■	■	3	.1184	.283	.300	.383	.453	.636	.375
	NA6R2.5	■	■	2.5	.1431	.283	.300	.383	.453	.636	.375
	NA6L2.5	■	■	2.5	.1431	.283	.300	.383	.453	.636	.375
	NA6R2	■	■	2	.1802	.283	.300	.383	.453	.636	.375
	NA6L2	■	■	2	.1802	.283	.300	.383	.453	.636	.375
TOP NOTCH 29° STUB ACME THREADING 	NAS3R16	■	■	16	.0238	.149	.175	.195	.344	.405	.375
	NAS3RL16	■	■	16	.0238	.149	.175	.195	.344	.405	.375
	NAS3R14	■	■	14	.0276	.149	.175	.195	.344	.405	.375
	NAS3L14	■	■	14	.0276	.149	.175	.195	.344	.405	.375
	NAS3R12	■	■	12	.0326	.149	.175	.195	.344	.405	.375
	NAS3L12	■	■	12	.0326	.149	.175	.195	.344	.405	.375
	NAS3R10	■	■	10	.0370	.149	.175	.195	.344	.405	.375
	NAS3L10	■	■	10	.0370	.149	.175	.195	.344	.405	.375
	NAS3R8	■	■	8	.0417	.149	.175	.195	.344	.405	.375
	NAS3L8	■	■	8	.0417	.149	.175	.195	.344	.405	.375
	NAS3R6	■	■	6	.0652	.149	.175	.195	.344	.405	.375
	NAS3L6	■	■	6	.0652	.149	.175	.195	.344	.405	.375
	NAS3R5	■	■	5	.0793	.149	.175	.195	.344	.405	.375
	NAS3L5	■	■	5	.0793	.149	.175	.195	.344	.405	.375
	NAS3R4	■	■	4	.1004	.133	.200	.195	.344	.405	.375
	NAS3L4	■	■	4	.1004	.133	.200	.195	.344	.405	.375

■ : Typical 1 to 2 week delivery

THREADING INSERTS

TOP NOTCH

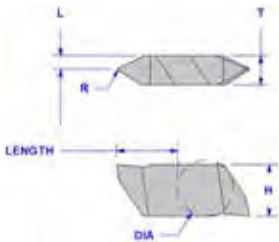
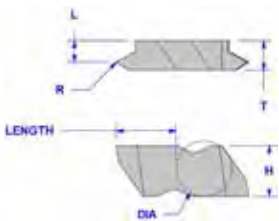
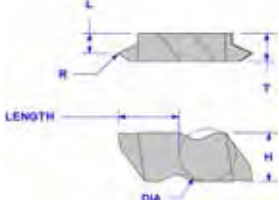
Geometry	Description	Stock	Stock	TPI	Width	L	D	T	H	L	DIA
		MP230	MP613								
TOP NOTCH 29° STUB ACME THREADING CONTINUED 	NAS4R8	■	■	8	.0417	.202	.200	.255	.453	.636	.375
	NAS4L8	■	■	8	.0417	.202	.200	.255	.453	.636	.375
	NAS4R6	■	■	6	.0652	.202	.200	.255	.453	.636	.375
	NAS4L6	■	■	6	.0652	.202	.200	.255	.453	.636	.375
	NAS4R5	■	■	5	.0793	.202	.200	.255	.453	.636	.375
	NAS4L5	■	■	5	.0793	.202	.200	.255	.453	.636	.375
	NAS4R4	■	■	4	.1004	.202	.200	.255	.453	.636	.375
	NAS4L4	■	■	4	.1004	.202	.200	.255	.453	.636	.375
	NAS4R3.5	■	■	3.5	.1155	.202	.200	.255	.453	.636	.375
	NAS4L3.5	■	■	3.5	.1155	.202	.200	.255	.453	.636	.375
	NAS4R3	■	■	3	.1356	.202	.200	.255	.453	.636	.375
	NAS4L3	■	■	3	.1356	.202	.200	.255	.453	.636	.375
	NAS6R3	■	■	3	.1356	.283	.300	.383	.453	.636	.375
	NAS6L3	■	■	3	.1356	.283	.300	.383	.453	.636	.375
	NAS6R2.5	■	■	2.5	.1638	.283	.300	.383	.453	.636	.375
	NAS6L2.5	■	■	2.5	.1638	.283	.300	.383	.453	.636	.375
	NAS6R2	■	■	2	.2060	.283	.300	.383	.453	.636	.375
	NAS6L2	■	■	2	.2060	.283	.300	.383	.453	.636	.375

Geometry	Description	Stock	Stock	R	L	T	H	L	DIA
		MP230	MP613						
TOP NOTCH 60° V-THREADING 	NT2R	■	■	.004R	.075	.150	.219	.270	.1875
	NT2L	■	■	.004R	.075	.150	.219	.270	.1875
	NT3R	■	■	.005R	.098	.195	.344	.405	.375
	NT3L	■	■	.005R	.098	.195	.344	.405	.375
	NT3R-8	■	■	.008R	.098	.195	.344	.405	.375
	NT3L-8	■	■	.008R	.098	.195	.344	.405	.375
	NT3R-10	■	■	.010R	.098	.195	.344	.405	.375
	NT3L-10	■	■	.010R	.098	.195	.344	.405	.375
	NT4R	■	■	.007R	.128	.255	.453	.636	.375
	NT4L	■	■	.007R	.128	.255	.453	.636	.375

■ : Typical 1 to 2 week delivery

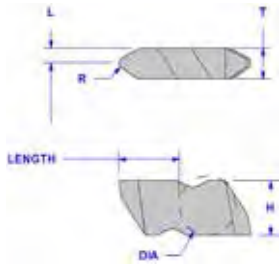
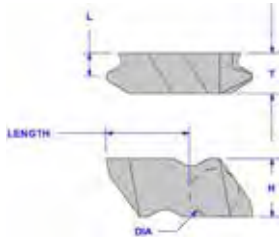
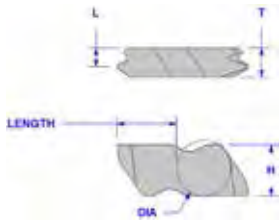
THREADING INSERTS

TOP NOTCH

Geometry	Description	Stock	Stock	R	L	T	H	L	DIA
		MP230	MP613						
TOP NOTCH 60° V-THREADING 5° POSITIVE RAKE 	NTP2R	■	■	.004R	.075	.150	.219	.270	.1875
	NTP2L	■	■	.004R	.075	.150	.219	.270	.1875
	NTP3R	■	■	.005R	.098	.195	.344	.405	.375
	NTP3L	■	■	.005R	.098	.195	.344	.405	.375
	NTP3R-8	■	■	.008R	.098	.195	.344	.405	.375
	NTP3L-8	■	■	.008R	.098	.195	.344	.405	.375
	NTP3R-10	■	■	.010R	.098	.195	.344	.405	.375
	NTP3L-10	■	■	.010R	.098	.195	.344	.405	.375
	NTP4R	■	■	.007R	.128	.255	.453	.636	.375
	NTP4L	■	■	.007R	.128	.255	.453	.636	.375
TOP NOTCH 60° V-THREADING FINE PITCH 	NTF2R	■	■	.004R	.110	.150	.219	.270	.1875
	NTF2L	■	■	.004R	.110	.150	.219	.270	.1875
	NTF3R	■	■	.004R	.141	.195	.344	.405	.375
	NTF3L	■	■	.004R	.141	.195	.344	.405	.375
	NTF4R	■	■	.004R	.201	.255	.453	.636	.375
	NTF4L	■	■	.004R	.201	.255	.453	.636	.375
TOP NOTCH 60° V-THREADING 5° POSITIVE RAKE 	NTK2R	■	■	.004R	.110	.150	.219	.270	.1875
	NTK2L	■	■	.004R	.110	.150	.219	.270	.1875
	NTK3R	■	■	.004R	.141	.195	.344	.405	.375
	NTK3L	■	■	.004R	.141	.195	.344	.405	.375
	NTK4R	■	■	.004R	.201	.255	.453	.636	.375
	NTK4L	■	■	.004R	.201	.255	.453	.636	.375

■ : Typical 1 to 2 week delivery

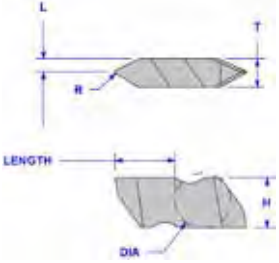
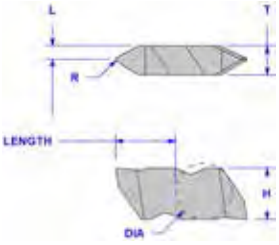
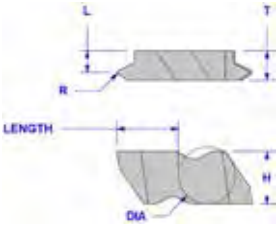
TOP NOTCH

Geometry	Description	Stock	PITCH	R	L	T	H	L	DIA
		MP633							
<p>TOP NOTCH NON-TOPPING API THREADING</p> 	ND3038R	■	4	.036	.082	.195	.344	.3991	.375
	ND3038L	■	4	.036	.082	.195	.344	.3991	.375
	ND3040R	■	5	.018	.082	.255	.344	.3991	.375
	ND3040L	■	5	.018	.082	.255	.344	.3991	.375
	ND4038R	■	4	.036	.128	.255	.453	.6293	.375
	ND4038L	■	4	.036	.128	.255	.453	.6293	.375
	ND4040R	■	5	.018	.128	.255	.453	.6293	.375
	ND4040L	■	5	.018	.128	.255	.453	.6293	.375
	ND4050R	■	4	.023	.128	.255	.453	.6293	.375
	ND4050L	■	4	.023	.128	.255	.453	.6293	.375
	<p>TOP NOTCH API ROTARY SHOULDER CONNECTION THREADING</p> 	NDC3-530R	■	5	3	.147	.255	.344	.4026
NDC3-530L		■	5	3	.147	.255	.344	.4026	.375
NDC4-425R		■	4	2	.183	.312	.453	.6320	.375
NDC4-425L		■	4	2	.183	.312	.453	.6320	.375
NDC4-428R		■	4	2	.183	.312	.453	.6320	.375
NDC4-428L		■	4	2	.183	.312	.453	.6320	.375
NDC4-435R		■	4	3	.183	.312	.453	.6320	.375
NDC4-435L		■	4	3	.183	.312	.453	.6320	.375
NDC4-438R		■	4	3	.183	.312	.453	.6320	.375
NDC4-438L		■	4	3	.183	.312	.453	.6320	.375
<p>TOP NOTCH API ROUND THREADING</p> 		NDC3-8RD75R	■	8	3/4	.125	.195	.344	.4026
	NDC3-8RD75L	■	8	3/4	.125	.195	.344	.4026	.375
	NDC3-10RD75R	■	10	3/4	.125	.195	.344	.4026	.375
	NDC3-10RD75L	■	10	3/4	.125	.195	.344	.4026	.375

■ : Typical 1 to 2 week delivery

THREADING INSERTS

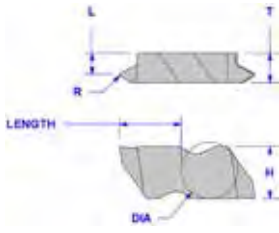
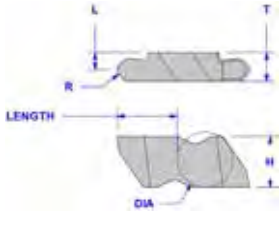
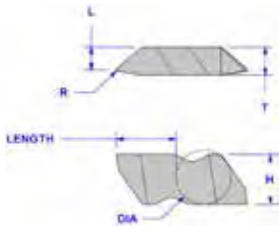
TOP NOTCH

Geometry	Description	Stock	Stock	PITCH	R	L	T	H	L	DIA
		MP230	MP613							
TOP NOTCH UNJ THREADING 	NJ3010R16	■	■	16	.010	.098	.195	.344	.400	.375
	NJ3010L16	■	■	16	.010	.098	.195	.344	.400	.375
	NJ3014R12	■	■	12	.013	.098	.195	.344	.400	.375
	NJ3014L12	■	■	12	.013	.098	.195	.344	.400	.375
	NJ3020R8	■	■	8	.0195	.098	.195	.344	.400	.375
	NJ3020L8	■	■	8	.0195	.098	.195	.344	.400	.375
TOP NOTCH UNJ THREADING 5° POSITIVE RAKE 	NJP3010R16	■	■	16	.010	.098	.195	.344	.400	.375
	NJP3010L16	■	■	16	.010	.098	.195	.344	.400	.375
	NJP3014R12	■	■	12	.013	.098	.195	.344	.400	.375
	NJP3014L12	■	■	12	.013	.098	.195	.344	.400	.375
	NJP3020R8	■	■	8	.0195	.098	.195	.344	.400	.375
	NJP3020L8	■	■	8	.0195	.098	.195	.344	.400	.375
TOP NOTCH UNJ THREADING FINE PITCH 	NJF3005R32	■	■	32	.005	.141	.195	.344	.402	.375
	NJF3005L32	■	■	32	.005	.141	.195	.344	.402	.375
	NJF3006R28	■	■	28	.006	.141	.195	.344	.402	.375
	NJF3006L28	■	■	28	.006	.141	.195	.344	.402	.375
	NJF3007R24	■	■	24	.007	.141	.195	.344	.402	.375
	NJF3007L24	■	■	24	.007	.141	.195	.344	.402	.375
	NJF3008R20	■	■	20	.008	.141	.195	.344	.402	.375
	NJF3008L20	■	■	20	.008	.141	.195	.344	.402	.375
	NJF3009R18	■	■	18	.009	.141	.195	.344	.402	.375
	NJF3009L18	■	■	18	.009	.141	.195	.344	.402	.375
	NJF3010R16	■	■	16	.010	.141	.195	.344	.402	.375
	NJF3010L16	■	■	16	.010	.141	.195	.344	.402	.375
	NJF3012R14	■	■	14	.011	.141	.195	.344	.402	.375
	NJF3012L14	■	■	14	.011	.141	.195	.344	.402	.375

■ : Typical 1 to 2 week delivery

THREADING & GROOVING INSERTS

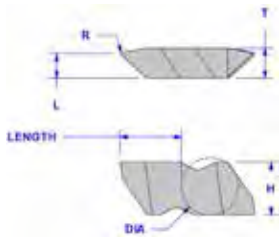
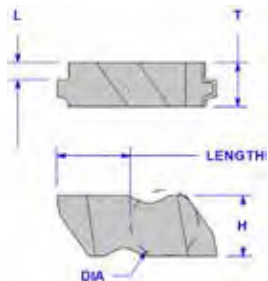
TOP NOTCH

Geometry	Description	Stock	Stock	PITCH	R	L	T	H	L	DIA
		MP230	MP613							
<p>TOP NOTCH UNJ THREADING 5° POSITIVE RAKE</p> 	NJK3005R32	■	■	32	.005	.141	.195	.344	.402	.375
	NJK3005L32	■	■	32	.005	.141	.195	.344	.402	.375
	NJK3006R28	■	■	28	.006	.141	.195	.344	.402	.375
	NJK3006L28	■	■	28	.006	.141	.195	.344	.402	.375
	NJK3007R24	■	■	24	.007	.141	.195	.344	.402	.375
	NJK3007L24	■	■	24	.007	.141	.195	.344	.402	.375
	NJK3008R20	■	■	20	.008	.141	.195	.344	.402	.375
	NJK3008L20	■	■	20	.008	.141	.195	.344	.402	.375
	NJK3009R18	■	■	18	.009	.141	.195	.344	.402	.375
	NJK3009L18	■	■	18	.009	.141	.195	.344	.402	.375
	NJK3010R16	■	■	16	.010	.141	.195	.344	.402	.375
	NJK3010L16	■	■	16	.010	.141	.195	.344	.402	.375
	NJK3012R14	■	■	14	.011	.141	.195	.344	.402	.375
	NJK3012L14	■	■	14	.011	.141	.195	.344	.402	.375
<p>TOP NOTCH UNDERCUTTING</p> 	NU3094R	○	○	.094	.020	.125	.195	.344	.505	.375
	NU3094L	○	○	.094	.020	.125	.195	.344	.505	.375
	NU3125R	○	○	.125	.047	.188	.195	.344	.505	.375
	NU3125L	○	○	.125	.047	.188	.195	.344	.505	.375
	NU3156R	○	○	.156	.047	.188	.195	.344	.505	.375
	NU3156L	○	○	.156	.047	.188	.195	.344	.505	.375
<p>TOP NOTCH ASB 7° LEADING</p> 	NTB2RA	■	■	16-20	.003	.126	.150	.219	.269	.188
	NTB2LA	■	■	16-20	.003	.126	.150	.219	.269	.188
	NTB3RA	■	■	8-12	.006	.165	.195	.344	.403	.375
	NTB3LA	■	■	8-12	.006	.165	.195	.344	.403	.375
	NTB4RA	■	■	4-6	.010	.206	.255	.453	.633	.375
	NTB4LA	■	■	4-6	.010	.206	.255	.453	.633	.375

■ : Typical 1 to 2 week delivery
○ : Non-stock, Special order only

THREADING INSERTS

TOP NOTCH

Geometry	Description	Stock	Stock	PITCH	R	L	T	H	L	DIA
		MP230	MP613							
TOP NOTCH ASB 45° LEADING 	NTB2RB	■	■	16-20	.003	.010	.150	.219	.269	.188
	NTB2LB	■	■	16-20	.003	.010	.150	.219	.269	.188
	NTB3RB	■	■	8-12	.006	.012	.195	.344	.403	.375
	NTB3LB	■	■	8-12	.006	.012	.195	.344	.403	.375
	NTB4RB	■	■	4-6	.010	.016	.255	.453	.633	.375
	NTB4LB	■	■	4-6	.010	.016	.255	.453	.633	.375
Geometry	Description	Stock		PITCH	TPF	L	T	H	L	DIA
		MP633								
TOP NOTCH API BUTTRESS THREADING 	NDC3-5B75R	■		5	3/4	.100	.250	.344	.4026	.375
	NDC3-5B75L	■		5	3/4	.100	.250	.344	.4026	.375
	NDC3-5B1R	■		5	1	.100	.250	.344	.4026	.375
	NDC3-5B1L	■		5	1	.100	.250	.344	.4026	.375
	NDC4-5B75R	■		5	3/4	.100	.255	.453	.6320	.375
	NDC4-5B75L	■		5	3/4	.100	.255	.453	.6320	.375
	NDC4-5B1R	■		5	1	.100	.255	.453	.6320	.375
	NDC4-5B1L	■		5	1	.100	.255	.453	.6320	.375

■ : Typical 1 to 2 week delivery

THREADING

For your safety

●Don't touch breakers and chips without gloves. ●Please machine within recommended application range, and exchange expired tools with new parts in advance. ●Please use safety cover and wear safety glasses. ●When using compounded cutting oils, please take fire prevention. ●When attaching inserts or spare parts, please use the attached wrench or driver. ●When using tools in revolution machining, please make a trial run to check run-out, vibration, abnormal sounds etc.

MITSUBISHI MATERIALS CORPORATION



AHB Tooling & Machinery, Inc.
 Complete Metalworking Solutions
 Roseville Saginaw & Jackson, MI

ISO Certified
 (800) 991-4225
www.ahbinc.com
customerservice@ahbinc.com