MITSUBISHI MATERIALS

C010A

CUTTING TOOLS 2024

DIA EDGE

HOW TO READ THE STANDARD OF THREADING

●How this section page is organized

①Classified according to external or internal applications.
②Sub-classified according to product series.
(Refer to the index on the next page.)

FIGURE SHOWING THE TOOLING APPLICATION
uses illustrations and arrows to depict the available machining applications, such as external and internal threading.

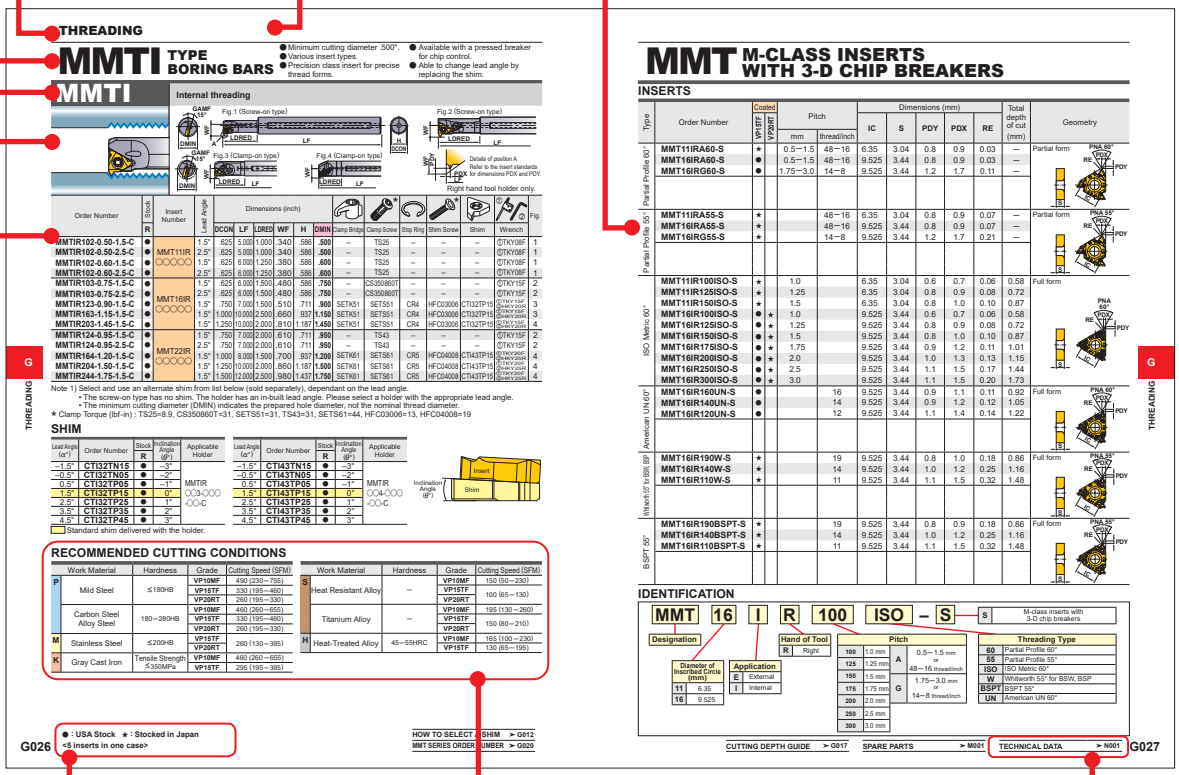
TYPE OF TOOL HOLDER
indicates the initial letters for the order number and cutting applications.

TITLE OF PRODUCT

PRODUCT SECTION

INDICATION OF EXTERNAL /INTERNAL APPLICATION

STANDARDS FOR APPLICABLE INSERTS
indicates stock status, dimensions, etc. for applicable inserts.



LEGEND FOR STOCK STATUS MARK
is shown on the left hand page of each double-page spread.

PAGE REFERENCE
·SPARE PARTS
indicates reference pages, including the above, on the right hand page of each double-page spread.

PRODUCT STANDARDS
indicates order numbers, stock status (per right/left hand), applicable inserts, holder dimensions, and spare parts.

RECOMMENDED CUTTING CONDITIONS
for each work material classification, indicates recommended cutting conditions according to the ISO categories for cutting grades, P, M, K, S, and H.

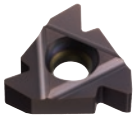
●To Order : For holder, please specify order number and hand of tool (right/left).
For insert, please specify insert number and grade.

TURNING TOOLS

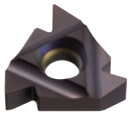
THREADING

*Arranged by Alphabetical order

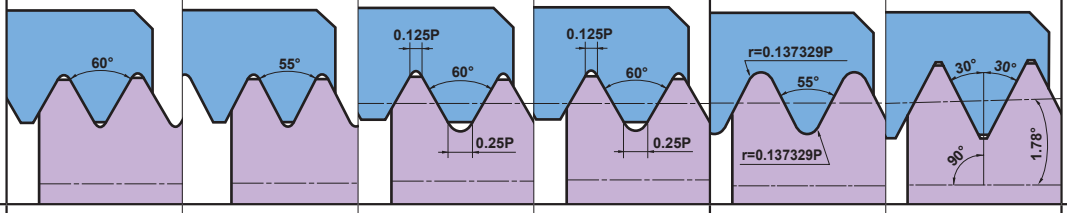
CLASSIFICATION (EXTERNAL THREADING)

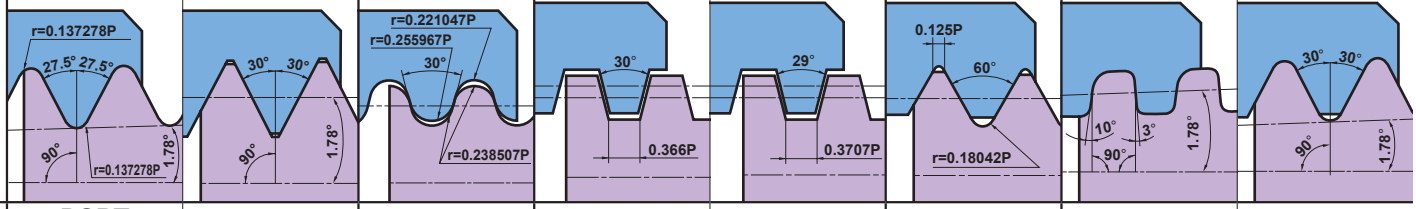
Name of Tool Holder	Insert Shape	Features
MMTE Holder  G021		● Various insert types. ● Precision class insert for precise thread forms. ● Available with a pressed breaker for chip control. ● Able to change lead angle by replacing the shim.

CLASSIFICATION (INTERNAL THREADING)

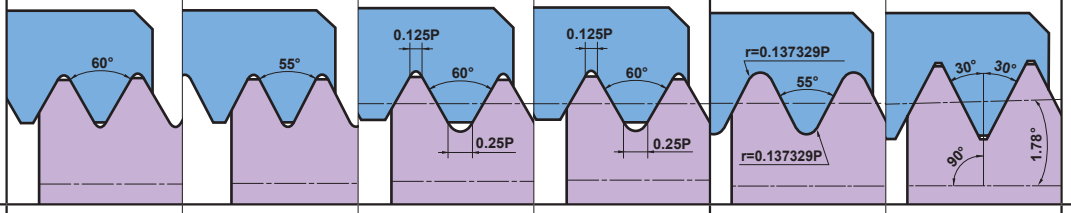
Name of Tool Holder	Insert Shape	Features
MMTI **Boring Bars**  G026		● Minimum cutting diameter .500 inch. ● Various insert types. ● Precision class insert for precise thread forms. ● Available with a pressed breaker for chip control. ● Able to change lead angle by replacing the shim.
FSL5 **S-SL5** **Boring Bars**  G031 G032		● Screw-on type. ● Precision class insert. ● Holder is capable of performing both grooving and threading. ● Maximum groove depth .118 inch.
MICRO-MINI TWIN **Boring Bars**  G034	–	● Solid carbide type. ● Economical due to single holder with two cutting edges.
MICRO-MINI **Boring Bars**  E031	–	● Solid carbide type. ● Insert can be ground to suit the application.

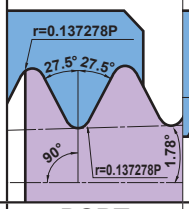
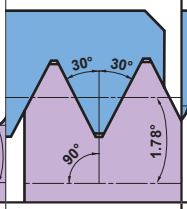
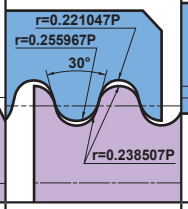
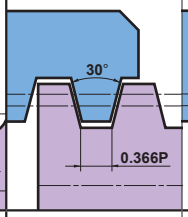
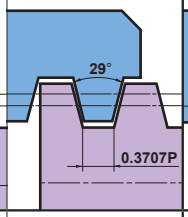
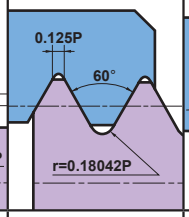
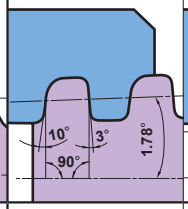
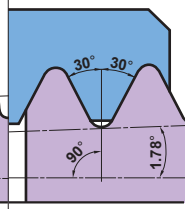
CROSS REFERENCE OF THREAD PITCHES (EXTERNAL)

Application		General machining				Pipe fittings and couplings for gas and water	
Type		Partial Profile 60°	Partial Profile 55°	ISO Metric 60°	American UN 60°	Parallel Pipe Thread Whitworth 55° for BSW, BSP	American NPT 60°
							
Symbol		M UNC UNF	W	M	UNC UNF	G(PF) Rp(PS) W	NPT
Holder	Pitch	mm (thread/inch)	thread/inch	mm	thread/inch	thread/inch	thread/inch
MMT Holder  G021	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	–	–

	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 55°	American NPTF 60°	Round DIN 405 30°	ISO Trapezoidal 30°	American ACME 29°	UNJ	API Buttress Casing	API Round 60° Casing & Tubing
								
	BSPT R(PT) Rc(RT) 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
	–	–	–	–	–	–	–	–

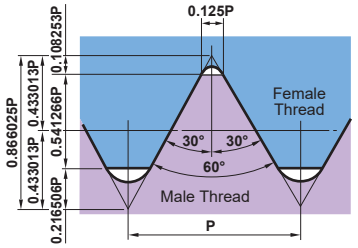
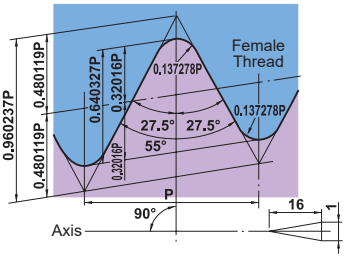
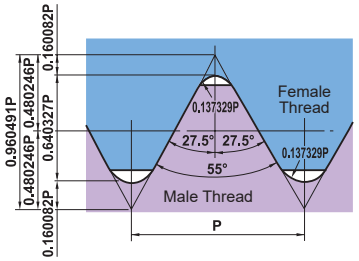
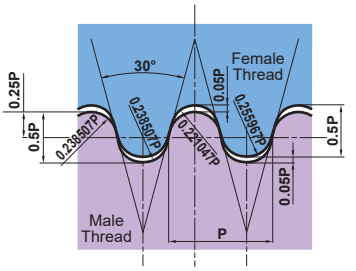
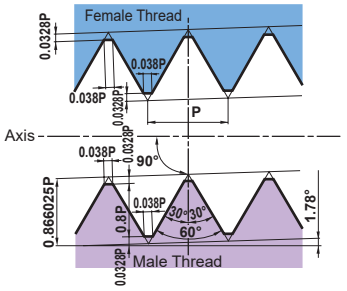
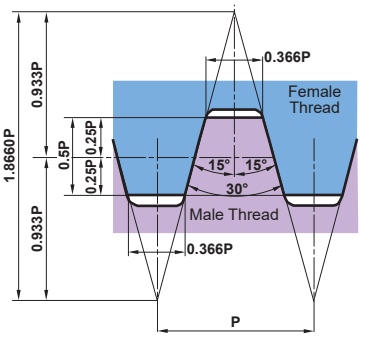
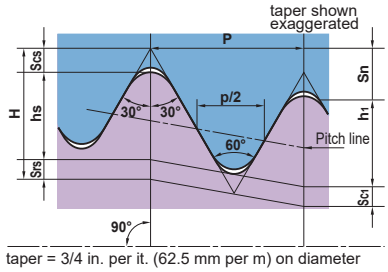
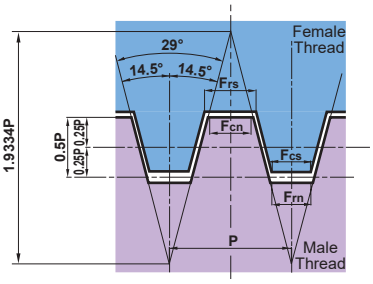
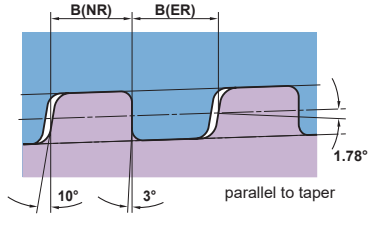
CROSS REFERENCE OF THREAD PITCHES (INTERNAL)

Application		General machining				Pipe fittings and couplings for gas and water	
Type		Partial Profile 60°	Partial Profile 55°	ISO Metric 60°	American UN 60°	Parallel Pipe Thread Whitworth 55° for BSW, BSP	American NPT 60°
							
Symbol		M UNC UNF	W	M	UNC UNF	G(PF) Rp(PS) W	NPT
Holder	Pitch	mm (thread/inch)	thread/inch	mm	thread/inch	thread/inch	thread/inch
MMT Boring Bars  G026	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	–	–
FSL5 SL5N Boring Bars  G031 G032	Partial form	1.5–2.0(16–13) 1.5–2.5(16–11) 1.5–3.5(16– 7)	–	1.5–2.0 1.5–2.5 1.5–3.5	16–13 16–11 16– 7	–	–
MICRO-MINI TWIN  G034	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 55°	American NPTF 60°	Round DIN 405 30°	ISO Trapezoidal 30°	American ACME 29°	UNJ	API Buttress Casing	API Round 60° Casing & Tubing
								
	BSPT R(PT) Rc(PT) 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 60°. 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 60° / American UN 60°		M UNC UNF	BSPT 55°		BSPT R (PT) Rc (PT) Rp
Parallel Pipe Thread Whitworth 55° for BSW, BSP		W G (PF) Rp (PS)	Round DIN 405		Rd
American NPT 60°		NPT	ISO Trapezoidal 30°		Tr (TM)
API Round 60° Casing & Tubing		CSG LCSG	American ACME 29°		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 1) Same as PF.

● Taper Pipe Threads R(PT), Rc(PT)

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 1) 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

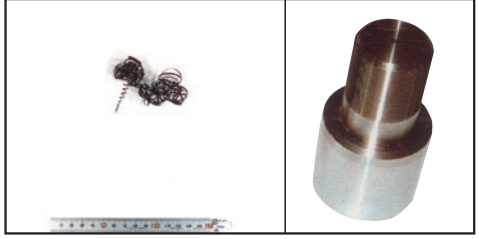
G-CLASS GROUND INSERTS

■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 1.5 mm Final pass (6th pass)

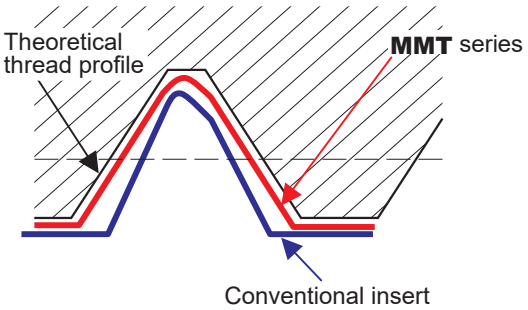
Competitor

MMT



<Cutting Conditions>
Work Material : AISI 4140
Insert : MMT16ER150ISO-S
Grade : VP15TF
Cutting speed : 395 SFM
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)

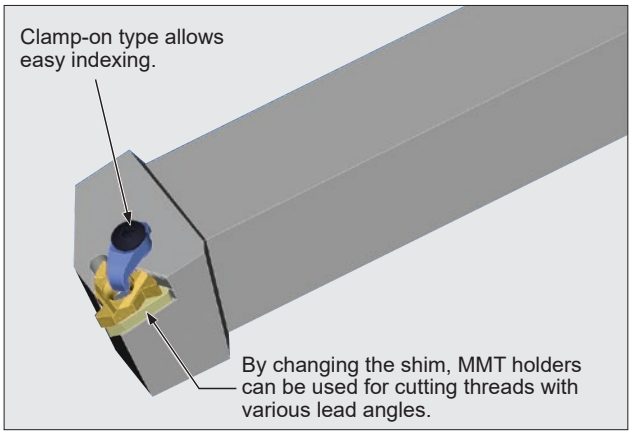


High precision threading can be achieved by using MMT inserts that feature a ground rake face and peripheral cutting edge.

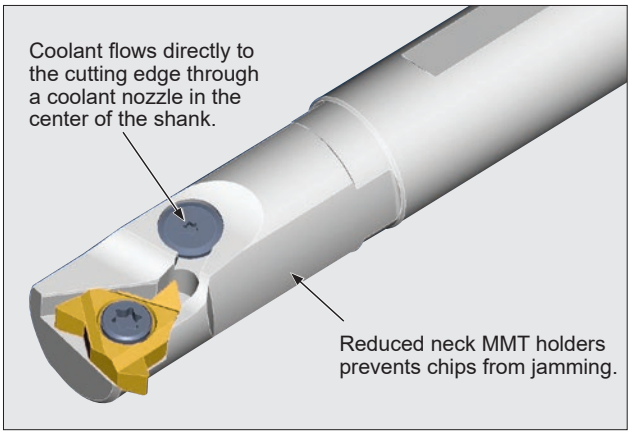
Thread Type	Threading Tolerance
ISO Metric 60°	6g / 6H
American UN 60°	2A / 2B
Whitworth 55° for BSW, BSP	Medium Class A
BSPT 55°	Standard BSPT
Round DIN 405 30°	7h / 7H
ISO Trapezoidal 30°	7e / 7H
American ACME 29°	3G
UNJ	3A
API Buttress Casing	Standard API
API Round 60° Casing & Tubing 60°	Standard API RD
American NPT 60°	Standard NPT
American NPTF 60°	Class2

■HOLDER (Use of special surface treatment)

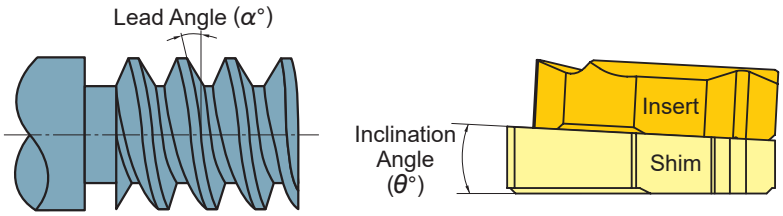
External



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.

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°

Standard shim delivered with the holder.

■GRADE

VP10MF (G-class ground insert only)

●Superior wear and plastic deformation resistance

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

VP15TF (G-class ground insert, M-class insert with 3-D chip breakers)

●Wide versatility

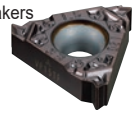
- High fracture resistance during low rigidity applications such as bar feed machining. Able to withstand harsh conditions for long periods where conventional inserts would be liable to breakage.
- Effective combination of high cost performance M-class inserts with 3-D chip breakers.

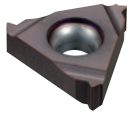
VP20RT (M-class insert with 3-D chip breakers)

●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	Precision of thread
M-class inserts with 3-D chip breakers 	◎	○

Insert	Chip control	Precision of thread
G-class inserts 	○	◎

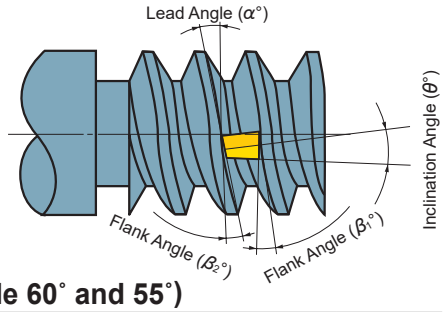
- For ideal chip control and a high cost performance ratio, M-class inserts with 3-D chip breakers are recommended.
- G-class inserts are recommended where higher precision is required.

CUTTING CONDITIONS OF MMT SERIES

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). No need to change a shim for general threading with an MMT holder. 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.



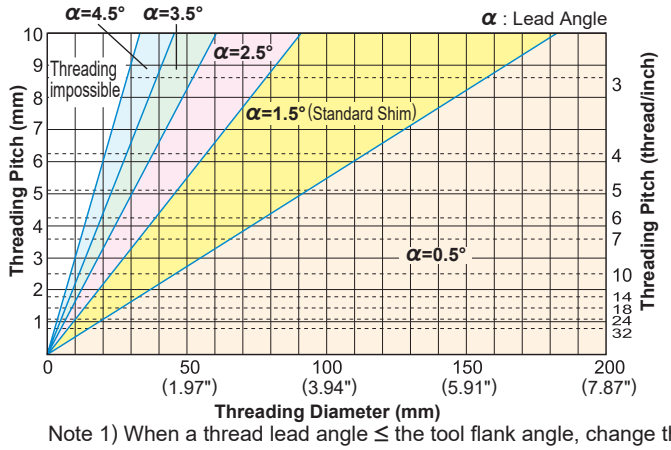
■SHIM REFERENCE TABLE (THREADING DIAMETER) (Thread angle 60˚ and 55˚)

Lead Angle / Pitch (mm)	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	≤ϕ1.7	ϕ1.7 − ϕ2.3	ϕ2.3 − ϕ3.0	ϕ3.0 − ϕ4.6	ϕ4.6 − ϕ9.1	≥ϕ9.1	≤ϕ3.6	ϕ3.6 − ϕ9.1	≥ϕ9.1
0.75	≤ϕ2.5	ϕ2.5 − ϕ3.4	ϕ3.4 − ϕ4.6	ϕ4.6 − ϕ6.8	ϕ6.8 − ϕ13.7	≥ϕ13.7	≤ϕ5.5	ϕ5.5 − ϕ13.7	≥ϕ13.7
1	≤ϕ3.3	ϕ3.3 − ϕ4.6	ϕ4.6 − ϕ6.1	ϕ6.1 − ϕ9.1	ϕ9.1 − ϕ18.2	≥ϕ18.2	≤ϕ7.3	ϕ7.3 − ϕ18.2	≥ϕ18.2
1.25	≤ϕ4.1	ϕ4.1 − ϕ5.7	ϕ5.7 − ϕ7.6	ϕ7.6 − ϕ11.4	ϕ11.4 − ϕ22.8	≥ϕ22.8	≤ϕ9.1	ϕ9.1 − ϕ22.8	≥ϕ22.8
1.5	≤ϕ5.0	ϕ5.0 − ϕ6.8	ϕ6.8 − ϕ9.1	ϕ9.1 − ϕ13.7	ϕ13.7 − ϕ27.4	≥ϕ27.4	≤ϕ10.9	ϕ10.9 − ϕ27.4	≥ϕ27.4
1.75	≤ϕ5.8	ϕ5.8 − ϕ8.0	ϕ8.0 − ϕ10.6	ϕ10.6 − ϕ16.0	ϕ16.0 − ϕ31.9	≥ϕ31.9	≤ϕ12.8	ϕ12.8 − ϕ31.9	≥ϕ31.9
2	≤ϕ6.6	ϕ6.6 − ϕ9.1	ϕ9.1 − ϕ12.1	ϕ12.1 − ϕ18.2	ϕ18.2 − ϕ36.5	≥ϕ36.5	≤ϕ14.6	ϕ14.6 − ϕ36.5	≥ϕ36.5
2.5	≤ϕ8.3	ϕ8.3 − ϕ11.4	ϕ11.4 − ϕ15.2	ϕ15.2 − ϕ22.8	ϕ22.8 − ϕ45.6	≥ϕ45.6	≤ϕ18.2	ϕ18.2 − ϕ45.6	≥ϕ45.6
3	≤ϕ9.9	ϕ9.9 − ϕ13.7	ϕ13.7 − ϕ18.2	ϕ18.2 − ϕ27.3	ϕ27.3 − ϕ54.7	≥ϕ54.7	≤ϕ21.9	ϕ21.9 − ϕ54.7	≥ϕ54.7
3.5	≤ϕ11.6	ϕ11.6 − ϕ15.9	ϕ15.9 − ϕ21.3	ϕ21.3 − ϕ31.9	ϕ31.9 − ϕ63.8	≥ϕ63.8	≤ϕ25.5	ϕ25.5 − ϕ63.8	≥ϕ63.8
4	≤ϕ13.2	ϕ13.2 − ϕ18.2	ϕ18.2 − ϕ24.3	ϕ24.3 − ϕ36.5	ϕ36.5 − ϕ72.9	≥ϕ72.9	≤ϕ29.2	ϕ29.2 − ϕ72.9	≥ϕ72.9
4.5	≤ϕ14.9	ϕ14.9 − ϕ20.5	ϕ20.5 − ϕ27.3	ϕ27.3 − ϕ41.0	ϕ41.0 − ϕ82.1	≥ϕ82.1	≤ϕ32.8	ϕ32.8 − ϕ82.1	≥ϕ82.1
5	≤ϕ16.5	ϕ16.5 − ϕ22.8	ϕ22.8 − ϕ30.4	ϕ30.4 − ϕ45.6	ϕ45.6 − ϕ91.2	≥ϕ91.2	≤ϕ36.5	ϕ36.5 − ϕ91.2	≥ϕ91.2

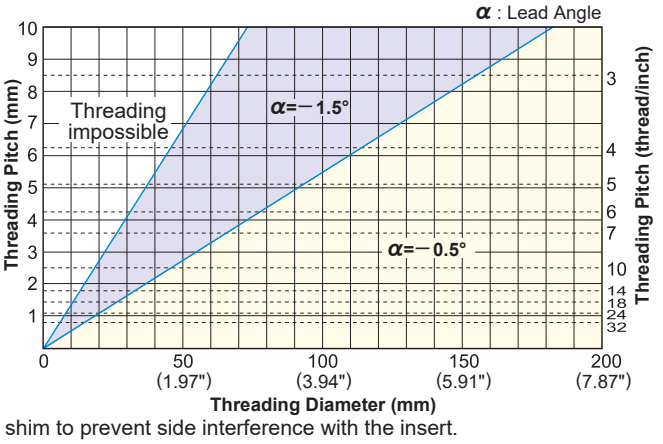
* Back turning in the case of left hand threads.

■SHIM REFERENCE GRAPH (Thread angle 60˚ and 55˚)

Right Hand Thread



Left Hand Thread



Note 1) When a thread lead angle ≤ the tool flank angle, change the shim to prevent side interference with the insert.
(Refer to the table on page G013 for the calculation of thread lead angle and tool flank angle.)

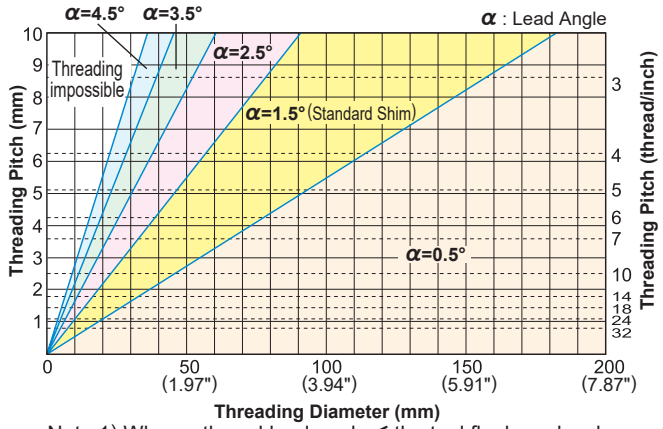
■SHIM REFERENCE TABLE (THREADING DIAMETER) (Thread angle 30˚ and 29˚)

Lead Angle / Pitch (mm)	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	≤ϕ1.8	ϕ1.8 − ϕ2.3	ϕ2.3 − ϕ3.0	ϕ3.0 − ϕ4.6	ϕ4.6 − ϕ9.1	≥ϕ9.1	≤ϕ4.6	ϕ4.6 − ϕ9.1	≥ϕ9.1
0.75	≤ϕ2.7	ϕ2.7 − ϕ3.4	ϕ3.4 − ϕ4.6	ϕ4.6 − ϕ6.8	ϕ6.8 − ϕ13.7	≥ϕ13.7	≤ϕ6.8	ϕ6.8 − ϕ13.7	≥ϕ13.7
1	≤ϕ3.6	ϕ3.6 − ϕ4.6	ϕ4.6 − ϕ6.1	ϕ6.1 − ϕ9.1	ϕ9.1 − ϕ18.2	≥ϕ18.2	≤ϕ9.1	ϕ9.1 − ϕ18.2	≥ϕ18.2
1.25	≤ϕ4.5	ϕ4.5 − ϕ5.7	ϕ5.7 − ϕ7.6	ϕ7.6 − ϕ11.4	ϕ11.4 − ϕ22.8	≥ϕ22.8	≤ϕ11.4	ϕ11.4 − ϕ22.8	≥ϕ22.8
1.5	≤ϕ5.5	ϕ5.5 − ϕ6.8	ϕ6.8 − ϕ9.1	ϕ9.1 − ϕ13.7	ϕ13.7 − ϕ27.4	≥ϕ27.4	≤ϕ13.7	ϕ13.7 − ϕ27.4	≥ϕ27.4
1.75	≤ϕ6.4	ϕ6.4 − ϕ8.0	ϕ8.0 − ϕ10.6	ϕ10.6 − ϕ16.0	ϕ16.0 − ϕ31.9	≥ϕ31.9	≤ϕ16.0	ϕ16.0 − ϕ31.9	≥ϕ31.9
2	≤ϕ7.3	ϕ7.3 − ϕ9.1	ϕ9.1 − ϕ12.1	ϕ12.1 − ϕ18.2	ϕ18.2 − ϕ36.5	≥ϕ36.5	≤ϕ18.2	ϕ18.2 − ϕ36.5	≥ϕ36.5
2.5	≤ϕ9.1	ϕ9.1 − ϕ11.4	ϕ11.4 − ϕ15.2	ϕ15.2 − ϕ22.8	ϕ22.8 − ϕ45.6	≥ϕ45.6	≤ϕ22.8	ϕ22.8 − ϕ45.6	≥ϕ45.6
3	≤ϕ10.9	ϕ10.9 − ϕ13.7	ϕ13.7 − ϕ18.2	ϕ18.2 − ϕ27.3	ϕ27.3 − ϕ54.7	≥ϕ54.7	≤ϕ27.3	ϕ27.3 − ϕ54.7	≥ϕ54.7
3.5	≤ϕ12.7	ϕ12.7 − ϕ15.9	ϕ15.9 − ϕ21.3	ϕ21.3 − ϕ31.9	ϕ31.9 − ϕ63.8	≥ϕ63.8	≤ϕ31.9	ϕ31.9 − ϕ63.8	≥ϕ63.8
4	≤ϕ14.6	ϕ14.6 − ϕ18.2	ϕ18.2 − ϕ24.3	ϕ24.3 − ϕ36.5	ϕ36.5 − ϕ72.9	≥ϕ72.9	≤ϕ36.5	ϕ36.5 − ϕ72.9	≥ϕ72.9
4.5	≤ϕ16.4	ϕ16.4 − ϕ20.5	ϕ20.5 − ϕ27.3	ϕ27.3 − ϕ41.0	ϕ41.0 − ϕ82.1	≥ϕ82.1	≤ϕ41.0	ϕ41.0 − ϕ82.1	≥ϕ82.1
5	≤ϕ18.2	ϕ18.2 − ϕ22.8	ϕ22.8 − ϕ30.4	ϕ30.4 − ϕ45.6	ϕ45.6 − ϕ91.2	≥ϕ91.2	≤ϕ45.6	ϕ45.6 − ϕ91.2	≥ϕ91.2

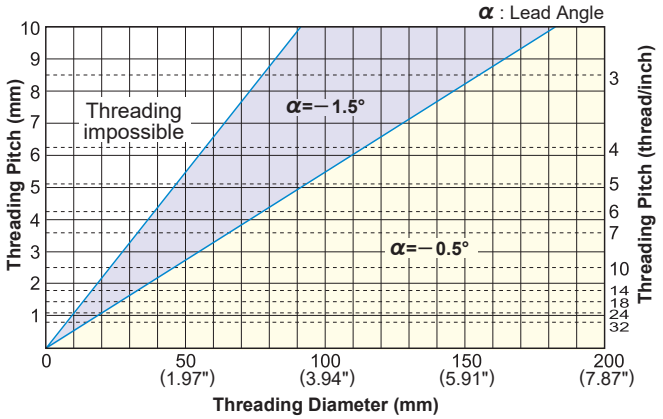
* Back turning in the case of left hand threads.

■ SHIM REFERENCE GRAPH (Thread angle 30˚ and 29˚)

Right Hand Thread



Left Hand Thread



Note 1) When a thread lead angle ≤ 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.)

■ Selection table

Lead Angle	Opening angle 60°/55° Right Hand Thread		Opening angle 60°/55°* Left Hand Thread		Opening angle 30°/29° Right Hand Thread		Opening 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

* 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 helix angle is 60° (55°)
2°−1° where thread helix 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 threads
P : Pitch
d : Effective diameter of thread

■ EXAMPLE OF SELECTING A SHIM

• When the thread lead angle is 2.2°
①In the case when the thread helix 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 G021 and G026.
②In the case when the thread helix 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 G021 and G026.

■ 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.

MMT STANDARD OF DEPTH OF CUT EXTERNAL (RADIAL INFEED)

ISO Metric 60°

(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 60°

(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	.005	.004	.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 55° 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 1) · 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 55°

(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 30°

(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 29°

(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 1) · 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.

MMT STANDARD OF DEPTH OF CUT EXTERNAL (RADIAL INFEED)

■API Round 60° 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						MMT16ER100APRD
8	.071	.010	.009	.007	.006	.006	.006	.005	.005	.005	.005	.005	.002				MMT16ER080APRD

■American NPT 60°

(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										MMT16ER270NPT
18	.040	.008	.006	.006	.005	.005	.004	.004	.002								MMT16ER180NPT
14	.052	.009	.007	.006	.006	.005	.005	.004	.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 60°

(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	.025	.006	.006	.004	.004	.003	.002										MMT16ER270NPTF
18	.039	.007	.006	.006	.005	.005	.004	.004	.002								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 1) · 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.

MMT STANDARD OF DEPTH OF CUT INTERNAL (RADIAL INFEED)

ISO Metric 60°

(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											MMT11IR050ISO	MMT16IR050ISO	–	–
0.75	0.43	0.15	0.13	0.09	0.06											MMT11IR075ISO	MMT16IR075ISO	–	–
1.0	0.58	0.17	0.15	0.11	0.09	0.06										MMT11IR100ISO	MMT16IR100ISO	MMT11IR100ISO-S	MMT16IR100ISO-S
1.25	0.72	0.18	0.16	0.12	0.11	0.09	0.06									MMT11IR125ISO	MMT16IR125ISO	MMT11IR125ISO-S	MMT16IR125ISO-S
1.5	0.87	0.21	0.20	0.16	0.13	0.11	0.06									MMT11IR150ISO	MMT16IR150ISO	MMT11IR150ISO-S	MMT16IR150ISO-S
1.75	1.01	0.21	0.20	0.15	0.12	0.10	0.09	0.08	0.06							MMT11IR175ISO	MMT16IR175ISO	–	MMT16IR175ISO-S
2.0	1.15	0.24	0.22	0.18	0.14	0.12	0.10	0.09	0.06							MMT11IR200ISO	MMT16IR200ISO	–	MMT16IR200ISO-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					–	MMT16IR250ISO	–	MMT16IR250ISO-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			–	MMT16IR300ISO	–	MMT16IR300ISO-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			–	MMT22IR350ISO	–	–
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	–	MMT22IR400ISO	–	–
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	–	MMT22IR450ISO	–	–
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	–	MMT22IR500ISO	–	–

American UN 60°

(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											MMT11IR320UN	MMT16IR320UN	–
28	.020	.006	.005	.004	.003	.002										MMT11IR280UN	MMT16IR280UN	–
24	.024	.007	.006	.005	.004	.002										MMT11IR240UN	MMT16IR240UN	–
20	.029	.007	.006	.005	.005	.004	.002									MMT11IR200UN	MMT16IR200UN	–
18	.032	.008	.007	.006	.005	.004	.002									MMT11IR180UN	MMT16IR180UN	–
16	.036	.008	.007	.006	.005	.004	.004	.002								MMT11IR160UN	MMT16IR160UN	MMT16IR160UN-S
14	.041	.008	.007	.006	.005	.005	.004	.004	.002							MMT11IR140UN	MMT16IR140UN	MMT16IR140UN-S
13	.044	.009	.007	.006	.006	.005	.005	.004	.002							–	MMT16IR130UN	–
12	.048	.009	.009	.007	.006	.005	.005	.005	.002							–	MMT16IR120UN	MMT16IR120UN-S
11	.052	.009	.009	.008	.006	.005	.005	.004	.004	.002						–	MMT16IR110UN	–
10	.058	.010	.009	.008	.006	.005	.005	.005	.004	.004	.002					–	MMT16IR100UN	–
9	.064	.012	.009	.008	.007	.006	.006	.005	.005	.004	.002					–	MMT16IR090UN	–
8	.072	.012	.010	.008	.007	.006	.006	.006	.005	.005	.005	.002				–	MMT16IR080UN	–
7	.082	.014	.012	.009	.008	.007	.007	.006	.006	.006	.005	.002				–	MMT22IR070UN	–
6	.096	.016	.013	.010	.009	.007	.007	.006	.006	.006	.005	.005	.004	.002		–	MMT22IR060UN	–
5	.115	.016	.014	.012	.010	.009	.008	.008	.007	.007	.006	.006	.005	.005	.002	–	MMT22IR050UN	–

Whitworth 55° 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										–	MMT16IR280W	–
26	.025	.007	.006	.005	.005	.002										–	MMT16IR260W	–
20	.032	.008	.007	.006	.005	.004	.002									–	MMT16IR200W	–
19	.034	.008	.007	.006	.006	.005	.002									MMT11IR190W	MMT16IR190W	MMT16IR190W-S
18	.035	.010	.007	.006	.005	.005	.002									–	MMT16IR180W	–
16	.040	.008	.007	.006	.005	.004	.004	.004	.002							–	MMT16IR160W	–
14	.046	.009	.008	.007	.006	.005	.005	.004	.002							MMT11IR140W	MMT16IR140W	MMT16IR140W-S
12	.054	.011	.010	.008	.006	.006	.006	.005	.002							–	MMT16IR120W	MMT16IR120W-S
11	.058	.011	.009	.008	.007	.006	.006	.005	.004	.002						–	MMT16IR110W	–
10	.064	.011	.010	.008	.007	.006	.006	.005	.005	.004	.002					–	MMT16IR100W	–
9	.071	.011	.010	.008	.007	.006	.006	.006	.005	.005	.005	.002				–	MMT16IR090W	–
8	.080	.012	.011	.009	.007	.007	.006	.006	.006	.005	.005	.004	.002			–	MMT16IR080W	–
7	.091	.013	.013	.010	.009	.008	.007	.007	.006	.006	.006	.004	.002			–	MMT22IR070W	–
6	.107	.014	.013	.011	.009	.008	.008	.007	.007	.006	.006	.006	.005	.005	.002	–	MMT22IR060W	–
5	.128	.017	.016	.014	.011	.010	.009	.009	.008	.007	.007	.007	.006	.005	.002	–	MMT22IR050W	–

Note 1) · 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.

MMT STANDARD OF DEPTH OF CUT INTERNAL (RADIAL INFEED)

■BSPT 55°

(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 30°

(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 29°

(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 60° 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 1) · 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.

American NPT 60°

(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 60°

(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 1) · 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.

MMT SERIES ORDER NUMBER

HOLDERS

EXTERNAL

MMT E R 08 3 – SM

Designation
MMT

Application	
E	External

Hand of Tool	
R	Right

Tool Size (inch) (Height and Width)			
06	.375	12	.750
08	.500	16	1.000
10	.625	20	1.250

Insert Size	
3	MMT16
4	MMT22

Tool Type	
SM	Non-offset

INTERNAL

MMT I R 10 2 – 0.50 – 1.5 – C

Designation
MMT

Application	
I	Internal

Hand of Tool	
R	Right

Shank Diameter (inch)	
10	.625
12	.750
16	1.000
20	1.250
24	1.500

Insert Size	
2	MMT11
3	MMT16
4	MMT22

Min. Cutting Diameter (inch)			
0.50	.500	1.15	1.150
0.60	.600	1.20	1.200
0.75	.750	1.45	1.450
0.90	.900	1.50	1.500
0.95	.950	1.75	1.750

Lead Angle	
1.5	1.5°
2.5	2.5°

Coolant	
C	With

INSERTS

M-CLASS

MMT 16 E R 100 ISO – S

S	M-class inserts with 3-D chip breakers

Designation
MMT

Diameter of Inscribed Circle (mm)	
11	6.35
16	9.525

Application	
E	External
I	Internal

Hand of Tool	
R	Right

Pitch			
100	1.0 mm	A	0.5—1.5 mm or 48—16 thread/inch
125	1.25 mm		
150	1.5 mm	G	1.75—3.0 mm or 14—8 thread/inch
175	1.75 mm		
200	2.0 mm		
250	2.5 mm		
300	3.0 mm		

Threading Type	
60	Partial Profile 60°
55	Partial Profile 55°
ISO	ISO Metric 60°
W	Whitworth 55° for BSW, BSP
BSPT	BSPT 55°
UN	American UN 60°

G-CLASS

MMT 16 E R 050 ISO

Designation
MMT

Diameter of Inscribed Circle (mm)	
11	6.35
16	9.525
22	12.7

Application	
E	External
I	Internal

Hand of Tool	
R	Right

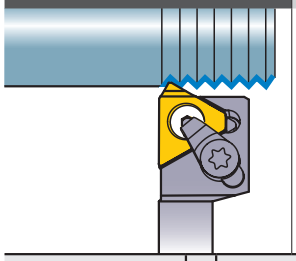
Pitch			
050	0.5 mm	A	0.5—1.5 mm or 48—16 thread/inch
075	0.75 mm		
100	1.0 mm		
125	1.25 mm	G	1.75—3.0 mm or 14—8 thread/inch
150	1.5 mm		
175	1.75 mm		
200	2.0 mm	AG	0.5—3.0 mm or 48—8 thread/inch
250	2.5 mm		
300	3.0 mm		
350	3.5 mm		
400	4.0 mm	N	3.5—5.0 mm or 7—5 thread/inch
450	4.5 mm		
500	5.0 mm		

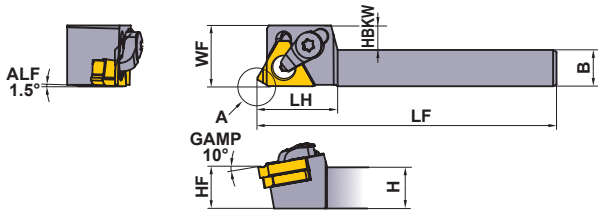
Threading Type	
60	Partial Profile 60°
55	Partial Profile 55°
ISO	ISO Metric 60°
W	Whitworth 55° for BSW, BSP
BSPT	BSPT 55°
UN	American UN 60°
RD	Round DIN 405 30°
TR	ISO Trapezoidal 30°
ACME	American ACME 29°
UNJ	UNJ
APBU	API Buttress Casing
APRD	API Round 60° Casing&Tubing
NPT	NPT 60°
NPTF	NPTF 60°

MMTE HOLDER

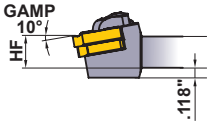
- Various insert types.
- Precision class insert for precise thread forms.
- Available with a pressed breaker for chip control.
- Able to change lead angle by replacing the shim.

MMTE — External threading





Details of position A
Refer to the insert standards for dimensions PDX and PDY.



MMTER-063SM

Right hand tool holder only.

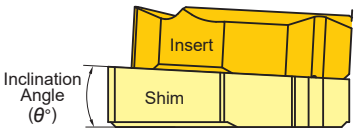
Order Number	Stock	Insert Number	Dimensions (inch)							Clamp Bridge	Clamp Screw *	Stop Ring	Shim Screw *	Shim	Wrench
	R		H	B	LF	LH	HF	WF	HBKW						
MMTER-063SM	●	MMT16ER ○○○○○	.375	.375	4.724	.875	.375	.625	.250	SETK51	SETS51	CR4	HFC03008	CTE32TP15	①TKY15F ②HKY20R
MMTER-083SM	●		.500	.500	4.724	.875	.500	.625	.125	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

Note 1) Select and use an alternate shim from list below (sold separately), dependant on the lead angle.
* 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.

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	**VP15TF**	260 (130—395)
			VP20RT	
K	Gray Cast Iron	Tensile Strength ≤350MPa	**VP10MF**	460 (260—655)
			VP15TF	295 (195—395)

	Work Material	Hardness	Grade	Cutting Speed (SFM)
S	Heat Resistant Alloy	—	**VP10MF**	150 (50—230)
			VP15TF	100 (65—130)
			VP20RT	
	Titanium Alloy	—	**VP10MF**	195 (130—260)
			VP15TF	150 (80—210)
			VP20RT	
H	Heat-Treated Alloy	45—55HRC	**VP10MF**	165 (100—230)
			VP15TF	130 (65—195)

● : USA Stock

HOW TO SELECT A SHIM ➤ G012
SPARE PARTS ➤ M001
TECHNICAL DATA ➤ N001

MMT M-CLASS INSERTS WITH 3-D CHIP BREAKERS

INSERTS

Type	Order Number	Coated VP15TF	Coated VP20RT	Pitch mm	Pitch thread/inch	Dimensions (mm) IC	S	PDY	PDX	RE	Total depth of cut (mm)	Geometry
Partial Profile 60°	**MMT16ERA60-S**	●		0.5—1.5	48—16	9.525	3.44	0.8	0.9	0.06	—	Partial form PNA 60°
	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	—	Partial form PNA 55°
	MMT16ERG55-S	★			14—8	9.525	3.44	1.2	1.7	0.23	—	
ISO Metric 60°	**MMT16ER100ISO-S**	●	★	1.0		9.525	3.44	0.7	0.7	0.13	0.61	Full form PNA 60°
	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 60°	**MMT16ER160UN-S**	●			16	9.525	3.44	0.9	1.1	0.23	0.97	Full form PNA 60°
	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 55° for BSW, BSP	**MMT16ER190W-S**	★			19	9.525	3.44	0.8	1.0	0.18	0.86	Full form PNA 55°
	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 55°	**MMT16ER190BSPT-S**	★			19	9.525	3.44	0.8	0.9	0.18	0.86	Full form PNA 55°
	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)

11	6.35
16	9.525

Application

E	External
I	Internal

Hand of Tool

R	Right

Pitch

100	1.0 mm	A	0.5—1.5 mm or 48—16 thread/inch
125	1.25 mm		
150	1.5 mm	G	1.75—3.0 mm or 14—8 thread/inch
175	1.75 mm		
200	2.0 mm		
250	2.5 mm		
300	3.0 mm		

Threading Type

60	Partial Profile 60°
55	Partial Profile 55°
ISO	ISO Metric 60°
W	Whitworth 55° for BSW, BSP
BSPT	BSPT 55°
UN	American UN 60°

● : USA Stock ★ : Stocked in Japan
<5 inserts in one case>

MMT G-CLASS GROUND INSERTS

INSERTS

Type	Thread Tolerance	Order Number	Coated VP10MF	Coated VP15TF	Pitch mm	Pitch thread/inch	IC	S	PDY	PDX	RE	Total depth of cut (mm)	Geometry
Partial Profile 60°	—	**MMT16ERA60**	★	★	0.5—1.5	48—16	9.525	3.44	0.8	0.9	0.05	—	Partial form PNA 60°
		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	—	Partial form PNA 55°
		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 60°	6g	**MMT16ER050ISO**	●		0.5		9.525	3.44	0.6	0.4	0.06	0.31	Full form PNA 60°
		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

Diameter of Inscribed Circle (mm)

11	6.35
16	9.525
22	12.7

Application

E	External
I	Internal

Hand of Tool

R	Right

Pitch

050	0.5 mm	**A**	0.5—1.5 mm or 48—16 thread/inch
075	0.75 mm		
100	1.0 mm		
125	1.25 mm	**G**	1.75—3.0 mm or 14—8 thread/inch
150	1.5 mm		
175	1.75 mm		
200	2.0 mm	**AG**	0.5—3.0 mm or 48—8 thread/inch
250	2.5 mm		
300	3.0 mm		
350	3.5 mm	**N**	3.5—5.0 mm or 7—5 thread/inch
400	4.0 mm		
450	4.5 mm		
500	5.0 mm		

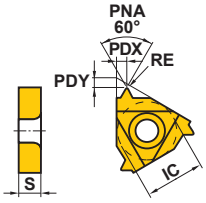
Threading Type

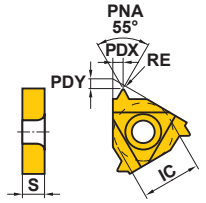
60	Partial Profile 60°
55	Partial Profile 55°
ISO	ISO Metric 60°
W	Whitworth 55° for BSW, BSP
BSPT	BSPT 55°
UN	American UN 60°
RD	Round DIN 405 30°
TR	ISO Trapezoidal 30°
ACME	American ACME 29°
UNJ	UNJ
APBU	API Buttress Casing
APRD	API Round 60° Casing&Tubing
NPT	NPT 60°
NPTF	NPTF 60°

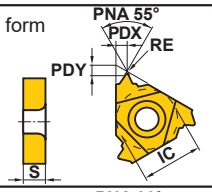
MMT G-CLASS GROUND INSERTS

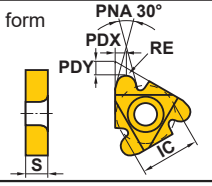
INSERTS

Type	Thread Tolerance	Order Number	Coated VP10MF	Coated VP15TF	Pitch mm	Pitch thread/inch	Dimensions (mm) IC	S	PDY	PDX	RE	Total depth of cut (mm)	Geometry
American UN 60°	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 55° 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 55°	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 30°	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	

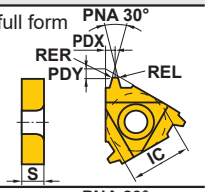
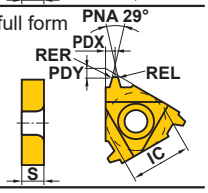
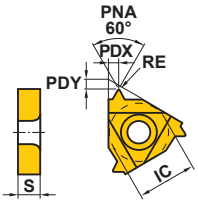
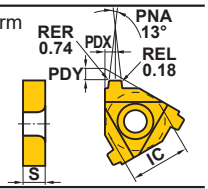
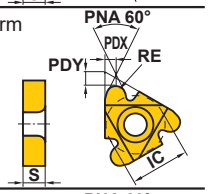
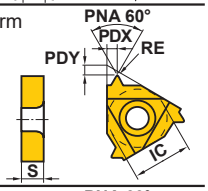
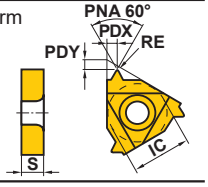








● : USA Stock ★ : Stocked in Japan
<5 inserts in one case>

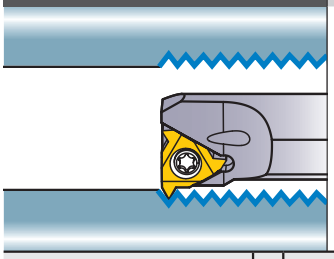
Type	Thread Tolerance	Order Number	Coated VP10MF		Pitch mm	Pitch thread/inch	Dimensions (mm) IC	S	PDY	PDX	RE	Total depth of cut (mm)	Geometry
ISO Trapezoidal 30°	7e	**MMT16ER150TR**	★		1.5		9.525	3.44	1.0	1.1	0.08	0.90	Semi-full form 
		MMT16ER200TR	★		2.0		9.525	3.44	1.1	1.3	0.15	1.25	
		MMT16ER300TR	★		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 29°	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 60° 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 60°	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 60°	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	

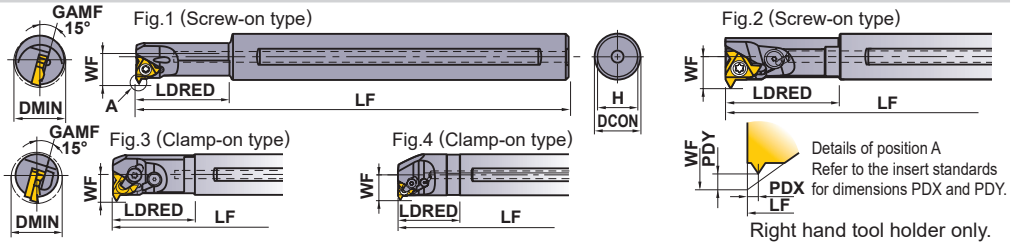
MMTI TYPE BORING BARS

- 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





Right hand tool holder only.

Order Number	Stock	Insert Number	Lead Angle	Dimensions (inch)						Clamp Bridge	Clamp Screw *	Stop Ring	Shim Screw *	Shim	Wrench ①②	Fig.
	R			DCON	LF	LDRED	WF	H	DMIN							
MMTIR102-0.50-1.5-C	●	MMT11IR	1.5°	.625	5.000	1.000	.340	.586	**.500**	–	TS25	–	–	–	①TKY08F	1
MMTIR102-0.50-2.5-C	●		2.5°	.625	5.000	1.000	.340	.586	**.500**	–	TS25	–	–	–	①TKY08F	1
MMTIR102-0.60-1.5-C	●	○○○○○	1.5°	.625	6.000	1.250	.380	.586	**.600**	–	TS25	–	–	–	①TKY08F	1
MMTIR102-0.60-2.5-C	●		2.5°	.625	6.000	1.250	.380	.586	**.600**	–	TS25	–	–	–	①TKY08F	1
MMTIR103-0.75-1.5-C	●	MMT16IR	1.5°	.625	6.000	1.500	.480	.586	**.750**	–	CS350860T	–	–	–	①TKY15F	2
MMTIR103-0.75-2.5-C	●		2.5°	.625	6.000	1.500	.480	.586	**.750**	–	CS350860T	–	–	–	①TKY15F	2
MMTIR123-0.90-1.5-C	●	○○○○○	1.5°	.750	7.000	1.500	.510	.711	**.900**	SETK51	SETS51	CR4	HFC03006	CTI32TP15	①TKY15F ②HKY20R	3
MMTIR163-1.15-1.5-C	●		1.5°	1.000	10.000	2.500	.660	.937	**1.150**	SETK51	SETS51	CR4	HFC03006	CTI32TP15	①TKY15F ②HKY20R	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	①TKY15F ②HKY20R	4
MMTIR124-0.95-1.5-C	●	MMT22IR	1.5°	.750	7.000	2.000	.610	.711	**.950**	–	TS43	–	–	–	①TKY15F	2
MMTIR124-0.95-2.5-C	●		2.5°	.750	7.000	2.000	.610	.711	**.950**	–	TS43	–	–	–	①TKY15F	2
MMTIR164-1.20-1.5-C	●	○○○○○	1.5°	1.000	8.000	1.500	.700	.937	**1.200**	SETK61	SETS61	CR5	HFC04008	CTI43TP15	①TKY20F ②HKY25R	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	①TKY20F ②HKY25R	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	①TKY20F ②HKY25R	4

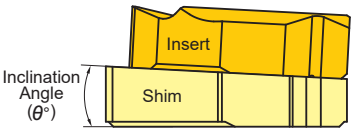
Note 1) Select and use an alternate shim from list below (sold separately), dependant on the lead angle.
- The screw-on type has no shim. The holder has an in-built lead angle. Please select a holder with the appropriate lead angle.
- The minimum cutting diameter (DMIN) indicates the prepared hole diameter, not the nominal thread diameter.

* Clamp Torque (lbf-in) : TS25=8.9, CS350860T=31, SETS51=31, TS43=31, SETS61=44, HFC03006=13, HFC04008=19

SHIM

Lead Angle (α°)	Order Number	Stock R	Inclination Angle (θ°)	Applicable Holder
–1.5°	**CTI32TN15**	●	–3°	MMTIR ○○3-○○○ -○○-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°	

Lead Angle (α°)	Order Number	Stock R	Inclination Angle (θ°)	Applicable Holder
–1.5°	**CTI43TN15**	●	–3°	MMTIR ○○4-○○○ -○○-C
–0.5°	**CTI43TN05**	●	–2°	
0.5°	**CTI43TP05**	●	–1°	
1.5°	**CTI43TP15**	●	0°	
2.5°	**CTI43TP25**	●	1°	
3.5°	**CTI43TP35**	●	2°	
4.5°	**CTI43TP45**	●	3°	



Standard shim delivered with the holder.

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	**VP15TF**	260 (130—395)
			VP20RT	
K	Gray Cast Iron	Tensile Strength ≤350MPa	**VP10MF**	460 (260—655)
			VP15TF	295 (195—395)

	Work Material	Hardness	Grade	Cutting Speed (SFM)
S	Heat Resistant Alloy	—	**VP10MF**	150 (50—230)
			VP15TF	100 (65—130)
			VP20RT	
	Titanium Alloy	—	**VP10MF**	195 (130—260)
			VP15TF	150 (80—210)
			VP20RT	
H	Heat-Treated Alloy	45—55HRC	**VP10MF**	165 (100—230)
			VP15TF	130 (65—195)

● : USA Stock ★ : Stocked in Japan
<5 inserts in one case>

HOW TO SELECT A SHIM ➤ G012
MMT SERIES ORDER NUMBER ➤ G020

MMT M-CLASS INSERTS WITH 3-D CHIP BREAKERS

INSERTS

Type	Order Number	Coated VP15TF	Coated VP20RT	Pitch mm	Pitch thread/inch	Dimensions (mm) IC	S	PDY	PDX	RE	Total depth of cut (mm)	Geometry
Partial Profile 60°	**MMT11IRA60-S**	★		0.5—1.5	48—16	6.35	3.04	0.8	0.9	0.03	—	Partial form, PNA 60°
	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	—	Partial form, PNA 55°
	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 60°	**MMT11IR100ISO-S**	★		1.0		6.35	3.04	0.6	0.7	0.06	0.58	Full form, PNA 60°
	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 60°	**MMT16IR160UN-S**	●			16	9.525	3.44	0.9	1.1	0.11	0.92	Full form, PNA 60°
	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 55° for BSW, BSP	**MMT16IR190W-S**	★			19	9.525	3.44	0.8	1.0	0.18	0.86	Full form, PNA 55°
	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 55°	**MMT16IR190BSPT-S**	★			19	9.525	3.44	0.8	0.9	0.18	0.86	Full form, PNA 55°
	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	

IDENTIFICATION

MMT **16** **I** **R** **100** **ISO** – **S**

S	M-class inserts with 3-D chip breakers

Designation

Diameter of Inscribed Circle (mm)

11	6.35
16	9.525

Application

E	External
I	Internal

Hand of Tool

R	Right

Pitch

100	1.0 mm	A	0.5—1.5 mm or 48—16 thread/inch
125	1.25 mm		
150	1.5 mm	G	1.75—3.0 mm or 14—8 thread/inch
175	1.75 mm		
200	2.0 mm		
250	2.5 mm		
300	3.0 mm		

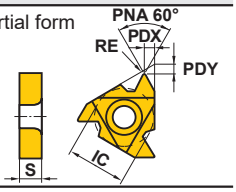
Threading Type

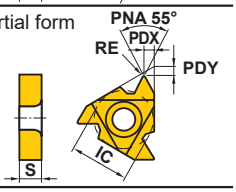
60	Partial Profile 60°
55	Partial Profile 55°
ISO	ISO Metric 60°
W	Whitworth 55° for BSW, BSP
BSPT	BSPT 55°
UN	American UN 60°

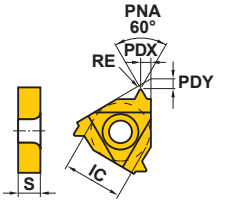
MMT G-CLASS GROUND INSERTS

INSERTS

Type	Thread Tolerance	Order Number	Coated VP10MF	Coated VP15TF	Pitch mm	Pitch thread/inch	IC	S	PDY	PDX	RE	Total depth of cut (mm)	Geometry
Partial Profile 60°	I	MMT11IRA60	★	★	0.5—1.5	48—16	6.35	3.04	0.8	0.9	0.05	—	Partial form
		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°	I	MMT11IRA55	★	★		48—16	6.35	3.04	0.8	0.9	0.05	—	Partial form
		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 60°	6H	MMT11IR050ISO	★		0.5		6.35	3.04	0.6	0.4	0.03	0.29	Full form
		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** **I** **R** **050** **ISO**

Designation

Diameter of Inscribed Circle (mm)

11	6.35
16	9.525
22	12.7

Application

E	External
I	Internal

Hand of Tool

R	Right

Pitch

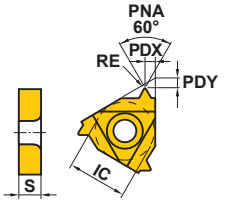
050	0.5 mm	A	0.5—1.5 mm or 48—16 thread/inch
075	0.75 mm		
100	1.0 mm		
125	1.25 mm	G	1.75—3.0 mm or 14—8 thread/inch
150	1.5 mm		
175	1.75 mm		
200	2.0 mm	AG	0.5—3.0 mm or 48—8 thread/inch
250	2.5 mm		
300	3.0 mm		
350	3.5 mm		
400	4.0 mm	N	3.5—5.0 mm or 7—5 thread/inch
450	4.5 mm		
500	5.0 mm		

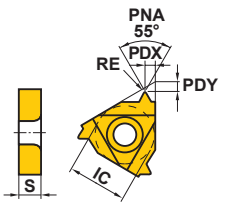
Threading Type

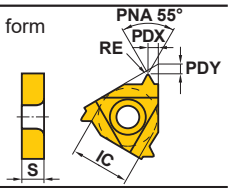
60	Partial Profile 60°
55	Partial Profile 55°
ISO	ISO Metric 60°
W	Whitworth 55° for BSW, BSP
BSPT	BSPT 55°
UN	American UN 60°
RD	Round DIN 405 30°
TR	ISO Trapezoidal 30°
ACME	American ACME 29°
UNJ	UNJ
APBU	API Buttress Casing
APRD	API Round 60° Casing&Tubing
NPT	NPT 60°
NPTF	NPTF 60°

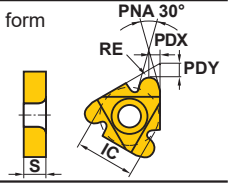
● : USA Stock ★ : Stocked in Japan
<5 inserts in one case>

Type	Thread Tolerance	Order Number	Coated VP10MF	Coated VP15TF	Pitch mm	Pitch thread/inch	Dimensions (mm) IC	S	PDY	PDX	RE	Total depth of cut (mm)	Geometry
American UN 60°	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 55° 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 55°	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 30°	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	





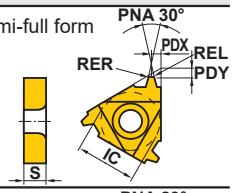


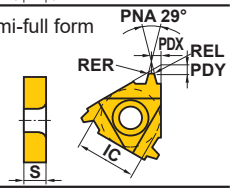


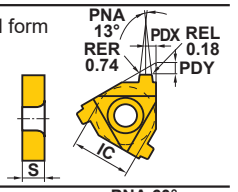
MMT G-CLASS GROUND INSERTS

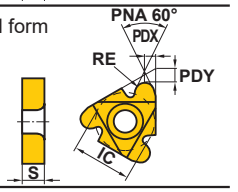
INSERTS

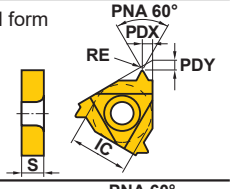
Type	Thread Tolerance	Order Number	Coated VP10MF		Pitch mm	Pitch thread/inch	Dimensions (mm) IC	S	PDY	PDX	RE RER/L	Total depth of cut (mm)	Geometry
ISO Trapezoidal 30°	7H	**MMT16IR150TR**	★		1.5		9.525	3.44	1.0	1.1	0.08	0.90	Semi-full form
		MMT16IR200TR	★		2.0		9.525	3.44	1.1	1.3	0.15	1.25	
		MMT16IR300TR	★		3.0		9.525	3.44	1.3	1.5	0.15	1.75	
		MMT22IR400TR	★		4.0		12.7	4.64	1.7	1.9	0.15	2.25	
		MMT22IR500TR	★		5.0		12.7	4.64	2.1	2.5	0.15	2.75	
American ACME 29°	3G	**MMT16IR120ACME**	●			12	9.525	3.44	1.2	1.3	0.05	1.19	Semi-full form
		MMT16IR100ACME	●			10	9.525	3.44	1.2	1.3	0.08	1.52	
		MMT16IR080ACME	●			8	9.525	3.44	1.4	1.5	0.10	1.84	
		MMT22IR060ACME	●			6	12.7	4.64	1.8	2.1	0.10	2.37	
		MMT22IR050ACME	●			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 American UN 60°. In this case, a full form type insert cannot be used.											
API Buttress Casing	Standard API	**MMT22IR050APBU**	★			5	12.7	4.64	2.8	1.9	0.74/0.8	1.55	Full form
API Round 60° Casing & Tubing	Standard API RD	**MMT16IR100APRD**	●			10	9.525	3.44	1.2	1.4	0.34	1.41	Full form
		MMT16IR080APRD	●			8	9.525	3.44	1.3	1.5	0.41	1.81	
American NPT 60°	Standard NPT	**MMT16IR270NPT**	●			27	9.525	3.44	0.7	0.8	0.04	0.66	Full form
		MMT16IR180NPT	●			18	9.525	3.44	0.8	1.0	0.08	1.01	
		MMT16IR140NPT	●			14	9.525	3.44	0.9	1.2	0.09	1.33	
		MMT16IR115NPT	●			11.5	9.525	3.44	1.1	1.5	0.11	1.64	
		MMT16IR080NPT	●			8	9.525	3.44	1.3	1.8	0.14	2.42	
American NPTF 60°	Class 2	**MMT16IR140NPTF**	★			14	9.525	3.44	0.9	1.2	0.04	1.35	Full form
		MMT16IR115NPTF	★			11.5	9.525	3.44	1.1	1.5	0.04	1.63	
		MMT16IR080NPTF	★			8	9.525	3.44	1.3	1.8	0.04	2.38	

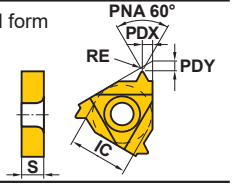












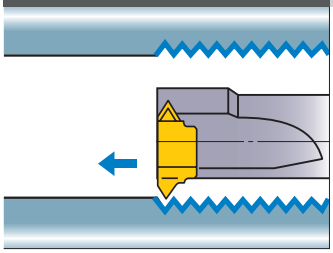
● : USA Stock ★ : Stocked in Japan
<5 inserts in one case>

CUTTING DEPTH GUIDE ➤ G017

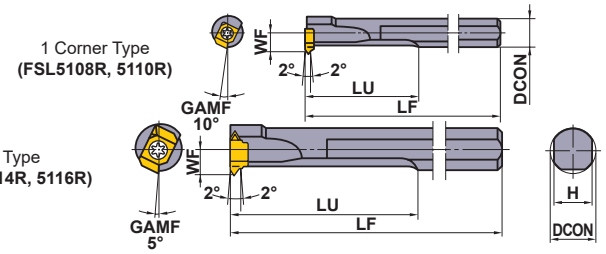
F TYPE BORING BARS

- Minimum cutting diameter 10 mm.
- Screw-on type.
- Applicable to threading, grooving.
- Thread pitch 1.5—3.5 mm.

FSL51 Internal threading, Grooving



Note 1) Cutting in the opposite direction is not possible.

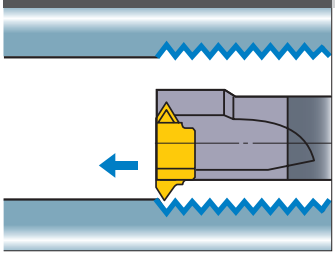


Right hand tool holder only.

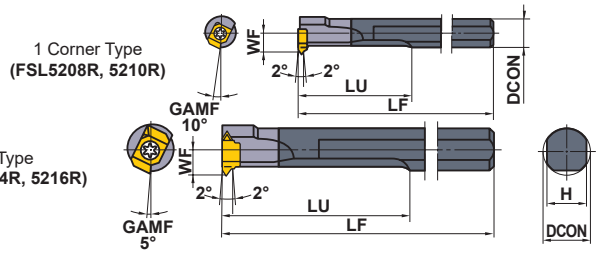
Order Number	Stock	Insert Number		Dimensions (mm)						*2	
	R	Threading	Grooving	DCON	LF	LU	WF	H	DMIN*1	Clamp Screw	Wrench
FSL5108R	★	MLT1001L	MLG10□□L	8	125	30	4.8	7	**10**	TS25	TKY08F
FSL5110R	★	MLT1001L	MLG10□□L	10	150	40	5.8	9	**12**	TS25	TKY08F
FSL5112R	★	MLT1401L	MLG14□□L	12	180	50	6.8	10.8	**14**	TS32	TKY08F
FSL5114R	★	MLT1401L	MLG14□□L	14	180	60	7.8	12.4	**16**	TS32	TKY08F
FSL5116R	★	MLT2001L	MLG20□□L	16	200	70	9.7	14	**20**	TS43	TKY15F

*1 DMIN : Min.Cutting Diameter
*2 Clamp Torque (lbf-in) : TS25=8.9, TS32=18, TS43=31

FSL52 (Carbide shank) Internal threading, Grooving



Note 1) Cutting in the opposite direction is not possible.



Right hand tool holder only.

Order Number	Stock	Insert Number		Dimensions (mm)						*2	
	R	Threading	Grooving	DCON	LF	LU	WF	H	DMIN*1	Clamp Screw	Wrench
FSL5208R	★	MLT1001L	MLG10□□L	8	125	60	4.8	7	**10**	TS25	TKY08F
FSL5210R	★	MLT1001L	MLG10□□L	10	150	70	5.8	9	**12**	TS25	TKY08F
FSL5212R	★	MLT1401L	MLG14□□L	12	180	80	6.8	11	**14**	TS32	TKY08F
FSL5214R	★	MLT1401L	MLG14□□L	14	180	85	7.8	12	**16**	TS32	TKY08F
FSL5216R	★	MLT2001L	MLG20□□L	16	200	115	9.7	14	**20**	TS43	TKY15F

*1 DMIN : Min.Cutting Diameter
*2 Clamp Torque (lbf-in) : TS25=8.9, TS32=18, TS43=31

RECOMMENDED CUTTING CONDITIONS

	Work Material	Hardness	Grade	Cutting Speed (SFM)
P	Mild Steel	≤180HB	**UP20M**	460 (330—590)
			UTi20T	395 (330—490)
	Carbon Steel Alloy Steel	180—280HB	**UP20M**	395 (330—490)
			UTi20T	330 (230—395)

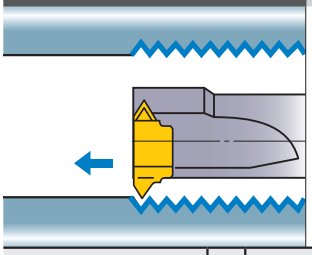
	Work Material	Hardness	Grade	Cutting Speed (SFM)
M	Stainless Steel	≤200HB	**UP20M**	395 (260—490)
			UTi20T	330 (230—425)
K	Gray Cast Iron	Tensile Strength ≤350MPa	**UP20M**	260 (195—330)
			UTi20T	260 (195—330)

INSERTS ➤ G033
SPARE PARTS ➤ M001
TECHNICAL DATA ➤ N001

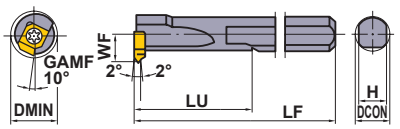
F TYPE BORING BARS

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

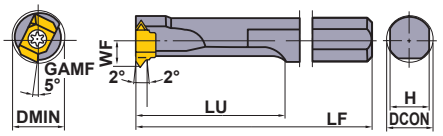
S-SL5N — Internal threading, Grooving



1 Corner type (S-SL5NR05 / 06)



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



Right hand tool holder only.

Order Number	Stock	Insert Number		Dimensions (inch)						*2	
	R	Threading	Grooving	DCON	LF	LU	WF	H	DMIN *1	Clamp Screw	Wrench
S-SL5NR05	●	MLT1001L	MLG10□□□L MLG10W□□□L	.313	5.000	1.250	.188	.283	.390	TS25	TKY08F
S-SL5NR06	●	MLT1001L	MLG10□□□L MLG10W□□□L	.375	6.000	1.500	.219	.340	.449	TS25	TKY08F
S-SL5NR08	●	MLT1401L	MLG14□□□L	.500	7.000	2.000	.281	.460	.579	TS32	TKY08F
S-SL5NR10	●	MLT2001L	MLG20□□□L	.625	8.000	3.000	.375	.560	.791	TS43	TKY15F
S-SL5NR12	●	MLT2001L	MLG20□□□L	.750	10.000	4.000	.438	.700	.902	TS43	TKY15F

*1 DMIN : Min. Cutting Diameter
*2 Clamp Torque (lbf-in) : TS25=8.9, TS32=18, TS43=31

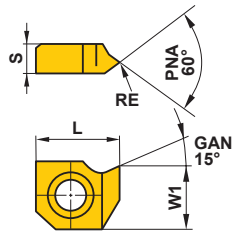
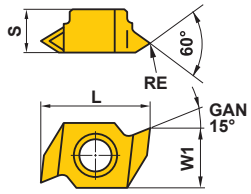
RECOMMENDED CUTTING CONDITIONS

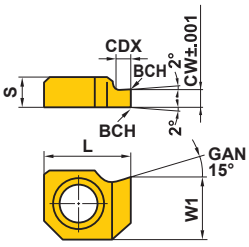
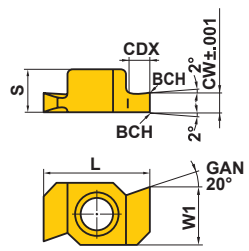
	Work Material	Hardness	Grade	Cutting Speed (SFM)
P	Mild Steel	≤180HB	**UP20M**	460 (330—590)
			UTi20T	395 (330—490)
	Carbon Steel Alloy Steel	180—280HB	**UP20M**	395 (330—490)
			UTi20T	330 (230—395)

	Work Material	Hardness	Grade	Cutting Speed (SFM)
M	Stainless Steel	≤200HB	**UP20M**	395 (260—490)
			UTi20T	330 (230—425)
K	Gray Cast Iron	Tensile Strength ≤350MPa	**UP20M**	260 (195—330)
			UTi20T	260 (195—330)

● : USA Stock
<10 inserts in one case>

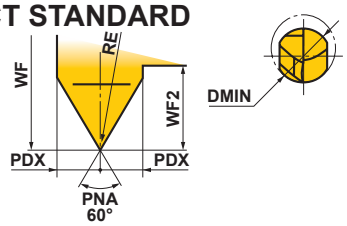
INSERTS

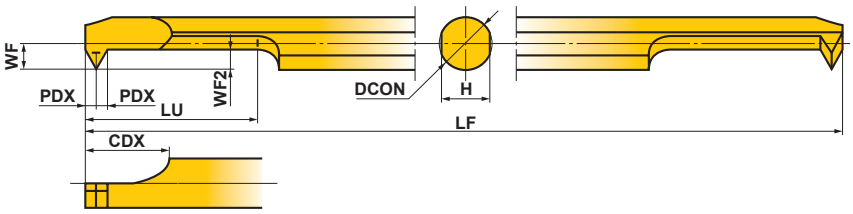
Application	Order Number	Coated UP20M	Carbide UTi20T	Pitch (inch)	Dimensions (inch) L	W1	S	RE	Geometry
Threading	**MLT1001L**	●	●	.059—.079	.276	.197	.094	.004	**MLT1001L (1 Corner type)** 
	MLT1401L	●	●	.059—.098	.465	.256	.187	.004	
	MLT2001L	●	●	.059—.138	.661	.356	.250	.004	**MLT1401L /2001L (2 Corner type)** 

Application	Order Number	Carbide UTi20T	Carbide HTi10		CW (inch)	Dimensions (inch) L	W1	CDX	S	BCH	Geometry
Grooving	**MLG10W062L**		●	Inch	.062	.276	.197	.039	.094	.004	**MLG...L (1 Corner type)** 
	MLG1012L	●		Metric	.047 (1.2 mm)	.276	.197	.039	.094	.004	
	MLG1015L	●			.059 (1.5 mm)	.276	.197	.039	.094	.004	
	MLG1020L	●			.079 (2.0 mm)	.276	.197	.039	.094	.004	
	MLG1415L	●		Metric	.059 (1.5 mm)	.465	.256	.079	.187	.004	**MLG...L (2 Corner type)** 
	MLG1420L	●			.079 (2.0 mm)	.465	.256	.079	.187	.004	
	MLG1430L	●			.118 (3.0 mm)	.465	.256	.079	.187	.004	
	MLG2020L	●			.079 (2.0 mm)	.661	.356	.118	.250	.004	
	MLG2030L	●			.118 (3.0 mm)	.661	.356	.118	.250	.004	
	MLG2040L	●			.157 (4.0 mm)	.661	.356	.118	.250	.004	

MICRO-MINI TWIN

■CT STANDARD





Order Number	Stock		Breaker	Threads				Dimensions (mm)									
	Micro Grain Carbide	Coated		Metric Screw		Unified Coarse Screw											
	TF15	VP15TF		Thread	Pitch (mm)	Thread	Pitch (thread/inch)	DMIN	RE	DCON	LF	LU	CDX	WF	PDX	WF2	H
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 P (mm)								Unified Thread 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 1) For internal threads that are larger than the minimum diameter of the Micro Mini Twin (CT type) it is possible to machining 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	0.92	1.09
Re* (Corner radius)		0.03	0.03	0.03	0.05	0.03	0.03	0.05	0.05	0.05	0.05
Number of Passes	1	0.06	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.07
	2	0.05	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.07
	3	0.05	0.06	0.06	0.05	0.06	0.06	0.06	0.07	0.07	0.07
	4	0.04	0.05	0.05	0.05	0.05	0.06	0.06	0.07	0.07	0.07
	5	0.04	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.07	0.07
	6	0.03	0.04	0.04	0.04	0.04	0.05	0.05	0.06	0.06	0.07
	7	0.03	0.04	0.04	0.04	0.04	0.05	0.05	0.06	0.06	0.06
	8		0.04	0.04	0.03	0.04	0.04	0.04	0.05	0.06	0.06
	9		0.03	0.03	0.03	0.03	0.04	0.04	0.05	0.05	0.06
	10			0.03	0.03	0.03	0.04	0.04	0.05	0.05	0.06
	11					0.03	0.03	0.03	0.04	0.05	0.05
	12						0.03	0.03	0.04	0.05	0.05
	13						0.03		0.04	0.04	0.05
	14								0.03	0.04	0.05
	15									0.04	0.04
	16									0.04	0.04
	17									0.03	0.04
	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	.0343	.0386
Re* (Corner radius)		.0012	.0012	.0012	.0020	.0012	.0020	.0020	.0020	.0020
Number of Passes	1	.0024	.0024	.0028	.0024	.0028	.0028	.0028	.0028	.0028
	2	.0024	.0024	.0024	.0024	.0028	.0028	.0028	.0028	.0028
	3	.0024	.0024	.0024	.0024	.0024	.0024	.0028	.0028	.0028
	4	.0020	.0020	.0024	.0020	.0024	.0024	.0024	.0028	.0028
	5	.0020	.0020	.0020	.0020	.0024	.0024	.0024	.0028	.0028
	6	.0016	.0016	.0020	.0020	.0020	.0020	.0024	.0024	.0024
	7	.0016	.0016	.0016	.0016	.0020	.0020	.0024	.0024	.0024
	8	.0016	.0016	.0016	.0016	.0016	.0020	.0020	.0024	.0024
	9	.0012	.0012	.0016	.0016	.0016	.0016	.0020	.0020	.0024
	10		.0012	.0012	.0012	.0016	.0016	.0020	.0020	.0024
	11		.0012	.0012	.0012	.0012	.0012	.0016	.0020	.0020
	12			.0012	.0012	.0012	.0012	.0016	.0020	.0020
	13					.0012	.0012	.0016	.0016	.0020
	14					.0012		.0012	.0016	.0016
	15							.0012	.0012	.0016
	16								.0012	.0016
	17									.0012
	18									.0012
	19									
	20									

* Even though the pitch may be 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 0.03 mm(.0012 inch), for other types it is 0.05 mm(.0020 inch). For further details please refer to the standards section.

● : USA Stock

<MICRO-MINI TWIN is available in 1 piece in one pack>

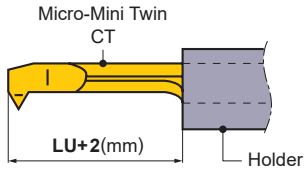
HOLDER

HOLDER CROSS REFERENCE LIST OF INCH SHANK STANDARD

Holder			Stock	MICRO-MINI TWIN	Machine Makers
Type		Order Number *1		CT	
Round Type Holder ϕ.625 inch	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)	
Round Type Holder ϕ.750 inch	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)	
Round Type Holder ϕ1.000 inch	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)	

*1 For holder details, refer to Boring Bar Section page E034—E038.
Note 1) Mitsubishi Materials obtained the makers' approval before entering their names in the list.

RECOMMENDED CUTTING CONDITIONS

	Work Material	Cutting Speed (SFM)	Recommended Tool Overhang (mm)
P	Carbon Steel Alloy Steel	100—260	
M	Stainless Steel	100—260	
K	Cast Iron	100—260	
N	Non-Ferrous Metal	165—330	

Note 1) Wet cutting is recommended.
Note 2) Pay special attention to machining of small diameters at high revolutions as the feed rate cannot keep up with the speed.

HOLDER CROSS REFERENCE LIST OF METRIC SHANK STANDARD

Holder		Stock	MICRO-MINI TWIN	Machine Makers
Type	Order Number *1		CT	
Round Type Holder ϕ16 mm	**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)	
Round Type Holder ϕ20 mm	**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)	
Round Type Holder ϕ22 mm	**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)	
Round Type Holder ϕ25 mm	**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)	
Square Type Holder □10 mm	**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)	

Note 1) Mitsubishi Materials obtained the makers' approval before entering their names in the list.
*1 For holder details, refer to Boring Bar Section page E034—E038.

Memo