

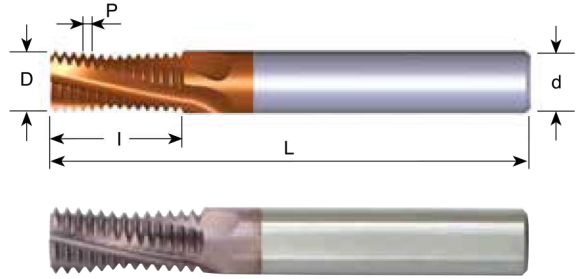
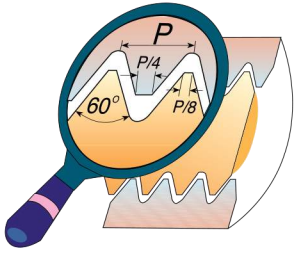
**ZÁVITOVÉ FRÉZY VHM  
MONOLITNÉ BEZ  
VNÚTORNÉHO CHLADENIA**



# Mill - Thread Solid Carbide

## ISO

### Tools for Internal thread



Pitch mm	M coarse	M fine	Ordering Code	d	D	No. of Flutes	I	L
0.5	M3	$\emptyset \geq 4$	<b>MT06022C5 0.5 ISO</b>	6	2.2	3	5.3	58
0.5		$\emptyset \geq 5$	<b>MT06038C10 0.5 ISO</b>	6	3.8	3	10.3	58
0.7	M4	$\emptyset \geq 5$	<b>MT06031C7 0.7 ISO</b>	6	3.1	3	7.4	58
0.75		$\emptyset \geq 6$	<b>MT06045C10 0.75 ISO</b>	6	4.5	3	10.1	58
0.8	M5	$\emptyset \geq 6$	<b>MT06036C9 0.8 ISO</b>	6	3.6	3	9.2	58
1.0	M6	$\emptyset \geq 7$	<b>MT0604C10 1.0 ISO</b>	6	4.0	3	10.5	58
1.0	M6	$\emptyset \geq 7$	<b>MT0604C14 1.0 ISO</b>	6	4.0	3	14.5	58
1.0		$\emptyset \geq 9$	<b>MT0606C12 1.0 ISO</b>	6	6.0	3	12.5	58
1.0		$\emptyset \geq 10$	<b>MT0808D16 1.0 ISO</b>	8	8.0	4	16.5	64
1.25	M8	$\emptyset \geq 10$	<b>MT0605C14 1.25 ISO</b>	6	5.0	3	14.4	58
1.25	M8	$\emptyset \geq 10$	<b>MT0605C19 1.25 ISO</b>	6	5.0	3	19.4	58
1.5	M10	$\emptyset \geq 12$	<b>MT0807C17 1.5 ISO</b>	8	7.0	3	17.3	64
1.5	M10	$\emptyset \geq 12$	<b>MT0807C24 1.5 ISO</b>	8	7.0	3	24.8	76
1.5		$\emptyset \geq 14$	<b>MT1010D21 1.5 ISO</b>	10	10.0	4	21.8	73
1.5		$\emptyset \geq 20$	<b>MT1616F33 1.5 ISO</b>	16	16.0	6	33.8	105
1.75	M12	$\emptyset \geq 14$	<b>MT0808C20 1.75 ISO</b>	8	8.0	3	20.1	64
1.75	M12	$\emptyset \geq 14$	<b>MT0808C28 1.75 ISO</b>	8	8.0	3	28.9	76
2.0	M16	$\emptyset \geq 17$	<b>MT1010C27 2.0 ISO</b>	10	10.0	3	27.0	73
2.0	M16	$\emptyset \geq 17$	<b>MT1010C39 2.0 ISO</b>	10	10.0	3	39.0	105
2.0		$\emptyset \geq 18$	<b>MT1212D27 2.0 ISO</b>	12	12.0	4	27.0	84
2.0		$\emptyset \geq 26$	<b>MT2020F41 2.0 ISO</b>	20	20.0	6	41.0	105
2.5	M20	$\emptyset \geq 22$	<b>MT1414D33 2.5 ISO</b>	14	14.0	4	33.8	84
2.5	M20	$\emptyset \geq 22$	<b>MT1414D48 2.5 ISO</b>	14	14.0	4	48.8	105
3.0	M24	$\emptyset \geq 25$	<b>MT1616C40 3.0 ISO</b>	16	16.0	3	40.5	105
3.0	M24	$\emptyset \geq 25$	<b>MT1616C58 3.0 ISO</b>	16	16.0	3	58.5	120
3.0	M27	$\emptyset \geq 28$	<b>MT2020D43 3.0 ISO</b>	20	20.0	4	43.5	105

Order example: MT 1212D27 2.0 ISO MT7

For thread mills with coolant bore see following pages

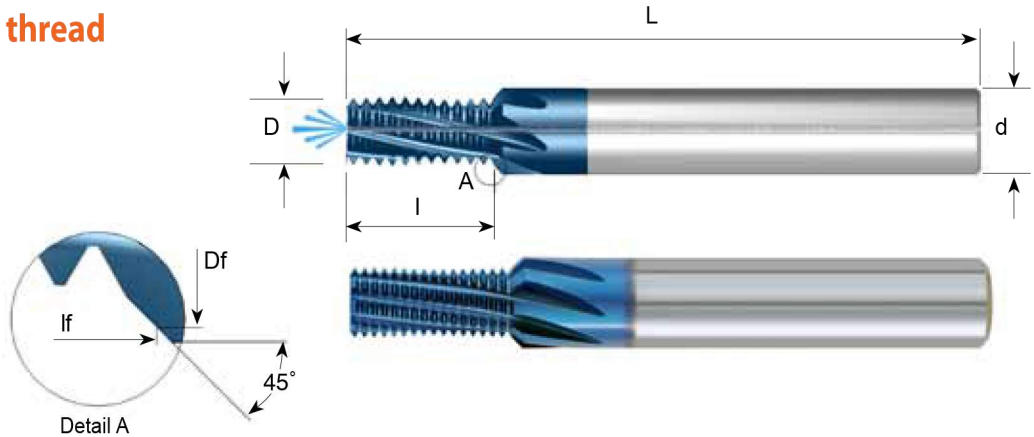
For small thread mills see pages 227-228, 235 & 245



# Mill - Thread Solid Carbide

## ISO Fast MT With internal coolant bore

### Tools for Internal thread

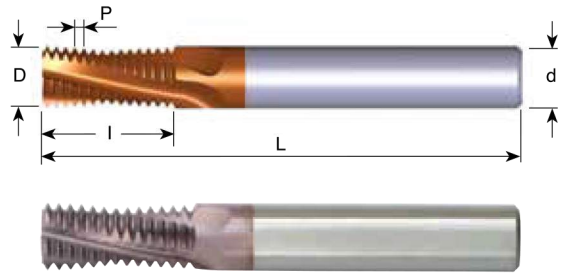
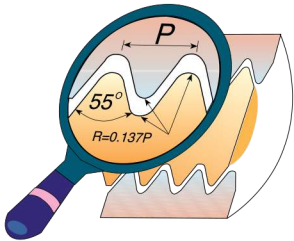


Pitch mm	M coarse	M fine	Ordering Code	d	D	Df	Flutes	I	lf	L
1.0	M6	$\phi \geq 7$	<b>FMT 08048 F10 1.0 ISO</b>	8	4.8	6.8	6	10.5	11.5	64
1.25	M8	$\phi \geq 10$	<b>FMT 10064 G14 1.25 ISO</b>	10	6.4	9.6	7	14.4	16.0	73
1.5	M10	$\phi \geq 12$	<b>FMT 1008 G17 1.5 ISO</b>	10	8.0	9.8	7	17.3	18.2	73
1.75	M12	$\phi \geq 12$	<b>FMT 12095 G20 1.75 ISO</b>	12	9.5	11.7	7	20.1	21.2	84

Order example: FMT 1008 G17 1.5 ISO MT8

## G (55°) BSF, BSP

### Same Tool for Internal and External Thread



Pitch TPI	Standard	Ordering Code	d	D	No. of Flutes	I	L
28	G1/16-G1/8	<b>MT0606C9 28 W</b>	6	6.0	3	9.5	58
19	G1/4-3/8	<b>MT0808C14 19 W</b>	8	8.0	3	14.0	64
14	G1/2-7/8	<b>MT1212D19 14 W</b>	12	12.0	4	19.0	84
14	G1/2-7/8	<b>MT1212D26 14 W</b>	12	12.0	4	26.3	84
11	G $\geq 1$	<b>MT1212C24 11 W</b>	12	12.0	3	24.2	84
11	G $\geq 1$	<b>MT1616D38 11 W</b>	16	16.0	4	38.1	105
11	G $\geq 1$	<b>MT2020E47 11 W</b>	20	20.0	5	47.3	105

Order example: MT 1212D19 14 W MT7

For small thread mills see pages 231, 234 & 247

For thread mills with coolant see next page

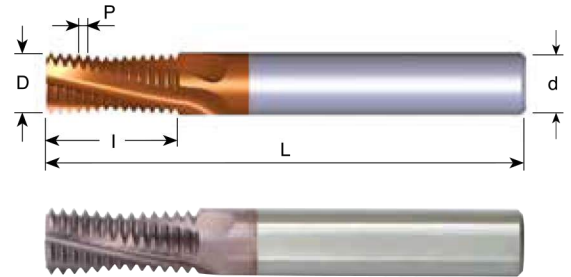
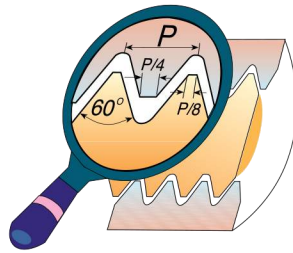


## Mill - Thread Solid Carbide for External Threads

### Advantages:

- \* Excellent surface finish thanks to the spiral flutes
- \* Short machining time due to multi 3 to 5 flutes

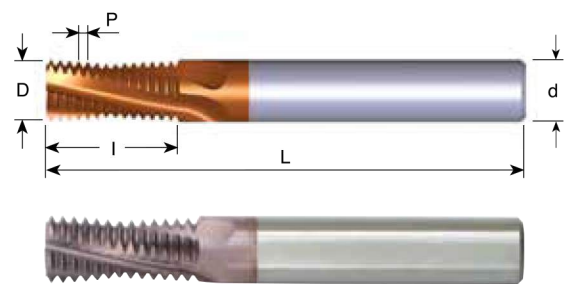
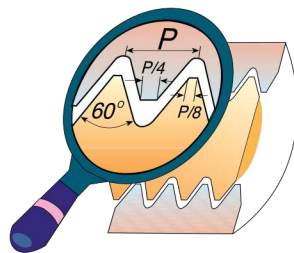
## ISO



Pitch mm	Ordering Code	d	D	No. of Flutes	I	L
1.0	<b>EMT1010D16 1.0 ISO</b>	10	10.0	4	16.5	73
1.0	<b>EMT1212E20 1.0 ISO</b>	12	12.0	5	20.5	84
1.25	<b>EMT1010D16 1.25 ISO</b>	10	10.0	4	16.9	73
1.5	<b>EMT1010D15 1.5 ISO</b>	10	10.0	4	15.8	73
1.5	<b>EMT1212D20 1.5 ISO</b>	12	12.0	4	20.3	84
1.75	<b>EMT1212D20 1.75 ISO</b>	12	12.0	4	20.1	84
2.0	<b>EMT1010C17 2.0 ISO</b>	10	10.0	3	17.0	73
2.0	<b>EMT1212D21 2.0 ISO</b>	12	12.0	4	21.0	84

Order example: EMT 1010D15 1.5 ISO MT7

## UN



Pitch TPI	Ordering Code	d	D	No. of Flutes	I	L
24	<b>EMT1010D16 24 UN</b>	10	10.0	4	16.4	73
20	<b>EMT1212E21 20 UN</b>	12	12.0	5	21.0	84
18	<b>EMT1212D20 18 UN</b>	12	12.0	4	20.5	84
16	<b>EMT1212D21 16 UN</b>	12	12.0	4	21.4	84
14	<b>EMT1212D20 14 UN</b>	12	12.0	4	20.9	84
12	<b>EMT1212D20 12 UN</b>	12	12.0	4	20.1	84

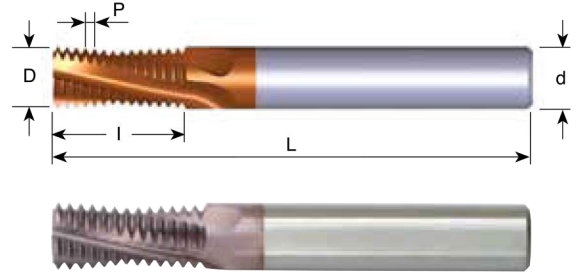
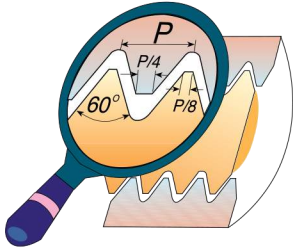
Order example: EMT 1212D20 18 UN MT7



# Mill - Thread Solid Carbide

## UN

### Tools for Internal Thread



Pitch TPI	UNC	UNF	UNEF	Ordering Code	d	D	No. of Flutes	I	L
40	5			<b>MT06025C6 40UN</b>	6	2.5	3	6.0	58
32	8	10	12	<b>MT06032C6 32UN</b>	6	3.2	3	6.8	58
28		1/4		<b>MT0604C11 28UN</b>	6	4.0	3	11.3	58
28			7/16-1/2	<b>MT0606C14 28UN</b>	6	6.0	3	14.1	58
24		5/16		<b>MT0605C14 24UN</b>	6	5.0	3	14.3	58
24		3/8	9/16-5/8	<b>MT0807C21 24UN</b>	8	7.0	3	20.6	64
20	1/4			<b>MT06045C12 20UN</b>	6	4.5	3	12.1	58
20		7/16-1/2		<b>MT0807C21 20UN</b>	8	7.0	3	21.0	64
20			3/4-1	<b>MT1212E27 20UN</b>	12	12.0	5	27.3	84
18	5/16			<b>MT0605C14 18UN</b>	6	5.0	3	14.8	58
18		9/16-5/8	1 <sup>1/8</sup> -1 <sup>5/8</sup>	<b>MT1010D26 18UN</b>	10	10.0	4	26.1	73
16	3/8			<b>MT0606C16 16UN</b>	6	6.0	3	16.7	58
16		3/4		<b>MT1212D31 16UN</b>	12	12.0	4	31.0	84
14	7/16			<b>MT0807C20 14UN</b>	8	7.0	3	20.9	64
14		7/8		<b>MT1615E37 14UN</b>	16	15.0	5	37.2	105
13	1/2			<b>MT0808C22 13UN</b>	8	8.0	3	22.5	64
12	9/16			<b>MT1010C26 12UN</b>	10	10.0	3	26.5	73
12		1-1 <sup>1/2</sup>		<b>MT1616E41 12UN</b>	16	16.0	5	41.3	105
11	5/8			<b>MT1010C28 11UN</b>	10	10.0	3	28.9	73
10	3/4			<b>MT1212C34 10UN</b>	12	12.0	3	34.3	84
9	7/8			<b>MT1615C38 9UN</b>	16	15.0	3	38.1	105
8	1			<b>MT1616C42 8UN</b>	16	16.0	3	42.9	105
7	1 <sup>1/8</sup> -1 <sup>1/4</sup>			<b>MT2020D45 7UN</b>	20	20.0	4	45.3	105

Order example: MT 1615 E37 14 UN MT7

For thread mills with coolant bore see following pages

For small thread mills see pages 229-230, 235 & 246

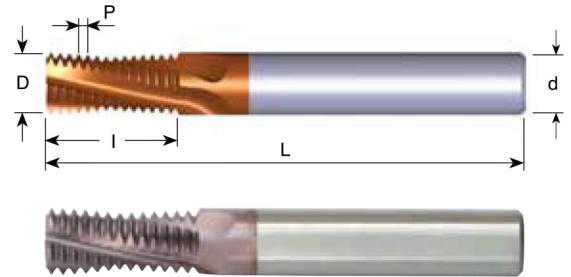
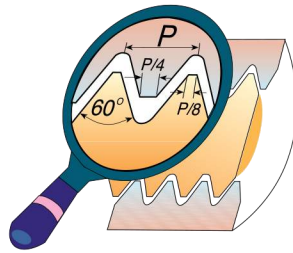


## Mill - Thread Solid Carbide for External Threads

### Advantages:

- \* Excellent surface finish thanks to the spiral flutes
- \* Short machining time due to multi 3 to 5 flutes

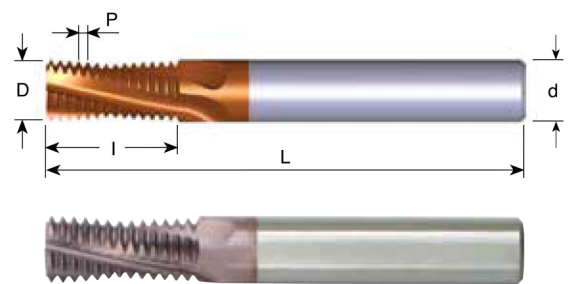
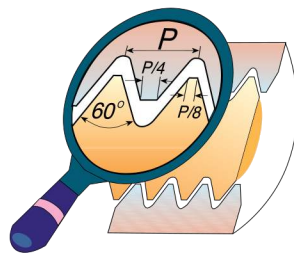
## ISO



Pitch mm	Ordering Code	d	D	No. of Flutes	I	L
1.0	<b>EMT1010D16 1.0 ISO</b>	10	10.0	4	16.5	73
1.0	<b>EMT1212E20 1.0 ISO</b>	12	12.0	5	20.5	84
1.25	<b>EMT1010D16 1.25 ISO</b>	10	10.0	4	16.9	73
1.5	<b>EMT1010D15 1.5 ISO</b>	10	10.0	4	15.8	73
1.5	<b>EMT1212D20 1.5 ISO</b>	12	12.0	4	20.3	84
1.75	<b>EMT1212D20 1.75 ISO</b>	12	12.0	4	20.1	84
2.0	<b>EMT1010C17 2.0 ISO</b>	10	10.0	3	17.0	73
2.0	<b>EMT1212D21 2.0 ISO</b>	12	12.0	4	21.0	84

Order example: EMT 1010D15 1.5 ISO MT7

## UN



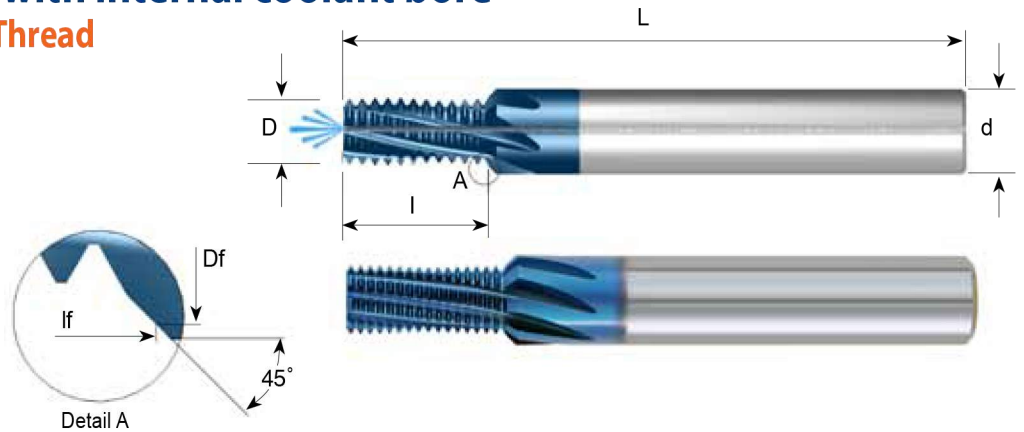
Pitch TPI	Ordering Code	d	D	No. of Flutes	I	L
24	<b>EMT1010D16 24 UN</b>	10	10.0	4	16.4	73
20	<b>EMT1212E21 20 UN</b>	12	12.0	5	21.0	84
18	<b>EMT1212D20 18 UN</b>	12	12.0	4	20.5	84
16	<b>EMT1212D21 16 UN</b>	12	12.0	4	21.4	84
14	<b>EMT1212D20 14 UN</b>	12	12.0	4	20.9	84
12	<b>EMT1212D20 12 UN</b>	12	12.0	4	20.1	84

Order example: EMT 1212D20 18 UN MT7

# Mill - Thread Solid Carbide

## UN Fast MT with internal coolant bore

### Tools for Internal Thread



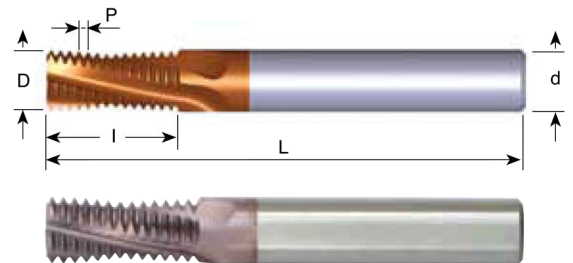
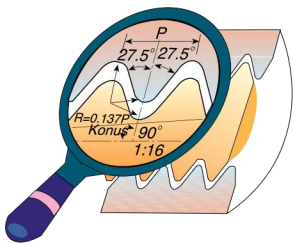
Pitch TPI	UNC	UNF	UNEF	Ordering Code	d	D	Df	Flutes	I	If	L
24		5/16, 3/8	9/16, 5/8, 11/16	FMT 10066 G14 24 UN	10	6.6	9.6	7	14.3	15.8	73
20	1/4			* FMT 08048 E12 20 UN	8	4.8	6.8	5	12.1	13.1	64
20		7/16, 1/2	3/4, 1	FMT 12092 H21 20 UN	12	9.2	11.4	8	21.0	22.1	84
18	5/16	9/16, 5/8	11/16	FMT 1006 F14 18 UN	10	6.0	8.4	6	14.8	16.0	73
16	3/8	3/4		FMT 10074 F16 16 UN	10	7.4	9.6	6	16.7	17.8	73
14	7/16	7/8		FMT 12085 F20 14 UN	12	8.5	10.7	6	20.9	22.0	84

Order example: FMT 08048 E12 20 UN MT8

\* without internal coolant

## BSPT

### Same Tool for Internal and External Thread



Pitch TPI	Standard	Ordering Code	d	D	No. of Flutes	I	L
28	RC1/16-1/8	MT0606C9 28 BSPT	6	6.0	3	9.5	58
19	RC1/4-3/8	MT0808C14 19 BSPT	8	8.0	3	14.0	64
14	RC1/2-7/8	MT1212D19 14 BSPT	12	12.0	4	19.1	84
11	RC1-2	MT1616D28 11 BSPT	16	16.0	4	28.9	105

Order example: MT 1616D28 11 BSPT MT7

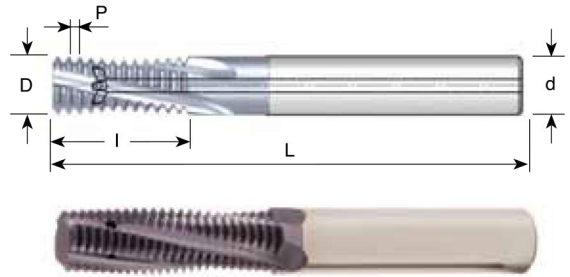
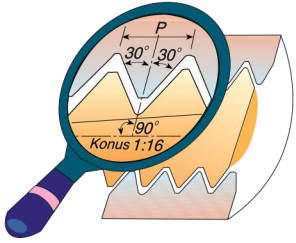
For thread mills with coolant through the flutes see next page

For conical preparation end mills see page 221

# Mill - Thread Solid Carbide

## NPT With internal coolant through the flutes

Same Tool for Internal and External Thread

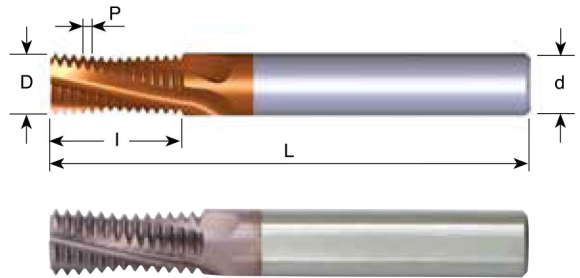
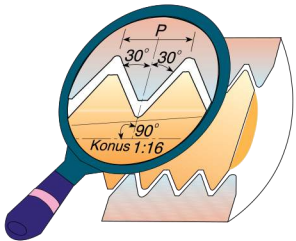


Pitch TPI	Standard	Ordering Code	d	D	No. of Flutes	I	L
27	1/8	<b>MTZ08076C10 27NPT</b>	8	7.6	3	10.8	64
18	1/4-3/8	<b>MTZ1010D16 18NPT</b>	10	10.0	4	16.2	73
14	1/2-3/4	<b>MTZ16155D22 14NPT</b>	16	15.5	4	22.7	101

Order example: MTZ 08076C10 27 NPT MT7

## NPTF

Same Tool for Internal and External Thread



Pitch TPI	Standard	Ordering Code	d	D	No. of Flutes	I	L
27	1/16-1/8	<b>MT0606C9 27 NPTF</b>	6	6.0	3	9.9	58
18	1/4-3/8	<b>MT0808C14 18 NPTF</b>	8	8.0	3	14.8	64
14	1/2-3/4	<b>MT1212D20 14 NPTF</b>	12	12.0	4	20.9	84
11.5	1-2	<b>MT1616D27 11.5 NPTF</b>	16	16.0	4	27.6	105
8	≥ 2 1/2	<b>MT2020D39 8 NPTF</b>	20	20.0	4	39.7	105

Order example: MT 1212D20 14 NPTF MT7

For thread mills with coolant bore see next page

For conical preparation end mills see page 221



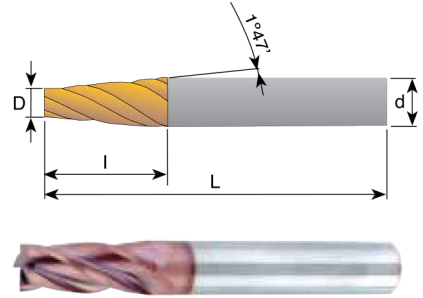
# Mill - Thread Solid Carbide

## Solid Carbide Tapered End Mills

Solid carbide tapered end mills are used for milling preparation of conical threads before the thread milling operation.

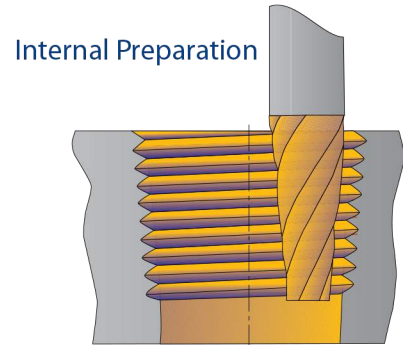
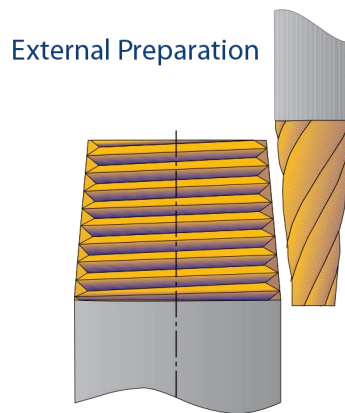
### Advantages:

- \* Increases the tool life of mill thread cutters and indexable inserts.
- \* Equal and uniform load along the cutting edge of the mill thread cutter.
- \* Shorter machining time during the mill thread operation, due to the tapered preparation.
- \* Same tool for internal and external preparation.



Ordering Code	d	D	I	L	No. of Flutes	Size
SC0652D12	6	5.2	12	58	4	NPT 1/16" - 1/8" NPTF 1/16" - 1/8" BSPT 1/16" - 1/8"
SC1085D24	10	8.5	24	73	4	NPT 1/8" - 1" NPTF 1/8" - 1" BSPT 1/8" - 1"
SC1210D32	12	10	32	84	4	NPT 1/4" - 3" NPTF 1/4" - 3" BSPT 1/4" - 3"

Order example: SC 1085D24 MT7  
Carbide grade: MT7



# Mill - Thread Technical Section

## Mill-Thread Solid Carbide Grades, Speed and Feed Selection

### MT Type

**MT7** Sub-Micron Grade with Titanium Aluminum Nitride multi-layer coating (ISO K10 - K20). This is a general purpose grade, which can be used with all materials; it should be run at medium to high cutting speeds.

ISO	Materials	Cutting Speed m/min	Feed mm/tooth Cutting Diameter=D										
			Ø2	Ø3	Ø4	Ø6	Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø25
<b>P</b>	Low and Medium Carbon Steels <0.55%C	90-200	0.03	0.04	0.04	0.06	0.07	0.08	0.09	0.11	0.12	0.15	0.18
	High Carbon Steels ≥0.55%C	100-145	0.02	0.03	0.03	0.05	0.06	0.07	0.08	0.09	0.10	0.12	0.15
	Alloy Steels, Treated Steels												
<b>M</b>	Stainless Steels - Free Cutting	55-130	0.02	0.03	0.03	0.04	0.05	0.06	0.06	0.07	0.08	0.09	0.11
	Stainless Steels - Austenitic												
	Cast Steels	120-135	0.02	0.02	0.03	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.10
<b>K</b>	Cast Iron	65-120	0.03	0.04	0.04	0.06	0.07	0.08	0.09	0.11	0.12	0.15	0.18
<b>N</b>	Aluminum ≤12%Si, Copper	135-280	0.03	0.04	0.04	0.06	0.07	0.08	0.09	0.11	0.12	0.15	0.18
	Aluminum >12% Si	90-200	0.02	0.02	0.03	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.10
	Synthetics, Duroplastics, Thermoplastics	90-320	0.05	0.06	0.07	0.08	0.10	0.11	0.12	0.14	0.15	0.18	0.22
<b>S</b>	Nickel Alloys, Titanium Alloys												

For cutters with long cutting length reduce feed rate by 40%

### MTB, MTZ, EMT Types

ISO	Materials	Cutting Speed m/min	Feed mm/tooth Cutting Diameter=D										
			Ø2	Ø3	Ø4	Ø6	Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø25
<b>P</b>	Low and Medium Carbon Steels <0.55%C	100-250	0.03	0.04	0.04	0.06	0.07	0.08	0.09	0.11	0.12	0.15	0.18
	High Carbon Steels ≥0.55%C	110-180	0.02	0.03	0.03	0.05	0.06	0.07	0.08	0.09	0.10	0.12	0.15
	Alloy Steels, Treated Steels	90- 60	0.02	0.02	0.03	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.10
<b>M</b>	Stainless Steels - Free Cutting	60-160	0.02	0.03	0.03	0.04	0.05	0.06	0.06	0.07	0.08	0.09	0.11
	Stainless Steels - Austenitic	60-120	0.02	0.02	0.03	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.10
	Cast Steels	130-170	0.02	0.02	0.03	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.10
<b>K</b>	Cast Iron	70-150	0.03	0.04	0.04	0.06	0.07	0.08	0.09	0.11	0.12	0.15	0.18
<b>N</b>	Aluminum ≤12%Si, Copper	150-350	0.03	0.04	0.04	0.06	0.07	0.08	0.09	0.11	0.12	0.15	0.18
	Aluminum >12% Si	100-250	0.02	0.02	0.03	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.10
	Synthetics, Duroplastics, Thermoplastics	100-400	0.05	0.06	0.07	0.08	0.10	0.11	0.12	0.13	0.15	0.18	0.22
<b>S</b>	Nickel Alloys, Titanium Alloys	20- 80	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.05

For cutters with long cutting length reduce feed rate by 40%

## MTQ type

**Thread mills with relieved neck and internal coolant for milling medium and large threads on relatively deep work pieces.**

Carbide grade: MT7

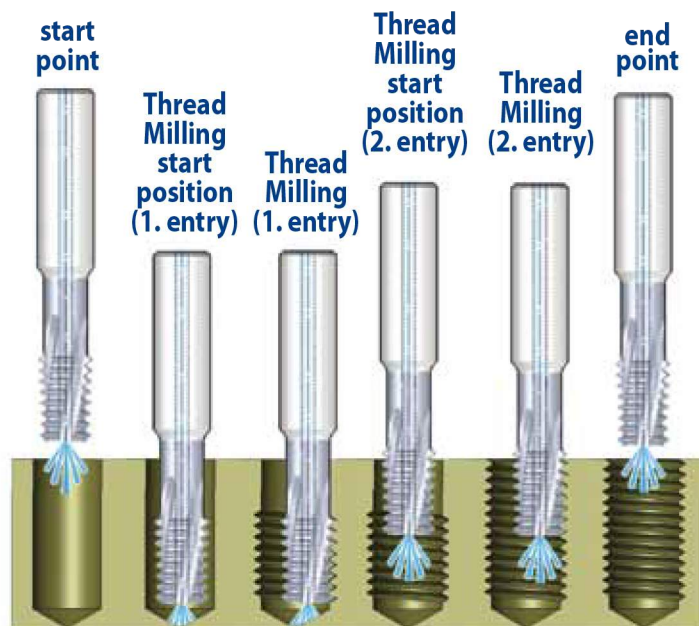
- To produce medium and large threads on relatively deep work pieces.
- To use overhang according to the application.
- To perform deep threads at the bottom of the application.

### Advantages

- Provides high rigidity and stability (anti-vibration).
- Accomplishes deep threads in one pass.
- Relatively low cutting forces due to short cutting length.
- Threads length up to 3D.

**MT7** Sub-Micron Grade with Titanium Aluminum Nitride multi-layer coating (ISO K10 - K20). This is a general purpose grade, which can be used with all materials; it should be run at medium to high cutting speeds.

ISO	Materials	Cutting Speed m/min	Feed mm/tooth Cutting Diameter=D					
			Ø10	Ø12	Ø14	Ø16	Ø20	Ø25
<b>P</b>	Low and Medium Carbon Steels < 0.55%C	100 - 250	0.06	0.07	0.07	0.08	0.10	0.12
	High Carbon Steels ≥ 0.55%C	110 - 180	0.05	0.05	0.06	0.07	0.09	0.10
	Alloy Steels, Treated Steels	90 - 160	0.03	0.04	0.04	0.05	0.06	0.07
<b>M</b>	Stainless Steels - Free Cutting	60 - 160	0.04	0.04	0.05	0.06	0.06	0.08
	Stainless Steels - Austenitic	60 - 120	0.04	0.04	0.04	0.05	0.06	0.07
	Cast Steels	130 - 170	0.03	0.04	0.04	0.05	0.06	0.07
<b>K</b>	Cast Iron	70 - 150	0.06	0.07	0.07	0.08	0.10	0.12
<b>N</b>	Aluminum ≤ 12%Si, Copper	150 - 350	0.06	0.07	0.07	0.08	0.10	0.12
	Aluminum > 12% Si	100 - 250	0.03	0.04	0.04	0.05	0.06	0.07
	Synthetics, Duroplastics, Thermoplastics	100 - 400	0.08	0.09	0.10	0.11	0.13	0.15
<b>S</b>	Nickel Alloys, Titanium Alloys	20 - 80	0.02	0.02	0.02	0.03	0.03	0.03



## FMT

ISO Standard	Materials	Cutting Speed m/min	Feed mm/tooth Cutting Diameter = D				
			Ø5	Ø6	Ø8	Ø10	Ø12
<b>P</b>	Low and Medium Carbon Steels < 0.55%C	100-250	0.03	0.06	0.07	0.08	0.09
	High Carbon Steels ≥ 0.55%C	110-180	0.03	0.05	0.06	0.07	0.08
	Alloy Steels, Treated Steels	90- 60	0.02	0.03	0.04	0.05	0.05
<b>M</b>	Stainless Steel - Free Cutting	60-160	0.03	0.04	0.05	0.06	0.06
	Stainless Steel - Austenitic	60-120	0.01	0.03	0.04	0.05	0.05
	Cast Steels	130-170	0.02	0.03	0.04	0.05	0.05
<b>K</b>	Cast Iron	70-150	0.04	0.06	0.07	0.08	0.09
<b>N</b>	Aluminum ≤ 12%Si, Copper	150-350	0.04	0.06	0.07	0.08	0.09
	Aluminum > 12%Si	100-250	0.03	0.03	0.04	0.05	0.05
	Synthetics, Duroplastics, Thermoplastics	100-400	0.06	0.08	0.10	0.11	0.12
<b>S</b>	Nickel Alloys, Titanium Alloys.	20- 80	0.02	0.03	0.03	0.03	0.03
<b>H</b>	Hardened Steel, 45-50HRc	60- 70	0.02	0.03	0.03	0.03	0.03



# Mill - Thread Technical Section

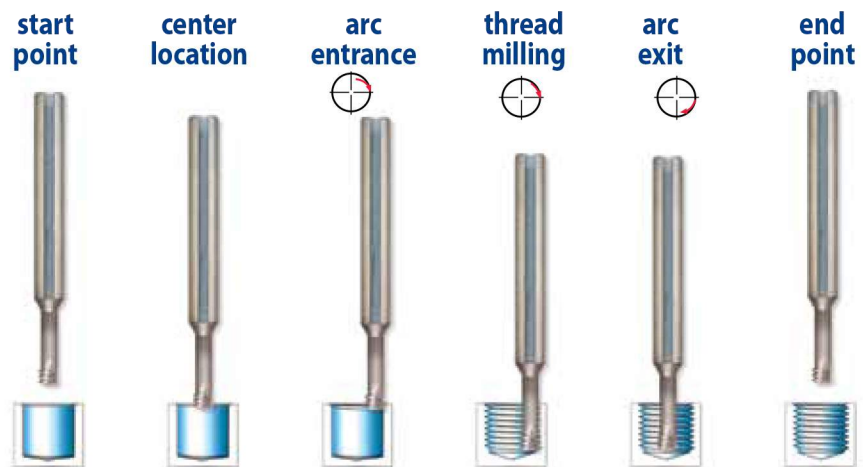
## Mini Mill-Thread MTS and MTI types

**MT7** Sub-Micron Grade with Titanium Aluminum Nitride multi-layer coating (ISO K10 - K20). This is a general purpose grade, which can be used with all materials; it should be run at medium to high cutting speeds.

**MT8** Sub-Micron Grade with Aluminum Titanium Nitride (AlTiN) multi-layer coating (ISO K10-K20). Extremely high heat resistant and smooth cutting operation, for high performance, and normal machining conditions. General purpose for all materials.

**MT11** Ultra-fine sub-micron grade with advanced PVD triple coating.

ISO Standard	Materials	Cutting Speed m/min	Feed mm/tooth													
			Cutting Diameter = D													
			Ø1	Ø1.5	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	Ø9	Ø10	Ø12	Ø14	Ø16
<b>P</b>	Low and Medium Carbon Steels < 0.55%C	60-120	0.04	0.05	0.05	0.07	0.09	0.11	0.13	0.14	0.15	0.16	0.16	0.17	0.18	0.18
	High Carbon Steels ≥ 0.55%C	60- 90	0.03	0.04	0.05	0.06	0.08	0.09	0.10	0.12	0.13	0.14	0.14	0.16	0.17	0.18
	Alloy Steels, Treated Steels	50- 80	0.03	0.04	0.04	0.05	0.05	0.06	0.07	0.07	0.08	0.09	0.10	0.12	0.13	0.14
<b>M</b>	Stainless Steels - Free Cutting	70-100	0.02	0.03	0.03	0.04	0.05	0.06	0.06	0.07	0.08	0.09	0.10	0.11	0.12	0.13
	Stainless Steels - Austenitic	60- 90	0.02	0.03	0.03	0.04	0.05	0.06	0.06	0.07	0.08	0.09	0.10	0.11	0.12	0.13
	Cast Steels	70- 90	0.03	0.04	0.04	0.05	0.05	0.06	0.07	0.07	0.08	0.09	0.10	0.12	0.13	0.14
<b>K</b>	Cast Iron	40- 80	0.04	0.05	0.05	0.07	0.09	0.11	0.13	0.14	0.15	0.16	0.16	0.17	0.18	0.18
<b>N</b>	Aluminum ≤12%Si, Copper	100-200	0.04	0.05	0.05	0.07	0.09	0.11	0.13	0.14	0.15	0.16	0.16	0.17	0.18	0.18
	Aluminum >12% Si	60-140	0.03	0.03	0.03	0.04	0.05	0.06	0.06	0.07	0.08	0.09	0.10	0.11	0.13	0.14
	Synthetics, Duroplastics, Thermoplastics	50-200	0.09	0.10	0.11	0.12	0.14	0.16	0.18	0.19	0.19	0.19	0.19	0.19	0.20	0.20
<b>S</b>	Nickel Alloys and Titanium Alloys	20- 40	0.03	0.03	0.03	0.04	0.04	0.05	0.06	0.06	0.06	0.07	0.07	0.07	0.08	0.08



## Mini Mill-Thread vs. Taps

Features	Mini Mill-Thread	Taps
Thread surface quality	High	Medium
Thread geometry	Very accurate	Medium
Thread tolerances	4H, 5H, 6H with std cutter	6H with standard tap, 4H with specific tap
Machining time	Same as tap or shorter	Short
Tool breakage	Almost not possible	Could happen often
Machining load	Very low	High
Range of thread diameters	Wide range of diameters	Specific tap for each diameter
Right/Left hand threading	Same cutter	Specific tap for each
Geometric shape	Full profile	Partial profile

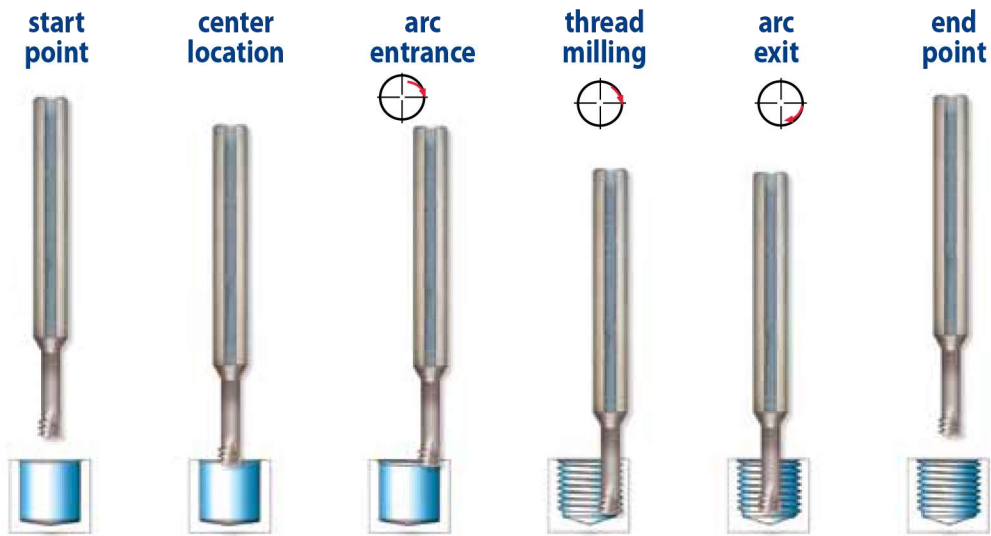
# Mill - Thread Technical Section

## Mini Mill-Thread MTSH type

**MT9** Sub-Micron Grade with advanced PVD triple coating.

**Left hand cutting for CNC code use M04**

ISO	Materials	Hardness HRC	Cutting Speed m/min	Feed mm/tooth													
				Cutting Diameter = D													
				Ø1	Ø1.5	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	Ø9	Ø10	Ø12	Ø14	Ø16
<b>S</b>	Nickel Alloys, Titanium Alloys and High Temp. Alloys		20-40	0.03	0.03	0.03	0.04	0.04	0.05	0.06	0.06	0.06	0.07	0.07	0.07	0.08	0.08
<b>H</b>	Hardened Steels	45-50	60-70	0.03	0.04	0.04	0.05	0.05	0.06	0.06	0.07	0.07	0.08	0.08	0.09	0.10	0.11
		51-55	50-60	0.02	0.03	0.03	0.04	0.04	0.05	0.05	0.06	0.06	0.07	0.07	0.08	0.09	0.10
		56-62	40-50	0.01	0.02	0.02	0.03	0.03	0.04	0.04	0.05	0.05	0.06	0.06	0.07	0.08	0.09



### Case Study

Application	Internal Thread M4 X 0.7
Thread Depth	8.0 mm
Workpiece Material	Tool Steel: D2
Hardness	60-62 (HRc)
Cutter Description	MTSH06031C9 0.7 ISO
Machining Conditions	Cutting Speed: 44 m / min Feed: 0.03 mm / tooth
Machine Control	Mori Seiki VN5000 Fanuc
Cooling Lubricant	Emulsion
Tool Life (No. of Threads)	84

## MTH type

**MT11** Sub-Micron Grade with advanced PVD triple coating.

ISO	Materials	Hardness HRC	Cutting Speed m/min	Feed mm/tooth								
				Cutting Diameter = D								
				Ø2.5	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	Ø9	Ø10
<b>S</b>	Nickel Alloys, Titanium Alloys and High Temp. Alloys		20-50	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.04
<b>H</b>	Hardened Steels Cast Iron	45-50	70-80	0.02	0.03	0.03	0.04	0.04	0.05	0.05	0.06	0.07
		51-55	60-70	0.01	0.02	0.02	0.03	0.03	0.04	0.04	0.05	0.06
		56-62	40-50	0.005	0.01	0.01	0.02	0.02	0.03	0.03	0.04	0.05

For cutters with long cutting length reduce feed rate by 40%

Positioning

Thread Milling

Chamfering

