

MTS0250C15 64 UN

MTS0250C17 56 UN

MTS0250C20 48 UN

MTS0250C25 40 UN

MTS0250C28 40 UN

MTS0250C28 32 UN

Mini Mill-Thread + **HARDCUT**

迷你螺纹+硬切削



Carmex
Precision Tools Ltd.

Inch
2008-2009

Specially designed solid-carbide thread mills for internal threads from very small bores

特殊设计整体硬质合金螺纹铣刀用于内螺纹、非常小的螺孔

Due to the unique tool design, accurate geometries and high quality grade, the following are achieved:

由于独特的审计，精确的几何形状和高质量

- Threading from 0-80 UNF (bore diameter ϕ .05).
80UNF, 孔径1.27mm
- Working in high cutting speed.
高切削速度
- Short machining time.
短的加工时间
- Low cutting forces thanks to the short profile.
低切削扭矩,短的形状
- No broken taps.
不会像丝锥那样折断
- Threading up to shoulder in blind holes.
盲孔至螺纹孔底
- Machining of hardened materials.
加工硬材料

The tools are offered in Carmex advanced MT7 Carbide Grade, a Sub-Micron grade with Titanium Aluminum Nitride multilayer coating (ISO K10 - K20) to be run at medium to high cutting speeds. General purpose for all materials.

MT7亚微颗粒硬质合金TiAlN

多层涂层K10-K20中到高额度切削速度, 适用全部材料

Carmex is an exclusive producer of solid carbide thread mills to produce MJ & UNJ threads.

Carmex独家整体硬质合金

Mj/UNJ航空、航天螺纹

The tools are offered in Carmex advanced MT8

Carbide Grade.

Carmex先进的MT8级硬质合金

This grade delivers Extremely high heat resistant and smooth cutting operation, for high performance, and normal machining conditions. General purpose for all materials.

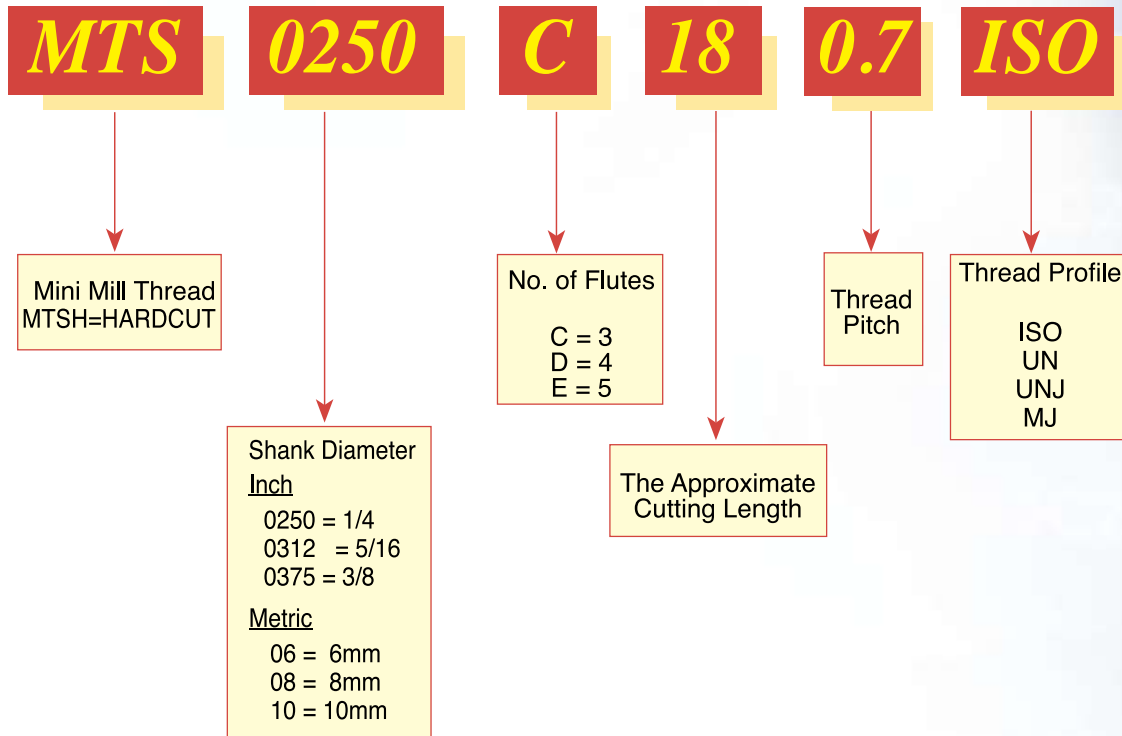
特别耐热和平滑切削, 高效能和常规加工, 可用于全部材料

These thread mills are offered with internal coolant through the flutes.

螺纹铣刀提供带槽内内冷孔

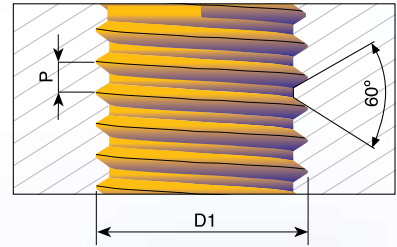
Product Identification

Mini Mill-Thread Ordering Codes



ISO

Tools for Internal Thread



For thread depth up to $2xD1$ ISO 螺纹深度 $2xD1$

Pitch mm	D1	Ordering Code	d	D	No. of flutes	I	L
0.25	M1.0	MTS03007C2 0.25 ISO	3mm	.028	3	.10	1.5
0.25	M1.2	MTS03009C3 0.25 ISO	3mm	.035	3	.12	1.5
0.4	M2	MTS0250C18 0.4 ISO	1/4	.061	3	.18	2.5
0.45	M2.2	MTS0250C20 0.45 ISO	1/4	.065	3	.20	2.5
0.45	M2.5	MTS0250C22 0.45 ISO	1/4	.077	3	.22	2.5
0.5	M3	MTS0250C26 0.5 ISO	1/4	.093	3	.26	2.5
0.6	M3.5	MTS0250C30 0.6 ISO	1/4	.108	3	.30	2.5
0.7	M4	MTS0250C35 0.7 ISO	1/4	.122	3	.35	2.5
0.8	M5	MTS0250C49 0.8 ISO	1/4	.150	3	.49	2.5
1.0	M6	MTS0250C55 1.0 ISO	1/4	.183	3	.55	2.5
1.25	M8	MTS0250C71 1.25 ISO	1/4	.234	3	.71	2.5
1.5	M10	MTS0312C91 1.5 ISO	5/16	.307	3	.91	2.5
1.75	M12	MTS0375C10 1.75 ISO	3/8	.354	3	1.02	3.0
2.0	M16	MTS0500D13 2.0 ISO	1/2	.465	4	1.38	3.5
2.5	M20	MTS0625E16 2.5 ISO	5/8	.591	5	1.69	4.0

For thread depth up to $3xD1$ ISO 螺纹深度 $3xD1$

Pitch mm	D1	Ordering Code	d	D	No. of flutes	I	L
* 0.3	M1.4	MTS03011C4 0.3 ISO	3mm	.041	3	.16	1.5
* 0.35	M1.6	MTS03012C5 0.35 ISO	3mm	.047	3	.19	1.5
* 0.4	M2	MTS03016C6 0.4 ISO	3mm	.061	3	.24	1.5
0.45	M2.5	MTS0250C30 0.45 ISO	1/4	.077	3	.30	2.5
0.5	M3	MTS0250C37 0.5 ISO	1/4	.093	3	.37	2.5
0.7	M4	MTS0250C49 0.7 ISO	1/4	.122	3	.49	2.5
0.8	M5	MTS0250C63 0.8 ISO	1/4	.150	3	.63	2.5
1.0	M6	MTS0250C79 1.0 ISO	1/4	.183	3	.79	2.5
1.25	M8	MTS0250C94 1.25 ISO	1/4	.234	3	.94	2.5

Order example: MTS 0250C26 0.5 ISO MT7

***Specially designed for the production of dental implants**

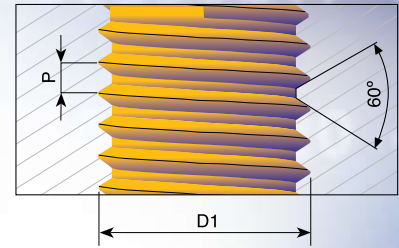
.Machining Titanium, surgical stainless steels and hardened materials.

.Suitable for high speed air turbine machines (30,000-40,000 RPM) and for standard machining centers (6,000 RPM and higher)

.Can also be used for general purpose threading.

UN

Tools for Internal Thread



For thread depth up to $2xD1$ UN 螺纹深度 $2XD1$

Pitch TPI	UNC	UNF	Ordering Code	d	D	No. of Flutes	I	L
72		1	MTS0250C15 72 UN	1/4	.057	3	.15	2.5
64	1	2	MTS0250C15 64 UN	1/4	.055	3	.15	2.5
56	2	3	MTS0250C17 56 UN	1/4	.065	3	.17	2.5
48	3	4	MTS0250C20 48 UN	1/4	.075	3	.20	2.5
40	4		MTS0250C25 40 UN	1/4	.083	3	.25	2.5
40	5	6	MTS0250C28 40 UN	1/4	.096	3	.28	2.5
36		8	MTS0250C35 36 UN	1/4	.130	3	.35	2.5
32	6		MTS0250C28 32 UN	1/4	.100	3	.28	2.5
32	8		MTS0250C37 32 UN	1/4	.126	3	.37	2.5
32		10	MTS0250C41 32 UN	1/4	.146	3	.41	2.5
28		12	MTS0250C43 28 UN	1/4	.165	3	.43	2.5
28		1/4	MTS0250C57 28 UN	1/4	.197	3	.57	2.5
24	10,12		MTS0250C42 24 UN	1/4	.138	3	.42	2.5
24		5/16,3/8	MTS0312C67 24 UN	5/16	.260	3	.67	2.5
20	1/4		MTS0250C55 20 UN	1/4	.187	3	.55	2.5
20		7/16	MTS0312C98 20 UN	5/16	.312	3	.98	2.5
18	5/16		MTS0250C67 18 UN	1/4	.236	3	.67	2.5
18	5/8		MTS0500D14 18 UN	1/2	.500	4	1.38	3.5
16	3/8		MTS0312C87 16 UN	5/16	.264	3	.87	2.5
14	7/16		MTS0312C98 14 UN	5/16	.303	3	.98	2.5
13	1/2		MTS0375C10 13 UN	3/8	.362	3	1.08	3.0
12	9/16		MTS0500C12 12 UN	1/2	.413	3	1.24	3.5
11	5/8		MTS0500C13 11 UN	1/2	.449	3	1.36	3.5
10	3/4		MTS0625D16 10 UN	5/8	.567	4	1.63	4.0

Order example: MTS0250C28 40UN MT7

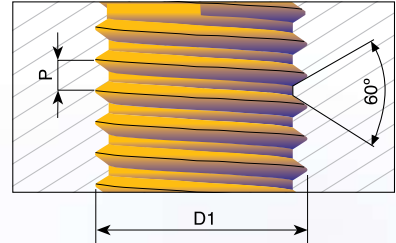
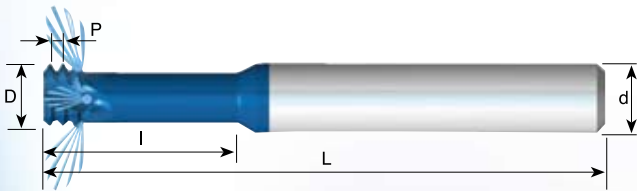
For thread depth up to $3xD1$ UN 螺纹深度 $3XD1$

Pitch TPI	UNC	UNF	Ordering Code	d	D	No. of Flutes	I	L
80		0	MTS0250C16 80 UN	1/4	.045	3	.16	2.5
*72		1	MTS03015C6 72 UN	3mm	.057	3	.24	1.5
56	2	3	MTS0250C26 56 UN	1/4	.065	3	.26	2.5
40	4		MTS0250C31 40 UN	1/4	.083	3	.31	2.5
40	5	6	MTS0250C38 40 UN	1/4	.096	3	.38	2.5
32	6		MTS0250C40 32 UN	1/4	.100	3	.41	2.5
32	8		MTS0250C49 32 UN	1/4	.126	3	.49	2.5
32		10	MTS0250C59 32 UN	1/4	.146	3	.59	2.5
28		1/4	MTS0250C75 28 UN	1/4	.197	3	.75	2.5
24		5/16, 3/8	MTS0312C94 24 UN	5/16	.260	3	.94	2.5
20	1/4		MTS0250C75 20 UN	1/4	.187	3	.75	2.5
18	5/16		MTS0250C91 18 UN	1/4	.236	3	.91	2.5

*Specially designed for the production of dental implants

- Machining Titanium, surgical stainless steels and hardened materials.
- Suitable for high speed air turbine machines (30,000-40,000 RPM) and for standard machining centers (6,000 RPM and higher).
- Can also be used for general purpose threading.

UNJ With internal coolant through the flutes 槽内冷却孔 Tools for Internal Thread - Metric shanks 用于内螺纹 - 公制柄



For thread depth up to $2.5 \times D1$ UNJ 航空航天螺纹 - 螺纹深度 $2.5 \times D1$

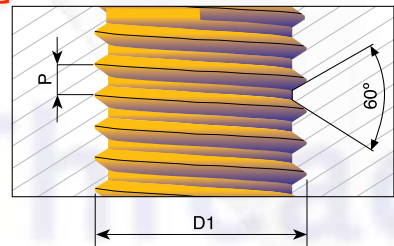
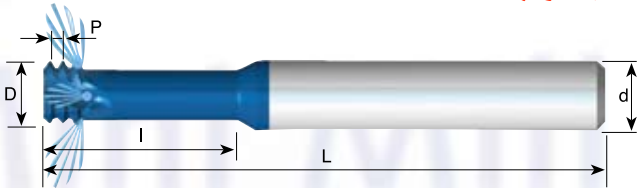
Pitch TPI	UNJC	UNJF	Ordering Code	d mm	D	No. of Flutes	I	L
*32	8	10	MTS06033C10 32 UNJ	6	.130	3	.41	2.3
28		1/4	MTS08051C16 28 UNJ	8	.201	3	.63	2.5
24		5/16, 3/8	MTS08067C20 24 UNJ	8	.264	3	.79	2.5
*20	1/4		MTS06049C16 20 UNJ	6	.193	3	.63	2.3
20		7/16	MTS0808C28 20 UNJ	8	.315	3	1.10	2.5
18	5/16		MTS08061C20 18 UNJ	8	.242	3	.79	2.5
16	3/8		MTS08069C24 16 UNJ	8	.272	3	.94	2.5
14	7/16		MTS08079C25 14 UNJ	8	.311	3	.98	2.5
13	1/2		MTS10094C27 13 UNJ	10	.370	3	1.08	2.9

* without coolant

Order example: MTS06049C16 20UNJ MT8

Carbide grade MT8 Sub Micron grade with Aluminium 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.

MJ With internal coolant through the flutes 槽内冷却孔 Tools for Internal Thread - Metric shanks 用于内螺纹 - 公制柄



For thread depth up to $2.5 \times D1$ MJ 航空航天螺纹 - 螺纹深度 $2.5 \times D1$

Pitch mm	D1	Ordering Code	d mm	D	No. of Flutes	I	L
* 0.7	MJ4	MTS06032C10 0.7 MJ	6	.126	3	.39	2.3
* 0.8	MJ5	MTS06039C12 0.8 MJ	6	.154	3	.49	2.3
* 1.0	MJ6	MTS06048C15 1.0 MJ	6	.189	3	.59	2.3
1.25	MJ8	MTS08061C20 1.25 MJ	8	.240	3	.79	2.5
1.5	MJ10	MTS0808C25 1.5 MJ	8	.315	3	.98	2.5
1.75	MJ12	MTS10092C30 1.75 MJ	10	.362	3	1.18	2.9
2.0	MJ14, MJ16	MTS1010C35 2.0 MJ	10	.394	3	1.38	2.9

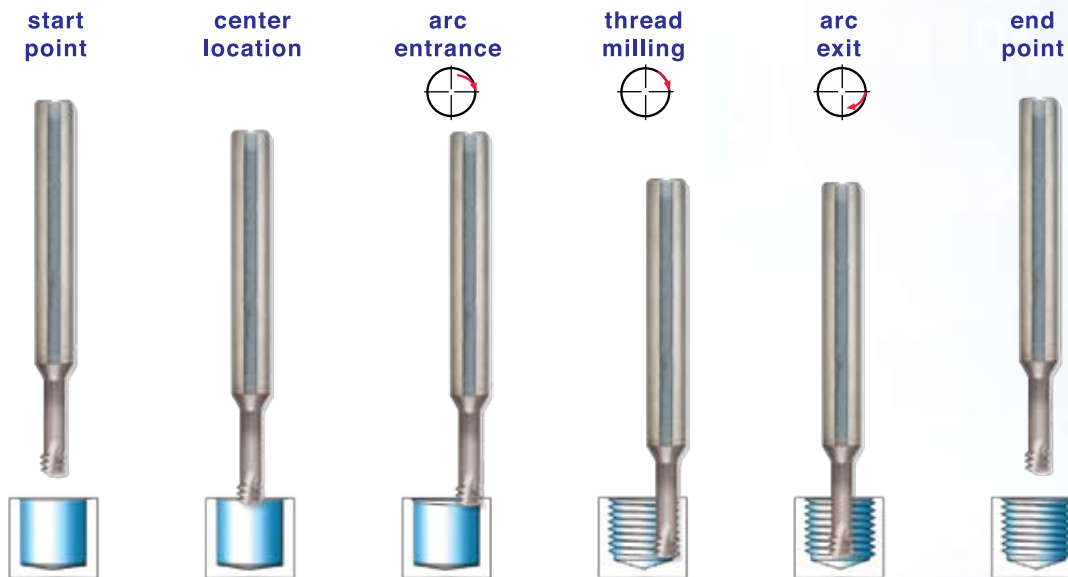
* without coolant

Order example: MTS06048C15 1.0 MJ MT8

Carbide grade MT8 Sub Micron grade with Aluminium 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.

Cutting Data 切削参数

ISO Standard	Materials	Cutting Speed ft/min	Feed inch/tooth												
			Cutting Diameter												
			Ø .06	Ø .08	Ø .12	Ø .16	Ø .20	Ø .24	Ø .28	Ø .31	Ø .35	Ø .39	Ø .47	Ø .55	Ø .59
P	Low and Medium Carbon Steels	200-390	.0018	.0021	.0028	.0035	.0043	.0050	.0057	.0060	.0062	.0064	.0067	.0070	.0071
	High Carbon Steels	200-300	.0016	.0019	.0024	.0030	.0035	.0041	.0046	.0050	.0054	.0057	.0062	.0067	.0069
	Alloy Steels, Treated Steels	160-260	.0015	.0017	.0019	.0021	.0024	.0026	.0028	.0033	.0037	.0041	.0047	.0052	.0055
M	Stainless Steels	200-300	.0011	.0013	.0016	.0019	.0022	.0025	.0026	.0031	.0035	.0038	.0044	.0049	.0051
	Cast Steels	230-300	.0015	.0017	.0019	.0021	.0024	.0026	.0028	.0033	.0037	.0041	.0047	.0052	.0055
K	Cast Iron	130-260	.0018	.0021	.0028	.0035	.0043	.0050	.0057	.0060	.0062	.0064	.0067	.0070	.0071
N	Aluminum	260-490	.0018	.0021	.0028	.0035	.0043	.0050	.0057	.0060	.0062	.0064	.0067	.0070	.0071
	Synthetics, Duroplastics, Thermoplastics	160-660	.0038	.0042	.0049	.0056	.0063	.0070	.0073	.0074	.0075	.0075	.0077	.0078	.0078
S	Nickel Alloys, Titanium Alloys	70-130	.0011	.0013	.0015	.0017	.0020	.0022	.0024	.0025	.0026	.0027	.0029	.0031	.0031



Mini Mill-Thread vs. Taps

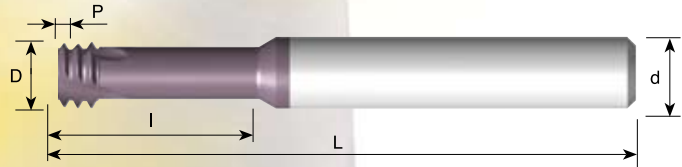
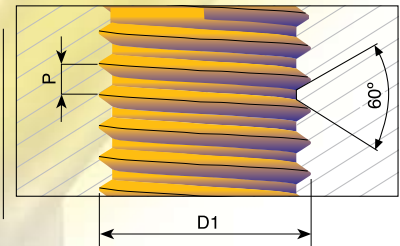
Features 特征	Mini Mill-Thread 迷你螺纹铣刀	Taps 丝锥
Thread surface quality 螺纹表面质量	High 高	Medium 中等
Thread geometry 螺纹几何形状	Very accurate 非常精确	Medium 中等
Thread tolerances 螺纹公差	4H, 5H, 6H with std cutter 4/5/6H	6H with standard tap, 4H with specific tap 6H标准丝锥, 4H特殊丝锥
Machining time 加工时间	Same as tap or shorter 相同于丝锥或差不多	Short 短
Tool breakage 刀具折断	Almost not possible 仅有可能	Could happen often 经常发生
Machining load 切削扭矩	Very low 低	High 高
Range of thread diameters 螺纹直径范围	Wide range of diameters 宽范围直径	Specific tap for each diameter 一支丝锥一个直径
Right/Left hand threading 左右手螺纹	Same cutter 相同刀具	Specific tap for each 特殊丝锥用于各自
Geometric shape 螺纹轮廓	Full profile 完整	Partial profile 部分完整

HARDCUT

硬切削

一个独特的螺纹铣刀设计明确的用于加工硬金属至62HRC。高效能切削和杰出的表面精加工。

A unique line of thread milling tools designed specifically for the machining of hardened materials up to 62HRC. These tools provide high performance, improved cut and an excellent surface finish.



- Threading from 0-80 UNF **80UNF 螺纹**
- Perfect solution for the Die and Mold industry **模具和模具工业完美的解决方案**
- Working at high cutting speeds **高切削速度**
- Short machining time **短的加工时间**
- Low cutting forces thanks to the short profile **低切削力由于短齿形**
- Threading up to shoulder in blind holes **盲孔至孔底**

The tools are offered in Carmex advanced MT9 Carbide grade, a *Sub-micron carbide grade with advanced Titanium Aluminium Nitride coating.*

Carmex 先进的MT9级硬质合金，一个亚微颗粒质合金带先进的TiAlN涂层。

ISO

Tools for Internal Thread ISO 用于内螺纹

For thread depth up to 2xD1 螺纹深度2XD1

Pitch mm	D1	Ordering Code	d	D	No. of flutes	I	L
0.4	M2	MTSH0250C18 0.4 ISO	1/4	.061	3	.18	2.5
0.45	M2.2	MTSH0250C20 0.45 ISO	1/4	.065	3	.19	2.5
0.45	M2.5	MTSH0250C22 0.45 ISO	1/4	.077	3	.22	2.5
0.5	M3	MTSH0250C26 0.5 ISO	1/4	.093	3	.26	2.5
0.6	M3.5	MTSH0250C30 0.6 ISO	1/4	.108	3	.30	2.5
0.7	M4	MTSH0250C35 0.7 ISO	1/4	.122	3	.35	2.5
0.8	M5	MTSH0250C49 0.8 ISO	1/4	.150	3	.49	2.5
1.0	M6	MTSH0250C55 1.0 ISO	1/4	.183	3	.55	2.5
1.25	M8	MTSH0250C71 1.25 ISO	1/4	.234	3	.71	2.5
1.5	M10	MTSH0312C91 1.5 ISO	5/16	.307	3	.91	2.5
1.75	M12	MTSH0375C10 1.75 ISO	3/8	.354	3	1.02	3.0
2	M16	MTSH12118D35 2.00 ISO	12mm	.465	4	1.38	3.3

For thread depth up to 3xD1 螺纹深度3XD1

Pitch mm	D1	Ordering Code	d	D	No. of flutes	I	L
0.3	M1.4	MTSH03011C4 0.3 ISO	3mm	.041	3	.16	1.5
0.35	M1.6	MTSH03012C5 0.35 ISO	3mm	.047	3	.19	1.5
0.4	M2	MTSH03016C6 0.4 ISO	3mm	.061	3	.24	1.5
0.45	M2.5	MTSH0250C30 0.45 ISO	1/4	.044	3	.30	2.5
0.5	M3	MTSH0250C37 0.5 ISO	1/4	.093	3	.37	2.5
0.7	M4	MTSH0250C49 0.7 ISO	1/4	.122	3	.49	2.5
0.8	M5	MTSH0250C63 0.8 ISO	1/4	.150	3	.63	2.5
1.0	M6	MTSH0250C79 1.0 ISO	1/4	.183	3	.79	2.5
1.25	M8	MTSH0250C94 1.25 ISO	1/4	.234	3	.94	2.5

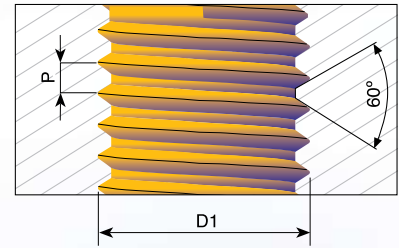
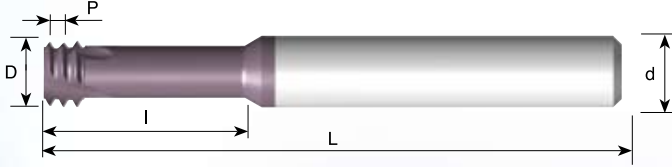
Order example: MTSH0250C35C 0.7 ISO MT9

HARDCUT

UN

Tools for Internal Thread

UN 用于内螺纹切削参数



For thread depth up to $2xD1$ UN 螺纹深度 $2XD1$

Pitch TPI	UNC	UNF	Ordering Code	d	D	No. of Flutes	I	L
72		1	MTSH0250C15 72 UN	1/4	.057	3	.15	2.5
64	1	2	MTSH0250C15 64 UN	1/4	.055	3	.15	2.5
56	2	3	MTSH0250C17 56 UN	1/4	.065	3	.17	2.5
48	3	4	MTSH0250C20 48 UN	1/4	.075	3	.20	2.5
40	4		MTSH0250C25 40 UN	1/4	.083	3	.25	2.5
40	5	6	MTSH0250C28 40 UN	1/4	.096	3	.28	2.5
36		8	MTSH0250C35 36 UN	1/4	.130	3	.35	2.5
32	6		MTSH0250C28 32 UN	1/4	.100	3	.28	2.5
32	8		MTSH0250C37 32 UN	1/4	.126	3	.37	2.5
32		10	MTSH0250C41 32 UN	1/4	.146	3	.41	2.5
28		12	MTSH0250C43 28 UN	1/4	.165	3	.43	2.5
28		1/4	MTSH0250C57 28 UN	1/4	.197	3	.57	2.5
24	10,12		MTSH0250C42 24 UN	1/4	.138	3	.42	2.5
24		5/16,3/8	MTSH0312C67 24 UN	5/16	.260	3	.67	2.5
20	1/4		MTSH0250C55 20 UN	1/4	.187	3	.55	2.5
20		7/16	MTSH0312C98 20 UN	5/16	.312	3	.98	2.5
18	5/16		MTSH0250C67 18 UN	1/4	.236	3	.67	2.5
16	3/8		MTSH0312C87 16 UN	5/16	.264	3	.87	2.5
14	7/16		MTSH0312C98 14 UN	5/16	.303	3	.98	2.5
13	1/2		MTSH0375C10 13 UN	3/8	.362	3	1.08	3.0
12	9/16		MTSH12105C31 12 UN	12mm	.413	3	1.24	3.3
11	5/8		MTSH12114C34 11 UN	12mm	.449	3	1.36	3.3

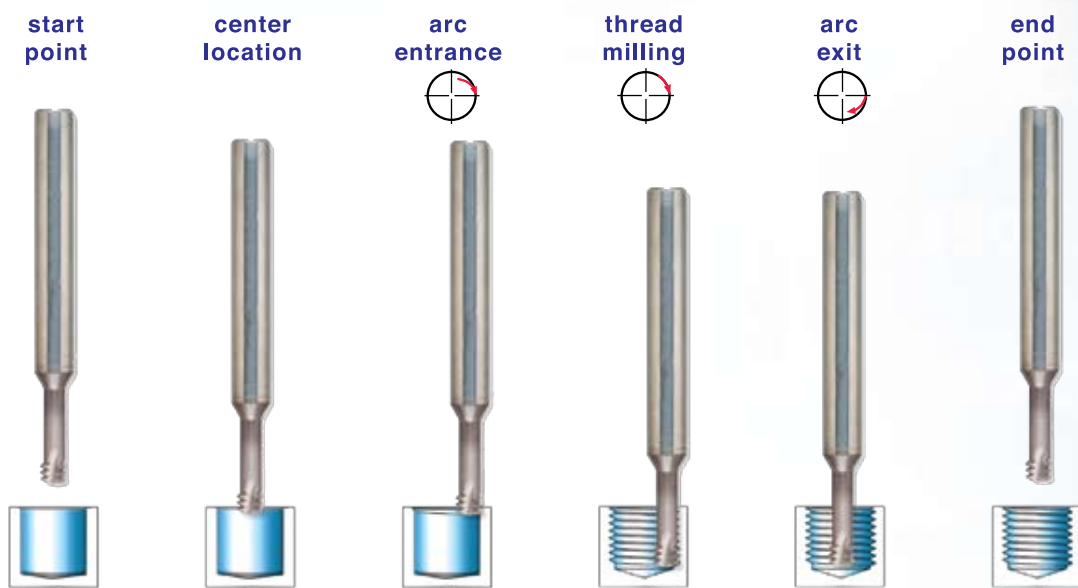
For thread depth up to $3xD1$ UN 螺纹深度 $2XD1$

Pitch TPI	UNC	UNF	Ordering Code	d	D	No. of Flutes	I	L
80		0	MTSH0250C16 80 UN	1/4	.045	3	.16	2.5
72		1	MTSH03015C6 72 UN	3mm	.057	3	.24	1.5
56	2	3	MTSH0250C26 56 UN	1/4	.065	3	.26	2.5
40	4		MTSH0250C31 40 UN	1/4	.083	3	.31	2.5
40	5	6	MTSH0250C38 40 UN	1/4	.096	3	.38	2.5
32	6		MTSH0250C40 32 UN	1/4	.100	3	.41	2.5
32	8		MTSH0250C49 32 UN	1/4	.126	3	.49	2.5
32		10	MTSH0250C59 32 UN	1/4	.146	3	.59	2.5
28		1/4	MTSH0250C75 28 UN	1/4	.197	3	.75	2.5
24		5/16,3/8	MTSH0312C94 24 UN	5/16	.260	3	.94	2.5
20	1/4		MTSH0250C75 20 UN	1/4	.187	3	.75	2.5
18	5/16		MTSH0250C91 18 UN	1/4	.236	3	.91	2.5

Order example: MTSH0250C28 40 UN MT9

Cutting Data 切削参数

ISO	Material	Hardness HRc	Cutting Speed ft/min	Feed inch/tooth								
				Cutting Diameter = D								
				ø.06	ø.08	ø.12	ø.16	ø.20	ø.24	ø.28	ø.31	ø.35
H	Hardened Steels	45-50	200-230	.0016	.0016	.0020	.0020	.0024	.0024	.0028	.0028	.0031
		51-55	160-200	.0012	.0012	.0016	.0016	.0020	.0020	.0024	.0024	.0028
		56-62	130-160	.0008	.0008	.0012	.0012	.0016	.0016	.0020	.0020	.0024



CASE STUDY

Application 操作	Internal Thread M4 X 0.7 内螺纹 M4X0.7
Thread Depth 螺纹深度	.31 Inch 0.31 inch
Workpiece Material 工件材料	Tool Steel: D2 工具钢: D2
Hardness 文本	60-62 (HRc) HRC60-62
Cutter Description 刀具型号	MTSH0250C35 0.7 ISO MTSH0250C35 0.7 ISO
Machining Conditions 切削参数	Cutting Speed: 144 ft/min $V_c = 43.89/\text{min}$ Feed: .0012 Inch/min $F = 0.0348/\text{tooth}$
Machine 机床	Mori Seiki VN5000 森精机 VN5000
Control 操作系统	Fanuc Fanuc
Cooling Lubricant 冷却液	Emulsion 乳化液
Tool Life (No. of Threads) 刀具寿命	84 84个螺孔

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