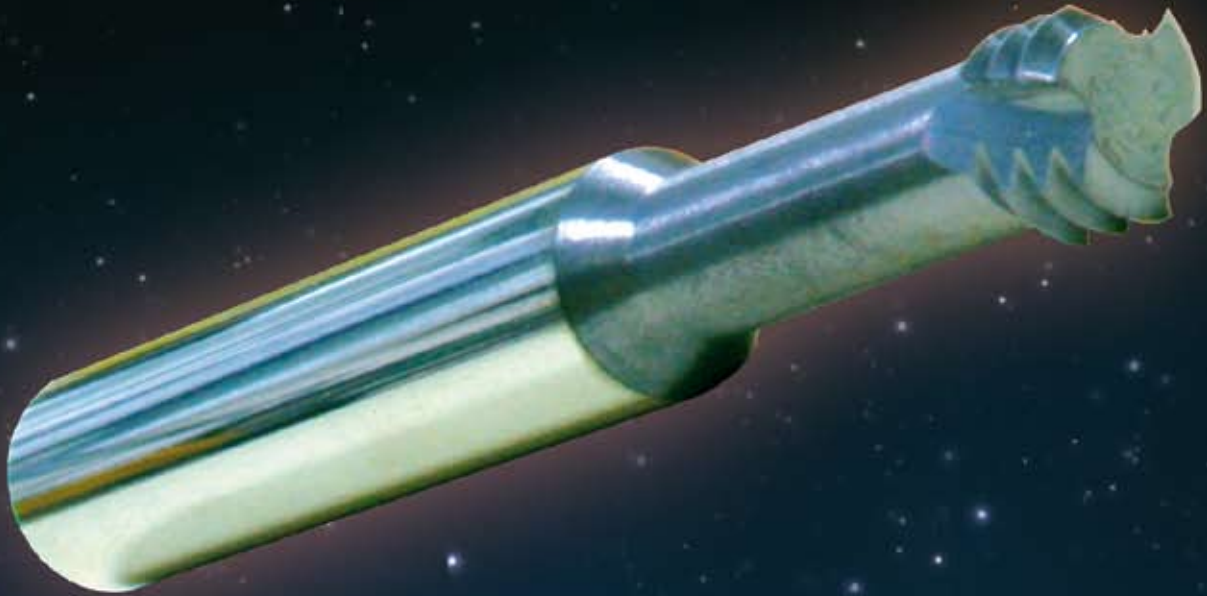


Mini Mill Thread

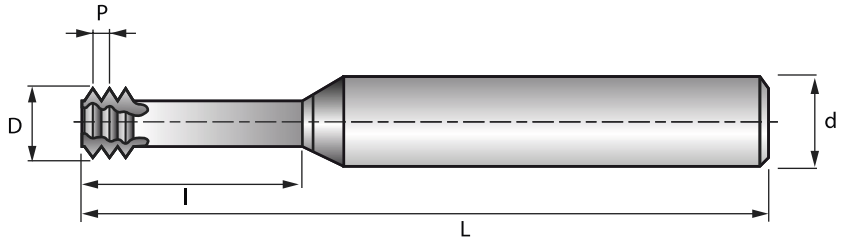
Solid Carbide Thread Mills
for threading bores as small as M2 X 0.4



COMBIDEX®

Threading Tools

Special designed solid-carbide thread mills for the production of internal threads in very small bores. Thanks to the unique tool design, accurate geometries and high quality MT7 sub-micron carbide grade with Titanium Aluminium multi layer coating, the following were achieved:



- * Threading from M2x0.4 (bore diameter 1.6)
- * Working at high cutting speeds
- * Short machining time
- * Low cutting forces due to the short profile
- * Threading up to shoulders in blind holes
- * Machining hard materials

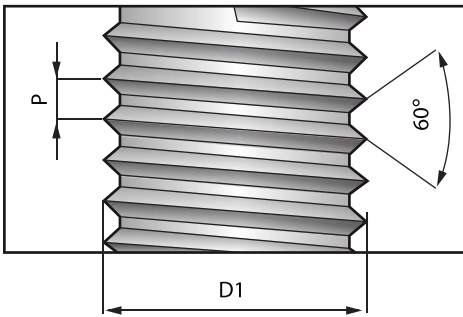
ISO Tools for Internal Thread For thread depth up to 2xD1

Pitch	D1	Ordering Code				d	D	Number of flutes	l	L
mm						mm	mm	mm	mm	
0.4	M2	TMS 06016	C4	0.4	ISO	6	1.55	3	4.5	58
0.45	M2.2	TMS 06017	C5	0.45	ISO	6	1.65	3	5.0	58
0.45	M2.5	TMS 06020	C5	0.45	ISO	6	1.95	3	5.5	58
0.5	M3	TMS 06024	C6	0.5	ISO	6	2.35	3	6.5	58
0.6	M3.5	TMS 06028	C7	0.6	ISO	6	2.75	3	7.5	58
0.7	M4	TMS 06031	C9	0.7	ISO	6	3.10	3	9.0	58
0.8	M5	TMS 06038	C12	0.8	ISO	6	3.80	3	12.5	58
1.0	M6	TMS 06047	C14	1.0	ISO	6	4.65	3	14.0	58
1.25	M8	TMS 06060	C18	1.25	ISO	6	5.95	3	18.0	58
1.5	M10	TMS 08078	C23	1.5	ISO	8	7.80	3	23.0	64
1.75	M12	TMS 10090	C26	1.75	ISO	10	9.00	3	26.0	73
2.0	M16	TMS 12118	C35	2.0	ISO	12	11.80	4	35.0	84
2.5	M20	TMS 16150	C43	2.5	ISO	16	15.00	5	43.0	105

ISO Tools for Internal Thread For thread depth up to 3xD1

Pitch	D1	Ordering Code				d	D	Number of flutes	l	L
mm						mm	mm	mm	mm	
0.3	M1.4	TMS 03011	C4	0.3	ISO	3	1.05	3	4.0	39
0.35	M1.6	TMS 03012	C5	0.35	ISO	3	1.20	3	5.0	39
0.4	M2	TMS 03016	C6	0.4	ISO	3	1.55	3	6.0	39
0.45	M2.5	TMS 06020	C7	0.45	ISO	6	1.95	3	7.5	58
0.5	M3	TMS 06024	C9	0.5	ISO	6	2.35	3	9.5	58
0.7	M4	TMS 06031	C12	0.7	ISO	6	3.10	3	12.5	58
0.8	M5	TMS 06038	C16	0.8	ISO	6	3.80	3	16.0	58
1.0	M6	TMS 06047	C20	1.0	ISO	6	4.65	3	20.0	58
1.25	M8	TMS 06060	C24	1.25	ISO	6	5.95	3	24.0	58

- 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

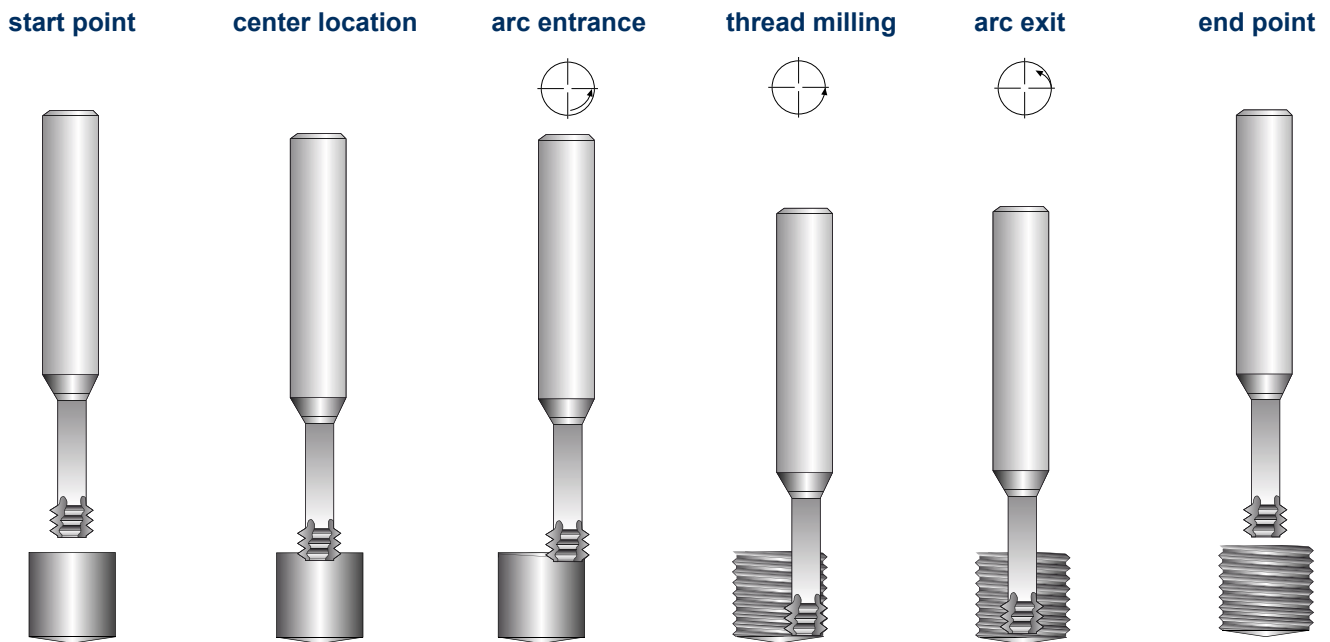
Pitch	UNC	UNF	Ordering Code	d	D	Number of flutes	I	L
TPI				mm	mm		mm	mm
72		1	TMS 06014 C3 72 UN	6	1.45	3	3.7	58
64	1	2	TMS 06014 C3 64 UN	6	1.40	3	3.8	58
56	2	3	TMS 06016 C4 56 UN	6	1.65	3	4.4	58
48	3	4	TMS 06019 C5 48 UN	6	1.90	3	5.2	58
40	4		TMS 06021 C6 40 UN	6	2.10	3	6.3	58
40	5	6	TMS 06024 C7 40 UN	6	2.45	3	7.0	58
36		8	TMS 06033 C9 36 UN	6	3.30	3	9.0	58
32	6		TMS 06025 C7 32 UN	6	2.55	3	7.1	58
32	8		TMS 06032 C9 32 UN	6	3.20	3	9.5	58
32		10	TMS 06037 C10 32 UN	6	3.70	3	10.5	58
28		12	TMS 06042 C11 28 UN	6	4.20	3	11.0	58
28		1/4	TMS 06050 C14 28 UN	6	5.00	3	14.5	58
24	10,12		TMS 06035 C10 24 UN	6	3.50	3	10.6	58
24		5/16, 3/8	TMS 08066 C17 24 UN	8	6.60	3	17.0	64
20	1/4		TMS 06047 C14 20 UN	6	4.75	3	14.0	58
18	5/16		TMS 06060 C17 18 UN	6	6.00	3	17.0	58
16	3/8		TMS 08067 C22 16 UN	8	6.70	3	22.0	64
14	7/16		TMS 08077 C25 14 UN	8	7.70	3	25.0	64
13	1/2		TMS 10092 C27 13 UN	10	9.20	3	27.5	73
12	9/16		TMS 12105 C31 12 UN	12	10.50	3	31.5	84
11	5/8		TMS 12114 C34 11 UN	12	11.40	3	34.5	84
10	3/4		TMS 16144 C41 10 UN	16	14.40	4	41.5	105

UN Tools for Internal Thread For thread depth up to 3xD1

Pitch	UNC	UNF	Ordering Code	d	D	Number of flutes	I	L
TPI				mm	mm		mm	mm
72		1	TMS 03015 C6 72 UN	3	1.45	3	6.0	39
40	5	6	TMS 06024 C9 40 UN	6	2.45	3	9.6	58
32	8		TMS 06032 C12 32 UN	6	3.20	3	12.5	58
32		10	TMS 06037 C15 32 UN	6	3.70	3	15.0	58
28		1/4	TMS 06050 C19 28 UN	6	5.00	3	19.0	58
24		5/16, 3/8	TMS 08066 C24 24 UN	8	6.60	3	24.0	64
20	1/4		TMS 06047 C19 20 UN	6	4.75	3	19.0	58
18	5/16		TMS 06060 C23 18 UN	6	6.00	3	23.0	58

Technical Section Cutting Data

Materials	Cutting speed	Feed mm/tooth						
		ø1.5	ø2	ø3	ø4	ø5	ø6	ø7
Low & Medium Carbon Steels	60-120	0.05	0.05	0.07	0.09	0.11	0.13	0.14
High Carbon Steels	60-90	0.04	0.05	0.06	0.08	0.09	0.10	0.12
Alloy Steels	50-80	0.04	0.04	0.05	0.05	0.06	0.07	0.07
Cast Steels	60-90	0.03	0.03	0.04	0.05	0.06	0.06	0.07
Stainless Steels	70-90	0.04	0.04	0.05	0.05	0.06	0.07	0.07
Cast Iron	40-80	0.05	0.05	0.07	0.09	0.11	0.13	0.14
Aluminium	80-150	0.05	0.05	0.07	0.09	0.11	0.13	0.14
Nickel Alloys, Titanium Alloys	20-40	0.03	0.03	0.04	0.04	0.05	0.06	0.06
Synthetics, Duroplastics, Thermoplastics	50-200	0.10	0.11	0.12	0.14	0.16	0.18	0.20



Comparison table - mini thread mills vs. tap

Features	Solid Carbide Thread Mills	Taps Thread Surface Quality
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	Shorter or same as tap	Short
Machining Load	Very low	High
Tool Breakage	Almost not possible	Could happen often
Thread Diameters Range	Same tool can produce a wide range of diameters within the same pitch	Specific tap for each diameter Specific tap for each
Right/Left Hand Threading	Same cutter for both	Partial profile
Geometric Shape	Full profile	