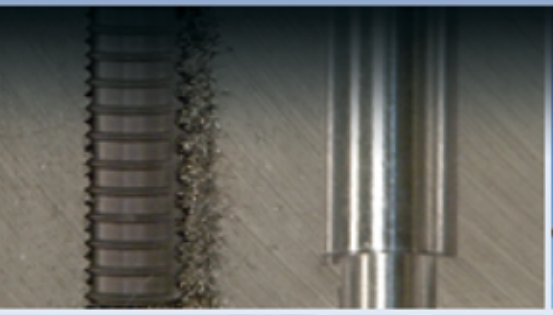
OMNIthread

THREAD MILLING

PRODUCT CATALOG



COLE TOOLING SYSTEMS

OMNIthread
THREAD MILLING

Catalog Contents

Carbide Grades

TIN

The TIN grade utilizes an ISO TIN carbide base grade but has the added benefit of a PVDTiN (Titanium Nitride) coating. TIN is our standard stocked grade and satisfies the greatest range of material applications. TIN should be the first choice for most applications.

TLN

TLN grade is a TiAlN (Titanium Aluminum Nitride), PVD coated grade recommended for difficult to machine alloys having work-hardening or abrasive wear characteristics. This could improve wear life in materials such as stainless steels, nickel alloys, most cast irons as well as graphite resin composites.

HSN

Our newest coating is a multi-layer hybrid nano coating. This new coating has very good heat resistance and high hardness. The HSN coating is designed for heat treated materials up to 72 HRc.

Tool Selection

There are 3 critical steps required for optimizing a thread milling operation for any thread to be produced.

1. **Tool Selection**
2. **Speed & Feed Selection**
3. **Preparing the CNC Program**

Selecting the best tool for a given job is made easier when all information is available.

Our technical service engineers will help you with any application you are considering and will guide you through every step of the process at no charge to you.

If you wish, you can fax a request by copying the Program Request form and request a suggested tool and cycle time for any application. (See page 40 for form)

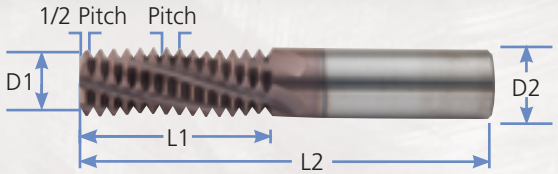
Please fill out the information along with your fax number and a recommendation will be returned to you within 24 hours.

Mini Thread Mills HSN coated

All Single Thread

Thread Sizes	D1	L1	D3	Flutes	L2	D2	SKU
0-80	.045	0.125	0.030	1	1.50	.125	10M1000
2-56 2-64 M2.5x0.45	.064	0.172	0.030	3	1.50	.125	10M1002
4-40 4-48	.081	0.225	0.035	3	1.50	.125	10M1004
5-40 5-44 M3x0.5	.095	0.250	0.050	3	1.50	.125	10M1005
6-32 6-40	.095	0.375	0.050	3	1.50	.125	10M1006
8-32 8-36 M4-0.7	.115	0.350	0.070	3	1.50	.125	10M1008
M5-0.8	.140	0.375	0.100	3	2.00	.187	10M1085
	.165	0.500	0.100	3	2.00	.187	10M1009
10-24 10-32	.130	0.500	0.100	3	2.00	.187	10M1010
1/4-20 1/4-28 M6-1.0	.180	0.600	0.100	3	2.00	.187	10M1011
18-56	.240	1.00	0.115	4	2.50	.250	10M1012
12-32	.300	1.00	0.230	4	3.50	.375	10M1013
11-32	.490	1.25	0.300	5	3.50	.500	10M1014
4-12	.720	2	0.420	6	4.00	.750	10M1015

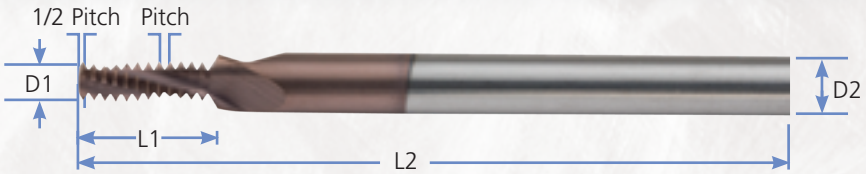
Solid Carbide Thread Mills



Helical Thread Mills HSN Coated

Tool Size	D2	D1	L1	L2	Flutes	SKU
4-40 UN	.125	0.085	0.175	2.00	3	04H1000
6-32 UN	.125	0.095	0.218	2.00	3	04H1001
8-32 UN	.125	0.115	0.25	2.00	3	04H1002
8-36 UN	.125	0.115	0.25	2.00	3	04H1003
10-24 UN	.187	0.12	0.312	2.00	3	04H1004
10-32 UN	.187	0.12	0.312	2.00	3	04H1005
1/4-20 UN	.187	0.18	0.5	2.50	3	04H1006
1/4-28 UN	.187	0.18	0.5	2.50	3	04H1007
5/16-18 UN	.250	0.24	0.625	2.50	3	04H1008
5/16-24 UN	.250	0.24	0.625	2.50	3	04H1009
3/8-16 UN	.312	0.29	0.75	3.00	4	04H1010
3/8-24 UN	.312	0.29	0.75	3.00	4	04H1011
7/16-14 UN	.375	0.34	0.875	3.00	4	04H1012
7/16-20 UN	.375	0.34	0.875	3.00	4	04H1013
1/2-13 UN	.375	0.35	0.875	3.50	4	04H1014
1/2-20 UN	.375	0.35	0.875	3.50	4	04H1015
9/16-12 UN	.500	0.37	0.875	3.50	4	04H1016
9/16-18 UN	.500	0.37	0.875	3.50	4	04H1017
5/8-11 UN	.500	0.47	1.25	3.50	5	04H1018
5/8-18 UN	.500	0.47	1.25	3.50	5	04H1019
3/4-10 UN	.500	0.495	1.25	3.50	5	04H1020
3/4-12 UN	.500	0.495	1.25	3.50	5	04H1021
3/4-16 UN	.500	0.495	1.25	3.50	5	04H1022
7/8-9 UN	.500	0.495	1.25	3.50	5	04H1023
7/8-14 UN	.500	0.495	1.25	3.50	5	04H1024
1-8 UN	.750	0.62	1.375	4.00	5	04H1025
1-12 UN	.750	0.62	1.375	4.00	5	04H1026

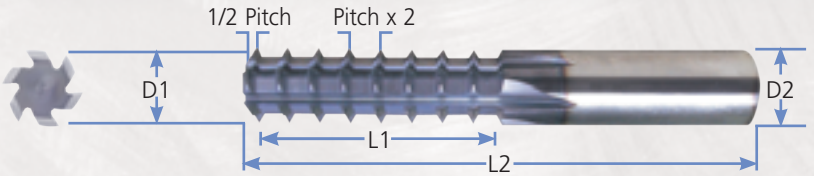
Solid Carbide Thread Mills



Helical Thread Mills HSN Coated - Straight Coolant Through

Tool Size	D2	D1	L1	L2	Flutes	SKU
1/4-20 UN C	.187	0.180	0.500	2.50	3	05H2006
1/4-28 UN C	.187	0.180	0.500	2.50	3	05H2007
5/16-18 UN C	.250	0.240	0.625	2.50	3	05H2008
5/16-24 UN C	.250	0.240	0.625	2.50	3	05H2009
3/8-16 UN C	.312	0.290	0.750	3.00	4	05H2010
3/8-24 UN C	.312	0.290	0.750	3.00	4	05H2011
7/16-14 UN C	.375	0.340	0.875	3.00	4	05H2012
7/16-20 UN C	.375	0.340	0.875	300	4	05H2013
1/2-13 UN C	.375	0.350	0.875	3.50	4	05H2014
9/16-12 UN C	.500	0.370	0.875	3.50	4	05H2015
9/16-18 UN C	.500	0.370	0.875	3.50	4	05H2016
5/8-11 UN C	.500	0.470	1.250	3.50	5	05H2017
5/8-18 UN C	.500	0.470	1.250	3.50	5	05H2018
3/4-10 UN C	.500	0.495	1.250	3.50	5	05H2019
3/4-12 UN C	.500	0.495	1.250	3.50	5	05H2020
3/4-16 UN C	.500	0.495	1.250	3.50	5	05H2021
7/8-9 UN C	.500	0.495	1.250	3.50	5	05H2022
7/8-14 UN C	.500	0.495	1.250	3.50	5	05H2023
1-8 UN C	.750	0.620	1.375	4.00	5	05H2024
1-12 UN C	.750	0.620	1.375	4.00	5	05H2025

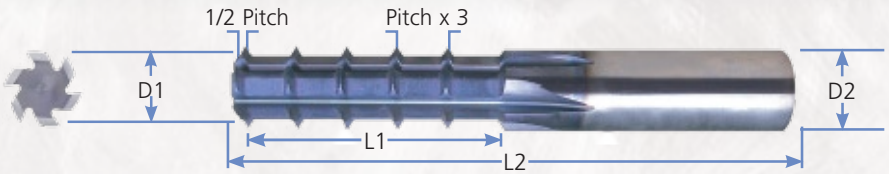
Solid Carbide Thread Mills



UN Internal Threads T2 Long Length

Min. Size	TIN	TLN	Pitch	Flutes	D2	D1	L2	L1
#4 - 40	0270800	0378800	40	3	0.125	0.085	1.50	0.224
#6 - 32	0270801	0378801	32	3	0.125	0.085	1.50	0.250
#8 - 32	0270802	0378802	32	3	0.125	0.120	1.50	0.328
1/4"- 28	0270813	0378813	28	3	0.188	0.160	1.97	0.500
1/4"- 28	0270814	0378814	28	3	0.250	0.180	2.95	0.786
#10 - 24	0270821	0378821	24	3	0.125	0.120	1.50	0.250
#12 - 24	0270815	0378815	24	3	0.187	0.140	2.56	0.500
5/16"- 24	0270816	0378816	24	3	0.250	0.200	2.56	0.833
3/8"- 24	0270822	0378822	24	5	0.250	0.240	2.56	0.750
1/4"- 20	0270803	0378803	20	3	0.187	0.160	2.56	0.500
7/16"- 20	0270817	0378817	20	5	0.313	0.310	3.35	1.000
5/16"- 18	0270804	0378804	18	3	0.250	0.200	2.95	0.625
5/8"- 18	0270819	0378819	18	5	0.500	0.437	3.94	1.375
3/8"- 16	0270805	0378805	16	5	0.250	0.240	2.95	0.750
11/16"- 16	0270820	0378820	16	5	0.500	0.470	3.94	1.375
7/16"- 14	0270806	0378806	14	5	0.313	0.310	3.35	0.875
1/2"- 13	0270807	0378807	13	5	0.313	0.310	3.35	1.000
9/16"- 12	0270808	0378808	12	5	0.375	0.370	3.35	1.125
3/4"- 12	0270818	0378818	12	5	0.500	0.470	3.94	1.500
5/8"- 11	0270809	0378809	11	5	0.500	0.437	3.94	1.250
3/4"- 10	0270810	0378810	10	5	0.500	0.470	3.94	1.500
7/8"- 9	0270811	0378811	9	6	0.625	0.620	4.50	1.750
1"- 8	0270812	0378812	8	6	0.625	0.620	4.50	2.000
1-1/8"- 7	0270823	0378823	7	6	0.625	0.620	4.50	1.857

Solid Carbide Thread Mills

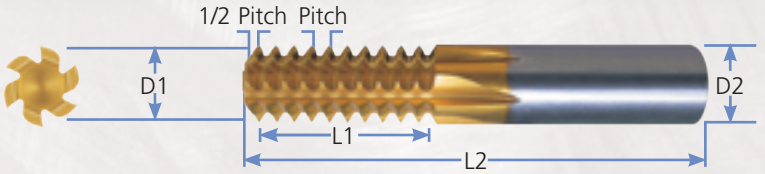


UN Internal Threads T3 Extra Long Length

Min. Size	TIN	TLN	Pitch	Flutes	D2	D1	L2	L1
# 4 - 40	0270900	0378900	40	3	0.125	0.080	1.65	0.336
# 6 - 32	0270901	0378901	32	3	0.125	0.085	1.65	0.375
# 8 - 32	0270902	0378902	32	3	0.125	0.120	1.65	0.492
# 12 - 28	0270913	0378913	28	3	0.187	0.160	2.37	0.750
1/4”- 28	0270914	0378914	28	3	0.250	0.180	2.90	0.750
# 10 - 24	0270921	0378921	24	3	0.125	0.120	1.50	0.375
# 12 - 24	0270915	0378915	24	3	0.187	0.140	2.56	0.625
5/16”- 24	0270916	0378916	24	3	0.250	0.200	2.75	0.958
3/8”- 24	0270920	0378920	24	5	0.250	0.240	2.95	1.000
1/4”- 20	0270903	0378903	20	3	0.187	0.160	2.56	0.750
7/16”- 20	0270917	0378917	20	5	0.312	0.310	3.35	1.200
5/16”- 18	0270904	0378904	18	3	0.250	0.200	2.95	0.937
3/8”- 16	0270905	0378905	16	5	0.250	0.240	2.95	1.125
7/16”- 14	0270906	0378906	14	5	0.312	0.310	3.35	1.286
1/2”- 13	0270907	0378907	13	5	0.312	0.310	3.35	1.500
9/16”- 12	0270908	0378908	12	5	0.375	0.370	3.35	1.687
3/4”- 12	0270918	0378918	12	5	0.500	0.470	3.94	2.000
5/8”- 11	0270909	0378909	11	5	0.500	0.437	4.35	1.909
3/4”- 10	0270910	0378910	10	5	0.500	0.470	3.94	2.250
7/8”- 9	0270911	0378911	9	6	0.625	0.620	5.13	2.333
1”- 8	0270912	0378912	8	6	0.625	0.620	4.10	1.875
1-1/8”- 7	0270919	0378919	7	6	0.625	0.620	4.10	2.000

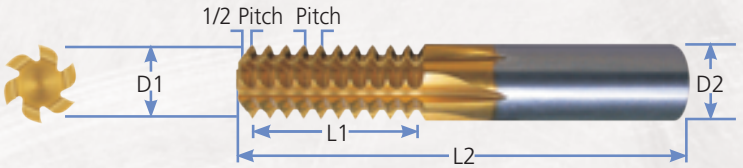
Min. Size: This is the smallest internal major thread diameter a tool of specific pitch and cutting diameter can produce. Any internal mill can be used to produce larger thread diameters as long as the L1 dimension exceeds the required length of full thread. Good machining practices dictate selecting a tool having sufficient mass to mill the desired pitch, thus reducing deflection and premature tool failure.

Solid Carbide Thread Mills



UN External Threads Standard Length

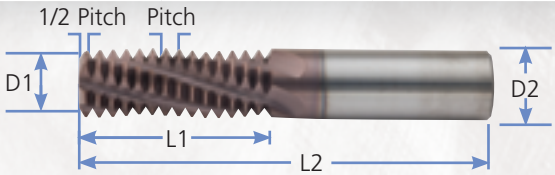
Min. Size	TIN	TLN	Pitch	Flutes	D2	D1	L2	L1
ALL 36 UN	0270208	0378208	36	5	0.250	0.240	2.25	0.2778
ALL 32 UN	0270200	0378200	32	5	0.250	0.240	2.25	0.5625
ALL 32 UN	0270209	0378209	32	5	0.375	0.370	2.84	0.9375
ALL 28 UN	0270201	0378201	28	5	0.312	0.310	2.48	0.7857
ALL 24 UN	0270210	0378210	24	5	0.312	0.310	2.48	0.7917
ALL 24 UN	0270211	0378211	24	5	0.375	0.370	2.84	1.0000
ALL 20 UN	0270202	0378202	20	5	0.375	0.370	2.84	0.9000
ALL 18 UN	0270203	0378203	18	5	0.375	0.370	2.84	0.9444
ALL 16 UN	0270204	0378204	16	5	0.500	0.470	3.27	1.1250
ALL 14 UN	0270212	0378212	14	5	0.312	0.310	2.48	1.6429
ALL 14 UN	0270213	0378213	14	5	0.500	0.470	3.27	1.1429
ALL 12 UN	0270205	0378205	12	5	0.500	0.470	3.27	1.1670
ALL 8 UN	0270206	0378206	8	6	0.625	0.620	3.62	1.5000
ALL 6 UN	0270207	0378207	6	6	0.750	0.745	4.10	1.5000



UNJ External Threads Standard Length

Min. Size	TIN	TLN	Pitch	Flutes	D2	D1	L2	L1
ALL 32 UNJ	0271000	0371800	32	5	0.250	0.240	2.25	0.5313
ALL 24 UNJ	0271001	0371801	24	5	0.375	0.370	2.84	0.9583
ALL 20 UNJ	0271002	0371802	20	5	0.375	0.370	2.84	0.9000
ALL 18 UNJ	0271003	0371803	18	5	0.312	0.310	2.48	0.7778
ALL 18 UNJ	0271004	0371804	18	5	0.500	0.470	3.27	1.1111
ALL 16 UNJ	0271005	0371805	16	5	0.312	0.310	2.48	1.0000
ALL 16 UNJ	0271006	0371806	16	5	0.500	0.470	3.27	1.1250
ALL 14 UNJ	0271007	0371807	14	5	0.500	0.470	3.27	1.1428
ALL 12 UNJ	0271008	0371808	12	5	0.500	0.470	3.27	1.1667

Solid Carbide Thread Mills



Helical NPT(F) Thread Mills - HSN Coated

Tool Size	D2	D1	L1	L2	Flutes	Coated SKU #	Tool Size	Coated SKU #
1/16” - 27 NPT	.250	.245	.437	2.50	3	08H2000		
1/8” - 27 NPT	.312	.310	.437	2.50	4	08H2ı001	1/8” - 27 NPTH	08H2005
1/4” & 3/8” - 18 NPT	.375	.305	.625	3.00	4	08H2002	1/4”, 3/8” - 18 NPTH	08H2006
1/2” & 3/4” - 14 NPT	.500	.495	.875	3.50	4	08H2003	1/2” - 14 NPTH	08H2007
1” - 11.5 NPT	.750	.620	1.125	4.00	5	08H2004		

Helical NPT(F) Thread Mills with Straight Coolant - HSN Coated

Tool Size	D2	D1	L1	L2	Flutes	Coated SKU #	Tool Size	Coated SKU #
1/16” - 27 NPT	.250	.245	.437	2.50	3	08H2008		
1/8” - 27 NPT	.312	.310	.437	2.50	4	08H2009	1/8” - 27 NPTH	08H2013
1/4” & 3/8” - 18 NPT	.375	.305	.625	3.00	4	08H2010	1/4”, 3/8” - 18 NPTH	08H2014
1/2” & 3/4” - 14 NPT	.500	.495	.875	3.50	4	08H2011	1/2” - 14 NPTH	08H2015
1” - 11.5 NPT	.750	.620	1.125	4.00	5	08H2012		

Helical BSPP Thread Mills - HSN Coated

Tool Size	D2	D1	L1	L2	Flutes	Coated SKU #
1/16”, 1/8” - 28 BSPP	.250	.240	.572	2.50	3	09H2000
1/4” - 19 BSPP	.312	.312	.737	3.00	4	09H2001
1/2” - 14 BSPP	.500	.470	1.143	3.50	4	09H2002
1” - 11 BSPP	.625	.620	1.546	4.00	5	09H2003

Helical BSPP Thread Mills with Straight Coolant - HSN Coated

Tool Size	D2	D1	L1	L2	Flutes	Coated SKU #
1/16”, 1/8” - 28 BSPP C	.250	.240	.572	2.50	3	09H2004
1/4” - 19 BSPP C	.312	.312	.737	3.00	4	09H2005
1/2” - 14 BSPP C	.500	.470	1.143	3.50	4	09H2006
1” - 11 BSPP C	.625	.620	1.546	4.00	5	09H2007

Helical BSPT Thread Mills - HSN Coated

Tool Size	D2	D1	L1	L2	Flutes	Coated SKU #
1/16”, 1/8” - 28 BSPT	.250	.240	.401	2.50	3	09H2008
1/4” - 19 BSPT	.312	.312	.578	3.00	4	09H2009
1/2” - 14 BSPT	.500	.470	.785	3.50	4	09H2010
1” - 11 BSPTP	.625	.620	1.546	4.00	5	09H2011

Helical BSPT Thread Mills with Straight Coolant - HSN Coated

Tool Size	D2	D1	L1	L2	Flutes	Coated SKU #
1/16”, 1/8” - 28 BSPT C	.250	.240	.401	2.50	3	09H2012
1/4” - 19 BSPT C	.312	.312	.578	3.00	4	09H2013
1/2” - 14 BSPT C	.500	.470	.785	3.50	4	09H2014
1” - 11 BSPT C	.625	.620	1.546	4.00	5	09H2015

Suggested Speeds And Feeds

Tool Shank Diameter and Number of Flutes
SFPM and Feed, Inches per Tooth

Material	Class	1/8" 3	3/16" 3	1/4" 3	5/16" 4	3/8" 4	1/2" 5	3/4" 5
1. Steel	Plain and Low Carbon to 22 HRc	600 .003	600 .003	600 .004	600 .005	600 .005	600 .006	600 .006
2. Medium Carbon & Alloy Steels	Carbon and Alloys to 32 HRc	575 .001	575 .002	575 .003	575 .003	575 .003	575 .004	575 .004
3. Medium Carbon & Alloy Steels	Carbon and Alloys 32 HRc to 42 HRc	525 .003	525 .003	525 .004	525 .005	525 .005	525 .006	525 .006
4. Stainless Steels	Austentic	525 .001	525 .001	525 .0015	525 .0015	525 .002	525 .003	525 .004
5. Stainless Steels	Martensitic	550 .001	550 .001	550 .0015	550 .0015	550 .002	550 .003	550 .004
6. Stainless Steels	Precipitation Hardening	300 .001	300 .001	300 .001	300 .0015	300 .0015	300 .002	300 .002
7. Nickel	Nickel Base Aloys	120 .0005	120 .0005	120 .001	120 .001	120 .0015	120 .002	120 .002
8. Titanium	Titanium Alloys	100 .0005	100 .0005	100 .001	100 .001	100 .0015	100 .002	100 .002
9. Cast Iron	Gray, Malleable & Ductile	600 .001	600 .0015	600 .0015	600 .002	600 .003	600 .004	600 .004
10. Non-Ferrous	Low Si Cast & Aluminum	1,700 .002	1,700 .002	1,700 .003	1,700 .003	1,700 .004	1,700 .005	1,700 .005

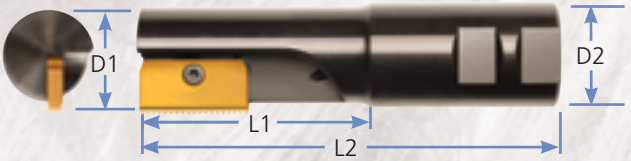
Indexable Thread Mill Holders Identification System

TM X 0075 - 79 - 2 - 14 - T

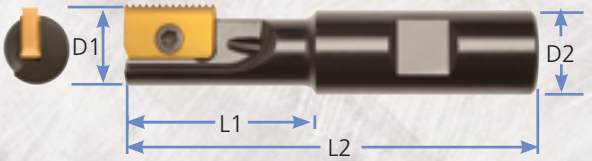
TM	X	0075	79	2*	14	T**
Denotes Thread Mill	Denotes Internal Or External Application	Denotes Shank Diameter In Hundredths Of An Inch	Denotes Cutter Diameter In Hundredths Of An Inch	Denotes Number Of Flutes	Denotes Length Of Insert In Millimeters (mm)	Denotes Taper Neck

* This position is omitted for single flute thread mills. ** This position omitted for straight neck thread mills.

Single Flute Holders



Standard Straight Neck Style
(For parallel thread applications.)

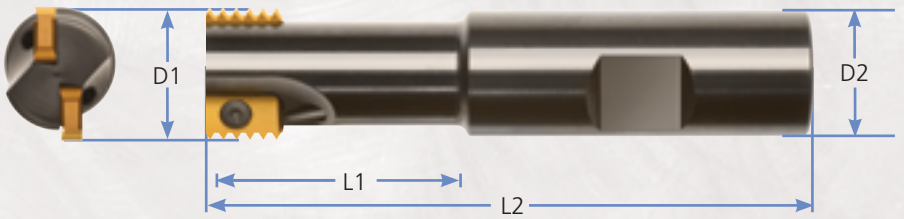


Tapered Neck "T" Style
(For tapered pipe thread applications.)

	Tool Description	SKU	D2	D1	L2	L1	Flutes	Screw	Insert
1	TMX 0075 - 45 - 14T*	1072120	0.75	0.450	3.39	1.000	1	T7 x M 2.5	14
	TMX 0075 - 50 - 14*	1072100	0.75	0.500	3.00	0.800	1	T7 x M 2.5	14
	TMX 0075 - 50 - 14HM*	1072101	0.75	0.500	3.35	1.000	1	T7 x M 2.5	14
	TMX 0075 - 54 - 14*	1072123	0.75	0.540	3.39	1.250	1	T7 x M 2.5	14
2	TMX 0075 - 54 - 14T*	1072121	0.75	0.540	3.39	1.250	1	T7 x M 2.5	14
	TMX 0075 - 57 - 14*	1072124	0.75	0.570	3.39	1.000	1	T7 x M 2.5	14
	TMX 0075 - 67 - 14*	1072102	0.75	0.670	3.39	1.180	1	T7 x M 2.5	14
3	TMX 0075 - 70 - 21T*	1072122	0.75	0.700	3.75	1.375	1	T20 x M 4	21
	TMX 0075 - 75 - 21**	1072104	0.75	0.750	3.75	1.575	1	T20 x M 4	21
	TMX 0075 - 88 - 21	1072115	0.75	0.880	3.75	1.575	1	T20 x M 4	21
	TMX 0100 - 114 - 30	1072107	1.00	1.140	4.37	1.968	1	T20 x M 5	30
	TMX 0150 - 173 - 40	1072112	1.50	1.730	6.00	3.070	1	T20 x M 5	40

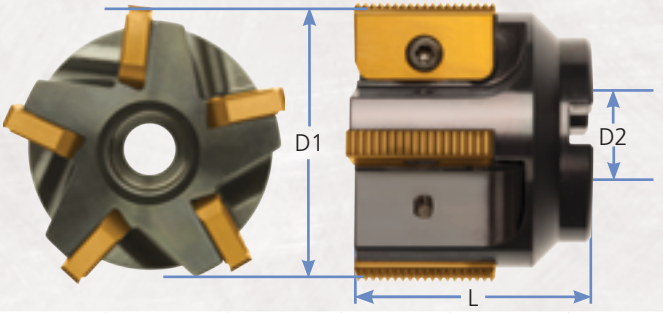
* These tool styles do not have through hole coolant. ** Tool not recommended for 1"- 8 UN internal thread application.
1 For 3/8"- 18 NPT **2** For 1/2"- 14 NPT **3** For 3/4"- 14 NPT. For larger NPT threads, use straight neck styles.

Indexable Thread Mill System



Two Flute Holders

Tool Description	SKU	D2	D1	L2	L1	Flutes	Screw	Insert
TMX 0075 - 79 - 2 - 14	2072103	0.75	0.790	3.75	1.630	2	T7 x M 2.5	14
TMX 0100 - 118 - 2 - 21	2072106	1.00	1.180	4.25	2.000	2	T20 x M 4	21
TMX 0125 - 158 - 2 - 30	2072109	1.25	1.580	5.12	2.850	2	T20 x M 5	30
TMX 0150 - 197 - 2 - 40	2072113	1.50	1.970	6.00	3.250	2	T20 x M 5	40

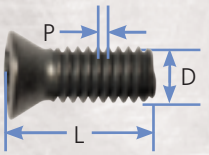


Four Flute Shell Mill Holders

Tool Description	SKU	D2	D1	L	Flutes	Screw	Insert
TMX 0075 - 248 - 4 - 30	4072110	0.75	2.480	1.968	4	T20 x M 5	30
TMX 0100 - 315 - 4 - 30	4072111	1.00	3.150	2.165	4	T20 x M 5	30
TMX 0100 - 315 - 4 - 40	4072114	1.00	3.150	5.12	4	T20 x M 5	40

Screw

Insert Screw	SKU	L	D	P
T7 x M 2.5	SC73102	0.250	2.50 mm	0.45 mm
T20 x M 4	SC73103	0.400	4.00 mm	0.70 mm
T20 x M 5	SC73104	0.480	5.00 mm	0.80 mm



Wrench

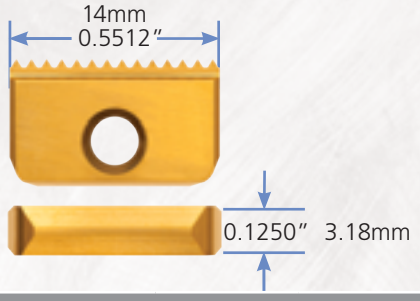
Wrench	SKU	Screw size	Insert Size
T7	W73100	T7 x M 2.5	14mm
T20	W73101	T20 x M 4 & T20 x M 5	21, 30 & 40 mm

Indexable Thread Mill Insert Identification System

21 N TM - 14 UN - TIN

21	N	TM	14	UN	TIN
Denotes Insert Length In Millimeters (mm)	N=Internal E=External X=Internal Or External Application	Denotes Insert Style Used For Thread Milling	Denotes Pitch In Threads Per Inch, ISO Pitch in mm	Thread Form UN=Unified ISO=Metric NPT=National Pipe Taper NPTF=Dryseal W=Whitworth	Carbide Grade TIN = TiN PVD Coated TLN = TiAlN PVD Coated

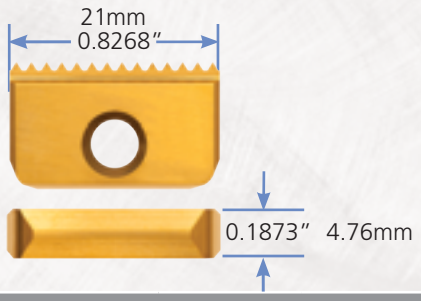
UN (Unified National), Thread Mill Inserts



14 mm External UN

Insert Description	TIN	TLN	TPI	Dec. Ptch
14 ETM - 48 UN	2074200	3076200	48	0.0208
14 ETM - 40 UN	2074201	3076201	40	0.0250
14 ETM - 32 UN	2074202	3076202	32	0.0313
14 ETM - 28 UN	2074203	3076203	28	0.0357
14 ETM - 27 UN	2074204	3076204	27	0.0370
14 ETM - 24 UN	2074205	3076205	24	0.0417
14 ETM - 20 UN	2074206	3076206	20	0.0500
14 ETM - 18 UN	2074208	3076208	18	0.0556
14 ETM - 16 UN	2074210	3076210	16	0.0625
14 ETM - 14 UN	2074212	3076212	14	0.0714
14 ETM - 12 UN	2074214	3076214	12	0.0833

For use with the following holders:
- TMX 0075 - 50 - 14
- TMX 0075 - 50 - 14 HM
- TMX 0075 - 54 - 14
- TMX 0075 - 57 - 14
- TMX 0075 - 67 - 14
- TMX 0075 - 79 - 2 - 14



21 mm External UN

Insert Description	TIN	TLN	TPI	Dec. Ptch
21 ETM - 20 UN	2074217	3076217	20	0.0500
21 ETM - 18 UN	2074219	3076219	18	0.0556
21 ETM - 16 UN	2074221	3076221	16	0.0625
21 ETM - 14 UN	2074223	3076223	14	0.0714
21 ETM - 12 UN	2074225	3076225	12	0.0833
21 ETM - 10 UN	2074227	3076227	10	0.1000
21 ETM - 9 UN	2074229	3076229	9	0.1111
21 ETM - 8 UN - S*	2074230	3076230	8	0.1250

* S denotes single side use only

For use with the following holders:
- TMX 0075 - 75 - 21
- TMX 0100 - 118 - 2 - 21
- TMX 0075 - 88 - 21

UN (Unified National), Thread Mill Inserts

30 mm External UN

Insert Description	TIN	TLN	TPI	Dec. Ptch
30 ETM - 18 UN	2074232	3076232	18	0.0556
30 ETM - 16 UN	2074234	3076234	16	0.0625
30 ETM - 14 UN	2074236	3076236	14	0.0714
30 ETM - 12 UN	2074238	3076238	12	0.0833
30 ETM - 10 UN	2074240	3076240	10	0.1000
30 ETM - 8 UN	2074242	3076242	8	0.1250
30 ETM - 7 UN	2074244	3076244	7	0.1429
30 ETM - 6 UN - S*	2074245	3076245	6	0.1667
30 ETM - 5 UN - S*	2074246	3076246	5	0.2000

* S denotes single side use only

For use with the following holders:

- TMX 0075 - 248 - 30
- TMX 0125 - 158 - 2 - 30
- TMX 0100 - 114 - 30
- TMX 0100 - 315 - 4 - 30

14 mm Internal UN

Insert Description	TIN	TLN	TPI	Dec. Ptch
14 NTM - 48 UN	2074100	3076100	48	0.0208
14 NTM - 40 UN	2074101	3076101	40	0.0250
14 NTM - 32 UN	2074102	3076102	32	0.0313
14 NTM - 28 UN	2074103	3076103	28	0.0357
14 NTM - 27 UN	2074104	3076104	27	0.0370
14 NTM - 24 UN	2074105	3076105	24	0.0417
14 NTM - 20 UN	2074106	3076106	20	0.0500
14 NTM - 18 UN	2074107	3076107	18	0.0556
14 NTM - 16 UN	2074108	3076108	16	0.0625
14 NTM - 14 UN	2074109	3076109	14	0.0714
14 NTM - 12 UN	2074110	3076110	12	0.0833

For use with the following holders:

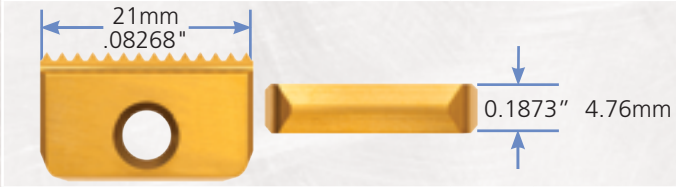
- TMX 0075 - 50 - 14
- TMX 0075 - 57 - 14
- TMX 0075 - 54 - 14
- TMX 0075 - 79 - 2 - 14
- TMX 0075 - 67 - 14
- TMX 0075 - 50 - 14 HM

40 mm External UN

Insert Description	TIN	TLN	TPI	Dec. Ptch
40 ETM - 18 UN	2074247	3076247	18	0.0556
40 ETM - 16 UN	2074248	3076248	16	0.0625
40 ETM - 14 UN	2074249	3076249	14	0.0714
40 ETM - 12 UN	2074250	3076250	12	0.0833
40 ETM - 10 UN	2074251	3076251	10	0.1000
40 ETM - 8 UN	2074252	3076252	8	0.1250
40 ETM - 7 UN	2074253	3076253	7	0.1429
40 ETM - 6 UN	2074254	3076254	6	0.1667
40 ETM - 5 UN	2074255	3076255	5	0.2000
40 ETM - 4.5 UN	2074256	3076256	4.5	0.2222
40 ETM - 4 UN - S*	2074257	3076257	4	0.2500
40 ETM - 3 UN - S*	2074258	3076258	3	0.3333

For use with the following holders:

- TMX 0100 - 315 - 4 - 40
- TMX 0150 - 173 - 40
- TMX 0150 - 197 - 2 - 40



21 mm Internal UN

Insert Description	TIN	TLN	TPI	Dec. Ptch
21 NTM - 32 UN	2074112	3076112	32	0.0313
21 NTM - 20 UN	2074113	3076113	20	0.0500
21 NTM - 18 UN	2074114	3076114	18	0.0556
21 NTM - 16 UN	2074115	3076115	16	0.0625
21 NTM - 14 UN	2074116	3076116	14	0.0714
21 NTM - 12 UN	2074117	3076117	12	0.0833
21 NTM - 10 UN	2074118	3076118	10	0.1000
21 NTM - 8 UN - S*	2074119	3076119	8	0.1250

* S denotes single side use only

For use with the following holders:

- TMX 0075 - 75 - 21
- TMX 0100 - 118 - 2 - 21
- TMX 0075 - 88 - 21

UN Thread Mill Inserts

30 mm Internal UN

Insert Description	TIN	TLN	TPI	Dec. Ptch
30 NTM - 18 UN	2074120	3076120	18	0.0556
30 NTM - 16 UN	2074121	3076121	16	0.0625
30 NTM - 14 UN	2074122	3076122	14	0.0714
30 NTM - 12UN	2074123	3076123	12	0.0833
30 NTM - 10 UN	2074124	3076124	10	0.1000
30 NTM - 8 UN	2074125	3076125	8	0.1250
30 NTM - 7 UN	2074126	3076126	7	0.1429
30 NTM - 6 UN - S*	2074127	3076127	6	0.1667
30 NTM - 5 UN - S*	2074128	3076128	5	0.2000

* S denotes single side use only

For use with the following holders:

- TMX 0075 - 248 - 4 - 30
- TMX 0100 - 114 - 30
- TMX 0125 - 158 - 2 - 30
- TMX 0100 - 315 - 4 - 30

40 mm Internal UN

Insert Description	TIN	TLN	TPI	Dec. Ptch
40 NTM - 18 UN	2074129	3076129	18	0.0556
40 NTM - 16 UN	2074130	3076130	16	0.0625
40 NTM - 12 UN	2074131	3076131	12	0.0833
40 NTM - 10 UN	2074132	3076132	10	0.1000
40 NTM - 8 UN	2074133	3076133	8	0.1250
40 NTM - 7 UN	2074134	3076134	7	0.1429
40 NTM - 6 UN	2074135	3076135	6	0.1667
40 NTM - 5 UN	2074136	3076136	5	0.2000
40 NTM - 4.5 UN	2074137	3076137	4.5	0.2222
40 NTM - 4 UN - S*	2074138	3076138	4	0.2500
40 NTM - 3 UN - S*	2074139	3076139	3	0.3333

* S denotes single side use only

For use with the following holders:

- TMX 0100 - 315 - 4 - 40
- TMX 0150 - 173 - 40
- TMX 0150 - 197 - 2 - 40

Indexable Thread Mill Inserts

40 mm External UNJ

Insert Description	TIN	TLN	TPI	Dec. Ptch
14 ETM - 20 UNJ	2074207	3076207	20	0.0500
14 ETM - 18 UNJ	2074209	3076209	18	0.0556
14 ETM - 16 UNJ	2074211	3076211	16	0.0625
14 ETM - 14 UNJ	2074213	3076213	14	0.0714
14 ETM - 12 UNJ	2074216	3076216	12	0.0833

For use with the following holders:
- TMX 0075 - 50 - 14
- TMX 0075 - 50 - 14 HM
- TMX 0075 - 54 - 14
- TMX 0075 - 57 - 14
- TMX 0075 - 67 - 14
- TMX 0075 - 79 - 2 - 14

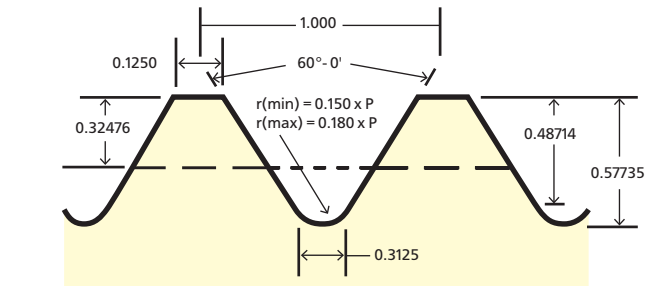
30 mm External UNJ

Insert Description	TIN	TLN	TPI	Dec. Ptch
30 ETM - 18 UNJ	2074233	3076233	18	0.0556
30 ETM - 16 UNJ	2074235	3076235	16	0.0625
30 ETM - 14 UNJ	2074237	3076237	14	0.0714
30 ETM - 12 UNJ	2074239	3076239	12	0.0833
30 ETM - 10 UNJ	2074241	3076241	10	0.1000
30 ETM - 8 UNJ	2074243	3076243	8	0.1250

For use with the following holders:
- TMX 0075 - 248 - 4 - 30
- TMX 0100 - 114 - 30
- TMX 0125 - 158 - 2 - 30
- TMX 0100 - 315 - 4 - 30

External UNJ (Aerospace)

External UNJ thread forms are made to MIL-S-8879C specifications and are generally used in aerospace applications when a controlled root radius of the external thread is specified. Exact dimensions of the thread form can be determined by multiplying the decimal pitch times multipliers shown in the following drawing:



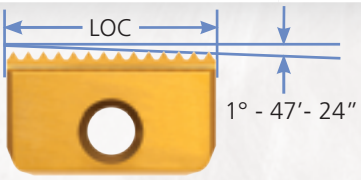
21 mm External UNJ

Insert Description	TIN	TLN	TPI	Dec. Ptch
21 ETM - 20 UNJ	2074218	3076218	20	0.0500
21 ETM - 18 UNJ	2074220	3076220	18	0.0556
21 ETM - 16 UNJ	2074222	3076222	16	0.0625
21 ETM - 14 UNJ	2074224	3076224	14	0.0714
21 ETM - 12 UNJ	2074226	3076226	12	0.0833
21 ETM - 10 UNJ	2074228	3076228	10	0.1000
21 ETM - 8 UNJ - S*	2074231	3076231	8	0.1250

* S denotes single side use only

For use with the following holders:
- TMX 0075 - 75 - 21
- TMX 0100 -118 - 2 - 21
- TMX 0075 - 88 - 21

Indexable Thread Mill Inserts



Internal Or External NPT (National Pipe Taper)

Insert Description	TIN	TLN	TPI	Dec. Ptch	NPT Size	Max Loc**	Recommended Tool Holder
14 mm Inserts							
14 XTM - 18 NPT - SXP*	2074360	3076360	18	0.0556	3/8”- 18 NPT	0.4626	TMX 0075 - 45 - 14T
14 XTM - 14 NPT - SXP*	2074361	3076361	14	0.0714	1/2”- 14 NPT	0.5000	TMX 0075 - 54 - 14T
21 mm Inserts							
21 XTM - 18 NPT - S*	2074302	3076302	18	0.0556	External use only	0.7778	TMX 0075 - 70 - 21T
21 XTM - 14 NPT - SXP*	2074362	3076362	14	0.0714	3/4”- 14 NPT	0.7857	TMX 0075 - 70 - 21T
21 XTM - 11.5 NPT - S*	2074304	3076304	11.5	0.0870	1” thru 2”- 11.5 NPT	0.7826	TMX 0075 - 88 - 21
30 mm Inserts							
30 XTM - 11.5 NPT - S*	2074305	3076305	11.5	0.0870	1-1/4”- 2”- 11.5 NPT	1.1304	TMX 0100 - 114 - 30
30 XTM - 8 NPT - S*	2074306	3076306	8	0.1250	2-1/2”- 8 NPT	1.1250	TMX 0125 - 158 - 2 - 30
40 mm Inserts							
40 XTM - 11.5 NPT - S*	2074307	3076307	11.5	0.1667	2”- 11.5 NPT	1.5652	TMX 0150 - 173 - 40
40 XTM - 8 NPT - S*	2074308	3076308	8	0.1250	2-1/2”- 8 NPT & UP	1.5000	TMX 0150 - 173 - 40
							TMX 0150 - 197 - 2 - 40

* S denotes single side use only
** Max. LOC refers to the maximum length of full threads available on the insert. To determine the actual length of full thread required for a given size NPT thread, please refer to page 21 of this catalog. In most cases, the standard L3 gage length plus one pitch is less than the maximum LOC of the insert.

Internal Or External NPTF (Dryseal)

Insert Description	TIN	TLN	TPI	Dec. Ptch	NPT Size	Max Loc**	Recommended Tool Holder
14 mm Inserts							
14 XTM - 18 NPTF - SXP*	2074363	3076363	18	0.0556	3/8”- 18 NPTF	0.4626	TMX 0075 - 45 - 14T
14 XTM - 14 NPTF - SXP*	2074364	3076364	14	0.0714	1/2”- 14 NPTF	0.5000	TMX 0075 - 54 - 14T
21 mm Inserts							
21 XTM - 18 NPTF - S*	2074311	3076311	18	0.0556	External use only	0.7778	TMX 0075 - 70 - 21T
21 XTM - 14 NPTF - SXP*	2074365	3076365	14	0.0714	3/4”- 14 NPTF	0.7857	TMX 0075 - 70 - 21T
21 XTM - 11.5 NPTF - S*	2074313	3076313	11.5	0.0870	1” thru 2”- 11.5 NPTF	0.7826	TMX 0075 - 88 - 21
30 mm Inserts							
30 XTM - 11.5 NPTF - S*	2074314	3076314	11.5	0.0870	1-1/4” to 2”- 11.5 NPTF	1.1304	TMX 0100 - 114 - 30
30 XTM - 8 NPTF - S*	2074315	3076315	8	0.1250	2-1/2”- 8 NPTF	1.1250	TMX 0125 - 158 - 2 - 30
40 mm Inserts							
40 XTM - 11.5 NPTF - S*	2074316	3076316	11.5	0.1667	2”- 11.5 NPTF	1.5652	TMX 0150 - 173 - 40
40 XTM - 8 NPTF - S*	2074317	3076317	8	0.1250	2-1/2”- 8 NPTF & UP	1.5000	TMX 0150 - 173 - 40
							TMX 0150 - 197 - 2 - 40

* S denotes single side use only
** Max. LOC refers to the maximum length of full threads available on the insert. To determine the actual length of full thread required for a given size NPT thread, please refer to page 21 of this catalog. In most cases, the standard L3 gage length plus one pitch is less than the maximum LOC of the insert.

Indexable Thread Mill Inserts

Internal NPSM (National Pipe Straight Mechanical)

Insert Description	TIN	TLN	TPI	Dec. Ptch	NPSM Size	Max Loc	Recommended Tool Holder
14 mm Inserts							
14 NTM - 18 NPSM	2074318	3076318	18	0.0556	3/8"- 18 NPSM	0.4626	TMX 0075 - 50 - 14
14 NTM - 14 NPSM	2074319	3076319	14	0.0714	1/2"- 14 NPSM	0.5000	TMX 0075 - 54 - 14
21 mm Inserts							
21 NTM - 14 NPSM	2074321	3076321	14	0.0714	3/4"- 14 NPSM	0.7857	TMX 0075 - 75 - 21
21 NTM - 11.5 NPSM	2074322	3076322	11.5	0.0870	1" thru 2"- 11.5 NPSM	0.7826	TMX 0075 - 88 - 21
30 mm Inserts							
30 NTM - 11.5 NPSM	2074323	3076323	11.5	0.0870	1-1/4" thru 2"- 11.5 NPSM	1.1304	TMX 0100 - 114 - 30
30 NTM - 8 NPSM	2074324	3076324	8	0.1250	2-1/2"- 8 NPSM & UP	1.1250	TMX 0125 - 158 - 2 - 30

External NPSM (National Pipe Straight Mechanical)

Insert Description	TIN	TLN	TPI	Dec. Ptch	NPSM Size	Max Loc**	Recommended Tool Holder
14 mm Inserts							
14 ETM - 18 NPSM	2074325	3076325	18	0.0556	3/8"- 18 NPSM	0.4626	TMX 0075 - 67 - 14
14 ETM - 14 NPSM	2074326	3076326	14	0.0714	1/2"- 14 NPSM	0.5000	TMX 0075 - 67 - 14
21 mm Inserts							
21 ETM - 18 NPSM	2074327	3076327	18	0.0556	External use only	0.7778	TMX 0075 - 75 - 21
21 ETM - 14 NPSM	2074328	3076328	14	0.0714	3/4"- 14 NPSM	0.7857	TMX 0075 - 75 - 21
21 ETM - 11.5 NPSM	2074329	3076329	11.5	0.0870	1" thru 2"- 11.5 NPSM	0.7826	TMX 0075 - 88 -21
30 mm Inserts							
30 ETM - 11.5 NPSM	2074330	3076330	11.5	0.0870	1" thru 2"- 11.5 NPSM	1.1304	TMX 0100 - 114 - 30
30 ETM - 8 NPSM	2074331	3076331	8	0.1250	2-1/2"- 8 NPSM & UP	1.1250	TMX 0125 - 158 - 2 - 30

Internal or External BSPT (British Standard Pipe Taper)

Insert Description	TIN	TLN	TPI	Dec. Ptch	NPT Size	Max Loc	Recommended Tool Holder
14 mm Inserts							
14 XTM - 14 BSPT - S*	2074349	3076349	14	0.0714	R 1/2" & R 3/4"- 14 BSPT	0.5000	TMX 0075 - 54 - 14T
21 mm Inserts							
21 XTM - 14 BSPT - S*	2074350	3076350	14	0.0714	R 3/4"- 14 BSPT	0.7857	TMX 0075 - 70 - 21T
21 XTM - 11 BSPT - S*	2074351	3076351	11	0.0909	R 1" thru R 2"- 11 BSPT	0.8182	TMX 0075 - 88 - 21
30 mm Inserts							
30 XTM - 11 BSPT - S*	2074352	3076352	11	0.0909	R 1-1/4" thru R 2"- 11 BSP	1.1811	TMX 0100 - 114 - 30
40 mm Inserts							
40 XTM - 11 BSPT - S*	2074353	3076353	11	0.0909	R 2"- 11 BSPT	1.5456	TMX 0150 - 173 - 40

* S denotes single side use only

Indexable Thread Mill Inserts

Internal or External BSP (British Standard Pipe)

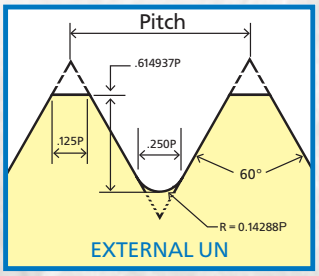
Insert Description	TIN	TLN	TPI	Dec. Ptch	NPT Size	Max Loc	Recommended Tool Holder
14 mm Inserts							
14 XTM - 19 BSP	2074341	3076341	19	0.0526	G 3/8"- 19 BSP	0.5263	TMX 0075 - 50 - 14
14 XTM - 14 BSP	2074342	3076342	14	0.0714	G 1/2" & G 3/4"- 14 BSP	0.5000	TMX 0075 - 67 - 14
14 XTM - 11 BSP - S*	2074343	3076343	11	0.0909	G 1" thru G 2"- 11 BSP	0.5455	TMX 0075 - 67 - 14
21 mm Inserts							
21 XTM - 14 BSP	2074344	3076344	14	0.0714	G 3/4"- 14 BSP	0.7857	TMX 0075 - 75 - 21
21 XTM - 11 BSP	2074345	3076345	11	0.0909	G 1" thru G 2"- 11 BSP	0.8182	TMX 0075 - 88 - 21
30 mm Inserts							
30 XTM - 14 BSP	2074347	3076347	11	0.0909	External use only	1.1429	TMX 0100 - 114 - 30
30 XTM - 11 BSP	2074346	3076346	11	0.0909	G 1-1/4" thru G 2"- 11 BSP	1.1811	TMX 0100 - 114 - 30
40 mm Inserts							
40 XTM - 11 BSP	2074348	3076348	11	0.0909	G 2"- 11 BSP Internal	1.5455	TMX 0150 - 173 - 40

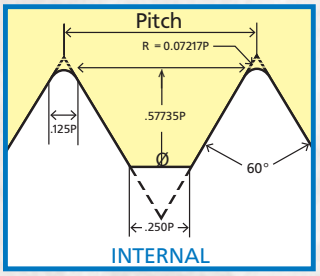
Cutting Conditions

Thread Mill with Straight and Taper Flute

Materials to be Machined	Hardness	Cutting Speed Hard Metal SFM	Cutting Speed Coated SFM	Feed Per Flute Av/d (inch) Cutting Diameter (D1) .4724 - .6299
Unalloyed Steel / Low Alloyed Steel	<600N/mm2	230 - 330	300 - 360	0.002 - 0.004
Unalloyed Steel / Low Alloyed Steel	>600N/mm2	130 - 200	230 - 300	0.002 - 0.003
Lead Alloyed Cutting Steel		230- 330	300 - 360	0.002 - 0.006
High Alloyed / Stainless Steel	400-700N/mm2	130 - 200	230 - 300	0.002 - 0.003
High Alloyed Steel or Cast Iron / Heat Resisting Stainless Steel	700-1500N/mm2	100 - 150	130 - 180	0.002 - 0.003
Special Alloys		50 - 100	80 - 120	0.002 - 0.003
Grey Cast Iron / Nodular Iron Pearlitic	<250HB	230 - 330	300 - 360	0.002 - 0.004
Cast Iron / Nodular Iron Pearlitic	>250HB	130 - 230	230 - 300	0.002 - 0.003
Nodular Ferritic Cast Iron / Malleable Cast Iron		230 - 330	300 - 360	0.002 - 0.004
Titanium, Titanium Alloy		100 - 150	130 - 200	0.002 - 0.003
Copper Alloy (Brass , Bronze)		460 - 530	660- 720	0.002 - 0.006
Copper Alloy / Aluminum Bronze	(CuAlFe)	400 - 460	560 - 620	0.002 - 0.003
Aluminum Alloy / Magnesium Alloy		590 - 720	750 - 890	0.002 - 0.006
Aluminum Cast	Si<8%	790 - 850	980 - 1120	0.002 - 0.006
Aluminum Cast	Si>8%	460 - 530	690 - 750	0.002 - 0.006
Plastic		790 - 850	980 - 1120	0.003 - 0.009

UN Specifications





UN Thread Specifications

Decimal Thread Pitch:	1 ÷ Threads Per Inch
Theoretical Thread Height:	0.866025 x Decimal Pitch
*External Thread Height:	0.614937 x Decimal Pitch
*Internal Thread Height:	0.577350 x Decimal Pitch
External Crest Radius:	0.108253 x Decimal Pitch
Internal Crest Flat Width:	0.250 x Decimal Pitch
External Max. Root Radius:	0.142881 x Decimal Pitch
Internal Max. Root Radius:	0.072169 x Decimal Pitch

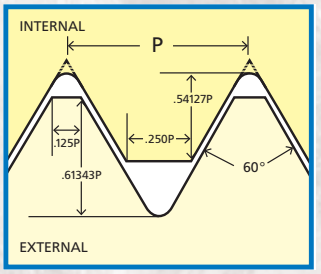
* External & Internal thread height based on maximum material condition full root radius and crest flat truncation as shown in the drawing above.

UN Thread Specifications

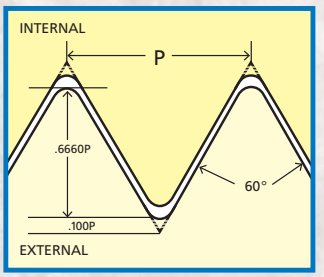
	Internal Thread			External Thread		
TPI	Dec. Pitch	Max Root R	Thd. Height	Max Root R	Crest Flat	Thd. Height
36	0.02778	0.0020	0.0160	0.0040	0.0035	0.0171
32	0.03125	0.0023	0.0180	0.0045	0.0039	0.0192
28	0.03571	0.0026	0.0206	0.0051	0.0045	0.0220
27	0.03704	0.0027	0.0214	0.0053	0.0046	0.0228
24	0.04167	0.0030	0.0241	0.0060	0.0052	0.0256
20	0.05000	0.0036	0.0289	0.0071	0.0063	0.0307
18	0.05556	0.0040	0.0321	0.0079	0.0069	0.0342
16	0.06250	0.0045	0.0361	0.0089	0.0078	0.0384
14	0.07143	0.0052	0.0412	0.0102	0.0089	0.0439
13	0.07692	0.0056	0.0444	0.0110	0.0096	0.0473
12	0.08333	0.0060	0.0481	0.0119	0.0104	0.0512
11	0.09091	0.0066	0.0525	0.0130	0.0114	0.0559
10	0.10000	0.0072	0.0577	0.0143	0.0125	0.0615
9	0.11111	0.0080	0.0642	0.0159	0.0139	0.0683
8	0.12500	0.0090	0.0722	0.0179	0.0156	0.0769
7	0.14286	0.0103	0.0825	0.0204	0.0179	0.0878
6	0.16667	0.0120	0.0962	0.0238	0.0208	0.1025
5	0.20000	0.0144	0.1155	0.0286	0.0250	0.1230
4.5	0.22222	0.0160	0.1283	0.0318	0.0278	0.1367
4	0.25000	0.0180	0.1443	0.0357	0.0313	0.1537

Thread Form Profiles

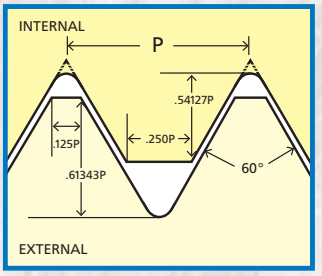
UNIFIED UN



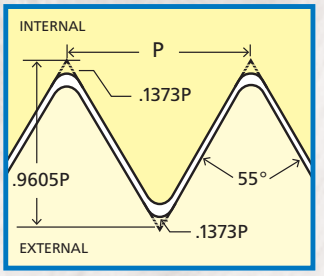
NPSM (MECHANICAL SEAL)



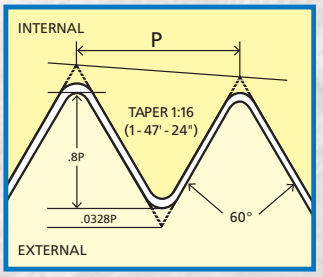
ISO



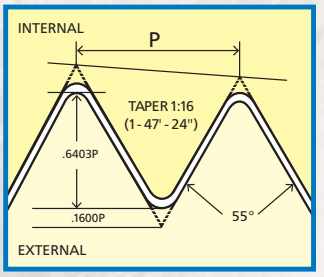
BSP (BRITISH STRAIGHT PIPE)



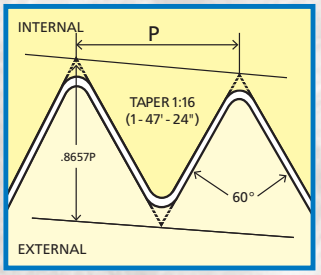
NPT (NATIONAL PIPE TAPER)



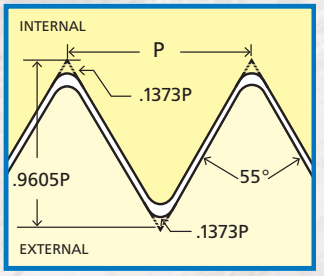
BSPT (BRITISH STANDARD PIPE)



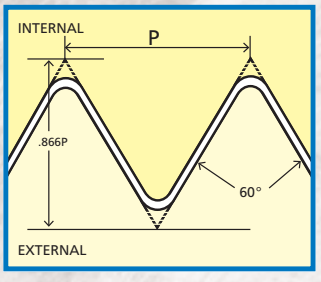
NPTF (DRYSEAL) (NATIONAL PIPE TAPER)



BSW (WHITWORTH)



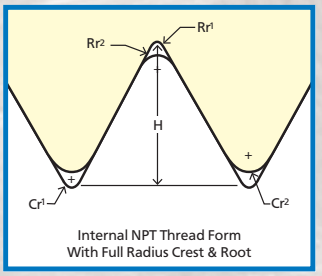
NPSF (DRYSEAL) (NATIONAL PIPE STRAIGHT)

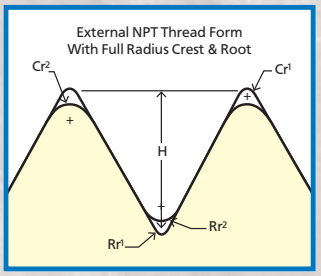


NPT Thread Specifications

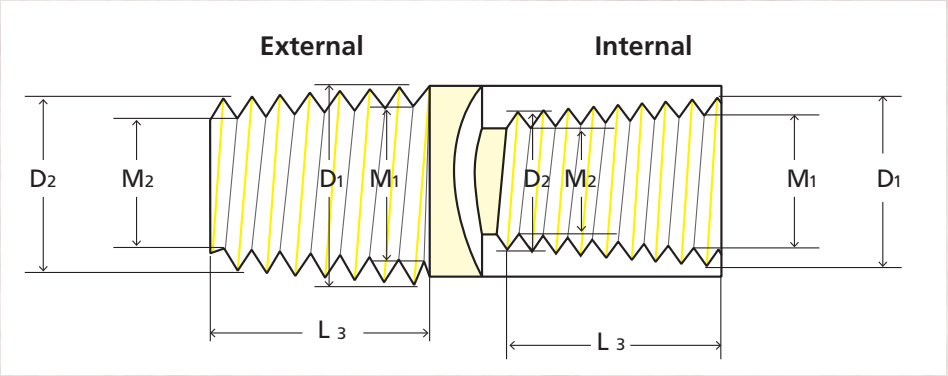
NPT Specifications For Radius Crest & Root

	Root Radius		Crest Radius	
Pitch	Rr1	Rr2	Cr1	Cr2
27 TPI	0.0008	0.0024	0.0012	0.0036
18 TPI	0.0012	0.0033	0.0018	0.0049
14 NPT	0.0016	0.0037	0.0024	0.0056
11.5 TPI	0.0019	0.0042	0.0029	0.0063
8 TPI	0.0027	0.0052	0.0041	0.0078





Nominal thread height shown as H above has been calculated on the mean of the minimum and maximum radius for the following pitch NPT forms: 27 TPI=0.02806", 18 TPI=0.04251", 14 TPI=0.05517", 11.5 TPI=0.06722", 8 TPI=0.09830".



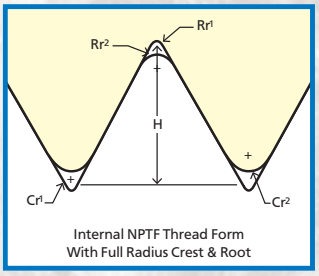
Internal NPSM (National Pipe Straight Mechanical)

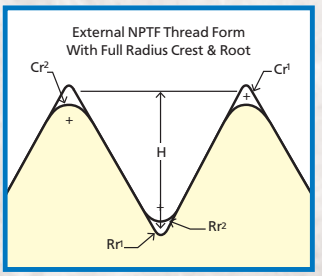
Nominal Size	Decimal Ptch	L3 Gage Length	L3 + 1 Pitch*	D1	D2	M1	M2
1/16"- 27	0.03704	0.271	0.3080	0.308	0.292	0.252	0.236
1/8"- 27	0.03704	0.273	0.3100	0.400	0.384	0.344	0.328
1/4"- 18	0.05556	0.395	0.4506	0.533	0.508	0.448	0.424
3/8"- 18	0.05556	0.407	0.4626	0.668	0.643	0.584	0.559
1/2"- 14	0.07143	0.534	0.6054	0.832	0.799	0.723	0.690
3/4"- 14	0.07143	0.553	0.6244	1.043	1.008	0.934	0.899
1"- 11.5	0.08696	0.661	0.7507	1.305	1.263	1.173	1.131
1-1/4"- 11.5	0.08696	0.681	0.7680	1.650	1.607	1.518	1.475
1-1/2"- 11.5	0.08696	0.681	0.7680	1.888	1.846	1.756	1.714
2"- 11.5	0.08696	0.697	0.7840	2.362	2.319	2.230	2.187
2-1/2"- 8	0.1250	1.057	1.1820	2.859	2.793	2.669	2.603
3"- 8	0.1250	1.141	1.2660	3.485	3.414	3.295	3.224
3-1/2"- 8	0.1250	1.250	1.3750	3.985	3.907	3.795	3.717
4"- 8	0.1250	1.300	1.4250	4.484	4.402	4.294	4.212
5"- 8	0.1250	1.406	1.5310	5.546	5.458	5.356	5.268

*L3 + 1 pitch dimension is maximum length of full thread to satisfy standard NPT or NPTF specifications.

NPTF (Dryseal) Thread Specifications

	Root Radius		Crest Radius	
Pitch	Rr1	Rr2	Cr1	Cr2
27 TPI	0.0023	0.00035	0.0017	0.0035
18 TPI	0.0029	0.0041	0.0026	0.0043
14 NPT	0.0029	0.0041	0.0026	0.0043
11.5 TPI	0.0035	0.0052	0.0035	0.0052
8 TPI	0.0046	0.0063	0.0052	0.0069





Nominal thread height shown as H above has been calculated on the mean of the minimum and maximum radius for the following pitch NPT forms: 27 TPI=0.02657", 18 TPI=0.04118", 14 TPI=0.05492", 11.5 TPI=0.06660", 8 TPI=0.09670".

Drill Recommendation For Thread Milling NPT & NPTF Threads

Thread Size	Drill Size	Dec. Diameter
1/16"- 27	B	0.2380
1/8"- 27	21/64"	0.3281
1/4"- 18	27/64"	0.4219
3/8"- 18	9/16"	0.5625
1/2"- 14	17.5 mm	0.6890
3/4"- 14	23 mm	0.9055
1"- 11.5	1-1/8"	1.1250
1-1/4"- 11.5	-	1.4688
1-1/2"- 11.5	-	1.7132
2"- 11.5	-	2.1861
2-1/2"- 8	-	2.6072
3"- 8	-	3.2283
3-1/2"- 8	-	3.7252
4"- 8	-	4.2221

Production of full form internal or external NPT or NPTF threads by thread milling requires changing the minor diameter of the bore or the external major diameter prior to the final thread milling process.

Do not refer to tap drill charts for internal pipe tap applications. The internal minor diameter created using tap drill sizes will truncate the minor diameter crest beyond the maximum allowable limits with the exception of two turns from the end of the pipe.

The chart to the left recommends the ideal drill size for preparing the bore of an internal pipe thread milling application prior to taper reaming or before going straight to the thread milling operation without reaming the taper. This will produce full crest and root form threads to the L3 gage line.

CNC Programming Data For NPT & NPTF Threads

Thread Size	Drill Size
28 & 27	0.0003"
19 & 18	0.0004"
14	0.0006"
11.5 & 11	0.0007"
8	0.0010"

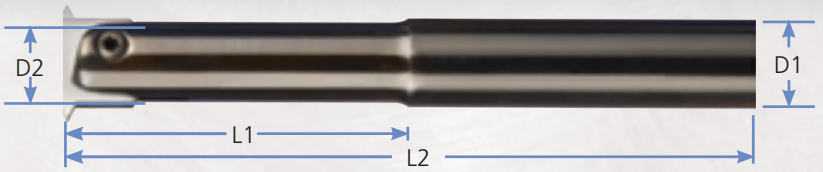
To produce accurate tapered threads for any pipe thread application having a 1: 16 or 3/4" per foot taper, the CNC program must incorporate an increase in arc radius as the centerline of the spindle moves around the internal centerline of the thread to be produced.

For straight threads, a 360° arc move is made around the center with a Z positive move up one pitch. If this were used for pipe threads, the end result would be an oval thread because the 1° - 47' 24" taper ground on the tool cutting edge will move away from the pitch diameter as the tool moves up.

To create a perfect pitch truncated cone pitch diameter for pipe threads, the X & Y arc tool path must also increase to match the taper of 1° - 47' 24" as the tool moves up the bore one pitch. This cannot be performed in one 360° G code line. The use of 4 separate lines using 90° of arc move are required. An ever increasing arc radius is incorporated based on the distance moved up (1/4 pitch) in Z. The end points of each arc move must also include this additional increase in X or Y.

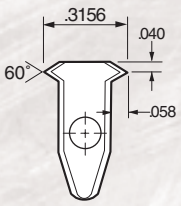
The chart above indicates the exact amount of compensation required for each 90° arc move.

UN Thread Form

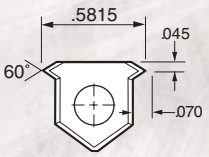


Internal Threading Tool (All Inserts Are HSN Coated)

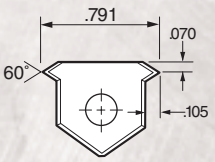
Insert Part Number	Holder Part Number	Holder Description	D1	L2	L1	D2	Maximum Thread Depth	Nominal Size UN	Pitch
175-3002	190-1302	OTE-0250-6.0-.1875	0.1875	6.0	na	0.1875	4	7/16	14
↓	190-1322	CBCYV-0250-6.0-0250	.216	6.0	1.05	.2500	↓	7/16	20
↓	↓	↓	↓	↓	↓	↓	↓	1/2	13
↓	↓	↓	↓	↓	↓	↓	↓	1/2	20
↓	↓	↓	↓	↓	↓	↓	↓	9/16	12
↓	↓	↓	↓	↓	↓	↓	↓	9/16	18
↓	↓	↓	↓	↓	↓	↓	↓	5/8	11
↓	↓	↓	↓	↓	↓	↓	↓	5/8	18
175-3003	190-1313	CYF-0500-6.0-0500	0.44	6.0	1.75	0.5	1.6	3/4	10
↓	190-1323	CBCYF-0500-6.0-0500	0.44	6.0	1.145	0.5	1	3/4	16
↓	190-1303	OTE-0500-6.0-.4375	0.4375	6.0	na	0.4375	4	7/8	9
↓	↓	↓	↓	↓	↓	↓	↓	7/8	14
175-3004	190-1314	CYF-0625-6.25-0625	0.55	6.25	2	0.625	1.85	1	8
↓	190-1324	CBCYF-0625-6.0-0625	0.55	6.0	1.325	0.625	1.2	1	12
↓	190-1304	OTE-0625-6.0-5625	0.5625	6.0	na	0.5625	4	1	14
↓	↓	↓	↓	↓	↓	↓	↓	1-1/8	7
↓	↓	↓	↓	↓	↓	↓	↓	1-1/8	8
↓	↓	↓	↓	↓	↓	↓	↓	1-1/8	12
↓	↓	↓	↓	↓	↓	↓	↓	1-1/4	7
↓	↓	↓	↓	↓	↓	↓	↓	1-1/4	8
↓	↓	↓	↓	↓	↓	↓	↓	1-1/4	12
↓	↓	↓	↓	↓	↓	↓	↓	1-3/8	6
↓	↓	↓	↓	↓	↓	↓	↓	1-3/8	8
↓	↓	↓	↓	↓	↓	↓	↓	1-3/8	12
↓	↓	↓	↓	↓	↓	↓	↓	1-1/2	6
↓	↓	↓	↓	↓	↓	↓	↓	1-1/2	8
↓	↓	↓	↓	↓	↓	↓	↓	1-1/2	12



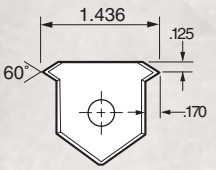
7/16" - 5/8" UN Thread Form Insert



3/4" - 7/8" UN Thread Form Internal Threading Tool

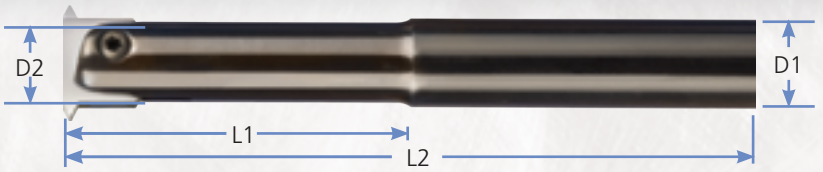


1" - 1-1/2" UN Thread Form Internal Threading Tool



1-5/8" - 4" Internal Threading Tool

UN Thread Form - Continued



Internal Threading Tool (All Inserts Are HSN Coated)

Insert Part Number	Holder Part Number	Holder Description	D1	L2	L1	D2	Maximum Thread Depth	Nominal Size UN	Pitch
175-3005	190-1315	CYF-1250-7.5-1250	1.125	7.5	2.25	1.25	2	1-5/8	8
↓	190-1325	CYF-1250-10.0-1250	1.125	10.0	3	1.25	2.75	1-3/4	5
↓	190-1305	OTM-1.250-8.0-1000	1	8.0	na	1	6	1-3/4	8
↓	↓	↓	↓	↓	↓	↓	↓	1-7/8	8
↓	↓	↓	↓	↓	↓	↓	↓	2	4.5
↓	↓	↓	↓	↓	↓	↓	↓	2	8
↓	↓	↓	↓	↓	↓	↓	↓	2-1/4	4.5
↓	↓	↓	↓	↓	↓	↓	↓	2-1/4	8
↓	↓	↓	↓	↓	↓	↓	↓	2-1/2	4
↓	↓	↓	↓	↓	↓	↓	↓	2-1/2	8
↓	↓	↓	↓	↓	↓	↓	↓	2-3/4	4
↓	↓	↓	↓	↓	↓	↓	↓	2-3/4	8
↓	↓	↓	↓	↓	↓	↓	↓	3	4
↓	↓	↓	↓	↓	↓	↓	↓	3	8
↓	↓	↓	↓	↓	↓	↓	↓	3-1/4	4
↓	↓	↓	↓	↓	↓	↓	↓	3-1/4	8
↓	↓	↓	↓	↓	↓	↓	↓	3-1/2	4
↓	↓	↓	↓	↓	↓	↓	↓	3-1/2	8
↓	↓	↓	↓	↓	↓	↓	↓	3-3/4	4
↓	↓	↓	↓	↓	↓	↓	↓	3-3/4	8
↓	↓	↓	↓	↓	↓	↓	↓	4	4
↓	↓	↓	↓	↓	↓	↓	↓	4	8

Suggested Speeds And Feeds

Tool Shank Diameter and Number of Flutes
SFPM and Feed, Inches per Tooth

Material	Class	1/4" 2	5/16" 2	3/8" 2	1/2" 2	3/4" 2
1. Steel	Plain and Low Carbon to 22 HRc	600 .004	600 .005	600 .005	600 .006	600 .006
2. Medium Carbon & Alloy Steels	Carbon and Alloys to 32 HRc	575 .003	575 .003	575 .003	575 .004	575 .004
3. Medium Carbon & Alloy Steels	Carbon and Alloys 32 HRc to 42 HRc	525 .004	525 .005	525 .005	525 .006	525 .006
4. Stainless Steels	Austentic	525 .0015	525 .0015	525 .002	525 .003	525 .004
5. Stainless Steels	Martensitic	550 .0015	550 .0015	550 .002	550 .003	550 .004
6. Stainless Steels	Precipitation Hardening	300 .001	300 .0015	300 .0015	300 .002	300 .002
7. Nickel	Nickel Base Aloys	120 .001	120 .001	120 .0015	120 .002	120 .002
8. Titanium	Titanium Alloys	100 .001	100 .001	100 .0015	100 .002	100 .002
9. Cast Iron	Gray, Malleable & Ductile	600 .0015	600 .002	600 .003	600 .004	600 .004
10. Non-Ferrous	Low Si Cast & Aluminum	1,700 .003	1,700 .003	1,700 .004	1,700 .005	1,700 .005

OMNIthread
THREAD MILLING

Catalog Contents

Carbide Grades

TIN

The TIN grade utilizes an ISO TIN carbide base grade but has the added benefit of a PVDTiN (Titanium Nitride) coating. TIN is our standard stocked grade and satisfies the greatest range of material applications. TIN should be the first choice for most applications.

TLN

TLN grade is a TiAlN (Titanium Aluminum Nitride), PVD coated grade recommended for difficult to machine alloys having work-hardening or abrasive wear characteristics. This could improve wear life in materials such as stainless steels, nickel alloys, most cast irons as well as graphite resin composites.

HSN

Our newest coating is a multi-layer hybrid nano coating. This new coating has very good heat resistance and high hardness. The HSN coating is designed for heat treated materials up to 72 HRc.

Tool Selection

There are 3 critical steps required for optimizing a thread milling operation for any thread to be produced.

1. **Tool Selection**
2. **Speed & Feed Selection**
3. **Preparing the CNC Program**

Selecting the best tool for a given job is made easier when all information is available.

Our technical service engineers will help you with any application you are considering and will guide you through every step of the process at no charge to you.

If you wish, you can fax a request by copying the Program Request form and request a suggested tool and cycle time for any application. (See page 40 for form)

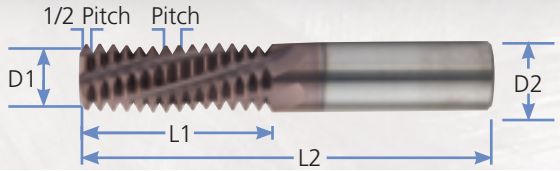
Please fill out the information along with your fax number and a recommendation will be returned to you within 24 hours.

Mini Thread Mills HSN coated

All Single Thread - HSN Coated

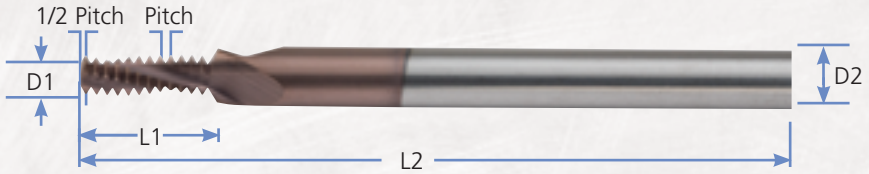
Thread Sizes	D1	L1	D3	Flutes	L2	D2	SKU
0-80	1,1	6,4	0,8	1	51	4	11M1000
2-56 2-64 M2.5x0.45	1,6	6,4	0,8	3	51	4	11M1001
4-40 4-48	2,2	6,4	0,9	3	51	4	11M1002
5-40 5-44 M3x0.5	2,4	6,4	1,3	3	51	4	11M1003
6-32 6-40	2,4	9,5	1,3	3	51	4	11M1004
8-32 8-36 M4-0.7	2,9	9,5	1,8	3	51	4	11M1005
M5-0.8	3,6	9,5	2,5	3	58	6	11M1006
10-24 10-32	3,3	12,7	2,5	3	58	6	11M1007
1/4-20 1/4-28 M6-1.0	4,6	15,2	2,5	3	58	6	11M1008
18-56	6,1	25,4	2,9	3	58	6	11M1009
12-32	7,6	25,4	5,8	4	73	10	11M1010
11-32	11,9	31,8	7,6	5	84	12	11M1011
4-12	15,9	50,8	8,1	6	93	16	11M1012

Solid Carbide Thread Mills



Helical Thread Mills HSN Coated

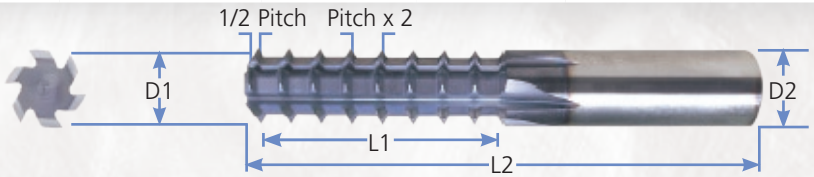
Tool Size	D2	D1	L1	L2	Flutes	SKU
M4-0.70M	4	2,8	8,4	51	3	06H2000
M5-0.80M	4	3,5	10,4	51	3	06H2001
M6-1.00M	4	3,9	12	51	3	06H2002
M8-0.75M	6	5,9	16	58	3	06H2003
M8-1.00M	6	5,9	16	58	3	06H2004
M8-1.25M	6	5,9	16,25	58	3	06H2005
M10-1.25M	8	7,7	20	64	4	06H2006
M10-1.50M	8	7,7	21	64	4	06H2007
M12-1.00M	10	9,9	24	73	4	06H2008
M12-1.50M	10	9,4	24	73	4	06H2009
M12-1.75M	10	8,7	24,5	73	4	06H2010
M14-1.50M	12	11,2	28,5	84	4	06H2011
M16-2.00M	12	11,9	32	84	5	06H2012
M18-2.5M	16	13,9	40	93	5	06H2013
M20,M24-3.00M	16	15,9	42	93	5	06H2014



Helical Thread Mills HSN Coated - Straight Coolant Through

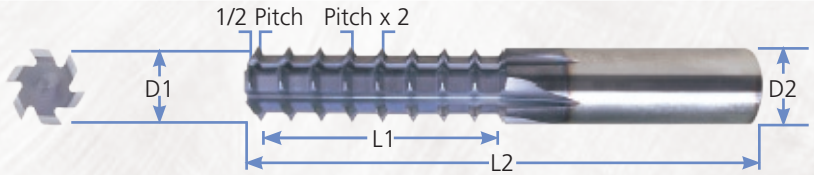
Tool Size	D2	D1	L1	L2	Flutes	SKU
M8-0.75M-C	6	5,9	16	58	3	07H2003
M8-1.00M-C	6	5,9	16	58	3	07H2004
M8-1.25M-C	6	5,9	16,25	58	3	07H2005
M10-1.25M-C	8	7,7	20	64	4	07H2006
M10-1.50M-C	8	7,7	21	64	4	07H2007
M12-1.00M-C	10	9,9	24	73	4	07H2008
M12-1.50M-C	10	9,4	24	73	4	07H2009
M12-1.75M-C	10	8,7	24,5	73	4	07H2010
M14-1.50M-C	12	11,2	28,5	84	4	07H2011
M16-2.00M-C	12	11,9	32	84	5	07H2012
M18-2.5M-C	16	13,9	40	93	5	07H2013
M20,M24-3.00M-C	16	15,9	42	93	5	07H2014

Solid Carbide Thread Mills



ISO Metric Straight Flute Internal TLN Coated - Long Length

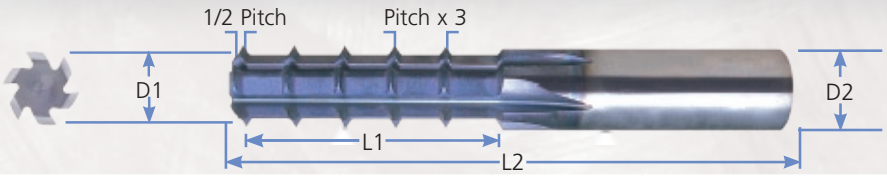
Min. Size	SKU	Pitch	L2	L1	D2	D1	Flutes
M 4	78850	0,70 ISO-T2	38	8,40	3,0	2,60	3
M 5	78851	0,80 ISO-T2	42	11,20	4,0	3,60	3
M 6	78852	1,00 ISO-T2	57	12,00	6,0	4,00	3
M 8	78853	1,25 ISO-T2	62	17,50	6,0	5,00	3
M 10	78854	1,50 ISO-T2	62	21,00	6,0	5,90	5
M 12	78855	1,75 ISO-T2	74	24,50	8,0	7,90	5
M 14	78856	2,00 ISO-T2	86	28,00	10,0	9,90	5
M 16	78857	2,00 ISO-T2	95	32,00	12,0	11,90	5
M 20	78858	2,50 ISO-T2	95	40,00	12,0	11,90	5



ISO Internal Fine Pitch TLN Coated - Long Length

Min. Size	SKU	Pitch	L2	L1	D2	D1	Flutes
M8	78859	0,75 ISO-T2	62	16,50	6,0	5,90	5
M12	78860	1,00 ISO-T2	74	24,00	8,0	7,90	5
M16	78861	1,00 ISO-T2	95	32,00	12,0	11,90	5
M14	78862	1,50 ISO-T2	86	30,00	10,0	9,90	5
M16	78863	1,50 ISO-T2	95	36,00	12,0	11,90	5
M18	78864	2,00 ISO-T2	95	32,00	12,0	11,90	5

Solid Carbide Thread Mills



ISO Metric Straight Flute Internal TLN Coated - Extra Long Length

Min. Size	SKU	Pitch	L2	L1	D2	D1	Flutes
M4	78950	0,70 ISO-T3	42	12,60	3,0	2,60	3
M5	78951	0,80 ISO-T3	47	16,80	4,0	3,60	3
M6	78952	1,00 ISO-T3	60	18,00	6,0	4,00	3
M8	78953	1,25 ISO-T3	65	26,25	6,0	5,00	3
M10	78954	1,50 ISO-T3	72	31,50	6,0	5,90	5
M12	78955	1,75 ISO-T3	86	36,75	8,0	7,90	5
M14	78956	2,00 ISO-T3	95	42,00	10,0	9,90	5
M16	78957	2,00 ISO-T3	115	48,00	12,0	11,00	5
M20	78958	2,50 ISO-T3	115	80,00	12,0	11,90	5

Suggested Speeds And Feeds

Tool Shank Diameter and number of flutes
Cutting Speed and Feed per Tooth

Material	Class	4mm 3	6mm 3	8mm 3	10mm 4	12mm 4	16mm 5
1. Steel	Plain and Low Carbon to 22 HRc	185 0,075	185 0,075	185 0,100	185 0,125	185 0,125	185 0,150
2. Medium Carbon & Alloy Steels	Carbon and Alloys to 32 HRc	175 0,025	175 0,050	175 0,075	175 0,075	175 0,075	175 0,125
3. Medium Carbon & Alloy Steels	Carbon and Alloys 32 HRc to 42 HRc	160 0,075	160 0,075	160 0,100	160 0,125	160 0,125	160 0,150
4. Stainless Steels	Austentic	160 0,025	160 0,025	160 0,038	160 0,038	160 0,050	160 0,075
5. Stainless Steels	Martensitic	165 0,025	165 0,025	165 0,038	165 0,038	165 0,050	165 0,075
6. Stainless Steels	Precipitation Hardening	90 0,025	90 0,025	90 0,025	90 0,038	90 0,038	90 0,050
7. Nickel	Nickel Base Aloys	36 0,012	36 0,012	36 0,025	36 0,025	36 0,038	36 0,050
8. Titanium	Titanium Alloys	30 0,012	30 0,012	30 0,025	30 0,025	30 0,038	30 0,050
9. Cast Iron	Gray, Malleable & Ductile	185 0,025	185 0,038	185 0,038	185 0,050	185 0,075	185 0,100
10. Non-Ferrous	Low Si Cast & Aluminum	500 0,050	500 0,050	500 0,075	500 0,075	500 0,100	500 0,150

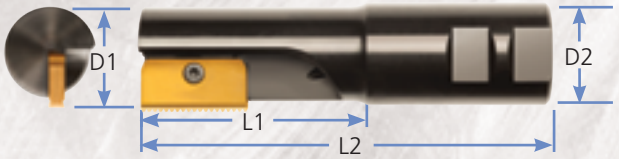
Indexable Thread Mill Holders Identification System

TM X 0075 - 79 - 2 - 14 - T

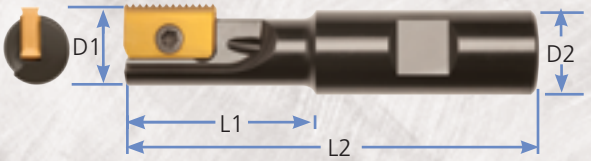
TM	X	0075	79	2*	14	T**
Denotes Thread Mill	Denotes Internal Or External Application	Denotes Shank Diameter In Hundredths Of An Inch	Denotes Cutter Diameter In Hundredths Of An Inch	Denotes Number Of Flutes	Denotes Length Of Insert In Millimeters (mm)	Denotes Taper Neck

* This position is omitted for single flute thread mills. ** This position omitted for straight neck thread mills.

Single Flute Holders



Standard Straight Neck Style
(For parallel thread applications.)

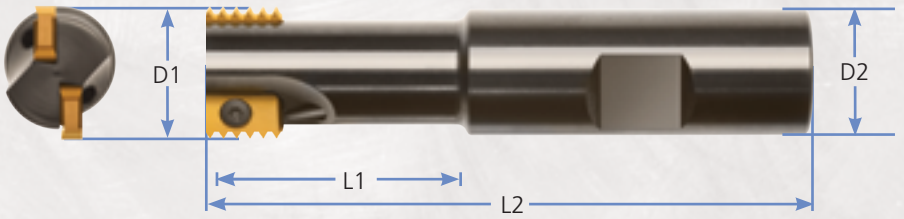


Tapered Neck "T" Style
(For tapered pipe thread applications.)

	Tool Description	SKU	D2	D1	L2	L1	Flutes	Screw	Insert
1	TMX - 20 - 114 - 14T*	1092030	20	11,4	85	26	1	T7 x M 2,5	14T
	TMX - 20 - 12 - 14*	1092012	20	12	75	20	1	T7 x M 2,5	14
	TMX - 20 - 14 - 14*	1092014	20	14	85	25	1	T7 x M 2,5	14
	TMX - 20 - 17 - 14*	1092017	20	17	85	30	1	T7 x M 2,5	14
2	TMX - 20 - 137 - 14T*	1092031	20	13,7	93	32	1	T7 x M 2,5	14T
3	TMX - 20 - 178 - 21T*	1092018	20	17,8	93	95	1	T20 x M 4	21T
	TMX - 20 - 20 - 21**	1092020	20	20	93	40	1	T20 x M 4	21
	TMX - 20 - 25 - 21L	1092025L	20	25	125	NA	1	T20 x M 4	21
	TMX - 25 - 29 - 30	1092529	25	29	108	50	1	T20 x M 5	30
	TMX - 32 - 38 - 30	1093238	32	38	130	70	1	T20 x M 5	30
	TMX - 25 - 29 - 30L	1092529L	25	29	150	NA	1	T20 x M 5	30
	TMX - 32 - 38 - 30L	1093238L	32	38	150	NA	1	T20 x M 5	30
	TMX - 40 - 44 - 40	1094044	40	44	153	82	1	T20 x M 5	40
	TMX - 40 - 48 - 40L	1094048L	40	48	210	NA	1	T20 x M 5	40

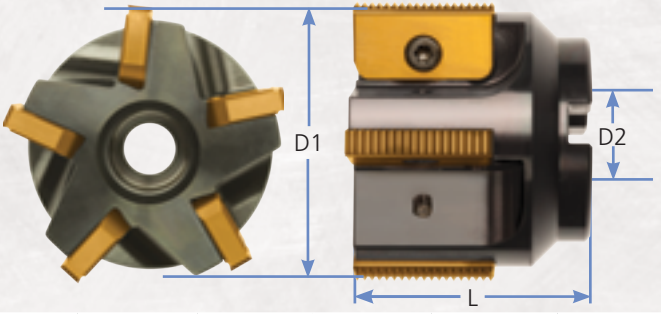
* These tool styles do not have through hole coolant. ** Tool not recommended for 1"- 8 UN internal thread application.
1 For 3/8"- 18 NPT **2** For 1/2"- 14 NPT **3** For 3/4"- 14 NPT. For larger NPT threads, use straight neck styles.

Indexable Thread Mill System



Two Flute Holders

Tool Description	SKU	D2	D1	L2	L1	Flutes	Screw	Insert
TMX - 20 - 20 - 14	2092020	20	20	93	40	2	T7 x M 2,5	14
TMX - 25 - 30 - 21	2092530	25	30	108	50	2	T20 x M 4	21
TMX - 32 - 40 - 30	2093240	32	40	130	70	2	T20 x M 5	30
TMX - 40 - 50 - 40	2094050	40	50	153	82	2	T20 x M 5	40

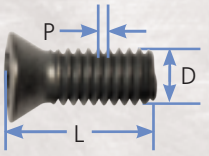


Four and Five Flute Shell Mill Holders

Tool Description	SKU	D2	D1	L	Flutes	Screw	Insert
TMX - 22 - 63 - 30	4096322	22	63	50	4	T20 x M 5	30
TMX - 27 - 80 - 30	5098027	27	80	55	5	T20 x M 5	30
TMX - 27 - 80 - 40	5098028	27	80	65	5	T20 x M 5	40
TMX - 32 - 100 - 30	5090032	32	100	60	5	T20 x M 5	30
TMX - 32 - 100- 40	5090033	32	100	70	5	T20 x M 5	40

Screw

Insert Screw	SKU	L	D	P
T7 x M 2,5	SC73102	6,35 mm	2,50 mm	0,45 mm
T20 x M 4	SC73103	10,16 mm	4,00 mm	0,70 mm
T20 x M 5	SC73104	12,19 mm	5,00 mm	0,80 mm



Wrench

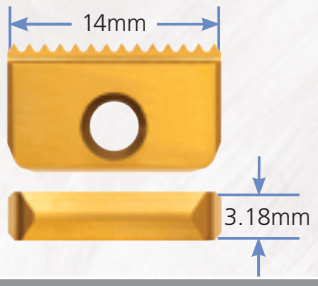
Wrench	SKU	Screw size	Insert Size
T7	W73100	T7 x M 2,5	14mm
T20	W73101	T20 x M 4 & T20 x M 5	21, 30 & 40 mm

Indexable Thread Mill Insert Identification System

21 N TM - 14 UN - TIN

21	N	TM	14	UN	TIN
Denotes Insert Length In Millimeters (mm)	N=Internal E=External X=Internal Or External Application	Denotes Insert Style Used For Thread Milling	Denotes Pitch In Threads Per Millimeter (mm)	Thread Form UN=Unified ISO=Metric NPT=National Pipe Taper NPTF=Dryseal W=Whitworth	0T20C Carbide Grade TIN = TiN PVD Coated TLN = TiAlN PVD Coated

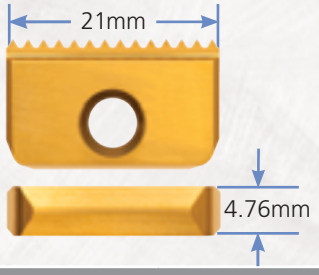
UN (Unified National), Thread Mill Inserts



14 mm External UN

Insert Description	TIN	TLN	TPI	Dec. Ptch
14 ETM - 48 UN	2074200	3076200	48	0,5283
14 ETM - 40 UN	2074201	3076201	40	0,6350
14 ETM - 32 UN	2074202	3076202	32	0,7950
14 ETM - 28 UN	2074203	3076203	28	0,9068
14 ETM - 27 UN	2074204	3076204	27	0,9398
14 ETM - 24 UN	2074205	3076205	24	1,0592
14 ETM - 20 UN	2074206	3076206	20	1,2700
14 ETM - 18 UN	2074208	3076208	18	1,4122
14 ETM - 16 UN	2074210	3076210	16	1,5875
14 ETM - 14 UN	2074212	3076212	14	1,8136
14 ETM - 12 UN	2074214	3076214	12	2,1158

For use with the following holders:
- TMX 0075 - 50 - 14
- TMX 0075 - 50 - 14 HM
- TMX 0075 - 54 - 14
- TMX 0075 - 57 - 14
- TMX 0075 - 67 - 14
- TMX 0075 - 79 - 2 - 14



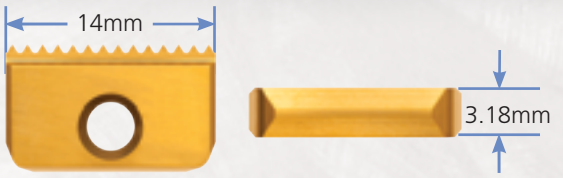
21 mm External UN

Insert Description	TIN	TLN	TPI	Dec. Ptch
21 ETM - 20 UN	2074217	3076217	20	0,5283
21 ETM - 18 UN	2074219	3076219	18	1,4122
21 ETM - 16 UN	2074221	3076221	16	1,5875
21 ETM - 14 UN	2074223	3076223	14	1,8136
21 ETM - 12 UN	2074225	3076225	12	2,1158
21 ETM - 10 UN	2074227	3076227	10	2,540
21 ETM - 9 UN	2074229	3076229	9	2,8219
21 ETM - 8 UN - S*	2074230	3076230	8	3,1750

* S denotes single side use only

For use with the following holders:
- TMX 0075 - 75 - 21
- TMX 0100 - 118 - 2 - 21
- TMX 0075 - 88 - 21

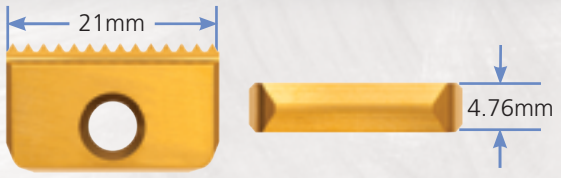
ISO Thread Mill Inserts



14 mm External ISO

Insert Description	TIN	TLN	Pitch*
14 ETM - 1,00 ISO	2074500	3076500	1,0 mm
14 ETM - 1,50 ISO	2074501	3076501	1,5 mm
14 ETM - 2,00 ISO	2074502	3076502	2,0 mm

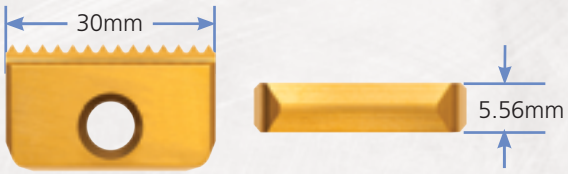
For use with the following holders:
- TMX 0075 - 50 - 14
- TMX 0075 - 50 - 14 - HM
- TMX 0075 - 54 - 14
- TMX 0075 - 57 - 14
- TMX 0075 - 67 - 14
- TMX 0075 - 79 - 2 - 14



21 mm External ISO

Insert Description	TIN	TLN	Pitch*
21 ETM - 1,00 ISO	2074503	3076503	1,0 mm
21 ETM - 1,50 ISO	2074504	3076504	1,5 mm
21 ETM - 2,00 ISO	2074505	3076505	2,0 mm
21 ETM - 2,50 ISO	2074506	3076506	2,5 mm
21 ETM - 3,00 ISO	2074507	3076507	3,0 mm
21 ETM - 3,50 ISO	2074508	3076508	3,5 mm

For use with the following holders:
- TMX 0075 - 75 - 21
- TMX 0100 - 118 - 2 - 21
- TMX 0075 - 88 - 21

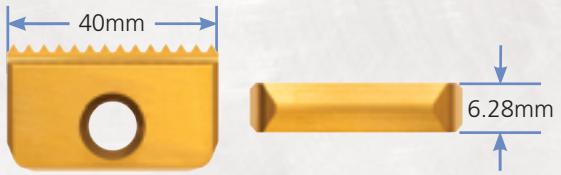


30 mm External ISO

Insert Description	TIN	TLN	Pitch*
30 ETM - 1,50 ISO	2074509	3076509	1,5 mm
30 ETM - 2,00 ISO	2074510	3076510	2,0 mm
30 ETM - 2,50 ISO	2074511	3076511	2,5 mm
30 ETM - 3,00 ISO	2074512	3076512	3,0 mm
30 ETM - 3,50 ISO	2074513	3076513	3,5 mm
30 ETM - 4,00 ISO-S*	2074514	3076514	4,0 mm

* S denotes single side use only

For use with the following holders:
- TMX 0075 - 248 - 4 - 30
- TMX 0100 - 114 - 30
- TMX 0100 - 315 - 4 - 30
- TMX 0125 - 158 - 2 - 30

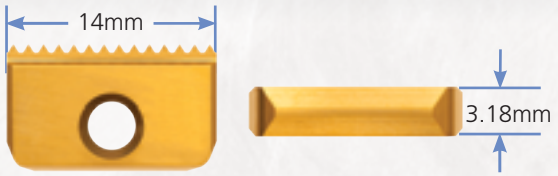


40 mm External ISO

Insert Description	TIN	TLN	Pitch*
40 ETM - 4,00 ISO	2074515	3076515	4,0 mm
40 ETM - 5,00 ISO	2074516	3076516	5,0 mm
40 ETM - 6,00 ISO	2074517	3076517	6,0 mm

For use with the following holders:
- TMX 0100 - 315 - 4 - 40
- TMX 0150 - 173 - 40
- TMX 0150 - 197 - 2 - 40

Internal ISO Thread Mill Inserts



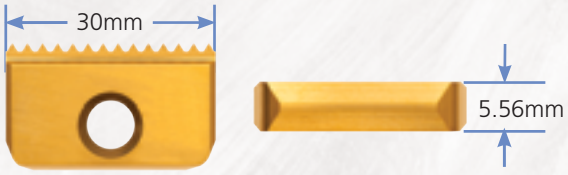
14 mm Internal ISO

Insert Description	TIN	TLN	Pitch*
14 NTM - 1,00 ISO	2074400	3076400	1,0 mm
14 NTM - 1,50 ISO	2074401	3076401	1,5 mm
14 NTM - 2.00 ISO-S*	2074402	3076402	2,0 mm

* S denotes single side use only

For use with the following holders:

- TMX 0075 - 50 - 14
- TMX 0075 - 50 - 14 - HM
- TMX 0075 - 54 - 14
- TMX 0075 - 57 - 14
- TMX 0075 - 67 - 14
- TMX 0075 - 79 - 2 - 14



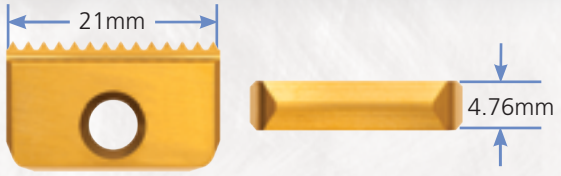
30 mm Internal ISO

Insert Description	TIN	TLN	Pitch*
30 NTM - 1,50 ISO	2074410	3076410	1,5 mm
30 NTM - 2,00 ISO	2074411	3076411	2,0 mm
30 NTM - 2,50 ISO	2074412	3076412	2,5 mm
30 NTM - 3,00 ISO	2074413	3076413	3,0 mm
30 NTM - 3,50 ISO	2074414	3076414	3,5 mm
30 NTM - 4,00 ISO-S*	2074415	3076415	4,0 mm
30 NTM - 4,50 ISO-S*	2074416	3076416	4,5 mm
30 NTM - 5,00 ISO-S*	2074417	3076417	5,0 mm
30 NTM - 5,50 ISO-S*	2074418	3076418	5,5 mm

* S denotes single side use only

For use with the following holders:

- TMX 0075 - 248 - 4 - 30
- TMX 0100 - 114 - 30
- TMX 0100 - 315 - 4 - 30
- TMX 0125 - 158 - 2 - 30

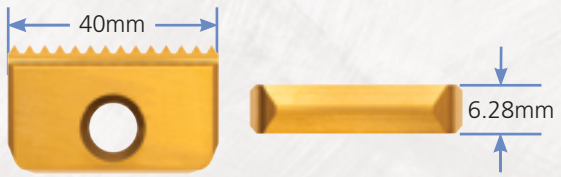


21 mm Internal ISO

Insert Description	TIN	TLN	Pitch*
21 NTM - 1,00 ISO	2074403	3076403	1,0 mm
21 NTM - 1,25 ISO	2074404	3076404	1,25 mm
21 NTM - 1,50 ISO	2074405	3076405	1,5 mm
21 NTM - 2,00 ISO	2074406	3076406	2,0 mm
21 NTM - 2,50 ISO	2074407	3076407	2,5 mm
21 NTM - 3,00 ISO	2074408	3076408	3,0 mm
21 NTM - 3,50 ISO	2074409	3076409	3,5 mm

For use with the following holders:

- TMX 0075 - 75 - 21
- TMX 0100 -118 - 2 - 21
- TMX 0075 - 88 - 21



40 mm Internal ISO

Insert Description	TIN	TLN	Pitch*
40 NTM - 2,00 ISO	2074419	3076419	2,0 mm
40 NTM - 2,50 ISO	2074420	3076420	2,5 mm
40 NTM - 3,00 ISO	2074421	3076421	3,0 mm
40 NTM - 3,50 ISO	2074422	3076422	3,5 mm
40 NTM - 4,00 ISO	2074423	3076423	4,0 mm
40 NTM - 4,50 ISO	2074424	3076424	4,5 mm
40 NTM - 5,00 ISO	2074425	3076425	5,0 mm
40 NTM - 5,50 ISO	2074426	3076426	5,5 mm
40 NTM - 6,00 ISO	2074427	3076427	6,0 mm

For use with the following holders:

- TMX 0100 - 315 - 4 - 40
- TMX 0150 - 173 - 40
- TMX 0150 - 197 - 2 - 40

Other Thread Forms Available From Omnithread

Omnithread offers special thread forms available on a made-to-order basis.

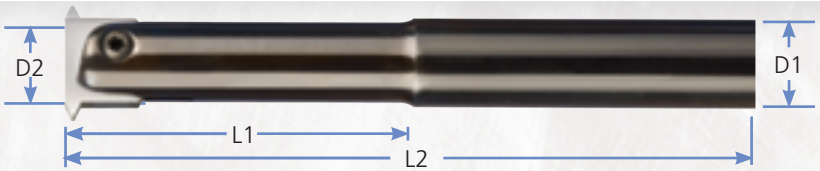
Certain inserts may be available off the shelf. Just call our technical service facility at 586-574-0952. Be sure to provide the thread form type, major thread diameter, pitch, and length of full thread you need to produce. We will check our current inventory for availability.

Cutting Conditions

Thread Mill with Straight and Taper Flute

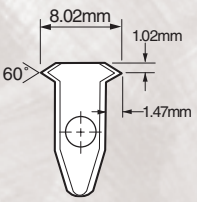
Materials to be Machined	Hardness	Cutting Speed Hard Metal m/min.	Cutting Speed Coated m/min.	Feed Per Flute Fz (mm) Cutting Diameter (D1) 12,00 - 16,00
Unalloyed Steel / Low Alloyed Steel	<600N/mm2	70 - 100	90 - 110	0,050 - 0,110
Unalloyed Steel / Low Alloyed Steel	>600N/mm2	40 - 60	70 - 90	0,040 - 0,080
Lead Alloyed Cutting Steel		70 - 100	90 - 110	0,060 - 0,160
High Alloyed / Stainless Steel	400-700N/mm2	40 - 60	70 - 90	0,040 - 0,080
High Alloyed Steel or Cast Iron / Heat Resisting Stainless Steel	700-1500N/mm2	30 - 45	40 - 55	0,040 - 0,080
Special Alloys		15 - 30	25 - 35	0,040 - 0,080
Grey Cast Iron / Nodular Iron Pearlitic	<250HB	70 - 100	90 - 110	0,050 - 0,110
Cast Iron / Nodular Iron Pearlitic	>250HB	40 - 70	70 - 90	0,040 - 0,080
Nodular Ferritic Cast Iron / Malleable Cast Iron		70 - 100	90 - 110	0,050 - 0,110
Titanium, Titanium Alloy		30 - 45	40 - 60	0,040 - 0,080
Copper Alloy (Brass , Bronze)		140 - 160	200 - 220	0,060 - 0,160
Copper Alloy / Aluminum Bronze	(CuAlFe)	120 - 140	170 - 190	0,040 - 0,080
Aluminum Alloy / Magnesium Alloy		180 - 220	230 - 270	0,060 - 0,160
Aluminum Cast	Si<8%	240 - 260	300 - 340	0,060 - 0,160
Aluminum Cast	Si>8%	140 - 160	210 - 230	0,060 - 0,160
Plastic		240 - 260	300 - 340	0,080 - 0,240

ISO Thread Form

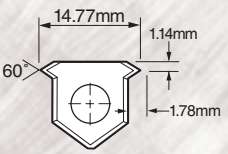


Internal Threading Tool

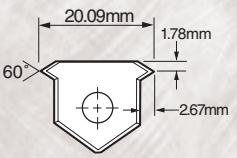
Insert Part Number	Holder Part Number	Holder Description	D2	L1	L2	D1	Maximum Thread Depth	Nominal Size ISO	Pitch
175-1030	190-2092	OTM-06-150-12	5	46	150	12	45	12	1,75
↓	↓	↓	↓	↓	150	↓	↓	16	2
↓	↓	↓	↓	↓	150	↓	↓	18	2,5
175-1003	190-1113	CYF-12-150-12	10,8	46	150	12	44	20	2,5
↓	190-1123	CBCYF-12-150-12	10,8	52	150	12	50	22	2,5
↓	190-1103	OTM-12-150-11	11	na	150	11	100	24	3
↓	↓	↓	↓	↓	150	↓	↓	27	3
175-1004	190-1114	CYF-16-160-16	14,4	50	160	16	48	30	3,5
↓	190-1124	CBCYF-16-150-16	14,4	52	150	16	50	33	3,5
↓	190-1104	OTM-16-150-14	14	na	150	14	100	36	4
↓	↓	↓	↓	↓	150	↓	↓	39	4
↓	↓	↓	↓	↓	150	↓	↓	42	4,5
↓	↓	↓	↓	↓	150	↓	↓	45	4,5
175-1005	190-1115	CYF-30/32-250-32	28,6	76	250	32	72	48	5
↓	190-1105	OTM-30/32-200-23	25	na	200	25	150	52	5
↓	↓	↓	↓	↓	200	↓	↓	56	5,5
↓	↓	↓	↓	↓	200	↓	↓	60	5,5
↓	↓	↓	↓	↓	200	↓	↓	64	6
↓	↓	↓	↓	↓	200	↓	↓	68	6



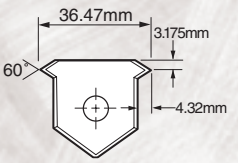
M12-M18 ISO Thread Form Insert



M20-M27 ISO Thread Form Internal Threading Tool



M30-M45 ISO Thread Form Internal Threading Tool

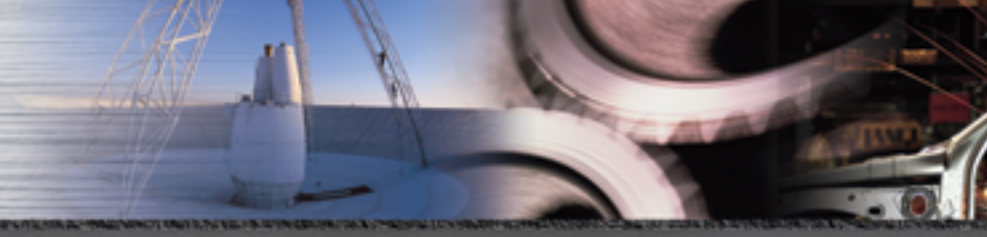


ISO Thread Form Internal Threading Tool

Suggested Speeds And Feeds

Tool Shank Diameter and number of flutes
Cutting Speed and Feed per Tooth

Material	Class	6mm 2	8mm 2	10mm 2	12mm 2	16mm 2
1. Steel	Plain and Low Carbon to 22 HRc	185 0,075	185 0,100	185 0,125	185 0,125	185 0,150
2. Medium Carbon & Alloy Steels	Carbon and Alloys to 32 HRc	175 0,050	175 0,075	175 0,075	175 0,075	175 0,125
3. Medium Carbon & Alloy Steels	Carbon and Alloys 32 HRc to 42 HRc	160 0,075	160 0,100	160 0,125	160 0,125	160 0,150
4. Stainless Steels	Austentic	160 0,025	160 0,038	160 0,038	160 0,050	160 0,075
5. Stainless Steels	Martensitic	165 0,025	165 0,038	165 0,038	165 0,050	165 0,075
6. Stainless Steels	Precipitation Hardening	90 0,025	90 0,025	90 0,038	90 0,038	90 0,050
7. Nickel	Nickel Base Aloys	36 0,012	36 0,025	36 0,025	36 0,038	36 0,050
8. Titanium	Titanium Alloys	30 0,012	30 0,025	30 0,025	30 0,038	30 0,050
9. Cast Iron	Gray, Malleable & Ductile	185 0,038	185 0,038	185 0,050	185 0,075	185 0,100
10. Non-Ferrous	Low Si Cast & Aluminum	500 0,050	500 0,075	500 0,075	500 0,100	500 0,150



Programming Request Form

Copy this form, fill in the information then fax it to: 586-558-9481 • Contact Us At: 586-574-0952

Your Information

Company Name: Date: / /

Contact: Telephone: ( )

Tooling Purchased From: Fax Number: ( )

Machine Information

Brand Make:

Model:

Spindle Taper: ❑ 35 Cat ❑ 40 Cat ❑ 50 Cat ❑ Other

Max RPM:

CNC Controller Information

Brand Make:

Model:

ISO - ASCII Compatible: ❑ Yes ❑ No ❑ Don't Know

Is Helical Option Available: ❑ Yes ❑ No ❑ Don't Know

Thread Specification To Be Produced:

Thread Specification:

Length Of Full Thread:

Thread Form: ❑ 100% ❑ 75% ❑ Other _____%

Thread: ❑ Internal ❑ External

Drill Size: _____" ❑ Thru ❑ Blind ❑ Counterbored

Material To Be Machined:

Material:

Hardness:

Condition: ❑ Annealed ❑ Normalized ❑ Heat Treated

❑ Cast ❑ Forged ❑ Rolled ❑ Plate ❑ Bar

❑ Pre-Machined ❑ Flame Cut ❑ Scale ❑ Sand

Thread Mill Selected:

❑ Solid Carbide ❑ Indexable

Tool Description:

Insert Selected (If Indexable):

Tool Purchased From:*

If you are not sure what tool to select, check one of the following and we will recommend a tool for you:

❑ Shortest Cycle Time ❑ Lowest Tooling Cost

Tool Recommended:

*Distributor you purchased tool from must be filled in to receive a program for your application, otherwise a tool recommendation will be faxed back with approximate cycle time given.

Programming Data:

Dimensions: ❑ Inch ❑ Metric

Program Values: ❑ Absolute (G90) ❑ Incremental (G91)

Arc Center: ❑ I & J ❑ R (Radius)

Tool Path: ❑ Offset ❑ No Offset

Arc Limitation: ❑ Full Circle ❑ Quadrant

K Value: ❑ Not Required ❑ Required

If Required: ❑ In Radians ❑ Per Revolution

Feed Direction: ❑ Climb Mill ❑ Conventional

Note: Climb Milling is always recommended for carbide tooling. In some cases where thin wall parts, long extensions or worn spindle bearings are encountered, conventional milling may be an option to produce a given thread.

WARNING

Cemented Carbide Products

Contains one or more of the following substances: Tungsten Carbide, Cobalt, Tantlum Carbide, Chromium Carbide, Chromium, Molybdenum, or Vanadium Carbide.

Read Material Safety Data Sheet for applicable carbide grade before grinding product.

WARNING: GRINDING OF THIS PRODUCT WILL PRODUCE DUST OF POTENTIALLY HAZARDOUS INGREDIENTS.

Dust from grinding this product can cause nose, throat, skin and eye irritation and temporary or permanent respiratory disease in a small percentage of exposed individuals. Permanent respiratory disease can lead to disability or death. Coolant mist from wet grinding may contain dust.

Avoid breathing dust or mist - Use protective devices. Avoid prolonged skin contact with dust or mist. Use adequate ventilation when grinding. Maintain dust level below OSHA and ACGIH levels.

Wash hands thoroughly after handling, before eating or smoking. Dispose of material according to local, state and/or federal regulations.

OMNIthread

OMNIthread

THREAD MILLING

4930 S. Lapeer Rd. • Orion Twp., MI 48359
Phone: (586) 574-0952 • Fax: (586) 558-9481
www.omnithread.com

LIMITED WARRANTY

Omnithread Warrants to all distributors and industrial users that the products supplied by Omnithread shall be free from defects in material and workmanship.

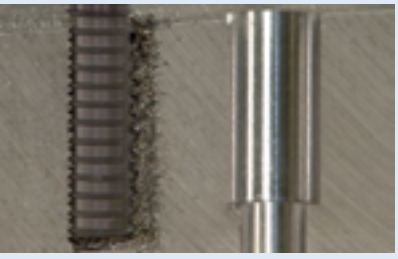
For a period of thirty days from the date of sale by Omnithread, we will repair or replace (at no additional charge) any standard Omnithread product which Omnithread determines contains defects in material or workmanship or alternatively, at its sole discretion, Omnithread may credit all or part of the purchase price for such product. However, complete operating conditions and any other information requested by Omnithread must accompany claims made under this Warranty. We cannot issue credit or accept returns on specials.

EXCLUSION OF OTHER WARRANTIES AND REMEDIES

There are no warranties, express or implied, which extend beyond the warranty description on the face hereof and specifically, OMNITHREAD AND ITS AFFILIATED COMPANIES EXCLUDE ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE. Omnithread and it's affiliated companies shall have no liability or responsibility for any claim or loss arising out of the design, manufacture, sale or use of its product other than to repair or replace its products as described above or alternatively, at Omnithread's sole option, to credit all or part of the purchase price for returned products as described above. IN NO EVENT SHALL OMNITHREAD OR ITS AFFILIATED COMPANIES BE LIABLE FOR ANY SPECIAL, CONSEQUENTIAL OR INCIDENTAL DAMAGES.

Any misuse or alteration of the product may void this warranty.

Omnithread does not authorize any person or entity to make any representation (verbal or written) contrary to the terms of this Limited Warranty or its exclusions.

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