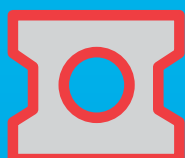


# ThreadMill®

*solid carbide thread mills  
and thread milling cutters*



Edition 2015-10



**Scandinavian  
Tool Systems**

***Scandinavian Tool Systems AB is a Swedish based manufacturer and supplier of tools for thread turning, thread milling, parting off and grooving.***

***The main product is the QuadCut<sup>®</sup>, which on the North American market is sold under the name QuadThread<sup>®</sup>.***

***Our products are sold through distributors in more than 30 countries worldwide.***



## Solid Thread milling cutters

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## Solid thread-milling cutters



Solid thread-milling cutters are available in the following variants:

- 15° spiral with short and long cutting edge
- 15° spiral with deburring
- 15° spiral with chamfer
- 15° spiral with internal cooling
- 15° spiral mini

Most dimensions and profiles are available with both short and long cutting edge. The shortest possible length should be chosen for best stability and length of life.

Using cutters that also have a chamfer edge saves time and tool costs if the hole is to be chamfered.

**Internal cooling not only lowers the temperature.  
Swarf in blind holes is also washed away effectively.**

## Indexable thread-cutters



Using our indexable thread-cutters makes it possible to produce different pitches simply by changing the threading insert. Cutter shanks available in the following variants:

- With one seat
- With two seats
- With four seats
- With carbide shank

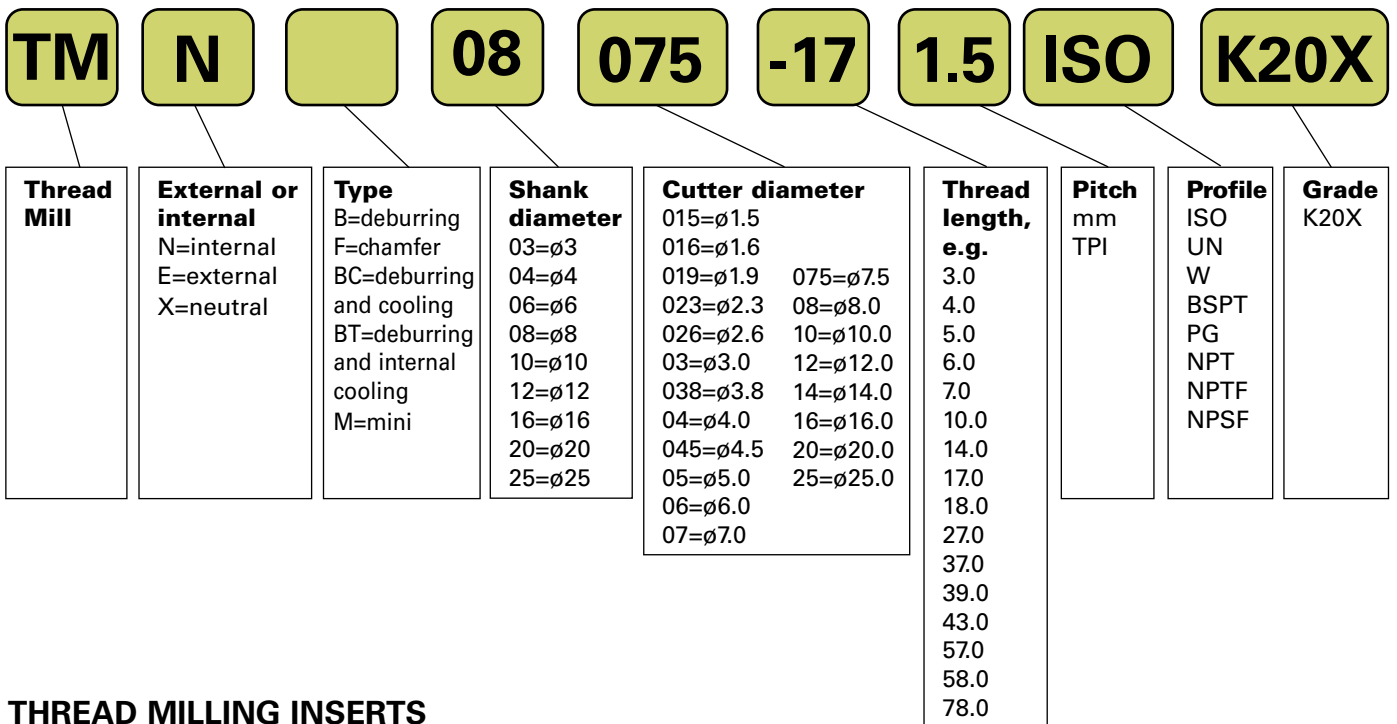
Same milling shank can be used for right and left hand thread, and also for both internal and external threads; all you need to do is change the thread milling inserts.

Thread milling inserts available in four sizes:

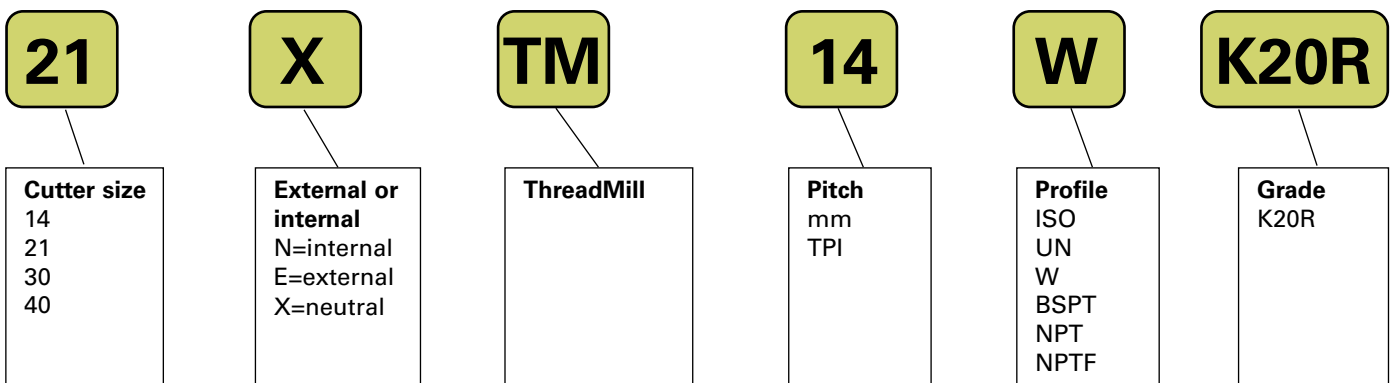
- 14
- 21
- 30
- 40

**ThreadMill indexable thread-cutters can be used  
for both internal and external threads.**

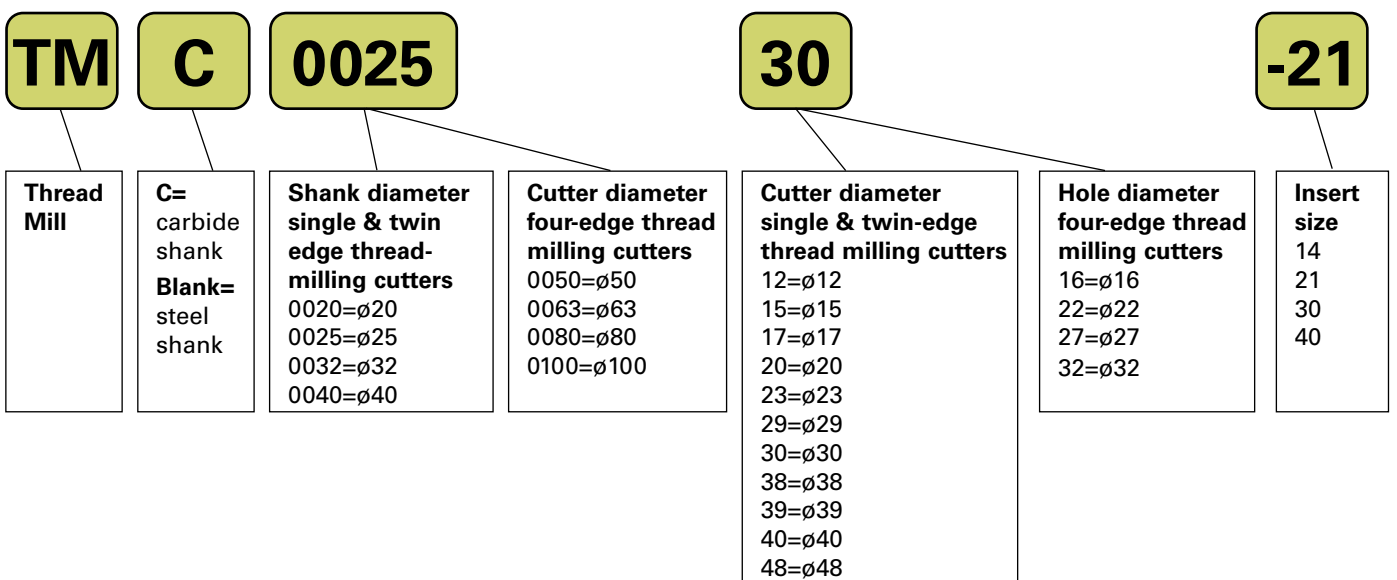
## SOLID CARBIDE THREAD MILLS



## THREAD MILLING INSERTS



## THREAD MILLING CUTTERS



# Solid carbide Thread mills

Solid carbide thread mills are designed mainly for internal thread milling of small diameters in modern CNC machining centers.

The solid thread mills have three or more spiral flutes which lead to shorter machining times, compared to tools that have only a single edge.

A new, time saving, feature is the deburring edge that most of our solid thread mills are equipped with. The threading and deburring are made in one operation. The deburring solid thread mills are identified by the letter B in the catalogue number.

All of our solid thread mills have 15° right hand spiral flutes and are available for the following types of thread:

M Metric  
Metric with chamfer  
Metric with internal cooling  
Metric with internal radial cooling  
Metric Mini

UN Unified  
G Whitworth pipe thread  
BSPT BSPT pipe thread  
NPT NPT pipe thread  
NPTF NPTF Dryseal pipe thread  
PG Conduit pipe thread  
NPSF NPSF pipe thread

**K20X**  
Micrograin carbide with TiAlCN coating

**Shank**  
Cylindrical with h6 tolerance, DIN 6535 HA

**Flute**  
15° right hand spiral

**Range of use**  
Thread milling in all types of steel



Solid thread-milling cutter



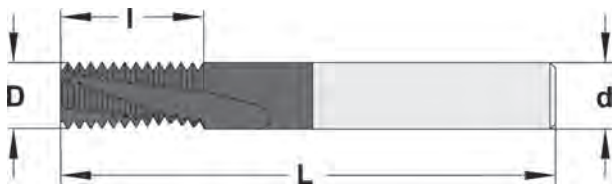
Solid thread-milling cutter with chamfer



Solid thread-milling cutter with internal cooling



Solid thread-milling cutter Mini



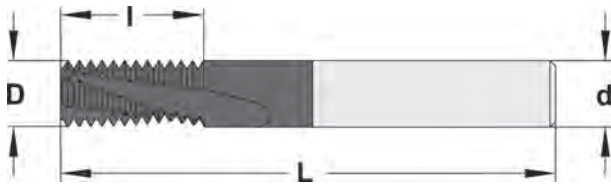
## Metric (M)

Pitch mm	M coarse	M fine	Catalogue number	Dimensions mm				Number of flutes	Price group
				d	D	l	L		
0.4	M2 (1.5xD)		TMNB04015-3 0.4ISO	4	1.5	3.4	50	3	554
0.4	M2 (2xD)		TMNB04015-4 0.4ISO	4	1.5	4.6	50	3	556
0.45	M2.2 (1.5xD)		TMNB04016-3 0.45ISO	4	1.6	3.82	50	3	554
0.45	M2.2 (2xD)		TMNB04016-5 0.45ISO	4	1.6	5.17	50	3	556
0.45	M2.5 (1.5xD)		TMNB04019-4 0.45ISO	4	1.9	4.27	50	3	554
0.45	M2.5 (2xD)		TMNB04019-5 0.45ISO	4	1.9	5.62	50	3	556
0.5	M3 (1.5xD)	≥ M4	TMNB04023-5 0.5ISO	4	2.3	5.25	50	3	554
0.5	M3 (2xD)	≥ M4	TMNB04023-6 0.5ISO	4	2.3	6.75	50	3	556
0.5	M3 (2.5xD)	≥ M4	TMNB04023-8 0.5ISO	4	2.3	8.25	50	3	558
0.5	M3 (1.5xD)	≥ M4	TMNB06023-5 0.5ISO	6	2.3	5.25	63	3	557
0.5	M3 (2xD)	≥ M4	TMNB06023-6 0.5ISO	6	2.3	6.75	63	3	558
0.5	M3 (2.5xD)	≥ M4	TMNB06023-8 0.5ISO	6	2.3	8.25	63	3	560
0.5		≥ M5	TMNB04038-10 0.5ISO	4	3.8	10.75	50	3	556
0.5		≥ M5	TMNB06038-10 0.5ISO	6	3.8	10.75	63	3	558
0.6	M3.5 (1.5xD)		TMNB04026-6 0.6ISO	4	2.6	6.3	50	3	554
0.6	M3.5 (2xD)		TMNB04026-8 0.6ISO	4	2.6	8.1	50	3	556
0.7	M4 (1.5xD)		TMNB0403-7 0.7ISO	4	3.0	7.35	50	3	554
0.7	M4 (2xD)		TMNB0403-8 0.7ISO	4	3.0	8.75	50	3	556
0.7	M4 (2.5xD)		TMNB0403-10 0.7ISO	4	3.0	10.85	50	3	558
0.7	M4 (1.5xD)		TMNB0603-7 0.7ISO	6	3.0	7.35	63	3	557
0.7	M4 (2xD)		TMNB0603-8 0.7ISO	6	3.0	8.75	63	3	558
0.7	M4 (2.5xD)		TMNB0603-10 0.7ISO	6	3.0	10.85	63	3	560
0.75	M4.5 (1.5xD)		TMNB04034-7 0.75ISO	4	3.4	7.87	50	3	554
0.75	M4.5 (2xD)		TMNB04034-10 0.75ISO	4	3.4	10.12	50	3	556
0.75		≥ M6	TMNB06045-10 0.75ISO	6	4.5	10.87	63	3	557
0.75		≥ M6	TMNB06045-16 0.75ISO	6	4.5	16.87	63	3	558
0.8	M5 (1.5xD)		TMNB04038-8 0.8ISO	4	3.8	8.4	50	3	554
0.8	M5 (2xD)		TMNB04038-10 0.8ISO	4	3.8	10.8	50	3	556
0.8	M5 (2.5xD)		TMNB04038-13 0.8ISO	4	3.8	13.2	50	3	558
0.8	M5 (1.5xD)		TMNB06038-8 0.8ISO	6	3.8	8.4	63	3	554
0.8	M5 (2xD)		TMNB06038-10 0.8ISO	6	3.8	10.8	63	3	556
0.8	M5 (2.5xD)		TMNB06038-13 0.8ISO	6	3.8	13.2	63	3	558
1.0	M6 (1.5xD)	≥ M8	TMNB06045-10 1.0ISO	6	4.5	10.5	63	3	557
1.0	M6 (2xD)	≥ M8	TMNB06045-13 1.0ISO	6	4.5	13.5	63	3	558
1.0	M6 (2.5xD)	≥ M8	TMNB06045-16 1.0ISO	6	4.5	16.5	63	3	560
1.0	M6 (3xD)	≥ M8	TMNB06045-19 1.0ISO	6	4.5	19.5	63	3	562
1.0			TMNB0606-10 1.0ISO	6	6.0	10.5	63	3	558
1.0		≥ M8	TMNB0606-13 1.0ISO	6	6.0	13.5	63	3	557
1.0			TMNB0808-10 1.0ISO	8	8.0	10.5	63	4	560
1.0			TMNB0808-13 1.0ISO	8	8.0	13.5	63	4	560
1.0		≥ M10	TMNB0808-17 1.0ISO	8	8.0	17.5	63	4	561
1.0			TMNB1010-14 1.0ISO	10	10.0	14.5	76	5	566
1.0			TMNB1010-19 1.0ISO	10	10.0	19.5	76	5	568
1.0			TMNB1212-15 1.0ISO	12	12.0	15.5	83	6	569
1.0		≥ M14	TMNB1212-21 1.0ISO	12	12.0	21.5	83	6	569
1.25	M8 (1.5xD)	≥ M10	TMNB0606-14 1.25ISO	6	6.0	14.37	63	3	557
1.25	M8 (2xD)	≥ M10	TMNB0606-18 1.25ISO	6	6.0	18.12	63	3	558
1.25	M8 (2.5xD)	≥ M10	TMNB0606-21 1.25ISO	6	6.0	21.87	63	3	560

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# Solid carbide Thread mills

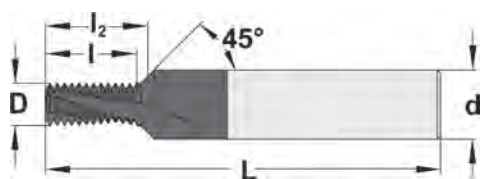
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## Metric (M)

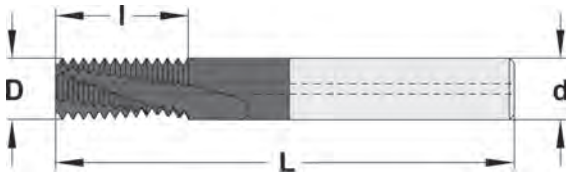
Pitch mm	M coarse	M fine	Catalogue number	Dimensions mm				Number of flutes	Price group
				d	D	l	L		
1.25	M8 (3xD)	≥ M10	TMNB0606-25 1.25ISO	6	6.0	25.6	76	3	562
1.5	M10 (1.5xD)	≥ M12	TMNB08075-17 1.5ISO	8	7.5	17.25	63	3	561
1.5	M10 (2xD)	≥ M12	TMNB08075-21 1.5ISO	8	7.5	21.75	76	3	563
1.5	M10 (2.5xD)	≥ M12	TMNB08075-27 1.5ISO	8	7.5	27.75	76	3	564
1.5	M10 (3xD)	≥ M12	TMNB08075-32 1.5ISO	8	8	32.25	76	3	567
1.5			TMNB1010-17 1.5ISO	10	10.0	17.25	76	4	566
1.5		≥ M14	TMNB1010-23 1.5ISO	10	10	23.25	76	4	566
1.5			TMNB1212-15 1.5ISO	12	12.0	15.75	83	4	568
1.5			TMNB1212-21 1.5ISO	12	12.0	21.75	83	4	569
1.5		≥ M16	TMNB1212-29 1.5ISO	12	12	29.25	83	4	569
1.5			TMNB1616-18 1.5ISO	16	16.0	18.75	89	6	575
1.5			TMNB1616-26 1.5ISO	16	16.0	26.25	89	6	577
1.5		≥ M20	TMNB1616-35 1.5ISO	16	16	35.25	100	6	576
1.75	M12 (1.5xD)		TMNB0808-20 1.75ISO	8	8	20.12	76	3	561
1.75	M12 (2xD)		TMNB0808-27 1.75ISO	8	8	27.12	76	3	563
1.75	M12 (1.5xD)		TMNB1009-20 1.75ISO	10	9	20.12	76	3	566
1.75	M12 (2xD)		TMNB1009-27 1.75ISO	10	9	27.12	76	3	567
1.75	M12 (2.5xD)		TMNB1009-32 1.75ISO	10	9	32.37	100	3	569
1.75	M12 (3xD)		TMNB1009-37 1.75ISO	10	9	37.62	100	3	572
2.0	M14 (1.5xD)	≥ M18	TMNB1010-23 2.0ISO	10	10	23	76	3	566
2.0	M14 (2xD)	≥ M18	TMNB1010-31 2.0ISO	10	10	31	100	3	567
2.0	M14 (2.5xD)	≥ M18	TMNB1010-37 2.0ISO	10	10	37	100	3	569
2.0	M16 (1.5xD)	≥ M18	TMNB1212-27 2.0ISO	12	12	27	83	4	569
2.0	M16 (2xD)	≥ M18	TMNB1212-35 2.0ISO	12	12	35	100	4	570
2.0	M16 (2.5xD)	≥ M18	TMNB1212-43 2.0ISO	12	12	43	100	4	573
2.0	M16 (3xD)	≥ M18	TMNB1212-51 2.0ISO	12	12	51	100	3	574
2.0			TMNB1616-29 2.0ISO	16	16.0	29.00	89	5	577
2.0		≥ M20	TMNB1616-39 2.0ISO	16	16	39	100	5	576
2.0		≥ M24	TMNB2020-43 2.0ISO	20	20	43	100	6	580
2.0		≥ M30	TMNB2525-57 2.0ISO	25	25	57	130	6	582
2.5	M18 (1.5xD)		TMNB1212-31 2.5ISO	12	12	31.25	100	3	570
2.5	M18 (2xD)		TMNB1212-38 2.5ISO	12	12	38.75	100	3	573
2.5	M18 (2.5xD)		TMNB1212-48 2.5ISO	12	12	48.75	100	3	574
2.5	M20 (1.5xD)		TMNB1414-33 2.5ISO	14	14	33.75	89	4	573
2.5	M20 (2xD)		TMNB1414-43 2.5ISO	14	14	43.75	100	4	575
2.5	M20 (2.5xD)		TMNB1615-53 2.5ISO	16	15	53.75	120	4	578
2.5	M20 (3xD)		TMNB1615-63 2.5ISO	16	15	63.75	120	3	579
3.0	M24 (1.5xD)	≥ M30	TMNB1616-40 3.0ISO	16	16	40.50	100	3	576
3.0	M24 (2xD)	≥ M30	TMNB1616-52 3.0ISO	16	16	52.50	120	3	578
3.0	M24 (2.5xD)	≥ M30	TMNB1818-64 3.0ISO	18	18	64.50	130	3	579
3.0		≥ M30	TMNB2020-46 3.0ISO	20	20	46.50	120	4	579
3.0		≥ M33	TMNB2525-61 3.0ISO	25	25	61.50	130	4	583
3.5	M30 (1.5xD)		TMNB2020-50 3.5ISO	20	20	50.75	120	3	582
3.5	M30 (2xD)		TMNB2020-64 3.5ISO	20	20	64.75	150	3	582
3.5	M30 (2.5xD)		TMNB2020-78 3.5ISO	20	20	78.75	150	3	583
4.0	M36 (1.5xD)	≥ M42	TMNB2525-58 4.0ISO	25	25	58	130	3	583
4.0	M36 (2xD)	≥ M42	TMNB2525-78 4.0ISO	25	25	78	150	3	584





## Metric with chamfer (M)

Pitch mm	M coarse	Catalogue number	Dimensions mm					Number of flutes	Price group
			d	D	l	l <sub>2</sub>	L		
0.5	M3 (1.5xD)	TMNF06023-5 0.5ISO	6	2.3	5.25	5.85	63	3	557
0.5	M3 (2xD)	TMNF06023-6 0.5ISO	6	2.3	6.75	7.35	63	3	558
0.5	M3 (2.5xD)	TMNF06023-8 0.5ISO	6	2.3	8.25	8.85	63	3	560
0.5	M3 (3xD)	TMNF06023-9 0.5ISO	6	2.3	9.75	10.35	63	3	562
0.7	M4 (1.5xD)	TMNF0603-7 0.7ISO	6	3.0	7.35	8.2	63	3	557
0.7	M4 (2xD)	TMNF0603-8 0.7ISO	6	3.0	8.75	9.6	63	3	558
0.7	M4 (2.5xD)	TMNF0603-10 0.7ISO	6	3.0	10.85	11.7	63	3	559
0.7	M4 (3xD)	TMNF0603-12 0.7ISO	6	3.0	12.95	13.8	63	3	562
0.8	M5 (1.5xD)	TMNF06038-8 0.8ISO	6	3.8	8.40	9.4	63	3	557
0.8	M5 (2xD)	TMNF06038-10 0.8ISO	6	3.8	10.80	11.8	63	3	558
0.8	M5 (2.5xD)	TNMF06038-13 0.8ISO	6	3.8	13.20	14.2	63	3	560
0.8	M5 (3xD)	TNMF06038-16 0.8ISO	6	3.8	16.40	17.4	63	3	562
1.0	M6 (1.5xD)	TMNF08045-10 1.0ISO	8	4.5	10.50	11.75	63	3	560
1.0	M6 (2xD)	TMNF08045-13 1.0ISO	8	4.5	13.50	14.75	63	3	562
1.0	M6 (2.5xD)	TMNF08045-16 1.0ISO	8	4.5	16.50	16.5	63	3	563
1.25	M8 (1.5xD)	TMNF1006-14 1.25ISO	10	6.0	14.37	16	76	3	563
1.25	M8 (2xD)	TMNF1006-18 1.25ISO	10	6.0	18.12	19.75	76	3	564
1.25	M8 (2.5xD)	TMNF1006-21 1.25ISO	10	6.0	21.87	23.5	76	3	566
1.5	M10 (1.5xD)	TMNF12075-17 1.5ISO	12	7.5	17.25	19.25	83	3	564
1.5	M10 (2xD)	TMNF12075-21 1.5ISO	12	7.5	21.75	23.75	83	3	566
1.5	M10 (2.5xD)	TMNF12075-27 1.5ISO	12	7.5	27.75	29.75	83	3	568
1.75	M12 (1.5xD)	TMNF1409-20 1.75ISO	14	9.0	20.12	22.5	89	3	568
1.75	M12 (2xD)	TMNF1409-27 1.75ISO	14	9.0	27.12	29.5	89	3	570
1.75	M12 (2.5xD)	TMNF1409-32 1.75ISO	14	9.0	32.37	34.75	89	3	572



## Metric with internal cooling (M)

Pitch mm	M coarse	M fine	Catalogue number	Dimensions mm				Number of flutes	Price group
				d	D	I	L		
0.8	M8 (1.5xD)		TMNBC04038-8 0.8ISO	4	3.8	8.4	50	3	556
0.8	M8 (2xD)		TMNBC04038-10 0.8ISO	4	3.8	10.8	50	3	558
0.8	M8 (2.5xD)		TMNBC04038-13 0.8ISO	4	3.8	13.2	50	3	560
1.0	M10 (1.5xD)		TMNBC06045-10 1.0ISO	6	4.5	10.5	63	3	558
1.0	M10 (2xD)		TMNBC06045-13 1.0ISO	6	4.5	13.5	63	3	560
1.0	M10 (2.5xD)		TMNBC06045-16 1.0ISO	6	4.5	16.5	63	3	562
1.0	M10 (3xD)	≥ M10	TMNBC0808-17 1.0ISO	8	8	17.5	76	3	563
1.25	M8 (1.5xD)	≥ M10	TMNBC0606-14 1.25ISO	6	6	14.37	63	3	558
1.25	M8 (2xD)	≥ M10	TMNBC0606-18 1.25ISO	6	6	18.12	63	3	560
1.25	M8 (2.5xD)	≥ M10	TMNBC0606-21 1.25ISO	6	6	21.87	63	3	562
1.5	M10 (1.5xD)	≥ M12	TMNBC08075-17 1.5ISO	8	7.5	17.25	76	3	563
1.5	M10 (2xD)	≥ M12	TMNBC08075-21 1.5ISO	8	7.5	21.75	76	3	564
1.5	M10 (2.5xD)	≥ M12	TMNBC08075-27 1.5ISO	8	7.5	27.75	76	3	567
1.5	M10 (3xD)	≥ M12	TMNBC08075-32 1.5ISO	8	7.5	32.25	76	3	568
1.5		≥ M16	TMNBC1212-29 1.5ISO	12	12.0	29.25	100	4	573
1.5		≥ M20	TMNBC1616-35 1.5ISO	16	16.0	35.25	120	6	579
1.75	M12 (1.5xD)		TMNBC0808-20 1.75ISO	8	8	20.12	76	3	563
1.75	M12 (2xD)		TMNBC0808-27 1.75ISO	8	8	27.12	76	3	564
1.75	M12 (1.5xD)		TMNBC1009-20 1.75ISO	10	9	20.12	100	3	568
1.75	M12 (2xD)		TMNBC1009-27 1.75ISO	10	9	27.12	100	3	569
1.75	M12 (2.5xD)		TMNBC1009-32 1.75ISO	10	9	32.37	100	3	572
1.75	M12 (3xD)		TMNBC1009-37 1.75ISO	10	9	37.62	100	3	573
2.0	M14 (1.5xD)	≥ M18	TMNBC1010-23 2.0ISO	10	10	23	100	3	566
2.0	M14 (2xD)	≥ M18	TMNBC1010-31 2.0ISO	10	10	31	100	3	569
2.0	M16 (1.5xD)	≥ M18	TMNBC1212-27 2.0ISO	12	12	27	100	4	570
2.0	M16 (2xD)	≥ M18	TMNBC1212-35 2.0ISO	12	12	35	100	4	573
2.0	M16 (2.5xD)	≥ M18	TMNBC1212-43 2.0ISO	12	12	43	100	4	574
2.0	M16 (3xD)	≥ M18	TMNBC1212-51 2.0ISO	12	12	51	100	3	577
2.0		≥ M20	TMNBC1616-39 2.0ISO	16	16	39.00	120	5	579
2.5	M20 (1.5xD)		TMNBC1414-33 2.5ISO	14	14	33.75	100	4	575
2.5	M20 (2xD)		TMNBC1414-43 2.5ISO	14	14	43.75	100	4	577
2.5	M20 (2.5xD)		TMNBC1615-53 2.5ISO	16	15	53.75	120	4	579
3.0	M24 (1.5xD)	≥ M30	TMNBC1616-40 3.0ISO	16	16	40.50	120	3	578
3.0	M24 (2xD)	≥ M30	TMNBC1616-52 3.0ISO	16	16	52.50	120	3	579
3.5	M30 (1.5xD)		TMNBC2020-50 3.5ISO	20	20	50.75	150	3	582
3.5	M30 (2xD)		TMNBC2020-64 3.5ISO	20	20	64.75	150	3	582



## Metric with internal radial cooling (M)

Pitch mm	M coarse	M fine	Catalogue number	Dimensions mm				Number of flutes	Price group
				d	D	l	L		
1.0		≥ M10	TMNBT0808-17 1.0ISO	8	8	17.5	76	4	566
1.25	M8 (2xD)	≥ M10	TMNBT0606-18 1.25ISO	6	6	18.12	76	3	562
1.5	M10 (2xD)	≥ M12	TMNBT08075-21 1.5ISO	8	7.5	21.75	76	3	566
1.5		≥ M16	TMNBT1212-29 1.5ISO	12	12.0	29.25	100	4	575
1.75	M12 (2xD)		TMNBT0808-27 1.75ISO	8	8	27.12	76	3	566
1.75	M12 (2xD)		TMNBT1009-27 1.75ISO	10	9	27.12	100	3	572
2.0	M14 (2xD)	≥ M18	TMNBT1010-31 2.0ISO	10	10	31	100	3	572
2.0	M16 (2xD)	≥ M18	TMNBT1212-35 2.0ISO	12	12	35	100	4	574
2.0	M16 (2xD)	≥ M18	TMNBT1616-39 2.0ISO	16	16	39.00	100	5	580



## Metric Mini two teeth (M)

Pitch mm	M coarse	Catalogue number	Dimensions mm				Number of flutes	Price group
			d	D	l	L		
0.4	M2 (1.5xD)	TMNM03015-3 0.4ISO	3	1.5	3.4	39	3	551
0.4	M2 (2.25xD)	TMNM03015-5 0.4ISO	3	1.5	5	39	3	551
0.45	M2.2 (1.5xD)	TMNM03016-3 0.45ISO	3	1.6	3.8	39	3	551
0.45	M2.2 (2.25xD)	TMNM03016-5 0.45ISO	3	1.6	5.4	39	3	551
0.45	M2.5 (1.5xD)	TMNM03019-4 0.45ISO	3	1.9	4.2	39	3	551
0.45	M2.5 (2.25xD)	TMNM03019-6 0.45ISO	3	1.9	6.1	39	3	551
0.5	M3 (1.5xD)	TMNM03023-5 0.5ISO	3	2.3	5	39	3	551
0.5	M3 (2.25xD)	TMNM03023-7 0.5ISO	3	2.3	7.3	39	3	551
0.6	M3.5 (1.5xD)	TMNM03026-6 0.6ISO	3	2.6	6	39	3	551
0.6	M3.5 (2.25xD)	TMNM03026-8 0.6ISO	3	2.6	8.5	39	3	551
0.7	M4 (1.5xD)	TMNM0303-7 0.7ISO	3	3.0	7	39	3	551
0.7	M4 (2.25xD)	TMNM0303-10 0.7ISO	3	3.0	10	39	3	551
0.8	M5 (1.5xD)	TMNM04038-9 0.8ISO	4	3.8	9	50	3	552
0.8	M5 (2.25xD)	TMNM04038-12 0.8ISO	4	3.8	12.1	50	3	552
1.0	M6 (1.5xD)	TMNM06045-10 1.0ISO	6	4.5	10	63	3	552
1.0	M6 (2.25xD)	TMNM06045-14 1.0ISO	6	4.5	14.5	63	3	552
1.25	M8 (1.5xD)	TMNM0606-14 1.25ISO	6	6.0	14	63	3	552
1.25	M8 (2.25xD)	TMNM0606-19 1.25ISO	6	6.0	19.3	63	3	552

# Solid Thread milling cutters



## Unified (UN)

Pitch TPI	UNC	UNF	Catalogue number	Dimensions mm				Number of flutes	Price group
				d	D	I	L		
44		No.5 (1.5xD)	TMNB04024-5 44UN	4	2	5.48	50	3	556
40	No.5 (1.5xD)		TMNB04023-5 40UN	4	2	5.4	50	3	554
40	No.5 (2xD)		TMNB04023-7 40UN	4	2	7.3	50	3	556
40		No.6 (1.5xD)	TMNB04026-6 40UN	4	3	6.03	50	3	556
36		No.8 (1.5xD)	TMNB04031-7 36UN	4	3	7.41	50	3	556
32	No.6 (1.5xD)		TMNB04025-6 32UN	4	3	6.75	50	3	554
32	No.6 (2xD)		TMNB04025-8 32UN	4	3	8.33	50	3	556
32	No.8 (1.5xD)		TMNB0403-7 32UN	4	3	7.54	50	3	554
32	No.8 (2xD)		TMNB0403-9 32UN	4	3	9.13	50	3	556
32		No.10 (1.5xD)	TMNB04036-8 32UN	4	4	8.33	50	3	556
28		No.12 (1.5xD)	TMNB0404-9 28UN	4	4	9.52	50	3	556
28		1/4 (1.5xD)	TMNB0605-10 28UN	6	5	10.43	63	3	558
24	No.10 (1.5xD)		TMNB04038-9 24UN	4	4	9	50	3	554
24	No.10 (2xD)		TMNB04038-11 24UN	4	4	11.11	50	3	556
24	No.12 (1.5xD)		TMNB0404-10 24UN	4	4	10.05	50	3	554
24	No.12 (2xD)		TMNB0404-12 24UN	4	4	12.17	50	3	556
24		5/16 (1.5xD)	TMNB0606-13 24UN	6	6	13.23	63	3	558
24		3/8 (1.5xD)	TMNB08076-15 24UN	8	8	15.35	63	3	563
20	1/4 (1.5xD)		TMNB06045-10 20UN	6	5	10.8	63	3	557
20	1/4 (2xD)		TMNB06045-14 20UN	6	5	14.6	63	3	558
20		7/16 (1.5xD)	TMNB0808-18 20UN	8	8	18.41	63	3	563
20		1/2 (1.5xD)	TMNB1010-21 20UN	10	10	20.96	76	4	567
20			TMNB1212-28 20UN	12	12	28.57	83	5	570
18	5/16 (1.5xD)		TMNB06058-13 18UN	6	6	13.41	63	3	557
18	5/16 (2xD)		TMNB06058-17 18UN	6	6	17.64	63	3	558
18	5/16 (2.5xD)		TMNB06058-21 18UN	6	5.8	21.87	63	3	561
18		9/16 (1.5xD)	TMNB1010-23 18UN	10	10	23.28	76	4	567
18		5/8 (1.5xD)	TMNB1212-26 18UN	12	12	26.11	83	4	570
16	3/8 (1.5xD)		TMNB0606-16 16UN	6	6	16.67	64	3	557
16	3/8 (2xD)		TMNB0606-21 16UN	6	6	21.43	63	3	558
16		3/4 (1.5xD)	TMNB1212-31 16UN	12	12	30.96	100	4	570
16			TMNB1616-35 16UN	16	16	35.72	100	5	578
14	7/16 (1.5xD)		TMNB0808-19 14UN	8	8	19.05	63	3	561
14	7/16 (2xD)		TMNB0808-24 14UN	8	8	24.49	76	3	563
14		7/8 (1.5xD)	TMNB1616-35 14UN	16	16	35.38	100	5	578
13	1/2 (1.5xD)		TMNB0808-22 13UN	8	8	22.47	76	3	561
13	1/2 (2xD)		TMNB0808-28 13UN	8	8	28.33	76	3	563
12	9/16 (1.5xD)		TMNB1010-24 12UN	10	10	24.34	76	3	566
12	9/16 (2xD)		TMNB1010-30 12UN	10	10	30.69	100	3	567
12			TMNB1616-43 12UN	16	16	43.39	100	5	578
11	5/8 (1.5xD)		TMNB1010-26 11UN	10	10	26.55	76	3	566
11	5/8 (2xD)		TMNB1010-35 11UN	10	10	35.79	100	3	567
10	3/4 (1.5xD)		TMNB1212-31 10UN	12	12	31.75	100	3	569
10	3/4 (2xD)		TMNB1212-41 10UN	12	12	41.91	100	3	570
9	7/8 (1.5xD)		TMNB1616-38 9UN	16	16	38.1	100	3	576
9	7/8 (2xD)		TMNB1616-49 9UN	16	16	49.39	120	3	578
8	1 (1.5xD)		TMNB1616-42 8UN	16	16	42.86	100	3	576
8	1 (2xD)		TMNB1616-55 8UN	16	16	55.56	120	3	578
8			TMNB2020-49 8UN	20	20	49.21	120	4	580

## Whitworth pipe thread (G)

Pitch TPI	Standard	Catalogue number	Dimensions mm				Number of flutes	Price group
			d	D	l	L		
28	G $1/8$	TMXB0606-10 28W	6	6	10.43	63	3	557
19	G $1/4 - 3/8$	TMXB0808-15 19W	8	8	15.37	63	3	561
19	G $1/4 - 3/8$	TMXB1010-22 19W	10	10	22.06	76	4	566
14	G $1/2 - 7/8$	TMXB1212-20 14W	12	12	20.86	83	4	569
14	G $1/2 - 7/8$	TMXB1212-28 14W	12	12	28.12	83	4	570
14	G $1/2 - 7/8$	TMXB1616-28 14W	16	16	28.12	100	5	573
11	G 1 - $1 1/2$	TMXB1212-26 11W	12	12	26.55	83	3	569
11	G 1 - 3	TMXB1616-40 11W	16	16	40.41	100	4	577
11	G $\geq 1$	TMXB2020-49 11W	20	20	49.65	120	5	579

## BSPT pipe thread (BSPT)

Pitch TPI	Standard	Catalogue number	Dimensions mm				Number of flutes	Price group
			d	D	l	L		
28	Rc $1/8$	TMXB0606-10 28BSPT	6	6	10.43	63	3	558
19	Rc $1/4 - 3/8$	TMXB0808-15 19BSPT	8	8	15.37	63	3	563
14	Rc $1/2 - 7/8$	TMXB1212-20 14BSPT	12	12	20.86	83	4	570
11	Rc 1 - 2	TMXB1616-31 11BSPT	16	16	31.17	100	4	578

## NPT pipe thread (NPT)

Pitch TPI	Standard	Catalogue number	Dimensions mm				Number of flutes	Price group
			d	D	l	L		
27	$1/16 - 1/8$	TMXB0606-10 27NPT	6	6	10.82	63	3	558
18	$1/4 - 3/8$	TMXB0808-16 18NPT	8	8	16.23	63	3	563
14	$1/2 - 3/4$	TMXB1212-22 14NPT	12	12	22.68	83	4	570
14	$3/4$	TMXB1616-22 14NPT	16	16	22.86	100	4	578
11.5	1 - 2	TMXB1616-29 11.5NPT	16	16	29.82	100	4	578
8	$\geq 2 1/2$	TMXB2020-42 8NPT	20	20	42.86	100	4	580

## NPTF Dryseal pipe thread (NPTF)

Pitch TPI	Standard	Catalogue number	Dimensions mm				Number of flutes	Price group
			d	D	l	L		
27	$1/16 - 1/8$	TMXB0606-10 27NPTF	6	6	10.82	63	3	558
18	$1/4 - 3/8$	TMXB0808-16 18NPTF	8	8	16.23	63	3	563
14	$1/2 - 3/4$	TMXB1212-22 14NPTF	12	12	22.68	83	4	570
11.5	1 - 2	TMXB1616-29 11.5NPTF	16	16	29.82	100	4	578
8	$\geq 2 1/2$	TMXB2020-42 8NPTF	20	20	42.86	100	4	580

## NPSF pipe thread (NPSF)

Pitch TPI	Standard	Catalogue number	Dimensions mm				Number of flutes	Price group
			d	D	l	L		
27	$1/16 - 1/8$	TMXB0606-12 27NPSF	6	6	12.70	63	3	558
18	$1/4 - 3/8$	TMXB0808-16 18NPSF	8	8	16.23	63	3	563
14	$1/2 - 3/4$	TMXB1212-22 14NPSF	12	12	22.68	83	4	570
11.5	1	TMXB1616-29 11.5NPSF	16	16	29.82	100	4	578

## Conduit thread (PG)

Pitch TPI	Standard	Catalogue number	Dimensions mm				Number of flutes	Price group
			d	D	l	L		
20	Pg 7	TMXB0808-21 20PG	8	8	20.96	63	3	563
18	Pg 9 - 16	TMXB1010-27 18PG	10	10	27.52	76	3	567
16	Pg 21 - 48	TMXB1212-31 16PG	12	12	30.96	83	4	570

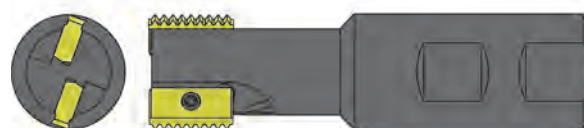
The indexable thread cutters are designed so that they can be used for both internal and external thread milling. The high indexing precision permits changing of inserts without altering the machine setting or the program.

Our thread milling cutters are available for the following types of thread:

M	Metric
UN	Unified
G	Whitworth pipe thread
BSPT	BSPT pipe thread
NPT	NPT pipe thread
NPTF	NPTF Dryseal pipe thread
PG	Conduit pipe thread



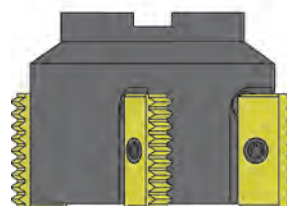
With one seat



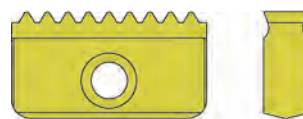
With two seats



With carbide shank



With four seats



Thread milling cutter

### Cutter shanks

Cutter shanks are available in four different types, for one to four inserts. Production time is halved by using two inserts instead of one. A channel in the cutter shank leads coolant to the insert.

### Thread milling cutters

Most inserts have two precision-ground edges and can therefore be used on two sides. Some of the "coarse" pitches are excluded and also inserts for taper threads, such as NPT, NPTF. The thread milling inserts are available in four sizes: 14, 21, 30 and 40 mm.

### Tolerance

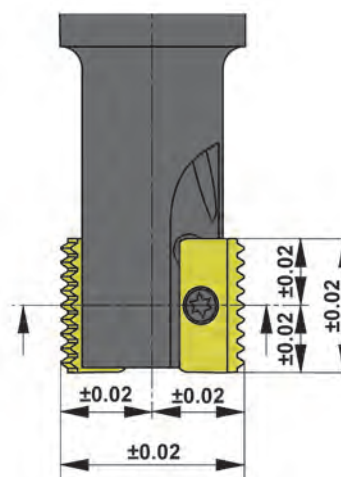
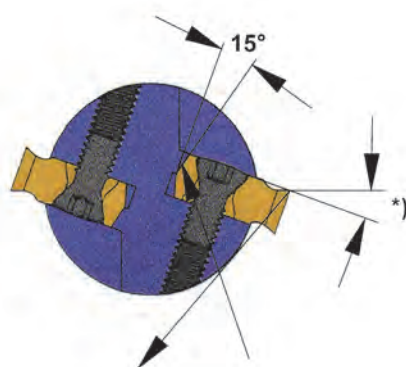
The close tolerances of the cutter and its inserts facilitate the use of more than one insert, without jeopardising tolerances of the finished part.

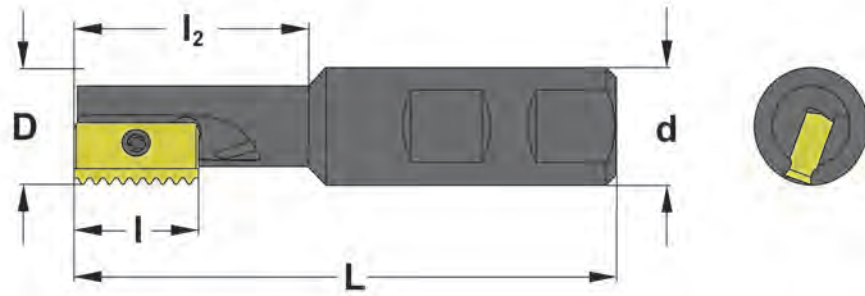
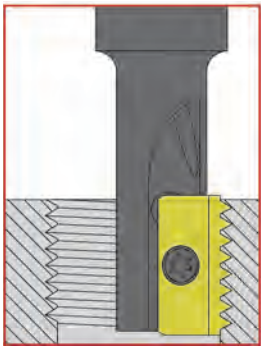
\*) Clearance angles are achieved by tipping the cutter 20° for cutter sizes 14 and 21 and 15° for size 30 and 40. The significant cutting forces that occur tend to lift the insert. We have solved this with a 15° oblique contact surface that counteracts the force. Consequently, you can increase the rate of feed without risking that the clamping screw will fracture.

### Range of use

Thread milling in all types of material

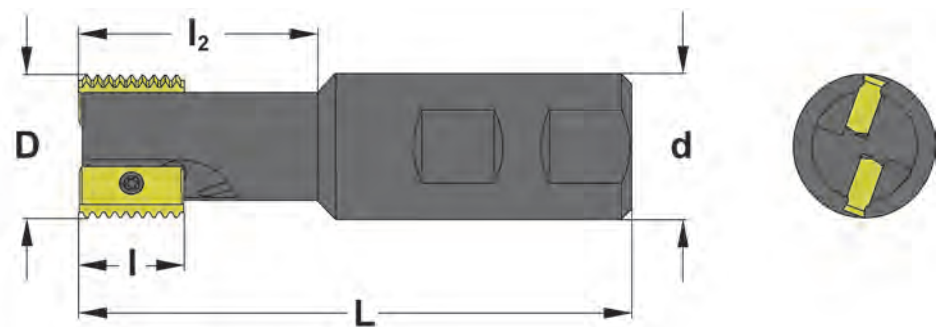
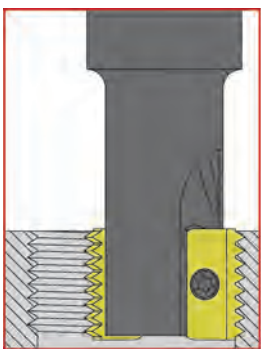
### Tolerances





## With one insert pocket

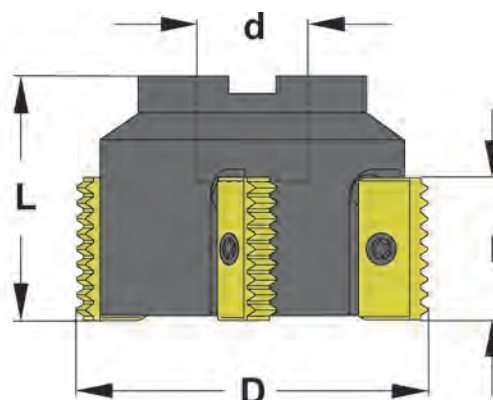
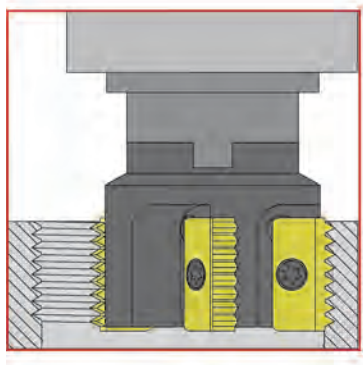
Insert	Catalogue number	Dimensions mm					Price group
		d	D	l	l <sub>2</sub>	L	
14...	TM000812-14-L120	8	12	14	65	120	520
14...	TM001014-14-L120	10	14	14	65	120	520
14...	TM001216-14-L120	12	16	14	65	120	520
14...	TM002012-14	20	12	14	20	75	520
14...	TM002015L75-14	20	15	14	20	75	520
14...	TM002015L85-14	20	15	14	30	85	520
14...	TM002017-14	20	17	14	30	85	520
21...	TM002020L85-21	20	20	21	25	85	520
21...	TM002020-21	20	20	21	40	93	520
21...	TM002023L96-21	20	23	21	45	96	520
30...	TM002529-30	25	29	30	50	108	521
30...	TM003239-30	32	39	30	70	130	521
40...	TM003238L140-40	32	38	40	78	140	522
40...	TM004048-40	40	48	40	78	153	522



## With two insert pockets

Insert	Catalogue number	Dimensions mm					Price group
		d	D	l	l <sub>2</sub>	L	
14...	TM002020-14	20	20	14	40	93	522
21...	TM002530-21	25	30	21	50	108	523
30...	TM003240-30	32	40	30	70	130	524
30...	TM003240L165-30	32	40	30	105	165	529
40...	TM004050-40	40	50	40	83	153	525
40...	TM004050L185-40	40	50	40	115	185	529





## With Multi Pockets

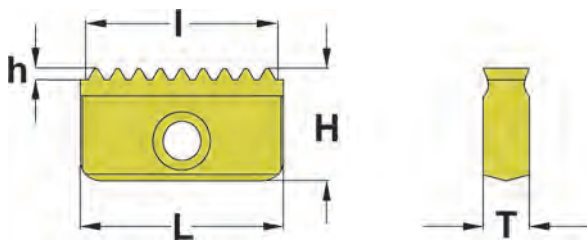
Insert	Catalogue number	Dimensions mm				Number of inserts	Price group
		d	D	l	L		
21...	TM006322-21	22	63	21	50	5	526
30...	TM006322-30	22	63	30	50	4	526
30...	TM008027-30	27	80	30	55	4	527
30...	TM010032-30	32	100	30	60	4	528
40...	TM008027-40	27	80	40	65	4	527
40...	TM010032-40	32	100	40	70	4	528



## With carbide shank

Insert	Catalogue number	Dimensions mm				Price group
		d	D	l	L	
14...	TMC001013-14	10	13	14	150	531
14...	TMC001215-14	12	15	14	180	532
21...	TMC001621-21	16	21	21	200	533
30...	TMC002027-30	20	27	30	260	534
30...	TMC002533-30	25	33	30	260	535

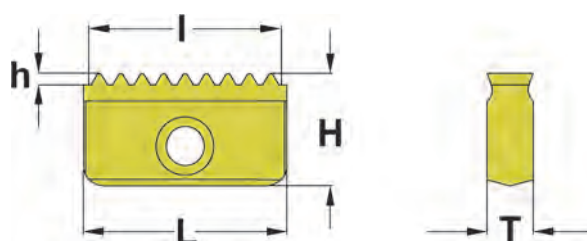
# Thread milling inserts



## Metric (M)

internal thread cutting

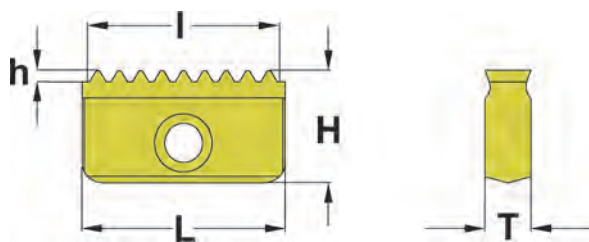
Pitch mm	M coarse	M fine	Catalogue number	Dimensions mm				Number of edges	Price group	
				I	L	T	H			
1.0		≥ M6	14NTM 1.0ISO	14	14	3.1	7.5	0.58	2	500
1.5		≥ M16	14NTM 1.5ISO	13.5	14	3.1	7.5	0.88	2	500
2.0		≥ M18	14NTM 2.0ISO	14	14	3.1	7.5	1.17	2	500
2.5	M18-M22		14NTM 2.5ISO	12.5	14	3.1	7.5	1.46	2	500
1.0		≥ M24	21NTM 1.0ISO	21	21	4.7	12	0.58	2	501
1.5		≥ M24	21NTM 1.5ISO	21	21	4.7	12	0.88	2	501
2.0		≥ M24	21NTM 2.0ISO	20	21	4.7	12	1.17	2	501
3.0		≥ M30	21NTM 3.0ISO	21	21	4.7	12	1.75	2	501
3.5	M30-M33		21NTM 3.5ISO	21	21	4.7	12	2.05	2	501
1.5		≥ M35	30NTM 1.5ISO	30	30	5.5	16	0.88	2	502
2.0		≥ M36	30NTM 2.0ISO	30	30	5.5	16	1.17	2	502
3.0		≥ M36	30NTM 3.0ISO	30	30	5.5	16	1.75	2	502
4.0	M36-M39	≥ M42	30NTM 4.0ISO	28	30	5.5	16	2.34	2	502
4.5	M42-M45		30NTM 4.5ISO	27	30	5.5	16	2.63	2	502
?.?	M43-M52		30NTM 5.0ISO	30	30	5.5	16	2.92	1	502
2.0		≥ M56	40NTM 2.0ISO	40	40	6.3	20	1.17	2	503
3.0		≥ M58	40NTM 3.0ISO	39	40	6.3	20	1.75	2	503
4.0		≥ M64	40NTM 4.0ISO	40	40	6.3	20	2.34	2	503
5.0			40NTM 5.0ISO	40	40	6.3	20	2.92	2	503
6.0		≥ M72	40NTM 6.0ISO	36	40	6.3	20	3.5	2	503



## Metric (M)

external thread cutting

Pitch mm	M coarse	M fine	Catalogue number	Dimensions mm				Number of edges	Price group
				I	L	T	H		
1.0		≥ M24	21ETM 1.0ISO	21	4.76	13	0.63	2	501
1.5		≥ M24	21ETM 1.5ISO	21	4.76	13	0.94	2	501
2.0		≥ M24	21ETM 2.0ISO	21	4.76	13	1.25	2	501
1.5		≥ M35	30ETM 1.5ISO	30	5.56	17	0.94	2	502
2.0		≥ M36	30ETM 2.0ISO	30	5.56	17	1.25	2	502
3.0		≥ M36	30ETM 3.0ISO	30	5.56	17	1.88	2	502
4.0		≥ M64	40ETM 4.0ISO	40	6.35	21	2.51	2	503
5.0			40ETM 5.0ISO	40	6.35	21	3.13	2	503
6.0		≥ M72	40ETM 6.0ISO	40	6.35	21	3.76	2	503

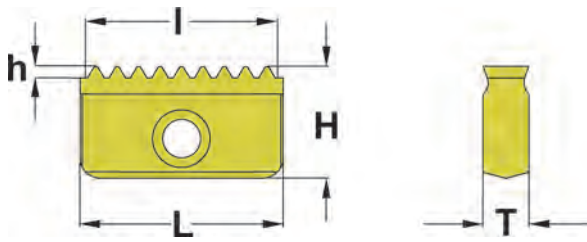


## Unified (UN)

internal thread cutting

Pitch TPI	UNC	UNF	UNEF	Catalogue number	Dimensions mm					Number of edges	Price group
					I	L	T	H	h		
32				14NTM 32UN	13.49	14	3.1	7.5	0.50	2	500
28				14NTM 28UN	13.61	14	3.1	7.5	0.57	2	500
24			$\frac{5}{8}$	14NTM 24UN	13.75	14	3.1	7.5	0.62	2	500
20			$\frac{3}{4} - 1$	14NTM 20UN	13.97	14	3.1	7.5	0.74	2	500
18		$\frac{5}{8}$	$1\frac{1}{8} - 1\frac{5}{8}$	14NTM 18UN	14	14	3.1	7.5	0.83	2	500
16		$\frac{3}{4}$		14NTM 16UN	12.70	14	3.1	7.5	0.93	2	500
14		$\frac{7}{8}$		14NTM 14UN	12.70	14	3.1	7.5	1.06	2	500
12		$1 - 1\frac{1}{2}$		14NTM 12UN	12.70	14	3.1	7.5	1.24	2	500
10	$\frac{3}{4}$			14NTM 10UN	12.70	14	3.1	7.5	1.59	2	500
20			1	21NTM 20UN	20.32	21	4.7	12	0.74	2	501
18			$1\frac{1}{8} - 1\frac{5}{8}$	21NTM 18UN	21	21	4.7	12	0.83	2	501
16				21NTM 16UN	20.64	21	4.7	12	0.93	2	501
14		$\frac{7}{8}$		21NTM 14UN	19.96	21	4.7	12	1.14	2	501
12			$1\frac{1}{8} - 1\frac{1}{2}$	21NTM 12UN	21	21	4.7	12	1.24	2	501
8				21NTM 8UN	19.05	21	4.7	12	1.86	2	501
7	$1\frac{1}{8} - 1\frac{1}{4}$			21NTM 7UN	21.77	21	4.7	12	2.27	2	501
20				30NTM 20UN	29.21	30	5.5	16	0.80	2	502
18			$1\frac{1}{4} - 1\frac{5}{8}$	30NTM 18UN	29.63	30	5.5	16	0.88	2	502
16				30NTM 16UN	30	30	5.5	16	0.93	2	502
12		$1\frac{1}{2}$		30NTM 12UN	29.63	30	5.5	16	1.24	2	502
8				30NTM 8UN	28.57	30	5.5	16	1.86	2	502
6	$1\frac{1}{2}$			30NTM 6UN	29.63	30	5.5	16	2.48	2	502
5				30NTM 5UN-S	30	30	5.5	16	2.97	1	502
16				40NTM 16UN	39.69	40	6.3	20	0.99	2	503
12				40NTM 12UN	40	40	6.3	20	1.24	2	503
8				40NTM 8UN	38.10	40	6.3	20	1.86	2	503
6				40NTM 6UN	38.10	40	6.3	20	2.48	2	503
4	3-4			40NTM 4UN	38.10	40	6.3	20	3.98	2	503

# Thread milling inserts



## Unified (UN)

external thread cutting

Pitch TPI	UNC	UNF	UNEF	Catalogue number	Dimensions mm				Number of edges	Price group
					I	L	T	H		
32				14ETM 32UN	14	4.7	13	0.50	2	500
24			$\frac{5}{8}$	14ETM 24UN	14	4.7	13	0.66	2	500
20			$\frac{3}{4} - 1$	14ETM 20UN	14	4.7	13	0.80	2	500
18		$\frac{5}{8}$	$1\frac{1}{8} - 1\frac{5}{8}$	14ETM 18UN	14	4.7	13	0.88	2	500
16				21ETM 16UN	21	5.5	17	0.99	2	501
12		$1 - 1\frac{1}{2}$		21ETM 12UN	21	5.5	17	1.33	2	501
16				30ETM 16UN	30	6.3	21	0.99	2	502
12		$1\frac{1}{2}$		30ETM 12UN	30	6.3	21	1.33	2	502

## Whitworth (BSW, BSP)

Internal and external thread cutting

Pitch mm	Norm	Catalogue number	Dimensions mm					Number of edges	Price group
			I	L	T	H	h		
19	G $\frac{3}{8}$	14XTM 19W	13.37	14	3.1	7.5	0.87	2	500
14	G $1\frac{1}{2} - \frac{5}{8}$	14XTM 14W	12.70	14	3.1	7.5	1.18	2	500
11	-	14XTM 11W-S	14	14	3.1	7.5	1.18	1	500
14	G $\frac{3}{4} - \frac{7}{8}$	21XTM 14W	19.96	21	4.7	12	1.18	2	501
11	G 1	21XTM 11W	20.78	21	4.7	12	1.50	2	501
11	G $1\frac{1}{8}$	30XTM 11W	30	30	5.5	16	1.50	2	502
11	$\geq G 2$	40XTM 11W	39.25	40	6.3	20	1.50	2	503

## BSPT

Internal and external thread cutting

Pitch mm	Norm	Catalogue number	Dimensions mm					Number of edges	Price group
			I	L	T	H	h		
19	Rc $\frac{3}{8}$	14XTM 19BSPT-S	13.37	14	3.1	7.5		1	500
14	Rc $1\frac{1}{2} - \frac{5}{8}$	14XTM 14BSPT-S	12.70	14	3.1	7.5	1.21	1	500
14	Rc $\frac{3}{4} - \frac{7}{8}$	21XTM 14BSPT-S	19.96	21	4.7	12	1.21	1	501
11	Rc 1	21XTM 11BSPT-S	20.78	21	4.7	12	1.54	1	501
11	Rc $1\frac{1}{8}$	30XTM 11BSPT-S	30	30	5.5	16	1.54	1	502
11	Rc $\geq 2$	40XTM 11BSPT-S	39.25	40	6.3	20	1.54	1	503

## NPT

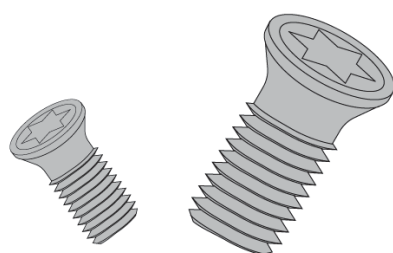
Internal and external thread cutting

Pitch mm	Norm	Catalogue number	Dimensions mm					Number of edges	Price group
			I	L	T	H	h		
18	$\frac{3}{8}$	14XTM 18NPT-S	14	14	3.1	7.5	1.05	1	500
14	$\frac{1}{2} - \frac{5}{8}$	14XTM 14NPT-S	12.70	14	3.1	7.5	1.37	1	500
14	$\frac{3}{4} - \frac{7}{8}$	21XTM 14NPT-S	19.96	21	4.7	12	1.37	1	501
11.5	1	21XTM 11.5NPT-S	19.88	21	4.7	12	1.68	1	501
11.5	$1\frac{1}{4} - 2$	30XTM 11.5NPT-S	28.71	30	5.5	16	1.68	1	502
8	$\geq 2\frac{1}{2}$	30XTM 8NPT-S	28.58	30	5.5	16	2.43	1	502
8	$\geq 2\frac{1}{2}$	40XTM 8NPT-S	38.10	40	6.3	20	2.43	1	503

## NPTF Dryseal

Internal and external thread cutting

Pitch mm	Norm	Catalogue number	Dimensions mm					Number of edges	Price group
			I	L	T	H	h		
18	$\frac{3}{8}$	14XTM 18NPTF-S	14	14	3.1	7.5	1.05	1	500
14	$\frac{1}{2} - \frac{5}{8}$	14XTM 14NPTF-S	12.70	14	3.1	7.7	1.37	1	500
14	$\frac{3}{4} - \frac{7}{8}$	21XTM 14NPTF-S	19.96	21	4.7	12	1.37	1	501
11.5	1	21XTM 11.5NPTF-S	19.88	21	4.7	12	1.68	1	501
11.5	$1\frac{1}{4} - 2$	30XTM 11.5NPTF-S	28.71	30	5.5	16	1.68	1	502
8	$\geq 2\frac{1}{2}$	30XTM 8NPTF-S	28.58	30	5.5	16	2.43	1	502
8	$\geq 2\frac{1}{2}$	40XTM 8NPTF-S	38.10	40	6.3	20	2.43	1	503



## Screws

Catalogue number	Used for	Price group
STST7xM2.5	TM 14	221
STST20xM4	TM 21	221
STST20xM5	TM 31	221
STST20xM5	TM 40	221



## Keys

Catalogue number	Used for	Price group
Torx T7	STST7xM2.5	222
Torx T20	STST20xM4	222
Torx T20	STST20xM5	222

## Making a thread

### 1. Choice of thread milling insert

Since length of the thread is 35 mm we should choose a 40 mm insert so that we will only need to do one complete turn.

Op. 1, Choose 40NTM 4.0ISO K20C

Op. 2, Choose 40ETM 4.0ISO K20C

### 2. Choice of thread milling cutter

Op. 1 See page 18. M64 x 4 gives  $d_{\text{cutter}} = 52.5$  mm

Select TM004050-40

Op. 2 Since we have ample room all round we can choose a multi-edge thread milling cutter.

To keep the costs of stock down we choose the same cutter as in Op. 1, Choose TM004050-40

### 3. Choice of cutting data

The material is stainless SS 2343 and carbide grade K20R.

Choose  $V = 190$  m/min and  $s_{\text{tooth}} = 0.10$  mm/tooth

### 4. Programming

$N$  = spindle speed r/min

$V$  = cutting speed m/min

$N = \frac{V \times 1000}{\pi \times \text{cutter}} = 1210$  r/min

$f_{\text{thread}}$  = rate of feed at thread diameter mm/min

$s_{\text{tooth}}$  = feed mm/tooth

$Z$  = number of cutter teeth

$f_{\text{thread}} = N \times s_{\text{tooth}} \times Z = 1210 \times 0.10 \times 2 = 242$  mm/min

#### Op. 1

$f_{\text{cutter}}$  = rate of feed at centre of cutter mm/min

$f_{\text{cutter}} = f_{\text{thread}} \times \frac{d_{\text{thread}} - d_{\text{cutter}}}{d_{\text{thread}}} = 242 \times \frac{64 - 50}{64} = 53$  mm/min

$d_{\text{thread}}$

$H$  = vertical movement in start block mm

$H = \frac{P}{8} = \frac{4}{8} = 0.5$  mm

S1210 M13

G01 G41 G91 X3.5 Y-3.5 F200

G03 X3.5 Y3.5 Z0.5 I0 J3.5 F53

G03 X0 Y0 Z4 I-7 J0

G03 X-3.5 Y3.5 Z0.5 I-3.5 J0

G01 G40 X-3.5 Y-3.5 F200

#### Op. 2

$f_{\text{cutter}}$  = rate of feed at centre of cutter mm/min

$f_{\text{cutter}} = f_{\text{thread}} \times \frac{d_{\text{thread}} + d_{\text{cutter}}}{d_{\text{thread}}} = 242 \times \frac{90 + 50}{90} = 376$  mm/min

$H$  = vertical movement in start block mm

$H = \frac{P}{2\pi} = \frac{4}{2\pi} = 0.637$  mm

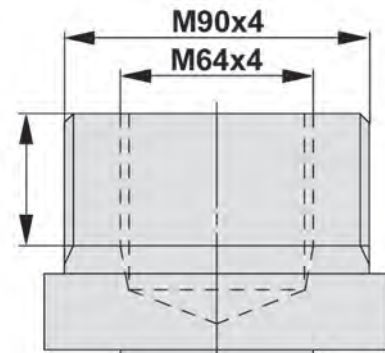
S1210 M13

G01 G41 G91 Y-67.835 Z-0.637 F363

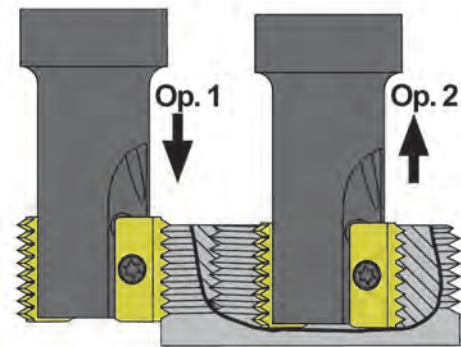
G02 X0 Y0 Z-4 I-42.835 J0

G01 G40 Y-67.835 Z-0.637

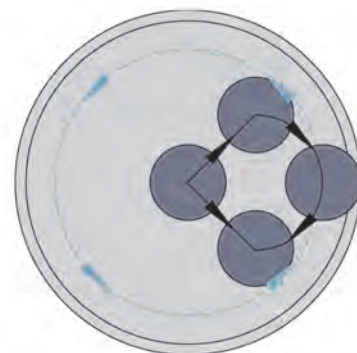
### Drawing



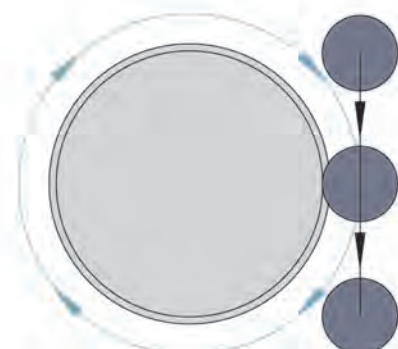
### Machining operations



### Internal thread cutting



### External thread cutting



## Machining data thread milling

Machining data recommendations for thread milling. Cutting speed/Rate of feed.

Material groups	Breaking strength N/mm <sup>2</sup>	Cutting speed V <sub>c</sub> [m/min]	Rate of feed f <sub>c</sub> [mm/tooth]
<b>Steel</b>			
Free-cutting steel	< 410 N/mm <sup>2</sup>	130 - 180	0.02 - 0.15
Structural steel	< 740 N/mm <sup>2</sup>	130 - 180	0.02 - 0.15
Carbon steel	< 750 N/mm <sup>2</sup>	120 - 160	0.02 - 0.15
Low-alloy steel	< 750 N/mm <sup>2</sup>	100 - 140	0.02 - 0.10
Tempered steel	< 1000 N/mm <sup>2</sup>	80 - 120	0.01 - 0.08
High-alloy steel	< 1600 N/mm <sup>2</sup>	60 - 100	0.01 - 0.08
<b>Hardened</b>			
Hardened steel HRC		30 - 60	0.01 - 0.10
Hardened steel HRC 55		20 - 40	0.01 - 0.10
<b>Stainless</b>			
Stainless free-cutting steel	< 750 N/mm <sup>2</sup>	130 - 180	0.04 - 0.10
Stainless steel I	< 750 N/mm <sup>2</sup>	100 - 140	0.04 - 0.08
Stainless steel II	< 1150 N/mm <sup>2</sup>	80 - 120	0.04 - 0.07
<b>Castings</b>			
Cast iron, laminar graphite I	< 350 N/mm <sup>2</sup>	130 - 180	0.05 - 0.15
Cast iron, laminar graphite II	< 450 N/mm <sup>2</sup>	100 - 140	0.03 - 0.1
Tempered cast iron	< 750 N/mm <sup>2</sup>	80 - 120	0.03 - 0.15
Graphite 500 - 900 0.03 - 0.25			
<b>Aluminium</b>			
Aluminium, Al Mg 3	< 200 N/mm <sup>2</sup>	500 - 900	0.05 - 0.25
Aluminium, Si < 0.5%	< 220 N/mm <sup>2</sup>	400 - 800	0.05 - 0.25
Cast aluminium, Si < 11%	< 260 N/mm <sup>2</sup>	300 - 600	0.05 - 0.15
Cast aluminium, Si > 11%	< 170 N/mm <sup>2</sup>	200 - 400	0.05 - 0.15

## Choice of threading tools

Recommended cutter shank and inserts for different thread sizes

M Metric coarse threads ISO			UNC Coarse threads		
Thread size	Cutter shank	Indexable cutter	Thread size	Cutter shank	Indexable cutter
M16	TM002012-14	14NTM2.0ISO	5/8	TM002012-14	14NTM 11UN
M18	TM002012-14	14NTM 2.5ISO	3/4	TM002015...-14	14NTM 10UN
M20	TM002015...-14	14NTM 2.5ISO	7/8		
M22	TM002015...-14	14NTM 2.5ISO	1 1/8	TM002020-21	21NTM 7UN
M24			1 1/4	TM002023L96-21	21NTM 7UN
M27	TM002020-21	21NTM 3.0ISO	1 3/8	TM002529-30	30NTM 6UN
M30	TM002023L96-21	21NTM 3.5ISO	1 1/2	TM002529-30	30NTM 6UN
M33	TM002023L96-21	21NTM 3.5ISO	1 3/4	TM002529-30	30NTM 5UN-S
M36	TM002529-30	30NTM 4.0ISO	2	TM003238-40	40NTM 4.5UN
M39	TM002529-30	30NTM 4.0ISO	2 1/4	TM003238-40	40NTM 4.5UN
M42	TM002529-30	30NTM 4.5ISO	2 1/2	TM004050...-40	40NTM 4UN
M45	TM002529-30	30NTM 4.5ISO			
M48	TM003238-40	40NTM 5.0ISO			
M52	TM003238-40	40NTM 5.0ISO			
M56	TM003238-40	40NTM 5.5ISO			
M60		40NTM 5.5ISO			
M64	TM004050...-40	40NTM 6.0ISO			

UNF Fine threads			UNEF Extra fine		
Thread size	Cutter shank	Indexable cutter	Thread size	Cutter shank	Indexable cutter
5/8	TM002012-14	14NTM 18UN	5/8	TM002012-14	14NTM 24UN
3/4	TM002015...-14	14NTM 16UN	3/4	TM002015...-14	14NTM 20UN
7/8	TM002017-14	14NTM 14UN	7/8	TM002017-14	14NTM 20UN
1	TM002017-14	14NTM 12UN	1	TM002017-14	14NTM 20UN
1 1/8	TM002023L96-21	21NTM 12UN	1 1/8	TM002023L96-21	21NTM 18UN
1 1/4	TM002023L96-21	21NTM 12UN	1 1/4	TM002023L96-21	21NTM 18UN
1 3/8	TM002529-30	30NTM 12UN	1 3/8	TM002023L96-21	21NTM 18UN
1 1/2	TM002529-30	30NTM 12UN	1 1/2	TM002530-21	21NTM 18UN
1 3/4	TM002529-30	30NTM 12UN	1 3/4	TM002530-21	21NTM 18UN
2	TM003240...-30	30NTM 12UN	2	TM002530-21	21NTM 18UN
2 1/4	TM003240...-30	30NTM 12UN	2 1/4	TM002530-21	21NTM 18UN
2 1/2	TM003240...-30	30NTM 12UN	2 1/2	TM002530-21	21NTM 18UN



## Choice of threading tools

Recommended cutter shank and inserts for different thread sizes

G, Rp, R Pipe threads			NPT Pipe threads		
Thread size	Cutter shank	Indexable cutter	Thread size	Cutter shank	Indexable cutter
3/8	TM002012-14	14XTM 19W	3/8	TM002012-14	14XTM 18NPT-S
1/2	TM002015L75-14	14XTM 14W	1/2	TM002015L75-14	14XTM 14NPT-S
5/8	TM002015L75-14	14XTM 14W	5/8	TM002015L75-14	14XTM 14NPT-S
3/4	TM002020L85-21	21XTM 14W	3/4	TM002020L85-21	21XTM 14NPT-S
7/8	TM002020L85-21	21XTM 14W	7/8	TM002020L85-21	21XTM 14NPT-S
1	TM002020L85-21	21XTM 11W	1	TM002020L85-21	21XTM 11.5NPT-S
1 1/8	TM002529-30	30XTM 11W	1 1/8	TM002529-30	30XTM 11.5NPT-S
1 1/4	TM002529-30	30XTM 11W	1 1/4	TM002529-30	30XTM 11.5NPT-S
1 1/2	TM003240-30	30XTM 11W	1 1/2	TM003240-30	30XTM 11.5NPT-S
1 3/4	TM003240-30	30XTM 11W	1 3/4	TM003240-30	30XTM 11.5NPT-S
2	TM003240-30	30XTM 11W	2	TM003240-30	30XTM 11.5NPT-S
2 1/4	TM003240-30	30XTM 11W	2 1/4	TM003240-30	30XTM 11.5NPT-S
2 1/2	TM004050-40	40XTM 11W	2 1/2	TM004050-40	40XTM 8NPT-S



## Advantages of thread milling

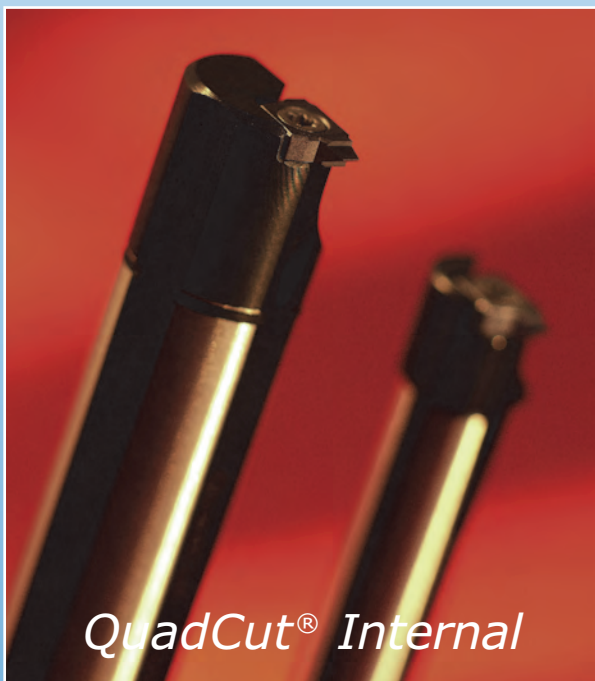




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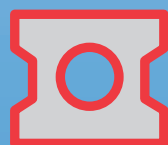
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**Scandinavian  
Tool Systems**

Scandinavian Tool Systems AB  
Box 59, SE-793 12 Insjön, Sweden  
Phone +46 (0)247 410 20 • Fax +46 (0)247 415 71  
info@scandinavian-tool.se • www.scandinavian-tool.se