

VARGUS 



Solid Carbide **THREAD MILLING**



Straight Flutes



Deep Threading



Helical Flutes

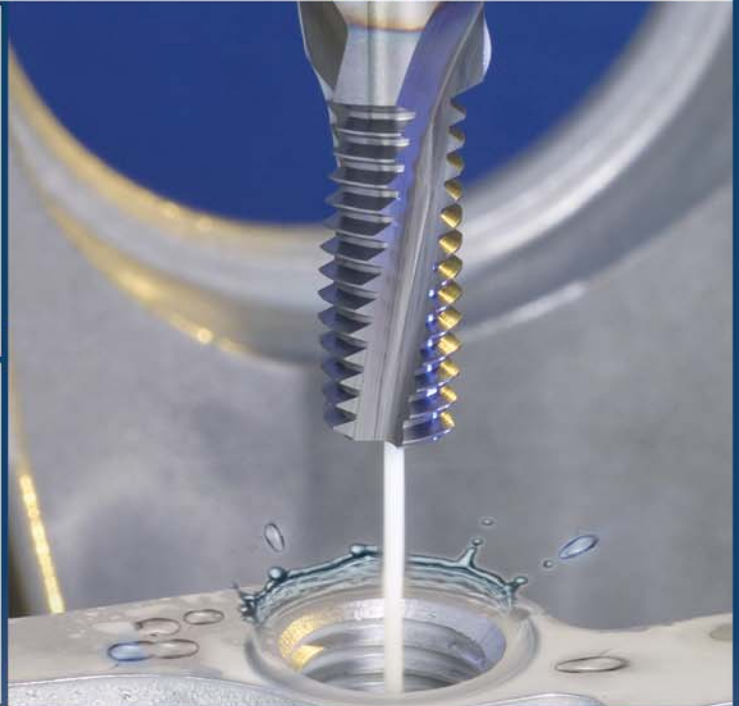


HeliCool Line



MilliPro

NEW!



Metric

VARDEX Threading Solutions

What's New?

HeliCool Line Solid Carbide Thread Mills with Thru-Hole Coolant

NEW!

General purpose VTH grade with wear-resistant coating for long tool life

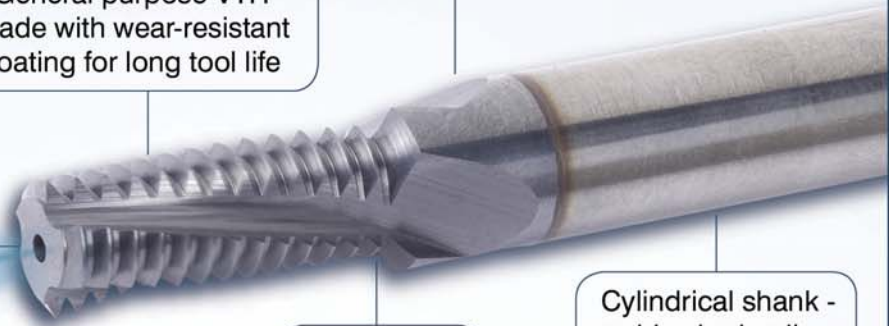
Unique cutter geometry provides:

- Minimum tool overhang
- High rigidity

Thru-Hole Cooling for excellent chip evacuation, especially in small blind holes

Tool length:
 $1.5 \times D_0$
and
 $2 \times D_0$

Cylindrical shank - enables hydraulic or shrink-fit clamping



TM Gen Software

- Selects the best tools for your application
- Provides optimal cutting data
- Generates your CNC Program

**NEW Version:
7.0.1!**



More on page 26-27

MilliPro Miniature Solid Carbide Thread Mills

NEW!

Minimum Thread Size:
M1.6 x 0.35 (1-72UN)!

Very cost-effective for short threads

3 flutes with 3 teeth for ultra-fast machining time

Ideal for difficult-to-machine materials where taps typically break

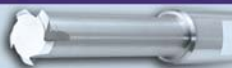
Tool length:
 $2 \times D_0$
and
 $3 \times D_0$

General purpose VTH grade with wear-resistant coating for long tool life





Table of Contents:

What's New?	Page 2
VARDEX Ordering Code System.....	Page 4
HeliCool Line  Pages 5-9	
ISO Metric	5
American UN	6
Whitworth, BSPT	7
BSP(G).....	8
NPT, NPTF.....	9
MilliPro  Pages 10-11	
ISO Metric	10
American UN	11
Deep Threading  Page 12	
ISO Metric	12
Helical Flutes  Pages 13-17	
ISO Metric.....	13
American UN.....	14
Whitworth.....	15
BSP(G) and BSPT.....	16
NPT, NPTF.....	17
Straight Flutes  Pages 18-22	
ISO Metric	18
American UN.....	19
BSW.....	20
BSP, BSPT.....	20-21
NPT, NPTF.....	21-22
PG	22
Technical Information  Pages 23-27	
About Thread Milling	23
Grades and Applications.....	24
Speeds and Feeds.....	25
TM Gen 7.0.1	26-27



VarDEX Ordering Code System

TM Solid Carbide

HC		10	082	L15	-	I	1.50	ISO	TM		VTH
1	2	3	4	5		6	7	8	9	10	11

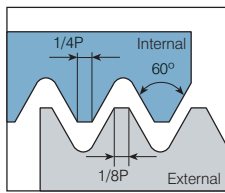
1 - Flutes Style	2 - No. of Teeth	3 - Shank Dia.	4 - Cutting Dia.	5 - Tool Cutting Length	6 - Type of Tool
H - Helical Flutes HC - HeliCool Line S - Straight Flutes D - Deep Threading & MilliPro	1T - 1 Tooth (Deep Threading) 3T - 3 Teeth (MilliPro)	03 - 3.0 04 - 4.0 06 - 6.0 08 - 8.0 10 - 10.0 12 - 12.0 14 - 14.0 16 - 16.0 18 - 18.0 20 - 20.0	1.2 - 19.9	Up to 3D	E - External I - Internal EI - External + Internal

7 - Pitch	8 - Standard	9 - System	10 - No. of Flutes	11 - Carbide Grade
Full Profile - Pitch Range mm tpi 0.35 - 6.0 72 - 4.5	ISO - ISO Metric UN - American UN UNC - UN Coarse UNF - UN Fine UNEF - UN Extra Fine BSW - Whit. Coarse BSP - BSP BSF - Whit. Fine BSPT - BSPT NPT - NPT NPTF - NPTF PG - PG	TM	3 - 3 Flutes 5 - 5 Flutes Only noted when two options are available	VTS VTH

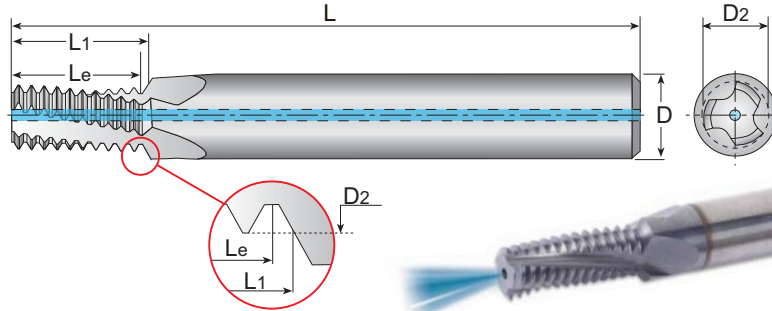
Note: Additional tools are available upon request.

ISO Metric

Internal



Defined by: R262 (DIN 13)
Tolerance class: 6H



NEW!

Helical Flutes with Thru-Hole Coolant

1.5 x D₀ (L1 ≤ 1.5 x Thread Diameter)

Thread		Pitch	Ordering Code	Dimensions mm					No. of Flutes	Teeth	Recommended *Drill Size +0.05
M Coarse	M Fine	mm	Internal	D	D2	L	Le	L1	Z	Zt	mm
M3x0.5	M3.5-M16x0.5	0.5	HC04024L04-I0.50ISO TM...	4	2.40	45	4.5	4.7	3	9	2.5
M4x0.7		0.7	HC04031L06-I0.70ISO TM...	4	3.15	45	6.3	6.6	3	9	3.3
M5x0.8		0.8	HC04039L07-I0.80ISO TM...	4	3.90	45	7.2	7.6	3	9	4.2
M6X1.0	M8-M40x1.0	1.0	HC06048L09-I1.00ISO TM...	6	4.80	57	9.0	9.5	3	9	5.0
M8x1.25		1.25	HC08065L13-I1.25ISO TM...	8	6.50	61	12.5	13.1	3	10	6.8
M10x1.5	M12-M48X1.5	1.5	HC10082L15-I1.50ISO TM...	10	8.20	73	15.0	15.7	3	10	8.5
M12X1.75		1.75	HC10099L18-I1.75ISO TM...	10	9.90	73	17.5	18.4	4	10	10.3
M14x2.0	M17-M80x2.0	2.0	HC12116L21-I2.00ISO TM...	12	11.60	73	20.0	21.0	4	10	12.0
M16x2.0	M17-M80x2.0	2.0	HC14136L25-I2.00ISO TM...	14	13.60	92	24.0	25.0	4	12	14.0

Helical Flutes with Thru-Hole Coolant

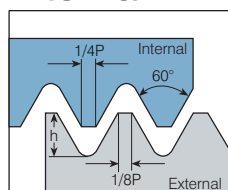
2 x D₀ (L1 ≤ 2 x Thread Diameter)

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Recommended *Drill Size +0.05		
M Coarse	M Fine	mm	Internal	D	D2	L	Le	L1	Z	Zt	mm
M3x0.5	M3.5-M16x0.5	0.5	HC04024L06-I0.50ISO TM...	4	2.40	45	6.0	6.2	3	12	2.5
	M4x0.5	0.5	HC04032L08-I0.50ISO TM...	4	3.20	45	8.0	8.2	3	16	3.5
	M5x0.5	0.5	HC06042L10-I0.50ISO TM...	6	4.20	57	10.0	10.2	3	20	4.5
M4x0.7		0.7	HC04031L08-I0.70ISO TM...	4	3.15	45	8.4	8.7	3	12	3.3
	M6x0.75	0.75	HC06050L12-I0.75ISO TM...	6	5.00	57	12.0	12.4	3	16	5.3
M5x0.8		0.8	HC04039L10-I0.80ISO TM...	4	3.90	45	10.4	10.8	3	13	4.2
M6x0.1	M8-M40x1.0	1.0	HC06048L12-I1.00ISO TM...	6	4.80	57	12.0	12.5	3	12	5.0
	M8x1.0	1.0	HC08067L16-I1.00ISO TM...	8	6.70	61	16.0	16.5	3	16	7.0
	M10x1.0	1.0	HC10087L20-I1.00ISO TM...	10	8.70	73	20.0	20.5	3	20	9.0
	M12x1.0	1.0	HC12107L24-I1.00ISO TM...	12	10.70	73	24.0	24.5	4	24	11.0
M8x1.25		1.25	HC08065L16-I1.25ISO TM...	8	6.50	61	16.2	16.9	3	13	6.8
	M10x1.25		HC10085L20-I1.25ISO TM...	10	8.50	73	20.0	20.6	3	16	8.8
M10x1.5	M12-M48x1.5	1.5	HC10082L20-I1.50ISO TM...	10	8.20	73	19.5	20.2	3	13	8.5
	M12x1.5	1.5	HC10099L24-I1.50ISO TM...	10	9.90	73	24.0	24.7	4	16	10.5
	M14x1.5	1.5	HC12119L29-I1.50ISO TM...	12	11.90	80	28.5	29.2	4	19	12.5
	M16x1.5	1.5	HC14139L32-I1.50ISO TM...	14	13.90	92	31.5	32.2	4	21	14.5
M12x1.75		1.75	HC10099L25-I1.75ISO TM...	10	9.90	73	24.5	25.4	4	14	10.3
M14x2.0	M17-M80x2.0	2.0	HC12116L29-I2.00ISO TM...	12	11.60	80	28.0	29.0	4	14	12.0
M16x2.0	M17-M80x2.0	2.0	HC14136L33-I2.00ISO TM...	14	13.60	92	32.0	33.0	4	16	14.0
M18x2.5		2.5	HC16148L36-I2.50ISO TM...	16	14.80	92	35.0	36.2	4	14	15.2
M20x2.5		2.5	HC18171L41-I2.50ISO TM...	18	17.10	102	40.0	41.2	4	16	17.5
M24x3.0		3.0	HC20199L49-I3.00ISO TM...	20	19.90	102	48.0	49.5	4	16	21.0

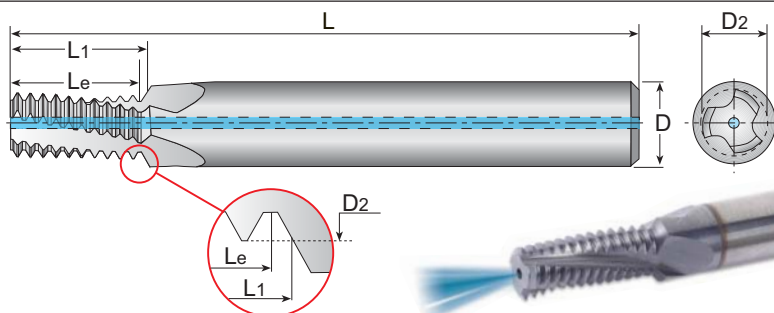


American UN

Internal



Defined by: ANSI B1.1.74
Tolerance class: 2B



NEW!

Helical Flutes with Thru-Hole Coolant

1.5 x D₀ (L1 ≤ 1.5 x Thread Diameter)

Thread		Pitch	Ordering Code	Dimensions mm					No. of Flutes	Teeth	Recommended *Drill Size +0.05	
UNC	UNF	UNEF	tpi	Internal	D	D2	L	Le	L1	Z	Zt	mm
NO.10x24	5/16" ,3/8"x24	9/16"-11/16"x24	24	HC04035L07-I24UNC TM...	4	3.58	45	7.4	7.9	3	7	3.8
NO.12x24	5/16" ,3/8"x24	9/16"-11/16"x24	24	HC06041L08-I24UNC TM...	6	4.15	57	8.5	9.0	3	8	4.5
1/4"x20	7/16" ,1/2"x20	3/4"-1"x20	20	HC06048L09-I20UNC TM...	6	4.88	57	8.9	9.5	3	7	5.1
5/16"x18	9/16" ,5/8"x18	11/16"-1 11/16" x18	18	HC08061L11-I18UNC TM...	8	6.15	61	11.3	12.0	3	8	6.6
3/8"x16	3/4"x16		16	HC08076L15-I16UNC TM...	8	7.65	61	14.3	15.1	3	9	8.0
7/16"x14	7/8"x14		14	HC10090L17-I14UNC TM...	10	9.00	73	16.3	17.2	3	9	9.4
1/2"x13			13	HC12104L20-I13UNC TM...	12	10.35	73	19.5	20.5	4	10	10.9
9/16"x12	1"-1 1/2"x12		12	HC12118L22-I12UNC TM...	12	11.80	73	21.2	22.2	4	10	12.3

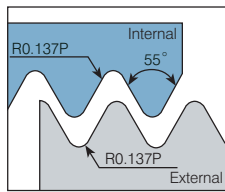
Helical Flutes with Thru-Hole Coolant

2 x D₀ (L1 ≤ 2 x Thread Diameter)

Thread		Pitch	Ordering Code	Dimensions mm						No. of Flutes	Teeth	Recommended *Drill Size +0.05
UNC	UNF	UNEF	tpi	Internal	D	D2	L	Le	L1	Z	Zt	mm
	No.10x32	No.12-3/8x32	32	HC04038L09-I32UNF TM...	4	3.80	45	9.5	9.9	3	12	4.0
		No.12-3/8x32	32	HC06044L11-I32UNEF TM...	6	4.40	57	11.1	11.5	3	14	4.7
	No.12, 1/4x28	7/16"; 1/2"x28	28	HC06043L11-I28UNF TM...	6	4.30	57	10.9	11.3	3	12	4.6
	1/4"x28	7/16"; 1/2"x28	28	HC06052L13-I28UNF TM...	6	5.15	57	12.7	13.1	3	14	5.5
		7/16"; 1/2"x28	28	HC10099L22-I28UNEF TM...	10	9.90	73	21.8	22.2	3	24	10.2
N0.10x24	5/16", 3/8"x24	9/16"-11/16"x24	24	HC04035L10-I24UNC TM...	4	3.58	45	9.5	10.0	3	9	3.8
No.12x24	5/16", 3/8"x24	9/16"-11/16"x24	24	HC06041L11-I24UNC TM...	6	4.15	57	10.6	11.1	3	10	4.5
	5/16", 3/8"x24	9/16"-11/16"x24	24	HC08066L16-I24UNF TM...	8	6.68	61	15.9	16.4	3	15	6.9
	3/8"x24	9/16"-11/16"x24	24	HC10082L19-I24UNF TM...	10	8.20	73	19.0	19.6	3	18	8.5
		9/16"-11/16"x24	24	HC14129L29-I24UNEF TM...	14	12.90	92	28.6	29.1	4	27	13.2
1/4"x20	7/16", 1/2"x20	3/4"-1"x20	20	HC06048L13-I20UNC TM...	6	4.88	57	12.7	13.3	3	10	5.1
	7/16", 1/2"x20	3/4"-1"x20	20	HC10096L22-I20UNF TM...	10	9.60	73	21.6	22.2	3	17	9.9
	1/2"x20	3/4"-1"x20	20	HC12111L26-I20UNF TM...	12	11.10	80	25.4	26.0	3	20	11.5
		3/4"-1"x20	20	HC18174L38-I20UNEF TM...	18	17.40	102	38.1	38.7	4	30	17.8
5/16"x18	9/16", 5/8"x18	11/16"-1 11/16"x18	18	HC08061L16-I18UNC TM...	8	6.15	61	15.5	16.2	3	11	6.6
	9/16", 5/8"x18	11/16"-1 11/16"x18	18	HC14125L28-I18UNF TM...	14	12.50	92	28.2	28.9	4	20	13.0
	5/8"x18	11/16"-1 11/16"x18	18	HC16141L31-I18UNF TM...	16	14.10	92	31.0	31.7	4	22	14.6
3/8"x16	3/4"x16		16	HC08076L19-I16UNC TM...	8	7.65	61	19.0	19.8	3	12	8.0
	3/4"x16		16	HC18170L38-I16UNF TM...	18	17.00	102	38.1	38.8	4	24	17.5
7/16"x14	7/8"x14		14	HC10090L22-I14UNC TM...	10	9.00	73	21.8	22.7	3	12	9.4
	7/8"x14		14	HC20199L44-I14UNF TM...	20	19.90	102	43.5	44.4	4	24	20.5
1/2"x13			13	HC12104L26-I13UNC TM...	12	10.35	80	25.4	26.4	4	13	10.9
9/16"x12	1"-1 1/2"x12		12	HC12118L28-I12UNC TM...	12	11.80	80	27.5	28.6	4	13	12.3
	1"-1 1/2"x12		12	HC20199L51-I12UNF TM...	20	19.90	102	50.8	51.9	4	24	23.5
5/8"x11			11	HC14131L33-I11UNC TM...	14	13.10	92	32.3	33.5	4	14	13.7
3/4"x10			10	HC16159L39-I10UNC TM...	16	15.90	92	38.1	39.4	4	15	16.7
7/8"x9			9	HC20190L46-I9UNC TM...	20	19.00	102	45.2	46.6	4	16	19.5
1"x8			8	HC20199L52-I8UNC TM...	20	19.90	102	50.8	52.4	4	16	22.0

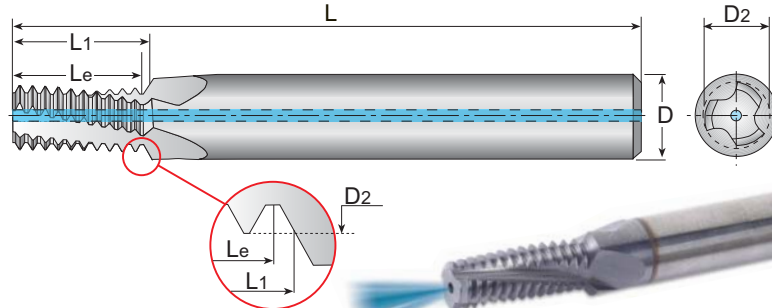
Whitworth

External / Internal



Defined by: B.S.84:1956,
DIN 259, ISO228/1:1982

Tolerance class: Medium class A



NEW!

Helical Flutes with Thru-Hole Coolant

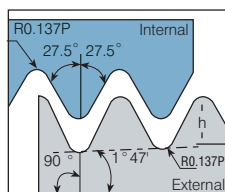
2 x D₀ (L1 ≤ 2 x Thread Diameter)

Thread	Pitch	Ordering Code	Dimensions mm					No. of Flutes	Teeth	Recommended *Drill Size +0.05	
BSW	BSF	tpi	D	D2	L	Le	L1	Z	Zt	mm	
	1/4"x26	26	HC06050L13-EI26BSF TM...	6	5.00	57	12.7	13.2	3	13	5.3
	5/16"x22	22	HC08063L16-EI22BSF TM...	8	6.35	61	16.2	16.7	3	14	6.7
1/4"x20	3/8"x20	20	HC06044L13-EI20BSW TM...	6	4.45	57	12.7	13.3	3	10	5.0
	3/8"x20	20	HC08076L19-EI20BSF TM...	8	7.65	61	19.0	19.7	3	15	8.2
5/16"x18	7/16"x18	18	HC06058L16-EI18BSW TM...	6	5.85	57	15.5	16.2	3	11	6.5
	7/16"x18	18	HC10092L23-EI18BSF TM...	10	9.20	73	22.6	23.3	3	16	9.7
3/8"x16	1/2",9/16"x16	16	HC08072L19-EI16BSW TM...	8	7.20	61	19.0	19.8	3	12	7.9
	1/2",9/16"x16	16	HC12105L26-EI16BSF TM...	12	10.50	80	25.4	26.2	4	16	11.1
	9/16"x16	16	HC14122L29-EI16BSF TM...	14	12.15	92	28.6	29.4	4	18	12.6
7/16"x14	5/8",11/16"x14	14	HC10085L22-EI14BSW TM...	10	8.50	73	21.8	22.7	3	12	9.2
	5/8",11/16"x14	14	HC14134L31-EI14BSF TM...	14	13.40	92	30.8	31.7	4	17	14.0
	11/16"x14	14	HC16150L35-EI14BSF TM...	16	15.00	92	34.5	35.4	4	19	15.6
1/2"x12	3/4"x12	12	HC10096L26-EI12BSW TM...	10	9.65	73	25.4	26.5	3	12	10.5
9/16"x12	3/4"x12	12	HC12113L28-EI12BSW TM...	12	11.25	80	27.5	28.6	4	13	12.1
	3/4"x12	12	HC18162L39-EI12BSF TM...	18	16.20	102	38.1	39.2	4	18	16.8
5/8"x11	7/8"x11	11	HC14126L33-EI11BSW TM...	14	12.60	92	32.3	33.5	4	14	13.4
11/16"x11		11	HC16142L35-EI11BSW TM...	16	14.20	92	34.6	35.8	4	15	15.0

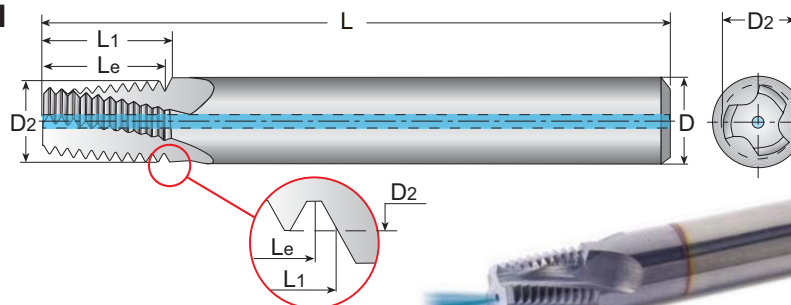
*Drill size applies to smallest thread Dia.

BSPT

Internal / External



Defined by: B.S.21:1985
Tolerance class: Standard BSPT



NEW!

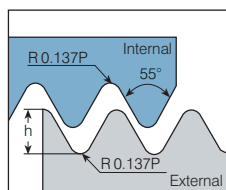
Helical Flutes with Thru-Hole Coolant

Thread	Pitch	Ordering Code	Dimensions mm					No. of Flutes	Teeth	Recommended *Drill Size +0.05
Standard	tpi	Internal + External	D	D2	L	Le	L1	Z	Zt	mm
1/16"x28	28	HC06059L10-EI28BSPT TM...	6	5.90	57	10.0	10.2	3	11	6.7
1/8"x28	28	HC08076L10-EI28BSPT TM...	8	7.65	61	10.0	10.2	3	11	8.7
1/4"x19	19	HC10099L15-EI19BSPT TM...	10	9.90	73	14.7	15.4	3	11	11.8
3/8"x19	19	HC12111L15-EI19BSPT TM...	12	11.15	73	14.7	15.4	4	11	15.2
1/2, 3/4"x14	14	HC16142L22-EI14BSPT TM...	16	14.25	92	21.8	22.7	4	12	19.0
1", 1 1/2", 2", 2 1/2"x11	11	HC20196L28-EI11BSPT TM...	20	19.60	102	27.7	28.9	4	12	30.7

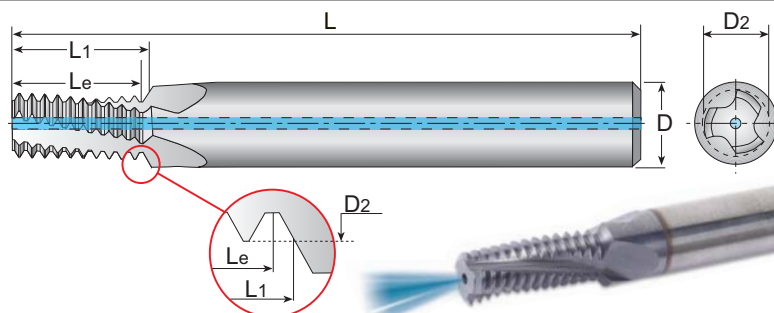
Maximum thread length = $L1 - \frac{\text{Pitch}}{4}$

BSP(G)

External / Internal



Defined by: B.S.2779:1956
Tolerance class: Medium class



NEW!

Helical Flutes with Thru-Hole Coolant

1.5 x D₀ (L1 ≤ 1.5 x Thread Diameter)

Thread	Pitch	Ordering Code	Dimensions mm					No. of Flutes	Teeth	Recommended *Drill Size +0.05
Standard	mm	Internal	D	D2	L	Le	L1	Z	Zt	mm
1/16", 1/8"x28	28	HC08064L12-EI28BSP TM...	8	6.40	61	11.8	12.2	3	13	6.7
1/8"x28	28	HC10082L15-EI28BSP TM...	10	8.20	73	14.5	15.0	3	16	8.7
1/4", 3/8"x19	19	HC12110L20-EI19BSP TM...	12	11.00	80	20.0	20.7	4	15	11.8
3/8"x19	19	HC16145L26-EI19BSP TM...	16	14.50	92	25.4	26.1	4	19	15.3
1"-4"x11	11	HC20199L42-EI11BSP TM...	20	19.90	102	41.6	42.7	4	18	30.8

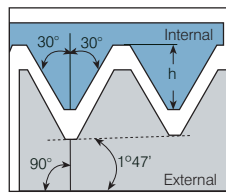
Helical Flutes with Thru-Hole Coolant

2 x D₀ (L1 ≤ 2 x Thread Diameter)

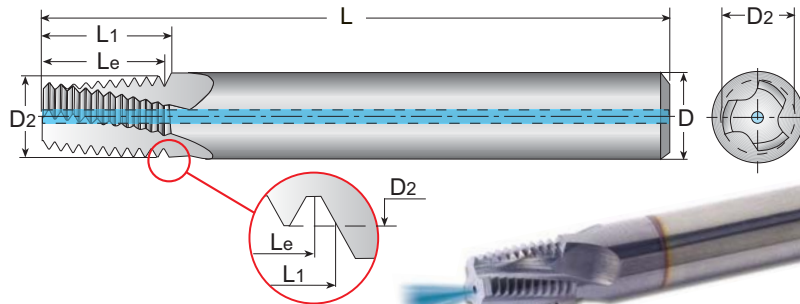
Thread	Pitch	Ordering Code	Dimensions mm					No. of Flutes	Teeth	Recommended *Drill Size +0.05
Standard	mm	Internal	D	D2	L	Le	L1	Z	Zt	mm
1/16", 1/8"x28	28	HC08064L15-EI28BSP TM...		6.40	61	15.4	15.9	3	17	6.7
1/8"x28	28	HC10082L19-EI28BSP TM...		8.20	73	19.0	19.5	3	21	8.7
1/4", 3/8"x19	19	HC12110L27-EI19BSP TM...		11.00	80	26.7	27.4	4	20	11.8
3/8"x19	19	HC16145L34-EI19BSP TM...		14.50	92	33.4	34.1	4	25	15.3
1/2"-7/8"x14	14	HC18179L42-EI14BSP TM...		17.90	102	41.7	42.6	4	23	19.1

NPT

Internal / External



Defined by: USAS B2.1:1968
Tolerance class: Standard NPT



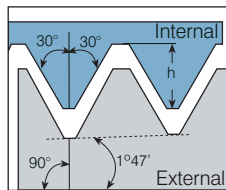
NEW!

Helical Flutes with Thru-Hole Coolant

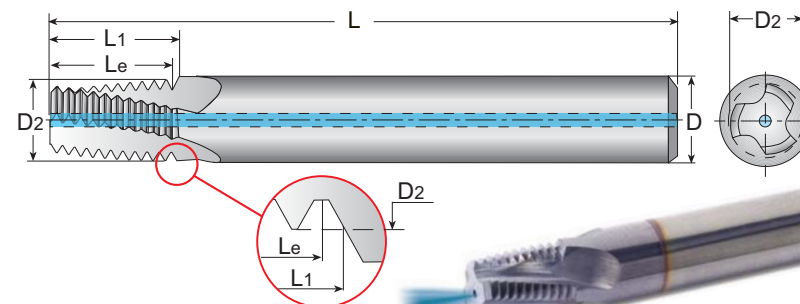
Thread	Pitch	Ordering Code	Dimensions mm					No. of Flutes	Teeth	Recommended Drill Size + 0.05mm
	mm	Internal	D	D2	L	Le	L1	Z	Zt	mm
1/16x27	27	HC06059L09-EI27NPT TM...	6	5.90	57	9.4	9.9	3	10	6.2
1/8x27	27	HC08076L09-EI27NPT TM...	8	7.65	61	9.4	9.9	3	10	8.4
1/4x18	18	HC10099L14-EI18NPT TM...	10	9.90	73	14.1	14.8	3	10	11.1
3/8x18	18	HC12111L14-EI18NPT TM...	12	11.15	73	14.1	14.8	4	10	14.3
1/2, 3/4x14	14	HC16142L19-EI14NPT TM...	16	14.25	92	18.1	19.0	4	10	17.9, 23.0
1, 1 1/4, 1 1/2, 2x11.5	11.5	HC20196L23-EI11.5NPT TM...	20	19.60	102	22.1	23.2	4	10	29.0, 37.7, 44.0, 56.0
21/2x8	8	HC20196L33-EI8NPT TM...	20	19.60	102	31.7	33.3	4	10	66.7, 82.1

NPTF

Internal / External



Defined by: ANSI 1.20.3-1976
Tolerance class: Standard NPTF



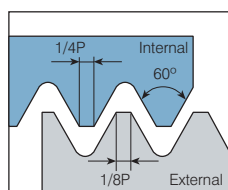
NEW!

Helical Flutes with Thru-Hole Coolant

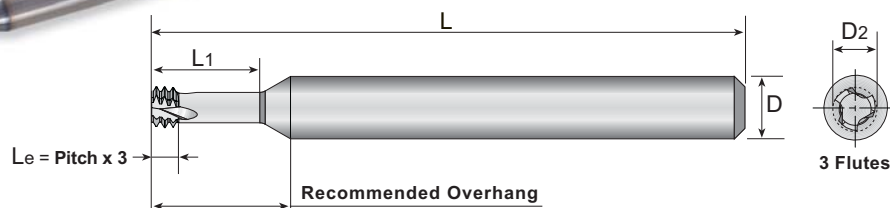
Thread	Pitch	Ordering Code	Dimensions mm					No. of Flutes	Teeth	Recommended Drill Size + 0.05mm
	mm	Internal	D	D2	L	Le	L1	Z	Zt	mm
1/16x27	27	HC06059L09-EI27NPTF TM...	6	5.90	57	9.4	9.9	3	10	6.1
1/8x27	27	HC08076L09-EI27NPTF TM...	8	7.65	61	9.4	9.9	3	10	8.4
1/4x18	18	HC10099L14-EI18NPTF TM...	10	9.90	73	14.1	14.8	3	10	11.1
3/8x18	18	HC12111L14-EI18NPTF TM...	12	11.15	73	14.1	14.8	4	10	14.3
1/2, 3/4x14	14	HC16142L19-EI14NPTF TM...	16	14.25	92	18.1	19.0	4	10	17.9, 23.0
1, 1 1/4, 1 1/2, 2x11.5	11.5	HC20196L23-EI11.5NPTF TM...	20	19.60	102	22.1	23.2	4	10	29.0, 37.7, 43.7, 55.6
21/2x8; 3x8	8	HC20196L33-EI8NPTF TM...	20	19.60	102	31.7	33.3	4	10	66.3, 82.1

ISO Metric

Internal



Defined by: R262 (DIN 13)
Tolerance class: 6H



NEW!

MilliPro - Miniature Thread Mills

2 x D₀ (L1 ≤ 2 x Thread Diameter)

Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Recommended *Drill Size +0.05
M Coarse	M Fine	mm	Internal	D	D2	L	L1	Z	Zt	mm
M1.6x0.35		0.35	D3T03012L034-I0.35ISO TM...	3	1.20	30	3.4	3	3	1.22
M2x0.4		0.4	D3T06015L042-I0.4ISO TM...	6	1.55	57	4.2	3	3	1.6
M2.2x0.45		0.45	D3T06016L046-I0.45ISO TM...	6	1.65	57	4.6	3	3	1.8
M2.5x0.45		0.45	D3T06019L052-I0.45ISO TM...	6	1.95	57	5.2	3	3	2.0
M3x0.5	M3.5-M16x0.5	0.5	D3T06024L062-I0.5ISO TM...	6	2.40	57	6.2	3	3	2.5
M3.5x0.6		0.6	D3T06027L073-I0.6ISO TM...	6	2.75	57	7.3	3	3	2.9
M4x0.7		0.7	D3T06031L083-I0.7ISO TM...	6	3.15	57	8.3	3	3	3.3
M5x0.8		0.8	D3T06040L104-I0.8ISO TM...	6	4.05	57	10.4	3	3	4.2
M6x1.0	M8-M40 x1.0	1.00	D3T06048L125-I1.0ISO TM...	6	4.80	57	12.5	3	3	5.0
M8x1.25		1.25	D3T08065L166-I1.25ISO TM...	8	6.50	63	16.6	3	3	6.8
M10x1.5	M12-M48 x1.50	1.50	D3T10082L208-I1.50ISO TM...	10	8.20	73	20.8	3	3	8.5
M12x1.75		1.75	D3T10099L250-I1.75ISO TM...	10	9.90	83	25.0	3	3	10.3

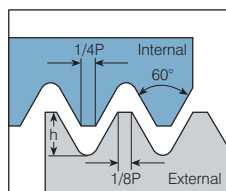
MilliPro - Miniature Thread Mills

3 x D₀ (L1 ≤ 3 x Thread Diameter)

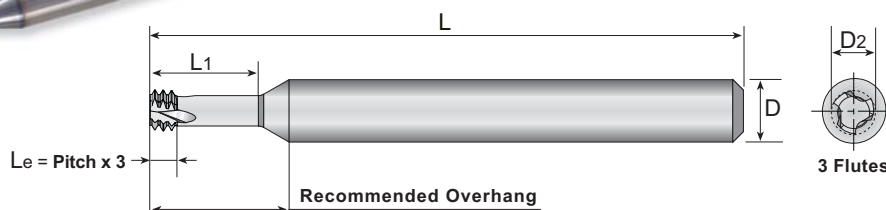
Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Recommended *Drill Size +0.05
M Coarse	M Fine	mm	Internal	D	D2	L	L1	Z	Zt	mm
M1.6X0.35		0.35	D3T03012L050-I0.35ISO TM...	3	1.20	30	5.0	3	3	1.22
M2X0.4		0.4	D3T06015L062-I0.4ISO TM...	6	1.55	57	6.2	3	3	1.6
M2.5x0.45		0.45	D3T06019L077-I0.45ISO TM...	6	1.95	57	7.0	3	3	2.0
M3x0.5	M3.5-M16x0.5	0.5	D3T06024L092-I0.5ISO TM...	6	2.40	57	9.2	3	3	2.5
M4x0.7		0.7	D3T06031L123-I0.7ISO TM...	6	3.15	57	12.3	3	3	3.3
M5x0.8		0.8	D3T06040L154-I0.8ISO TM...	6	4.05	57	15.4	3	3	4.2
M6x1.0	M8-M40 x1.0	1.00	D3T06048L185-I1.0ISO TM...	6	4.80	57	18.5	3	3	5.0
M8x1.25		1.25	D3T08065L246-I1.25ISO TM...	8	6.50	63	24.6	3	3	6.8

American UN

Internal



Defined by: ANSI B1.1.74
Tolerance class: 2B



NEW!

MilliPro - Miniature Thread Mills

2 x D₀ (L1 ≤ 2 x Thread Diameter)

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Recommended *Drill Size +0.05	
UNC	UNF	tpi	Internal	D	D2	L	L1	Z	Zt	mm
	No.1-72	72	D3T06014L039-I72UN TM...	6	1.45	57	3.9	3	3	1.5
No.1-64	No.2-64	64	D3T06014L042-I64UN TM...	6	1.40	57	4.2	3	3	1.5
No.2-56	No.3-56	56	D3T06016L050-I56UN TM...	6	1.65	57	5.0	3	3	1.8
No.3-48	No.4-48	48	D3T06019L060-I48UN TM...	6	1.90	57	6.0	3	3	2.0
No.4, No.5-40	No.6-40	40	D3T06021L060-I40UN TM...	6	2.10	57	6.0	3	3	2.3
No.5-40	No.6-40	40	D3T06024L072-I40UN TM...	6	2.45	57	7.2	3	3	2.6
	No.8-36	36	D3T06033L087-I36UN TM...	6	3.30	57	8.7	3	3	3.5
No.6, No.8-32	No.10-32	32	D3T06025L074-I32UN TM...	6	2.55	57	7.4	3	3	2.8
No.8-32	No.10-32	32	D3T06032L100-I32UN TM...	6	3.20	57	10.0	3	3	3.4
	1/4"-28	28	D3T06052L132-I28UN TM...	6	5.25	57	13.2	3	3	5.5
No.10-24	5/16"-24	24	D3T06035L102-I24UN TM...	6	3.58	57	10.2	3	3	3.8
	5/16"-24	24	D3T08066L165-I24UN TM...	8	6.68	63	16.5	3	3	6.9
1/4"-20	7/16"-20	20	D3T06048L134-I20UN TM...	6	4.88	57	13.4	3	3	5.1
	7/16"-20	20	D3T10095L230-I20UN TM...	10	9.55	73	23.0	3	3	9.9
7/16"-14		14	D3T10090L233-I14UN TM...	10	9.00	73	23.3	3	3	9.4

MilliPro - Miniature Thread Mills

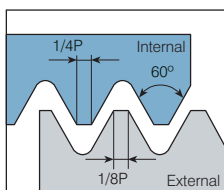
3 x D₀ (L1 ≤ 3 x Thread Diameter)

Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Recommended *Drill Size +0.05
UNC	UNF	tpi	Internal	D	D2	L	L1	Z	Z t	mm
	No.1-72	72	D3T06014L057-I72UN TM...	6	1.45	57	5.75	3	3	1.55
No.5-40	No.6-40	40	D3T06024L100-I40UN TM...	6	2.45	57	10.0	3	3	2.6
No.8-32	No.10-32	32	D3T06032L130-I32UN TM...	6	3.20	57	13.0	3	3	3.4
	1/4"-28	28	D3T06052L196-I28UN TM...	6	5.25	57	19.6	3	3	5.5
	5/16"-24	24	D3T08066L245-I24UN TM...	8	6.68	63	24.5	3	3	6.9
1/4"-20	7/16"-20	20	D3T06048L198-I20UN TM...	6	4.88	57	19.8	3	3	5.1

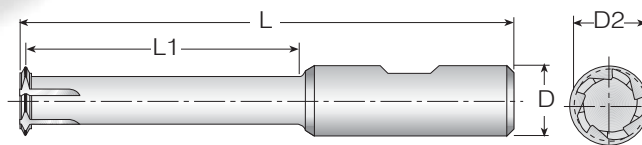
*Drill size refers to smallest thread Dia.

ISO Metric

Internal



Defined by: R262 (DIN 13)
Tolerance class: 6H



TM Solid Carbide - Deep Threading

Deep Threading

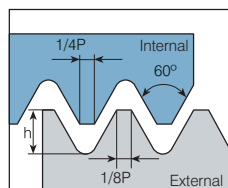
3 x D₀ (L₁ ≤ 3 x Thread Diameter)

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.
M Coarse	mm	Internal	D	D2	L	L1	Z	Zt	mm
M6x1	1.00	D1T08041-I1.0ISO TM...	8	4.1	63	19	3	1	5.0
M8x1.25	1.25	D1T10058-I1.25ISO TM...	10	5.8	73	26	3	1	6.8
M10x1.5	1.50	D1T10077-I1.50ISO TM...	10	7.7	73	32	3	1	8.5
M12x1.5	1.50	D1T12094-I1.50ISO TM...	12	9.4	83	38	4	1	10.5
M12x1.75	1.75	D1T12087-I1.75ISO TM...	12	8.7	83	38	4	1	10.2
M14x2	2.00	D1T16102-I2.0ISO TM...	16	10.2	92	44	4	1	12.0
M16x2	2.00	D1T16122-I2.0ISO TM...	16	12.2	100	50	4	1	14.0
M18x2.5	2.50	D1T16129-I2.5ISO TM...	16	12.9	108	57	5	1	15.5
M20x2.5	2.50	D1T16148-I2.5ISO TM...	16	14.8	114	63	5	1	17.5

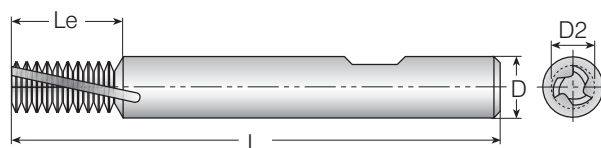
Note: Additional tools are available upon request.

ISO Metric

Internal



Defined by: R262 (DIN 13)
Tolerance class: 6H



TM Solid Carbide - Helical Flutes

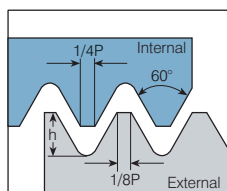
Helical Flutes

2 x D₀ (Le ≤ 2 x Thread Diameter)

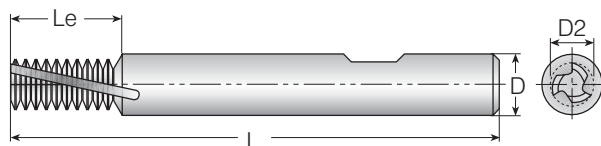
Thread		Pitch	Ordering Code	Dimensions mm			No. of Flutes	Teeth	Bore Dia.	
M Coarse	M Fine	mm	Internal	D	D2	L	Le	Z	Zt	mm
	M5x0.75	0.75	H06036-I0.75ISOTM...	6.0	3.60	57	10.5	3	14	4.2
	M5x0.8	0.8	H06035-I0.80ISOTM...	6.0	3.50	57	10.4	3	13	4.2
	M6x1.0	1.00	H08041-I1.0ISOTM...	8.0	4.10	63	12.0	3	12	5.0
	M8x1.0	1.00	H10060-I1.0ISOTM...	10.0	6.00	73	16.0	3	16	7.0
	M8x1.25	1.25	H10058-I1.25ISOTM...	10.0	5.80	73	16.3	3	13	6.8
	M10x1.0	1.00	H10079-I1.0ISOTM...	10.0	7.90	73	20.0	3	20	9.0
	M10x1.25	1.25	H10077-I1.25ISOTM...	10.0	7.70	73	20.0	3	16	8.8
	M10x1.5	1.50	H10077-I1.5ISOTM...	10.0	7.70	73	21.0	3	14	8.5
	M12x1.0	1.00	H12096-I1.0ISOTM...	12.0	9.60	83	24.0	4	24	11.0
	M12x1.25	1.25	H12094-I1.25ISOTM...	12.0	9.40	83	25.0	4	20	10.8
	M12x1.5	1.50	H12094-I1.5ISOTM...	12.0	9.40	83	24.0	4	16	10.5
	M12x1.75	1.75	H12087-I1.75ISOTM...	12.0	8.70	83	24.5	4	14	10.2
	M14x1.0	1.00	H16115-I1.0ISOTM...	16.0	11.50	92	28.0	4	28	13.0
	M14x1.5	1.50	H16112-I1.5ISOTM...	16.0	11.20	92	28.5	4	19	12.5
	M14x2.0	2.00	H16102-I2.0ISOTM...	16.0	10.20	92	28.0	4	14	12.0
	M16x1.5	1.50	H16130-I1.5ISOTM...	16.0	13.00	92	33.0	4	22	14.5
	M16x2.0	2.00	H16122-I2.0ISOTM...	16.0	12.20	92	32.0	4	16	14.0
	M18x1.5	1.50	H16148-I1.5ISOTM...	16.0	14.80	92	36.0	4	24	16.5
	M18x2.5	2.50	H20129-I2.5ISOTM...	20.0	12.90	104	37.5	5	15	15.5
	M20x1.5	1.50	H20165-I1.5ISOTM...	20.0	16.50	104	40.5	5	27	18.5
	M20x2.5	2.50	H20148-I2.5ISOTM...	20.0	14.80	104	40.0	5	16	17.5
	M24x3.0	3.00	H20162-I3.0ISOTM...	20.0	16.20	104	42.0	4	14	21.0

American UN

Internal



Defined by: ANSI B1.1.74
Tolerance class: 2B



TM Solid Carbide - Helical Flutes

Helical Flutes

2 x D₀ (Le ≤ 2 x Thread Diameter)

Thread	Pitch	Ordering Code	Dimensions mm			No. of Flutes	Teeth	Bore Dia.		
UNC	UNF	tpi	Internal	D	D2	L	Le	Z	Zt	mm
	No.10x32	32	H06033-I32UNFTM...	6.0	3.30	57	10.3	3	13	4.0
No.10x24		24	H06029-I24UNCTM...	6.0	2.90	57	10.6	3	10	3.8
	No.12x28	28	H08038-I28UNFTM...	8.0	3.80	63	11.8	3	13	4.6
No.12x24		24	H08035-I24UNCTM...	8.0	3.50	63	11.6	3	11	4.5
	1/4"x28	28	H08046-I28UNFTM...	8.0	4.60	63	12.7	3	14	5.5
1/4"x20		20	H08040-I20UNCTM...	8.0	4.00	63	12.7	3	10	5.2
	5/16"x24	24	H10057-I24UNFTM...	10.0	5.70	73	15.9	3	15	6.8
5/16"x18		18	H10052-I18UNCTM...	10.0	5.20	73	16.9	3	12	6.5
	3/8"x24	24	H10074-I24UNFTM...	10.0	7.40	73	19.1	3	18	8.5
3/8"x16		16	H10067-I16UNCTM...	10.0	6.70	73	19.1	3	12	8.0
7/16"x14		14	H12076-I14UNCTM...	12.0	7.60	83	23.6	4	13	9.3
	7/16"x20	20	H12085-I20UNFTM...	12.0	8.50	83	22.9	4	18	9.8
1/2"x13		13	H12089-I13UNCTM...	12.0	8.90	83	25.4	4	13	10.8
	1/2"x20	20	H12101-I20UNFTM...	12.0	10.10	83	25.4	4	20	11.5
9/16"x12		12	H16103-I12UNCTM...	16.0	10.30	92	29.6	4	14	12.3
	9/16"x18	18	H16113-I18UNFTM...	16.0	11.30	92	29.6	4	21	12.8
5/8"x11		11	H16110-I11UNCTM...	16.0	11.00	92	32.3	4	14	13.5
	5/8"x18	18	H16128-I18UNFTM...	16.0	12.80	92	32.5	4	23	14.5
3/4"x10		10	H20135-I10UNCTM...	20.0	13.50	104	38.1	5	15	16.5
7/8"x9		9	H20152-I9UNCTM...	20.0	15.20	104	42.3	4	15	19.5
1"x8		8	H20170-I8UNCTM...	20.0	17.00	104	41.3	4	13	22.3

Helical Flutes

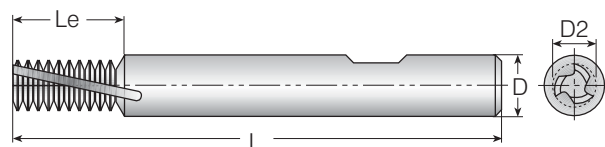
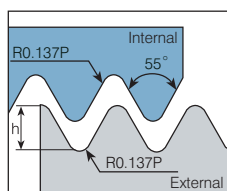
2 x D₀ (Le ≤ 2 x Thread Diameter)

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.
UNEF	tpi	Internal	D	D2	L	Le	Z	Zt	mm
1/4"x32	32	H08048-I32UNEFTM...	8.0	4.80	63	12.7	3	16	5.6
5/16"x32	32	H10062-I32UNEFTM...	10.0	6.20	73	15.9	3	20	7.1
3/8"x32	32	H10078-I32UNEFTM...	10.0	7.80	73	19.1	3	24	8.7
7/16"x28	28	H12092-I28UNEFTM...	12.0	9.20	83	22.7	4	25	10.2
1/2"x28	28	H12108-I28UNEFTM...	12.0	10.80	83	25.4	4	28	11.8
9/16"x24	24	H16121-I24UNEFTM...	16.0	12.10	92	28.6	4	27	13.2
5/8"x24	24	H16127-I24UNEFTM...	16.0	12.70	92	31.8	4	30	14.8
3/4"x20	20	H20163-I20UNEFTM...	20.0	16.30	104	38.1	5	30	17.8



Whitworth

External / Internal



Defined by: B.S.84:1956, DIN 259, ISO228/1:1982
Tolerance class: Medium class A

TM Solid Carbide - Helical Flutes

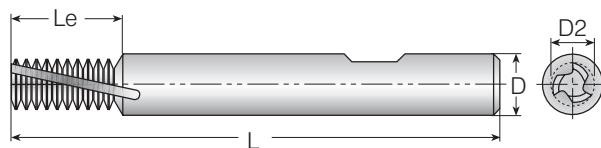
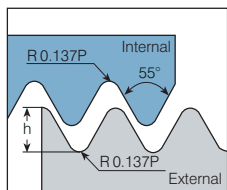
Helical Flutes

2 x D₀ (Le ≤ 2 x Thread Diameter)

Thread	Pitch	Ordering Code	Dimensions mm			No. of Flutes	Teeth	Bore Dia.		
BSW	BSF	tpi	Internal+ External	D	D2	L	Le	Z	Zt	mm
	1/4"x26	26	H08042-EI26BSFTM...	8.0	4.20	63	12.7	3	13	5.2
1/4"x20		20	H08038-EI20BSWTM...	8.0	3.80	63	12.7	3	10	5.1
	5/16"x22	22	H10053-EI22BSFTM...	10.0	5.30	73	16.2	3	14	6.6
5/16"x18		18	H10050-EI18BSWTM...	10.0	5.00	73	16.9	3	12	6.5
	3/8"x20	20	H10066-EI20BSFTM...	10.0	6.60	73	19.1	3	15	8.1
3/8"x16		16	H10062-EI16BSWTM...	10.0	6.20	73	19.1	3	12	7.9
	7/16"x18	18	H12078-EI18BSFTM...	12.0	7.80	83	22.6	4	16	9.5
7/16"x14		14	H12071-EI14BSWTM...	12.0	7.10	83	23.6	4	13	9.2
	1/2"x16	16	H12091-EI16BSFTM...	12.0	9.10	83	25.4	4	16	11.0
1/2"x12		12	H12082-EI12BSWTM...	12.0	8.20	83	25.4	4	12	10.5
	9/16"x16	16	H16106-EI16BSFTM...	16.0	10.60	92	28.6	4	18	12.5
9/16"x12		12	H16096-EI12BSWTM...	16.0	9.60	92	29.6	4	14	12.0
	5/8"x14	14	H16111-EI14BSFTM...	16.0	11.10	92	32.7	4	18	14.0
5/8"x11		11	H16103-EI11BSWTM...	16.0	10.30	92	32.3	4	14	13.2
	11/16"x14	14	H20126-EI14BSFTM...	20.0	12.60	104	36.3	5	20	15.5
11/16"x11		11	H20117-EI11BSWTM...	20.0	11.70	104	36.9	5	16	14.8
	3/4"x12	12	H20140-EI12BSFTM...	20.0	14.00	104	38.1	5	18	16.5

BSP(G)

Internal / External



Defined by: B.S.2779:1956
Tolerance class: Medium class

TM Solid Carbide - Helical Flutes

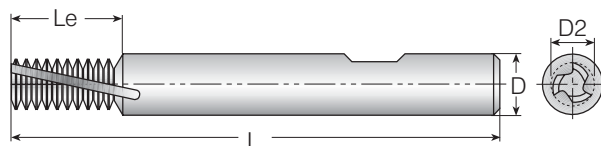
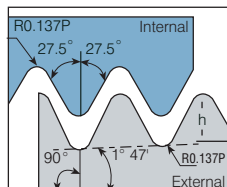
Helical Flutes

2 x D₀ (Le ≤ 2 x Thread Diameter)

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.
Standard	tpi	Internal + External	D	D2	L	Le	Z	Zt	mm
1/16"x28	28	H10058-EI28BSPTM...	10.0	5.80	73	16.3	3	18	6.7
1/8"x28	28	H10077-EI28BSPTM...	10.0	7.70	73	20.0	3	22	8.7
1/4"x19	19	H12102-EI19BSPTM...	12.0	10.20	83	26.7	4	20	11.8
3/8"x19	19	H16134-EI19BSPTM...	16.0	13.40	92	33.4	4	25	15.2
1/2"x14	14	H20157-EI14BSPTM...	20.0	15.70	104	43.5	5	24	19.0
1"x11	11	H20199-EI11BSPTM...	20.0	19.90	104	41.6	5	18	30.7

BSPT

Internal / External



Defined by: B.S.21:1985
Tolerance class: Standard BSPT

TM Solid Carbide - Helical Flutes

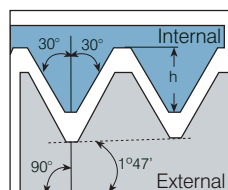
Helical Flutes

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.
Standard	tpi	Internal + External	D	D2	L	Le	Z	Zt	mm
1/16"x28	28	H10058-EI28BSPTTM...	10.0	5.80	73	16.3	3	18	6.7
1/8"x28	28	H10077-EI28BSPTTM...	10.0	7.70	73	20.0	3	22	8.7
1/4"x19	19	H12102-EI19BSPTTM...	12.0	10.20	83	26.7	4	20	11.8
3/8"x19	19	H16134-EI19BSPTTM...	16.0	13.40	92	33.4	4	25	15.2
1/2"x14	14	H20157-EI14BSPTTM...	20.0	15.70	104	43.5	5	24	19.0
1"x11	11	H20199-EI11BSPTTM...	20.0	19.90	104	41.6	5	18	30.7

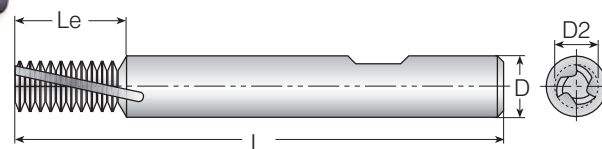


NPT

Internal / External



Defined by: USAS B2.1:1968
Tolerance class: Standard NPT



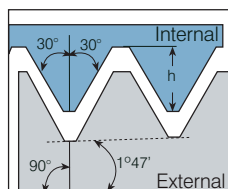
TM Solid Carbide - Helical Flutes

Helical Flutes

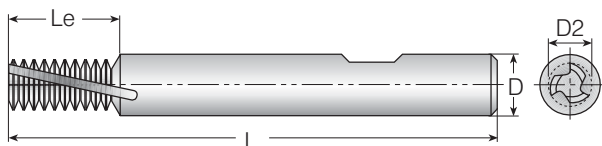
Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.
Standard	tpi	Internal + External	D	D2	L	Le	Z	Zt	mm
1/16"X27	27	H10053-EI27NPTTM...	10.0	5.30	73	9.4	3	10	6.3
1/8"X27	27	H12075-EI27NPTTM...	12.0	7.50	83	9.4	4	10	8.5
1/4"X18	18	H16094-EI18NPTTM...	16.0	9.40	92	14.1	4	10	11.1
3/8"X18	18	H16127-EI18NPTTM...	16.0	12.70	92	14.1	4	10	14.5
1/2"X14 , 3/4"X14	14	H20155-EI14NPTTM...	20.0	15.50	104	25.4	5	14	17.7 , 23.0
1"-2"X11.5	11.5	H20199-EI11.5NPTTM...	20.0	19.90	104	33.1	5	15	29.0 - 56.0
2 1/2"X8	8	H20199-EI8NPTTM...	20.0	19.90	104	38.1	4	12	66.5

NPTF

Internal / External



Defined by: ANSI 1.20.3-1976
Tolerance class: Standard NPTF

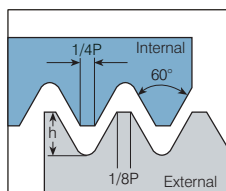


TM Solid Carbide - Helical Flutes

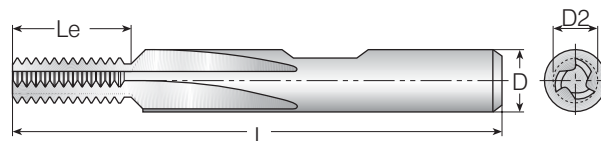
Helical Flutes

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.
Standard	tpi	Internal + External	D	D2	L	Le	Z	Zt	mm
1/16"X27	27	H10053-EI27NPTFTM...	10.0	5.03	73	9.4	3	10	6.3
1/8"X27	27	H12075-EI27NPTFTM...	12.0	7.50	83	9.4	4	10	8.4
1/4"X18	18	H16094-EI18NPTFTM...	16.0	9.40	92	14.1	4	10	11.1
3/8"X18	18	H16127-EI18NPTFTM...	16.0	12.70	92	14.1	4	10	14.7
1/2"X14 , 3/4"X14	14	H20155-EI14NPTFTM...	20.0	15.50	104	25.4	5	14	17.9 , 23.4
1"-2"X11.5	11.5	H20199-EI11.5NPTFTM...	20.0	19.90	104	33.1	5	15	29.4 - 56.2
2 1/2"X8	8	H20199-EI8NPTFTM...	20.0	19.90	104	38.1	4	12	67.0

ISO Metric



Defined by: R262 (DIN 13)
Tolerance class: 6g/6H



TM Solid Carbide - Straight Flutes

External - Straight Flutes

Pitch	Thread	Ordering Code	Dimensions mm			No. of Flutes	Teeth		
mm	Min. Dia.		D	D2	L	Le	Z	Zt	h mm
0.50	M 3	S06059-E0.5ISOTM...	6.0	5.90	57	15.0	3	30	0.31
0.75	M 4.5	S08079-E0.75ISOTM...	8.0	7.90	63	19.5	3, 5 *	26	0.46
1.00	M 6	S10099-E1.0ISOTM...	10.0	9.90	72	24.0	5	24	0.61
1.50	M 10	S12119-E1.5ISOTM...	12.0	11.90	83	30.0	5	20	0.92
2.00	M 14	S12119-E2.0ISOTM...	12.0	11.90	83	30.0	5	15	1.23
3.00	M 24	S16159-E3.0ISOTM...	16.0	15.90	92	36.0	5	12	1.84
4.00	M 36	S16159-E4.0ISOTM...	16.0	15.90	92	40.0	5	10	2.45
6.00	M 64	S20199-E6.0ISOTM...	20.0	19.90	104	36.0	5	6	3.68

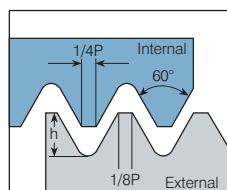
* Available with 3 and 5 flutes. Add 3 or 5 to the ordering code (TM3.../TM5...)

Internal - Straight Flutes

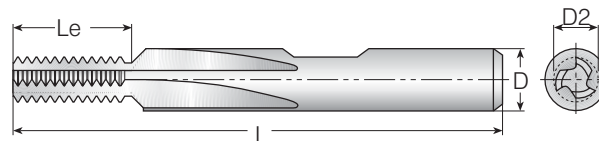
Pitch	Thread	Ordering Code	Dimensions mm			No. of Flutes	Teeth		
mm	Min. Dia.		D	D2	L	Le	Z	Zt	h mm
0.75	M 4.5	S04030-I0.75ISOTM...	4.0	3.00	42	6.7	3	9	0.43
0.75	M 8	S06059-I0.75ISOTM...	6.0	5.90	57	15.0	3	20	0.43
0.80	M 5	S04036-I0.8ISOTM...	4.0	3.60	42	8.0	3	10	0.46
1.00	M 6	S06040-I1.0ISOTM...	6.0	4.00	57	9.0	3	9	0.58
1.00	M 12	S08079-I1.0ISOTM...	8.0	7.90	63	20.0	3, 5 *	20	0.58
1.25	M 8	S06050-I1.25ISOTM...	6.0	5.00	57	12.5	3	10	0.72
1.25	M 10	S06059-I1.5ISOTM...	6.0	5.90	57	15.0	3	10	0.87
1.50	M 14	S10099-I1.5ISOTM...	10.0	9.90	72	24.0	5	16	0.87
1.50	M 18	S12119-I1.5ISOTM...	12.0	11.90	83	30.0	3, 5 *	20	0.87
1.75	M 12	S08079-I1.75ISOTM...	8.0	7.90	63	19.2	5	11	1.01
2.00	M 16	S10099-I2.0ISOTM...	10.0	9.90	72	24.0	5	12	1.15
2.00	M 18	S12119-I2.0ISOTM...	12.0	11.90	83	30.0	5	15	1.15
2.50	M 20	S12119-I2.5ISOTM...	12.0	11.90	83	30.0	5	12	1.44
3.00	M 24	S16159-I3.0ISOTM...	16.0	15.90	92	36.0	5	12	1.73
3.50	M 30	S16159-I3.5ISOTM...	16.0	15.90	92	38.5	5	11	2.02
4.00	M 36	S16159-I4.0ISOTM...	16.0	15.90	92	40.0	5	10	2.31
5.00	M 48	S20199-I5.0ISOTM...	20.0	19.90	104	40.0	5	8	2.89
6.00	M 64	S20199-I6.0ISOTM...	20.0	19.90	104	36.0	5	6	3.46

* Available with 3 and 5 flutes. Add 3 or 5 to the ordering code (TM3.../TM5...)

American UN



Defined by: ANSI B1.174
Tolerance class: 2A/2B



TM Solid Carbide - Straight Flutes

External - Straight Flutes

Pitch	Thread	Ordering Code	Dimensions mm				No. of Flutes	Teeth	
tpi	Min. Dia.		D	D2	L	Le	Z	Zt	h mm
32	No. 6	S06059-E32UNTM...	6.0	5.90	57	14.3	3	18	0.49
28	No. 12	S08079-E28UNTM...	8.0	7.90	63	19.9	3, 5 *	22	0.56
20	1/4"	S10099-E20UNTM...	10.0	9.90	72	22.9	5	18	0.78
18	5/16"	S10099-E18UNTM...	10.0	9.90	72	24.0	5	17	0.87
16	3/8"	S12119-E16UNTM...	12.0	11.90	83	28.6	5	18	0.97
12	9/16"	S12119-E12UNTM...	12.0	11.90	83	29.6	5	14	1.30
8	1"	S16159-E8UNTM...	16.0	15.90	92	38.1	5	12	1.95
6	1 3/8"	S20199-E6UNTM...	20.0	19.90	104	38.1	5	9	2.60

* Available with 3 and 5 flutes. Add 3 or 5 to the ordering code (TM3.../TM5...)

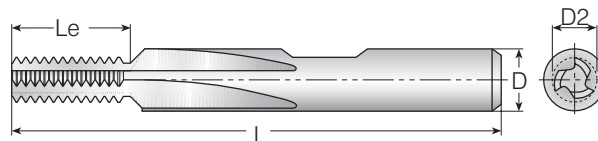
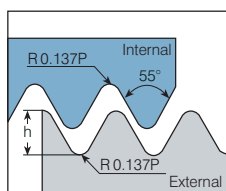
Internal - Straight Flutes

Pitch	Thread	Ordering Code	Dimensions mm				No. of Flutes	Teeth	
tpi	Min. Dia.		D	D2	L	Le	Z	Zt	h mm
36	No. 8	S04030-I36UNTM...	4.0	3.00	42	6.3	3	9	0.41
32	No. 8	S04030-I32UNTM...	4.0	3.00	42	6.3	3	8	0.46
32	5/16"	S06059-I32UNTM...	6.0	5.90	57	14.3	3	18	0.46
28	No. 12	S04036-I28UNTM...	4.0	3.60	42	8.2	3	9	0.52
28	7/16"	S08079-I28UNTM...	8.0	7.90	63	19.9	3, 5*	22	0.52
24	No. 12	S06040-I24UNTM...	6.0	4.00	57	8.5	3	8	0.61
20	1/4"	S06040-I20UNTM...	6.0	4.00	57	10.2	3	8	0.73
20	9/16"	S10099-I20UNTM...	10.0	9.90	72	22.9	5	18	0.73
18	5/16"	S06050-I18UNTM...	6.0	5.00	57	12.7	3	9	0.81
18	9/16"	S10099-I18UNTM...	10.0	9.90	72	24.0	5	17	0.81
16	3/8"	S06059-I16UNTM...	6.0	5.90	57	14.3	3	9	0.92
16	13/16"	S12119-I16UNTM...	12.0	11.90	83	28.6	5	18	0.92
14	7/16"	S08079-I14UNTM...	8.0	7.90	63	18.1	3, 5*	10	1.05
13	1/2"	S08079-I13UNTM...	8.0	7.90	63	19.5	3, 5*	10	1.13
12	9/16"	S10099-I12UNTM...	10.0	9.90	72	23.3	5	11	1.22
12	1"	S12119-I12UNTM...	12.0	11.90	83	29.6	5	14	1.22
11	5/8"	S10099-I11UNTM...	10.0	9.90	72	23.1	5	10	1.33
10	3/4"	S12119-I10UNTM...	12.0	11.90	83	27.9	5	11	1.47
9	7/8"	S16159-I9UNTM...	16.0	15.90	92	33.3	5	12	1.63
8	1"	S16159-I8UNTM...	16.0	15.90	92	38.1	5	12	1.83
7	1 1/8"	S16159-I7UNTM...	16.0	15.90	92	36.3	5	10	2.09
6	1 3/8"	S20199-I6UNTM...	20.0	19.90	104	38.1	5	9	2.44
5	1 3/4"	S20199-I5UNTM...	20.0	19.90	104	40.6	5	8	2.93
4.5	2"	S20199-I4.5UNTM...	20.0	19.90	104	39.5	5	7	3.26

* Available with 3 and 5 flutes. Add 3 or 5 to the ordering code (TM3.../TM5...)

BSW

External / Internal



Defined by: B.S.84:1956, DIN 259, ISO228/1:1982
Tolerance class: Medium class A

TM Solid Carbide - Straight Flutes

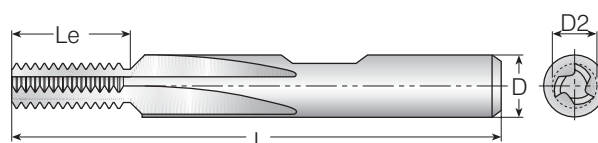
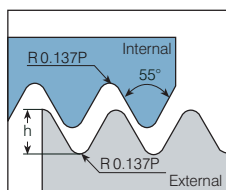
Straight Flutes

Pitch	Thread	Ordering Code	Dimensions mm			No. of Flutes	Teeth		
tpi	Min. Dia.		D	D2	L	Le	Z	Zt	h mm
20	1/4"	S06040-EI20BSWTM...	6.0	4.00	57	10.16	3	8	0.81
18	5/16"	S06050-EI18BSWTM...	6.0	5.00	57	11.29	3	8	0.90
16	3/8"	S06059-EI16BSWTM...	6.0	5.90	57	14.29	3	9	1.02
14	7/16"	S08079-EI14BSWTM...	8.0	7.90	63	18.14	3, 5*	10	1.16
12	1/2"	S08079-EI12BSWTM...	8.0	7.90	63	19.05	3, 5*	9	1.36
11	5/8"	S10099-EI11BSWTM...	10.0	9.90	72	23.09	5	10	1.48
10	3/4"	S12119-EI10BSWTM...	12.0	11.90	83	27.94	5	11	1.63
9	7/8"	S12119-EI9BSWTM...	12.0	11.90	83	28.22	5	10	1.81
8	1"	S16159-EI8BSWTM...	16.0	15.90	92	38.10	5	12	2.03
7	1 1/8"	S16159-EI7BSWTM...	16.0	15.90	92	36.29	5	10	2.32
6	1 3/8"	S16159-EI6BSWTM...	16.0	15.90	92	38.10	5	9	2.71
5	1 5/8"	S20199-EI5BSWTM...	20.0	19.90	104	40.64	5	8	3.25
4.5	1 7/8"	S20199-EI4.5BSWTM...	20.0	19.90	104	39.51	5	7	3.61

* Available with 3 and 5 flutes. Add 3 or 5 to the ordering code (TM3.../TM5...)

BSP

External / Internal



Defined by: B.S.2779:1956
Tolerance class: Medium class

TM Solid Carbide - Straight Flutes

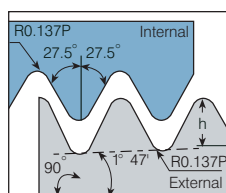
Straight Flutes

Pitch	Thread	Ordering Code	Dimensions mm			No. of Flutes	Teeth		
tpi	Min. Dia.		D	D2	L	Le	Z	Zt	h mm
28	1/16"	S06059-EI28BSPTM...	6.0	5.90	57	14.51	3	16	0.58
19	1/4"	S08079-EI19BSPTM...	8.0	7.90	63	18.72	3, 5*	14	0.86
14	1/2"	S12119-EI14BSPTM...	12.0	11.90	83	29.03	5	16	1.16
11	1"	S16159-EI11BSPTM...	16.0	15.90	92	34.64	5	15	1.48

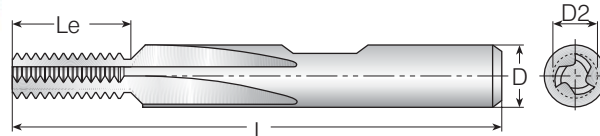
* Available with 3 and 5 flutes. Add 3 or 5 to the ordering code (TM3.../TM5...)

BSPT

External / Internal



Defined by: B.S.21:1985
Tolerance class: Standard BSPT



TM Solid Carbide - Straight Flutes

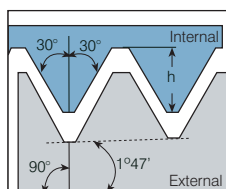
Straight Flutes

Pitch	Thread	Ordering Code	Dimensions mm			No. of Flutes	Teeth		
tpi	Min. Dia.		D	D2	L	Le	Z	Zt	h mm
28	1/16"	S06059-EI28BSPTTM...	6.0	5.90	57	9.98	3	11	0.58
19	1/4"	S08079-EI19BSPTTM...	8.0	7.90	63	14.71	3, 5*	11	0.86
14	1/2"	S12119-EI14BSPTTM...	12.0	11.90	83	19.96	5	11	1.16
11	1"	S16159-EI11BSPTTM...	16.0	15.90	92	39.25	5	17	1.48

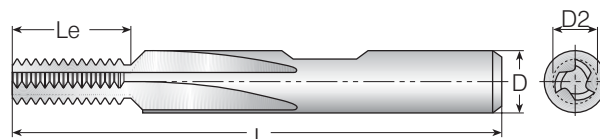
* Available with 3 and 5 flutes. Add 3 or 5 to the ordering code (TM3.../TM5...)

NPT

External / Internal



Defined by: USAS B2.1:1968
Tolerance class: Standard NPT



TM Solid Carbide - Straight Flutes

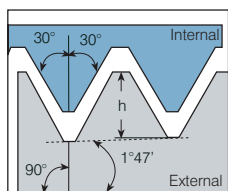
Straight Flutes

Pitch	Thread	Ordering Code	Dimensions mm			No. of Flutes	Teeth		
tpi	Min. Dia.		D	D2	L	Le	Z	Zt	h mm
27	1/16"	S06059-EI27NPTTM...	6.0	5.90	57	9.41	3	10	0.66
18	1/4"	S08079-EI18NPTTM...	8.0	7.90	63	14.11	3, 5*	10	1.01
14	1/2"	S12119-EI14NPTTM...	12.0	11.90	83	19.96	5	11	1.33
11.5	1"	S16159-EI11.5NPTTM...	16.0	15.90	92	26.51	5	12	1.64
8	2 1/2"	S16159-EI8NPTTM...	16.0	15.90	92	38.10	5	12	2.42

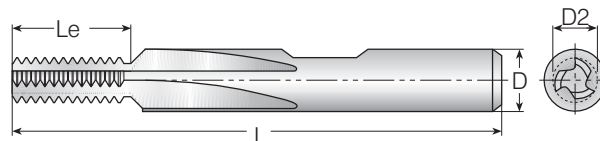
* Available with 3 and 5 flutes. Add 3 or 5 to the ordering code (TM3.../TM5...)

NPTF

External / Internal



Defined by: ANSI 1.20.3-1976
Tolerance class: Standard NPTF



TM Solid Carbide - Straight Flutes

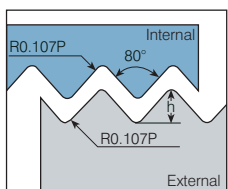
Straight Flutes

Pitch	Thread	Ordering Code	Dimensions mm			No. of Flutes	Teeth	
tpi	Min. Dia.		D	D2	L	Le	Z	Zt
27	1/16"	S06059-EI27NPTFTM...	6.0	5.90	57	9.41	3	10
18	1/4"	S08079-EI18NPTFTM...	8.0	7.90	63	14.11	3, 5*	10
14	1/2"	S12119-EI14NPTFTM...	12.0	11.90	83	19.96	5	11
11.5	1"	S16159-EI11.5NPTFTM...	16.0	15.90	92	26.51	5	12
8	2 1/2"	S16159-EI8NPTFTM...	16.0	15.90	92	38.10	5	12

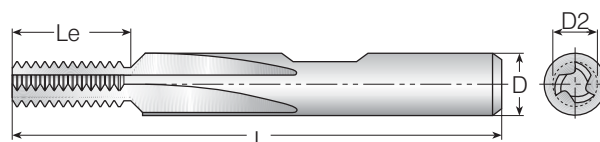
* Available with 3 and 5 flutes. Add 3 or 5 to the ordering code (TM3.../TM5...)

Pg

External / Internal



Defined by: DIN 40430
Tolerance class: Standard



TM Solid Carbide - Straight Flutes

Straight Flutes

Pitch	Thread	Ordering Code	Dimensions mm			No. of Flutes	Teeth	
tpi			D	D2	L	Le	Z	Zt
20	Pg7	S08079-EI20PGTM...	8.0	7.90	63	19.05	3, 5*	15
18	Pg9, 11, 13.5, 16	S10099-EI18PGTM...	10.0	9.90	72	23.99	5	17
16	Pg21, 29, 36, 42, 48	S12119-EI16PGTM...	12.0	11.90	83	28.58	5	18

* Available with 3 and 5 flutes. Add 3 or 5 to the ordering code (TM3.../TM5...)

About Thread Milling

In order to perform a thread milling operation, a milling machine with three-axis control capable of helical interpolation is required. Helical interpolation is a CNC function producing tool movement along a helical path. This helical motion combines circular movement in one plane with a simultaneous linear motion in a plane perpendicular to the first. For example, the path from point A to point B (Fig. A) on the envelope of the cylinder combines a circular movement in the xy plane with a linear displacement in the z direction.

On most CNC systems this function can be executed in two different ways:

G02: Helical interpolation in a clockwise direction

G03: Helical interpolation in a counter-clockwise direction

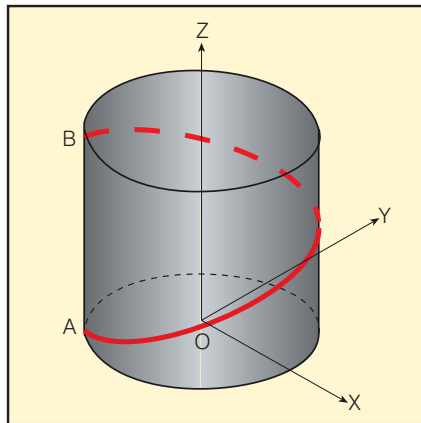


Fig. A

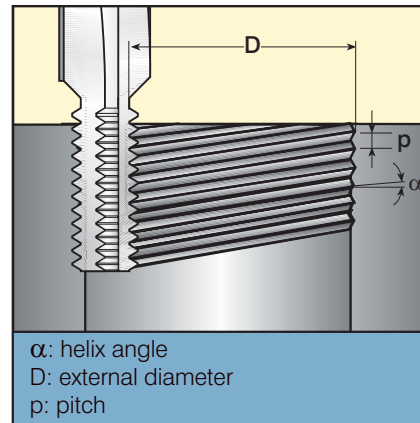


Fig. B

The thread milling operation (Fig. B) consists of circular rotation of the tool around its own axis together with an orbiting motion along the bore or workpiece circumference. During one such orbit, the tool will shift vertically one pitch length. These movements combined with the insert geometry create the required thread form.

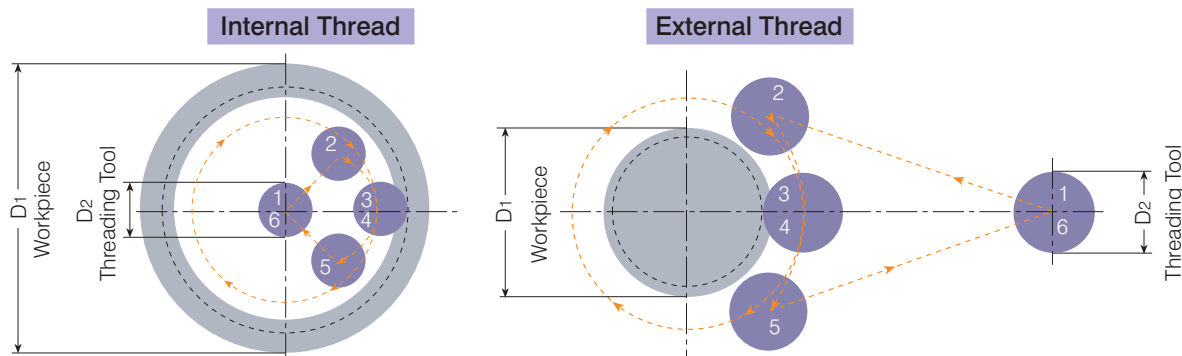
There are three acceptable ways of approaching the workpiece with the tool to initiate production of the thread:

1. Tangential Arc Approach

2. Radial Approach

1. Tangential Arc Approach

With this method, the tool enters and exits the workpiece smoothly. No marks are left on the workpiece and there is no vibration, even with harder materials. Although it requires slightly more complex programming than the radial approach (see below), this is the method recommended for machining the highest quality threads.



1-2: rapid approach

2-3: tool entry along tangential arc, with simultaneous feed along z-axis

3-4: helical movement during one full orbit (360°).

4-5: tool exit along tangential arc, with continuing feed along z-axis

5-6: rapid return

Note: Perform dry run above the material, before machining.

Grades and their Applications

Samples	Grade	Applications
	VTH	A general-purpose, heavy duty thread milling grade. TiCN coated for high resistance to wear.
		
		
		
		

Samples	Grade	Applications
	VTS	A general-purpose grade, specially designed for TM Solid Straight Flute cutters. TiAlN coated for high resistance to wear.
		

More Thread Milling Materials by VARGUS

Thread Milling Advantages CD



Thread Milling Handbook

Also available on TM Gen CD!



Cutting Speeds V_c [m/min] and Feed f [mm/tooth]

Material			Hardness Brinell HB	V_c [m/min]			Feed f [mm/tooth] *				
				Helical Flutes, Straight Flutes, Deep Threading, HeliCool Line		MilliPro	Helical Flutes	Straight Flutes	Deep Threading	HeliCool Line	MilliPro
				Coated		Coated					
				VTH	VTS	VTH					
P	Unalloyed steel	Low carbon (C=0.1-0.25 %)	125	80-250	50-180	60-120	0.03-0.15	0.01-0.1	0.03-0.23	0.024-0.289	0.03-0.12
		Medium carbon (C=0.25-0.55 %)	150	80-230	50-140	60-120	0.03-0.1	0.01-0.08	0.03-0.15	0.021-0.26	0.03-0.12
		High carbon (C=0.55-0.85 %)	170	80-200	50-120	60-90	0.03-0.08	0.01-0.05	0.03-0.12	0.019-0.231	0.03-0.12
	Low alloy steel (alloying elements $\leq$ 5%)	Non hardened	180	60-180	60-170	60-90	0.03-0.1	0.03-0.07	0.03-0.15	0.018-0.217	0.03-0.1
		Hardened	275	60-170	60-160	50-80	0.03-0.07	0.03-0.07	0.03-0.11	0.012-0.145	0.03-0.07
		Hardened	350	60-160	60-150	50-80	0.01-0.03	0.005-0.01	0.01-0.05	0.009-0.101	0.03
	High alloy steel (alloying elements $>$ 5%)	Annealed	200	40-100	40-90	50-80	0.03-0.05	0.01-0.03	0.03-0.08	0.011-0.13	0.03-0.05
		Hardened	325	30-80	30-70	50-80	0.01-0.03	0.005-0.01	0.01-0.05	0.01-0.116	0.03
	Cast steel	Low alloy (alloying elements $<$ 5%)	200	80-250	70-200	70-90	0.03-0.1	0.01-0.03	0.03-0.15	0.012-0.145	0.03-0.1
		High alloy (alloying elements $>$ 5%)	225	60-170	60-150	60-80	0.01-0.03	0.005-0.01	0.01-0.05	0.009-0.101	0.03
M	Stainless steel Ferritic	Non hardened	200	60-150	50-140	60-90	0.04-0.1	0.01-0.05	0.04-0.15	0.011-0.13	0.03-0.1
		Hardened	330	60-120	50-110	50-80	0.01-0.05	0.005-0.01	0.01-0.08	0.01-0.123	0.03
	Stainless steel Austenitic	Austenitic	180	60-140	60-130	60-90	0.04-0.1	0.007-0.02	0.04-0.15	0.01-0.116	0.03-0.1
		Super austenitic	200	60-130	50-120	50-80	0.04-0.1	0.007-0.02	0.04-0.15	0.009-0.101	0.03-0.1
	Stainless steel Cast ferritic	Non hardened	200	60-160	50-150	60-90	0.04-0.1	0.01-0.03	0.04-0.15	0.012-0.145	0.03-0.1
		Hardened	330	60-110	50-100	50-80	0.03-0.05	0.005-0.01	0.03-0.08	0.009-0.101	0.03
	Stainless steel Cast austenitic	Austenitic	200	60-150	50-140	60-90	0.04-0.1	0.01-0.03	0.04-0.15	0.01-0.116	0.03-0.1
		Hardened	330	60-100	50-90	50-80	0.03-0.05	0.005-0.01	0.03-0.08	0.009-0.101	0.03
	High temperature alloys	Annealed (Iron based)	200	30-60	30-50	60	0.04-0.1	0.007-0.02	0.04-0.15	0.007-0.087	0.03-0.1
		Aged (Iron based)	280	20-50	20-40	50	0.01-0.03	0.005-0.01	0.01-0.05	0.006-0.073	0.03
		Annealed (Nickel or Cobalt based)	250	15-35	15-30	35	0.01-0.03	0.005-0.01	0.01-0.05	0.005-0.058	0.03
		Aged (Nickel or Cobalt based)	350	15-30	15-25	30	0.01-0.03	0.005-0.01	0.01-0.05	0.005-0.058	0.03
	Titanium alloys	Pure 99.5 Ti	400Rm	40-80	30-70	30-50	0.03-0.05	0.007-0.02	0.03-0.08	0.006-0.073	0.03-0.06
		$\alpha + \beta$ alloys	1050Rm	20-50	20-45	25-35	0.03-0.05	0.007-0.02	0.03-0.08	0.006-0.073	0.03-0.07
K	Extra hard steel	Hardened & tempered	55HRc	15-45	15-35	45	0.005-0.01	0.003-0.006	0.005-0.02	0.004-0.044	0.01
	Malleable cast iron	Ferritic (short chips)	130	70-160	60-150	50-80	0.01-0.03	0.007-0.02	0.01-0.05	0.012-0.145	0.03
		Pearlitic (long chips)	230	60-150	100	60-90	0.03-0.05	0.005-0.01	0.03-0.08	0.01-0.116	0.05
	Grey cast iron	Low tensile strength	180	70-160	50-140	70-100	0.05-0.1	0.007-0.02	0.05-0.15	0.011-0.13	0.04-0.1
		High tensile strength	260	40-120	40-110	60-90	0.03-0.05	0.005-0.01	0.03-0.08	0.01-0.116	0.05
	Nodular SG iron	Ferritic	160	40-110	40-100	70-100	0.05-0.1	0.007-0.02	0.05-0.15	0.011-0.13	0.04-0.1
		Pearlitic	260	40-100	40-90	60-90	0.03-0.05	0.005-0.01	0.03-0.08	0.01-0.116	0.05
	Aluminium alloys Wrought	Non aging	60	200-300	150-250	60-250	0.1-0.25	0.05-0.15	0.10-0.38	0.035-0.433	0.05-0.15
		Aged	100	150-250	100-220	60-150	0.1-0.2	0.03-0.1	0.10-0.30	0.029-0.361	0.04-0.12
	Aluminium alloys	Cast	75	100-200	80-150	60-250	0.1-0.2	0.05-0.15	0.10-0.30	0.029-0.361	0.04-0.12
		Cast & aged	90	120-220	90-160	60-150	0.1-0.15	0.03-0.1	0.10-0.23	0.024-0.289	0.03-0.10
	Aluminium alloys	Cast Si 13-22%	130	200-300	150-250	250	0.1-0.2	0.05-0.15	0.10-0.30	0.029-0.361	0.05-0.1
	Copper and copper alloys	Brass	90	200-300	150-250	60-250	0.1-0.25	0.05-0.15	0.10-0.38	0.035-0.433	0.04-0.12
		Bronze and non leaded copper	100	150-250	100-220	60-150	0.1-0.2	0.03-0.1	0.10-0.30	0.029-0.361	0.05-0.1

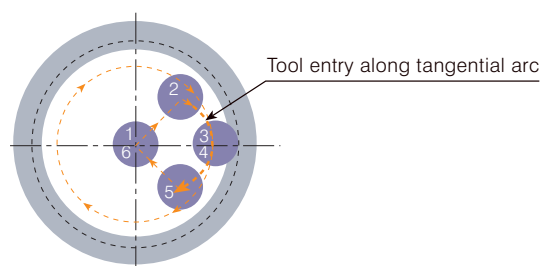
*Recommendation:

At tool entry, set the Feed f [mm/tooth] to 70% lower than the threading Feed.

Example:

Threading Feed: 0.3[mm/tooth]

Tool entry Feed: 0.09[mm/tooth]



VARGUS Makes Thread Milling Easy!

TM Gen CNC Program Generator



NEW Version 7.0.1!
Now includes *HeliCool* Line
& MilliPro!

Ask your dealer for
your free TM Gen CD!

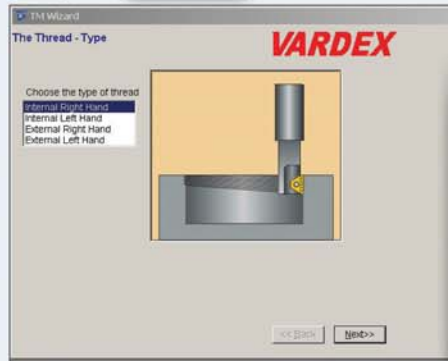
VARDEX TM Gen generates the CNC program
for your thread-milling application in just seconds.

- Compatible with Windows
- Works with Fanuc, Mazatrol, Siemens, Mitsubishi
and Heidenhain (horizontal & vertical)

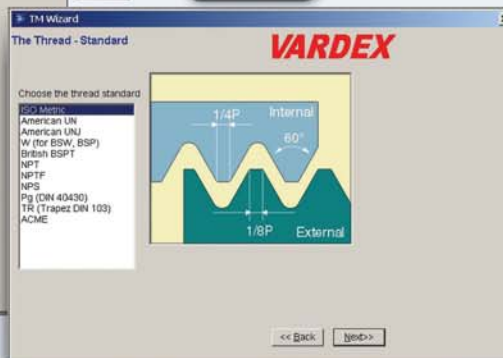
Downloading TM Gen is easy too!
Just go to: www.vargustools.com

Note: New versions and updates are provided regularly on the VARGUS website at: www.vargustools.com

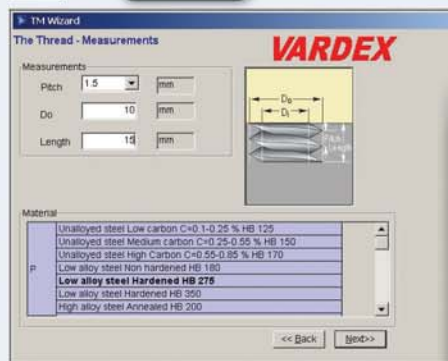
6 Clicks and You're Done!



Select the thread type



Select the thread standard



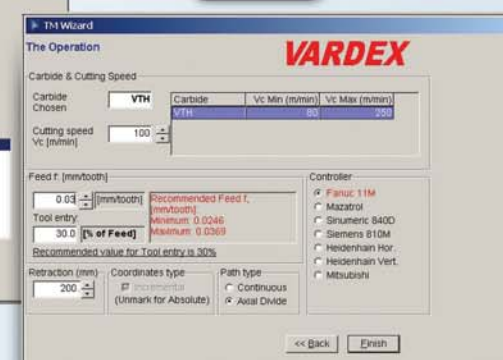
Input thread parameters



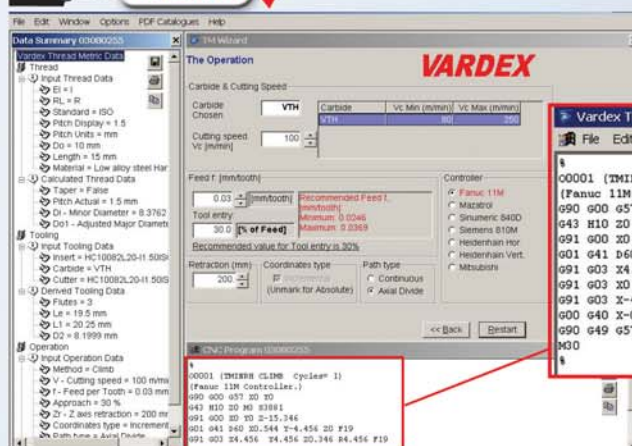
Select machining method



Select a tool



Define cutting data & controller



```

VarDEX TM CNC Generator Version 7.0.1 [Build 19] - [CNC Program 0409005-4]
File Edit Window Options PDF Catalogues Help

%
O0001 (TMINRH CLIMB Cycles= 1)
(Fanuc 11M Controller.)
G90 G00 G57 X0 Y0
G43 H10 Z0 M3 S3105
G91 G00 X0 Y0 Z-15.346
G01 G41 D60 X0.544 Y-4.456 Z0 F13
G91 G03 X4.456 Y4.456 Z0.346 R4.456 F13
G91 G03 X0 Y0 Z1.500 I-5.000 J0 F42
G91 G03 X-4.456 Y4.456 Z0.346 R4.456
G00 G40 X-0.544 Y-4.456 Z0
G90 G49 G57 G00 Z200.000 M5
M30
    
```

READY TO GO!
CNC program & data -

www.vargustools.com

Ask For The
VARDEX
General Catalog



VARDEX THREADING SOLUTIONS

Vargus Ltd.
Head Office - Israel

1 Hayotsrim Street
Nahariya 22311

Tel: +972-4-9855-101

Fax: +972-4-9855-118

E-mail: mrktg@vargus.co.il

www.vargustools.com