



TM Solid

Solid Carbide Thread Milling Tools



METRIC

A Tool for EVERY Thread Milling Job!

Miniature Threads MilliPro

MilliPro &
MilliPro EL
From M1.6x0.35 (1-72UNF)

MilliPro HD
Up to 62 HRC

MilliPro Dental
From M1.0x0.25 (0-80UNF)



Long Thread Deep Threading

Full Profile

Partial Profile

Up to 3XDo



Normal Use Straight Flutes

Taper
For Bone Plate Applications
From Pitch 0.3-0.6mm



From M4.5x0.75 (No.8-36UNF)



Heavy Duty Helicool

From M3x0.5 (No.10-32UNF)



Radial Coolant Helicool-R (HCR)

From M6x1.0



Helicool and Chamfer Helicool-C (HCC)

From M6x1.0



Economical Tool Helical

From M3x0.5 (No.8-36UNF)



Drill, Thread and Chamfer HTC

From M6x1.0



TM SOLID CATALOG

■ Helicool - Helical Flute with Axial Coolant Thru	Page	4
■ Helicool R (HCR) - Helical Flute with Radial Coolant Thru	Page	9
■ Helicool C (HCC) - Helical Flute with Axial Coolant Thru and Chamfer	Page	9
■ HTC (Thriller) - Drill, Chamfer and Thread with Coolant Thru	Page	10
■ Helical - Helical Flute without Coolant Thru	Page	11
■ Deep Threading - Straight Flutes for Deep Holes	Page	15
■ MilliPro - Miniature Thread Mills	Page	16
■ MilliPro Dental - Miniature Thread Mills for Dental Implants	Page	19
■ MilliPro EL - Miniature Thread Mills, Extra Long Tools	Page	20
■ MilliPro HD - Miniature Thread Mills for Hard Materials	Page	21
■ Straight - Straight Flute Taper 60°, 55°	Page	23
■ Straight - Straight Flute	Page	24
■ Grades and Their Applications	Page	29
■ Cutting Speeds and Feeds	Page	30

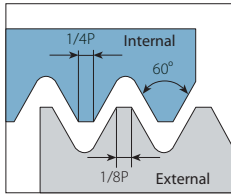
TM Solid Carbide - Ordering Code System

HC		10	082	L15	-	I	1.50	ISO	TM		VTH
1	2	3	4	5		6	7	8	9	10	11
1 - Line		2 - No. of Teeth		3 - Shank Dia.		4 - Cutting Dia.		5 - Tool Cutting Length		6 - Type of Tool	
HC - Helicool HCR - Helicool R HCC - Helicool C H - Helical S - Straight Flutes D - Deep Threading or MilliPro		1T - 1 Tooth 3T - 3 Teeth (MilliPro) 2L - 2 Teeth LH (MilliPro HD)		03 - 3.0 mm 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		0.7 - 19.9 mm		Up to 3Do		E - External I - Internal EI - External + Internal	
7 - Pitch		8 - Standard		9 - System		10 - No. of Flutes		11 - Carbide Grade			
Full Profile - Pitch Range		ISO - ISO Metric UN - American UN UNC - UN Coarse UNF - UN Fine UNEF - UN Extra Fine UNJ - UNJ MJ - MJ BSW - Whit. Coarse BSP - BSP BSF - Whit. Fine BSPT - BSPT NPT - NPT NPTF - NPTF PG - PG TP60 - Taper 60° TP55 - Taper 55°		TM TML - Extra Long		3 - 3 Flutes 5 - 5 Flutes Straight Flute, when two options are available		VTS VTH			
mm		tpi									
0.25-6.0		80 - 4.5									
Partial Profile - Pitch Range											
	mm	tpi									
TA	0.5-0.8	32-56									
TB	0.5-1.0	24-56									
TC	1.0-1.50	16-24									
TD	1.0-1.75	14-24									
TF	0.5-1.25	20-48									

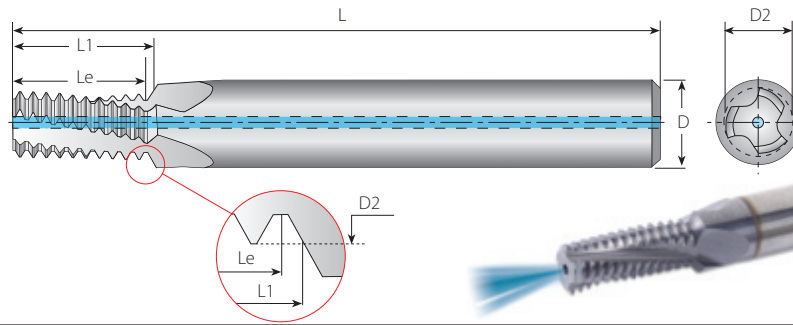
HTC Thriller - Ordering Code System

HTC	M6	1.0	2D	VTN				
1	2	3	4	5				
1 - Line		2 - Thread Diameter		3 - Pitch	4 - Thread Length		5 - Carbide Grade	
HTC - Thriller		M6 - M12		1 - 1.75mm	2D 2.5D		VTN VTS	

Internal



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



Helical Flutes with Thru-Hole Coolant

1.5 x Do ($L1 \leq 1.5 \times \text{Thread Diameter}$)

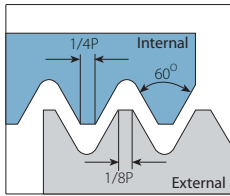
Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*	
M Coarse	M Fine	mm	Internal	D	D2	L	Le	L1	Z	Zt	mm
M3x0.5	M3.5-M16x0.5	0.5	HC04024L04-I0.50ISO TM...	4	2.40	45	4.5	4.7	3	9	2.5
M4x0.7		0.7	HC04031L06-I0.70ISO TM...	4	3.15	45	6.3	6.6	3	9	3.3
M5x0.8		0.8	HC04039L07-I0.80ISO TM...	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	10.2
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

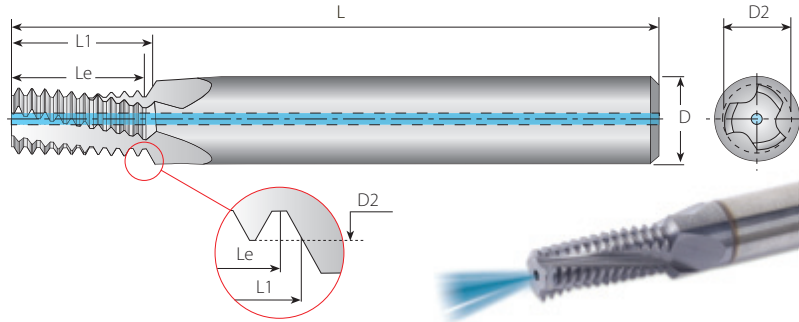
2 x Do ($L1 \leq 2 \times \text{Thread Diameter}$)

Thread		Pitch	Ordering Code	Dimensions mm					No. of Flutes	Teeth	Bore Dia.*
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
M6x1.0	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	1.25	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	10.2
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	15.5
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

Internal



Defined by: ANSI B1.1:74
Tolerance class: 2B



Helical Flutes with Thru-Hole Coolant

1.5 x Do (L1 ≤ 1.5 x Thread Diameter)

Thread			Pitch	Ordering Code	Dimensions mm					No. of Flutes	Teeth	Bore Dia.*
UNC	UNF	UNEF	tpi	Internal	D	D2	L	Le	L1	Z	Zt	mm
No.10-24	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.12-24	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	5.2
5/16"x18	9/16", 5/8"x18	11/16"-1 1/16" x18	18	HC08061L11-I18UNC TM...	8	6.15	61	11.3	12.0	3	8	6.5
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	9.3
1/2"x13			13	HC12104L20-I13UNC TM...	12	10.35	73	19.5	20.5	4	10	10.8
9/16"x12	1"-1 1/2"x12		12	HC12118L22-I12UNC TM...	12	11.80	73	21.2	22.2	4	10	12.3

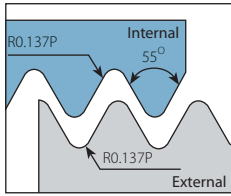
Helical Flutes with Thru-Hole Coolant

2 x Do (L1 ≤ 2 x Thread Diameter)

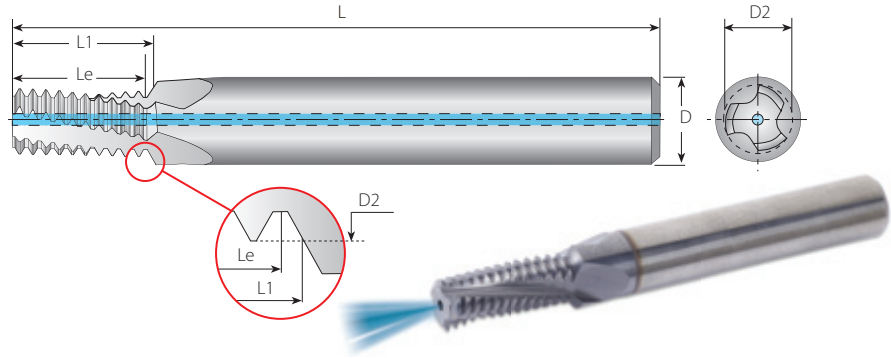
Thread			Pitch	Ordering Code	Dimensions mm					No. of Flutes	Teeth	Bore Dia.*
UNC	UNF	UNEF	tpi	Internal	D	D2	L	Le	L1	Z	Zt	mm
	No.10-32	No.12-3/8"x32	32	HC04038L09-I32UNF TM...	4	3.80	45	9.5	9.9	3	12	4.0
		No.12-3/8"x32	32	HC06044L11-I32UNEF TM...	6	4.40	57	11.1	11.5	3	14	4.7
	No.12, 1/4"x28	7/16", 1/2"x28	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
No.10-24	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.12-24	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	6.8
	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	5.2
	7/16", 1/2"x20	3/4"-1"x20	20	HC10096L22-I20UNF TM...	10	9.60	73	21.6	22.2	3	17	9.8
	1/2"x20	3/4"-1"x20	20	HC12111L26-I20UNF TM...	12	11.10	80	25.4	26.0	4	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 1/16"x18	18	HC08061L16-I18UNC TM...	8	6.15	61	15.5	16.2	3	11	6.5
	9/16", 5/8"x18	11/16"-1 1/16"x18	18	HC14125L28-I18UNF TM...	14	12.50	92	28.2	28.9	4	20	12.8
	5/8"x18	11/16"-1 1/16"x18	18	HC16141L31-I18UNF TM...	16	14.10	92	31.0	31.7	4	22	14.5
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	9.3
	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	10.8
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	13.5
3/4"x10			10	HC16159L39-I10UNC TM...	16	15.90	92	38.1	39.4	4	15	16.5
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

*Bore Diameter applies to smallest thread Dia.

External / Internal



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



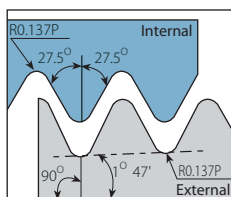
Helical Flutes with Thru-Hole Coolant

2 x Do (L1 ≤ 2 x Thread Diameter)

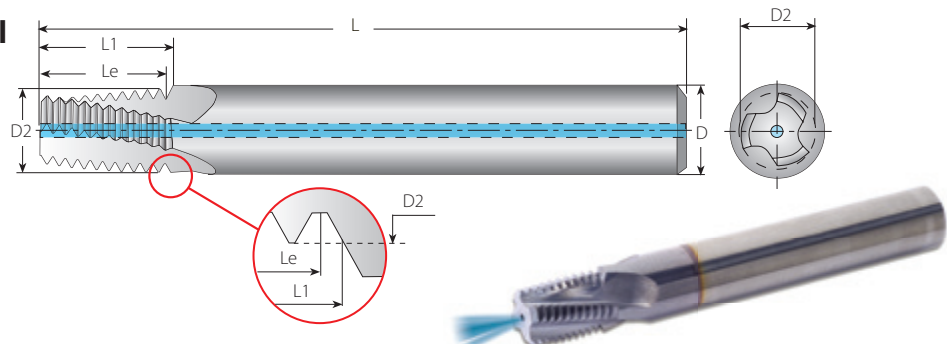
Thread		Pitch	Ordering Code	Dimensions mm					No. of Flutes	Teeth	Bore Dia.*
BSW	BSF	tpi	External / Internal	D	D2	L	Le	L1	Z	Zt	mm
	1/4"x26	26	HC06050L13-EI26BSF TM...	6	5.00	57	12.7	13.2	3	13	5.3
	5/16"x22	22	HC08063L16-EI22BSF TM...	8	6.35	61	16.2	16.7	3	14	6.7
1/4"x20	3/8"x20	20	HC06044L13-EI20BSW 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

BSPT

External / Internal



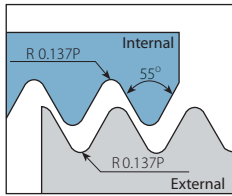
Defined by: B.S.21:1985
Tolerance class: Standard BSPT



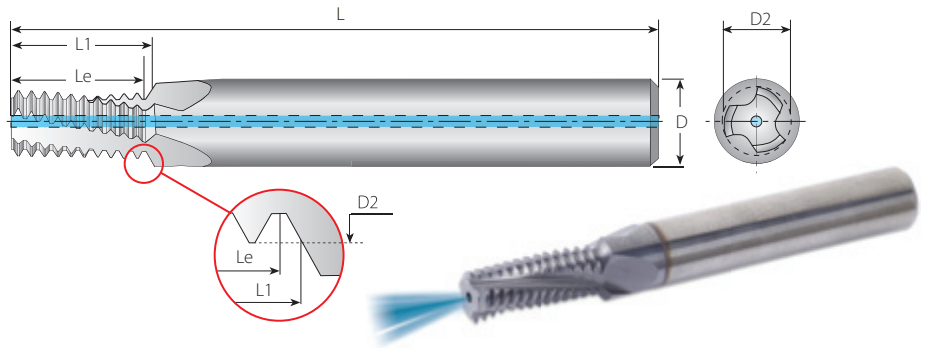
Helical Flutes with Thru-Hole Coolant

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*	
Standard	tpi	External / Internal	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

External / Internal



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



Helical Flutes with Thru-Hole Coolant

1.5 x Do (L1 ≤ 1.5 x Thread Diameter)

Thread	Pitch	Ordering Code	Dimensions mm					No. of Flutes	Teeth	Bore Dia.*
Standard	tpi	External / 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	15.2
1"-4"x11	11	HC20199L42-EI11BSP TM...	20	19.90	102	41.6	42.7	4	18	30.7

Helical Flutes with Thru-Hole Coolant

2 x Do (L1 ≤ 2 x Thread Diameter)

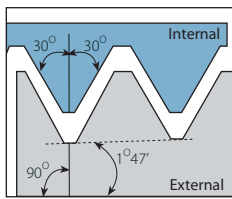
Thread	Pitch	Ordering Code	Dimensions mm					No. of Flutes	Teeth	Bore Dia.*
Standard	tpi	External / Internal	D	D2	L	Le	L1	Z	Zt	mm
1/16", 1/8"x28	28	HC08064L15-EI28BSP TM...	8	6.40	61	15.4	15.9	3	17	6.7
1/8"x28	28	HC10082L19-EI28BSP TM...	10	8.20	73	19.0	19.5	3	21	8.7
1/4", 3/8"x19	19	HC12110L27-EI19BSP TM...	12	11.00	80	26.7	27.4	4	20	11.8
3/8"x19	19	HC16145L34-EI19BSP TM...	16	14.50	92	33.4	34.1	4	25	15.2
1/2"-7/8"x14	14	HC18179L42-EI14BSP TM...	18	17.90	102	41.7	42.6	4	23	19.0

*Bore Diameter applies to smallest thread Dia.

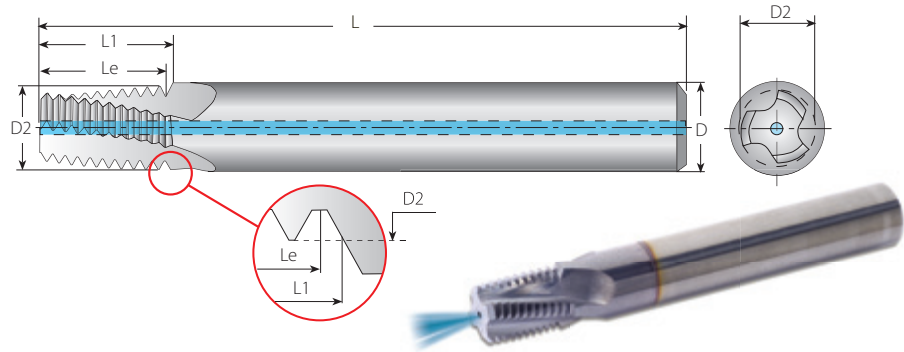
NPT

Helicool

External / Internal



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



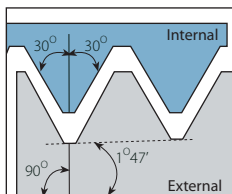
Helical Flutes with Thru-Hole Coolant

Thread	Pitch	Ordering Code	Dimensions mm					No. of Flutes	Teeth	Bore Dia.*
Standard	tpi	External / Internal	D	D2	L	Le	L1	Z	Zt	mm
1/16"x27	27	HC06059L09-EI27NPT TM...	6	5.90	57	9.4	9.9	3	10	6.3
1/8"x27	27	HC08076L09-EI27NPT TM...	8	7.65	61	9.4	9.9	3	10	8.5
1/4"x18	18	HC10099L14-EI18NPT TM...	10	9.90	73	14.1	14.8	3	10	11.1
3/8"x18	18	HC12111L14-EI18NPT TM...	12	11.15	73	14.1	14.8	4	10	14.5
1/2", 3/4"x14	14	HC16142L19-EI14NPT TM...	16	14.25	92	18.1	19.0	4	10	17.7, 23.0
1", 1 1/4", 1 1/2", 2"x11.5	11.5	HC20196L23-EI11.5NPT TM...	20	19.60	102	22.1	23.2	4	10	29.0, 37.7, 44.0, 56.0
2 1/2", 3"x8	8	HC20196L33-EI8NPT TM...	20	19.60	102	31.7	33.3	4	10	66.5, 82.1

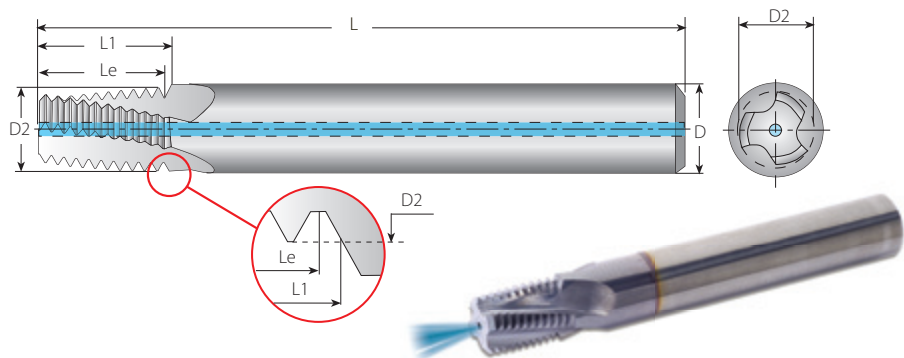
NPTF

Helicool

External / Internal



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



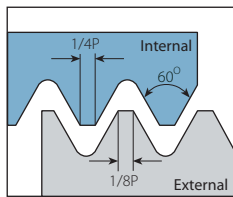
Helical Flutes with Thru-Hole Coolant

Thread	Pitch	Ordering Code	Dimensions mm					No. of Flutes	Teeth	Bore Dia.*
Standard	tpi	External / Internal	D	D2	L	Le	L1	Z	Zt	mm
1/16"x27	27	HC06059L09-EI27NPTF TM...	6	5.90	57	9.4	9.9	3	10	6.3
1/8"x27	27	HC08076L09-EI27NPTF TM...	8	7.65	61	9.4	9.9	3	10	8.4
1/4"x18	18	HC10099L14-EI18NPTF TM...	10	9.90	73	14.1	14.8	3	10	11.1
3/8"x18	18	HC12111L14-EI18NPTF TM...	12	11.15	73	14.1	14.8	4	10	14.7
1/2", 3/4"x14	14	HC16142L19-EI14NPTF TM...	16	14.25	92	18.1	19.0	4	10	17.9, 23.4
1", 1 1/4", 1 1/2", 2"x11.5	11.5	HC20196L23-EI11.5NPTF TM...	20	19.60	102	22.1	23.2	4	10	29.0, 37.7, 43.7, 55.6
2 1/2", 3"x8	8	HC20196L33-EI8NPTF TM...	20	19.60	102	31.7	33.3	4	10	66.3, 82.1

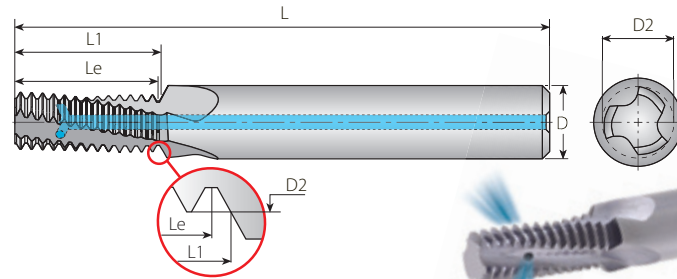
ISO Metric

Helicool-R (HCR)

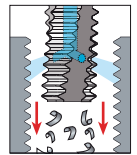
Internal



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



Improved Chip
Evacuation for
Thru-Holes



HeliCool-R (HCR)

Helical Flutes with Radial Cooling

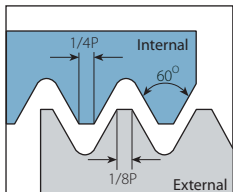
2 x Do (L1 ≤ 2 x Thread Diameter)

Thread		Pitch	Ordering Code	Dimensions [mm]					Flutes	Teeth	Bore Dia.*
M Coarse	M Fine	mm	Internal	D	D2	L	Le	L1	Z	Zt	mm
M6x1.0	M8-M40x1.0	1.0	HCR06048L12-I1.00ISO TM...	6	4.8	57	12.0	12.5	3	12	5.0
	M10x1.0	1.0	HCR10087L20-I1.00ISO TM...	10	8.7	73	20.0	20.5	3	20	9.0
	M12x1.0	1.0	HCR12107L24-I1.00ISO TM...	12	10.7	73	24.0	24.5	4	24	11.0
M8x1.25		1.25	HCR08065L16-I1.25ISO TM...	8	6.5	64	16.3	16.9	3	13	6.8
M10x1.5	M12-M48x1.5	1.5	HCR10082L20-I1.50ISO TM...	10	8.2	73	19.5	20.3	3	13	8.5
	M12x1.5	1.5	HCR10099L24-I1.50ISO TM...	10	9.9	73	24.0	24.8	4	16	10.5
	M14x1.5	1.5	HCR12119L29-I1.50ISO TM...	12	11.9	84	28.5	29.3	4	19	12.5
	M16x1.5	1.5	HCR14139L32-I1.50ISO TM...	14	13.9	84	31.5	32.3	4	21	14.5
M12x1.75		1.75	HCR10099L25-I1.75ISO TM...	10	9.9	73	24.5	25.4	4	14	10.2

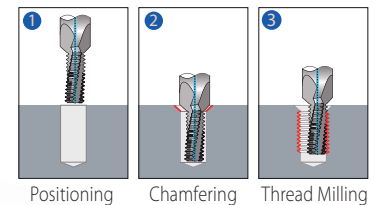
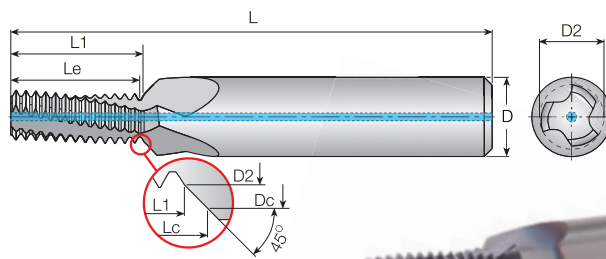
ISO Metric

Helicool-C (HCC)

Internal



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



Dc = Minimum recommended chamfer diameter



HeliCool-C (HCC)

Helical Flutes with Axial Coolant - Thru & Chamfer

2 x Do (L1 ≤ 2 x Thread Diameter)

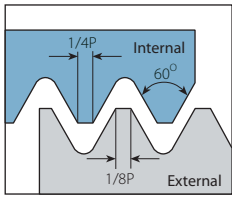
Thread		Pitch	Ordering Code	Dimensions [mm]					No. of Flutes		Teeth	Bore Dia.*	
M Coarse	M Fine	mm	Internal	D	D2	Dc	L	Le	L1	Lc	Z	Zt	mm
M6x1.0	M8-M40x1.0	1.0	HCC08048L12-I1.00ISO TM...	8	4.8	6.3	61	12.0	12.5	13.3	3	12	5.0
	M10x1.0	1.0	HCC12087L20-I1.00ISO TM...	12	8.7	10.3	73	20.0	20.5	21.3	3	20	9.0
	M12x1.0	1.0	HCC14107L24-I1.00ISO TM...	14	10.7	12.3	80	24.0	24.5	25.3	4	24	11.0
M8x1.25		1.25	HCC10065L16-I1.25ISO TM...	10	6.5	8.3	73	16.3	16.9	17.8	3	13	6.8
M10x1.5	M12-M48x1.5	1.5	HCC12082L20-I1.50ISO TM...	12	8.2	10.3	80	19.5	20.3	21.3	3	13	8.5
	M12x1.5	1.5	HCC14099L24-I1.50ISO TM...	14	9.9	12.3	80	24.0	24.8	26.0	4	16	10.5
	M14x1.5	1.5	HCC16119L29-I1.50ISO TM...	16	11.9	14.3	92	28.5	29.3	30.5	4	19	12.5
	M16x1.5	1.5	HCC18139L32-I1.50ISO TM...	18	13.9	16.3	92	31.5	32.3	33.5	4	21	14.5
M12x1.75		1.75	HCC14099L25-I1.75ISO TM...	14	9.9	12.3	80	24.5	25.4	26.6	4	14	10.2

*Bore Diameter applies to smallest thread Dia.

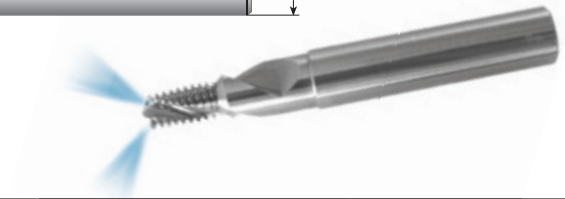
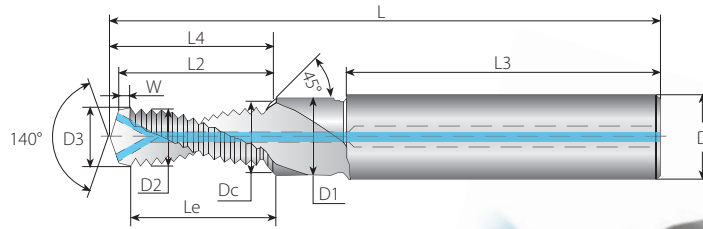
ISO Metric

HTC (Thriller)

Internal



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

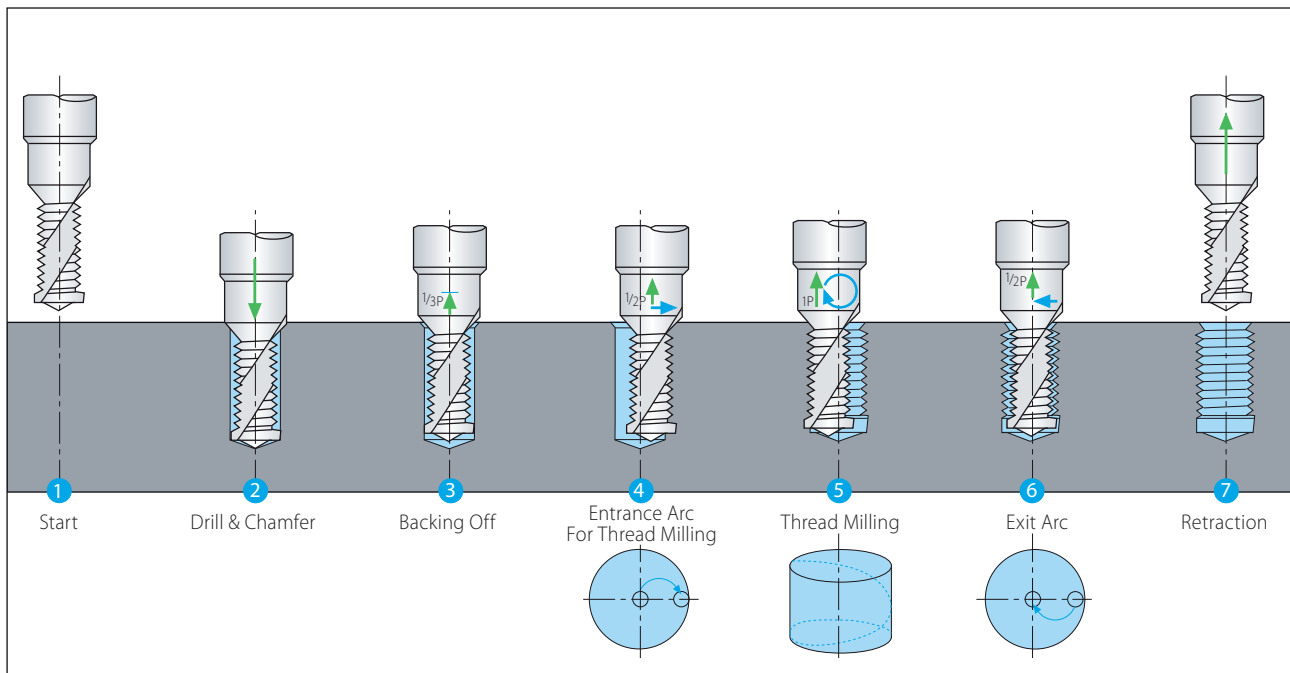


HTC (Thriller)

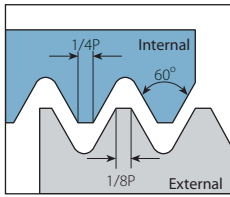
Drill, Chamfer & Thread with Coolant-Thru

Thread	Ordering Code	Pitch	Dimensions											No. of Flutes	Teeth
ISO 2xDo Coarse	Internal	mm	L	L4	L2	L3	W	Le	D3	D	D1	Dc	D2	Z	Zt
M6x1.0	HTC M6x1.0x2D...	1.00	62.0	14.5	13.7	36	1.0	12.7	5.0	8	6.6	6.3	4.85	2	11
M8x1.25	HTC M8x1.25x2D ...	1.25	74.0	18.2	17.1	40	1.3	15.8	6.8	10	9.0	8.3	6.45	2	11
M10x1.5	HTC M10x1.5x2D ...	1.50	79.0	23.4	22.1	45	1.5	20.6	8.5	12	11.0	10.3	8.08	2	12
M12x1.75	HTC M12x1.75x2D...	1.75	89.0	27.1	25.5	45	1.5	24.0	10.3	14	13.5	12.3	9.74	2	12
ISO 2.5xDo Coarse															
M6x1.0	HTC M6x1.0x2.5D ...	1.00	62.0	16.5	15.7	36	1.0	14.7	5.0	8	6.6	6.3	4.85	2	13
M8x1.25	HTC M8x1.25x2.5D...	1.25	74.0	23.2	22.1	40	1.3	20.8	6.8	10	9.0	8.3	6.45	2	15
M10x1.5	HTC M10x1.5x2.5D...	1.50	79.0	27.9	26.6	45	1.5	25.1	8.5	12	11.0	10.3	8.08	2	15

HTC - Thriller Operating Cycle



External / Internal



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



Helical Flutes - External

2 x Do (L1 ≤ 2 x Thread Diameter)

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth
M Coarse	mm	External	D	D2	L	Le	Z	Zt
M3x0.5	0.5	H04039L06-E0.5ISO TM...	4	3.9	45	6.0	3	12
M4.5x0.75	0.75	H04039L09-E0.75ISO TM...	4	3.9	45	9.0	3	12
M6x1.0	1.0	H04039L12-E1.0ISO TM...	4	3.9	45	12.0	3	12
M8x1.25	1.25	H06059L16-E1.25ISO TM...	6	5.9	57	16.25	3	13
M10x1.5	1.5	H08079L21-E1.5ISO TM...	8	7.9	63	21.0	3	14
M14x2.0	2.0	H10099L28-E2.0ISO TM...	10	9.9	73	28.0	4	14

Helical Flutes - Internal

2 x Do (L1 ≤ 2 x Thread Diameter)

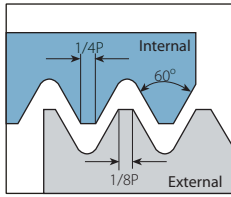
Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
M Coarse	M Fine	Internal	D	D2	L	Le	Z	Zt	mm
M3x0.5	M3.5-M16x0.5	H04022L06-I0.5ISO TM...	4	2.2	45	6.0	3	12	2.5
	M4x0.5	H04030L08-I0.5ISO TM...	4	3.0	45	8.0	3	16	3.5
	M5x0.5	H04039L10-I0.5ISO TM...	4	3.9	45	10.0	3	20	4.5
M4x0.7		H04028L08-I0.7ISO TM...	4	2.8	45	8.4	3	12	3.3
	M6x0.75	H04039L12-I0.75ISO TM...	4	3.9	45	12.0	3	16	5.3
M5x0.8		H04035L10-I0.8ISO TM...	4	3.5	45	10.4	3	13	4.2
M6x1.0	M8-M40x1.0	H04039L12-I1.0ISO TM...	4	3.9	45	12.0	3	12	5.0
	M8x1.0	H06059L16-I1.0ISO TM...	6	5.9	57	16.0	3	16	7.0
	M10x1.0	H08079L20-I1.0ISO TM...	8	7.9	63	20.0	3	20	9.0
	M12x1.0	H10099L24-I1.0ISO TM...	10	9.9	73	24.0	4	24	11.0
M8x1.25		H06058L16-I1.25ISO TM...	6	5.8	57	16.25	3	13	6.8
	M10x1.25	H08077L20-I1.25ISO TM...	8	7.7	63	20.0	3	16	8.8
M10x1.5	M12-M48x1.5	H08077L21-I1.5ISO TM...	8	7.7	63	21.0	3	14	8.5
	M12x1.5	H10094L24-I1.5ISO TM...	10	9.4	73	24.0	4	16	10.5
	M14x1.5	H12112L28-I1.5ISO TM...	12	11.2	83	28.5	4	19	12.5
	M16x1.5	H12119L33-I1.5ISO TM...	12	11.9	83	33.0	4	22	14.5
M12x1.75		H10087L24-I1.75ISO TM...	10	8.7	73	24.5	4	14	10.2
M14x2.0	M17-M80x2.0	H10099L28-I2.0ISO TM...	10	9.9	73	28.0	4	14	12.0
M16x2.0	M17-M80x2.0	H12119L32-I2.0ISO TM...	12	11.9	83	32.0	4	16	14.0
M18-M22x2.5		H16139L40-I2.5ISO TM...	16	13.9	92	40.0	5	16	15.5
M24x3.0		H16159L42-I3.0ISO TM...	16	15.9	92	42.0	4	14	21.0

*Bore Diameter applies to smallest thread Dia.

American UN

Helical

External / Internal



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



Helical Flutes - External

2 x Do (L1 ≤ 2 x Thread Diameter)

Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth
UNC	UNF	tpi	External	D	D2	L	Le	Z	Zt
No.8-32		32	H04039L09-E32UNC TM...	4	3.9	45	8.7	3	11
	No.12-28	28	H04039L12-E28UNF TM...	4	3.9	45	11.8	3	13
No.12-24		24	H04039L12-E24UNC TM...	4	3.9	45	11.6	3	11
1/4"x20		20	H04039L13-E20UNC TM...	4	3.9	45	12.7	3	10
5/16"x18		18	H06059L17-E18UNC TM...	6	5.9	57	16.9	3	12
3/8"x16		16	H08079L19-E16UNC TM...	8	7.9	63	19.1	3	12
9/16"x12		12	H12119L30-E12UNC TM...	12	11.9	83	29.6	4	14

Helical Flutes - Internal

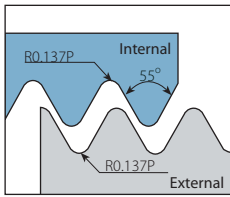
2 x Do (L1 ≤ 2 x Thread Diameter)

Thread			Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
UNC	UNF	UNEF	tpi	Internal	D	D2	L	Le	Z	Zt	mm
	No.8-36		36	H04030L09-I36UNF TM...	4	3.0	45	8.5	3	12	3.5
	No.10-32	No.12-3/8"x32	32	H04033L11-I32UNF TM...	4	3.3	45	11.1	3	14	4.0
	No.12-28, 1/4"x28	7/16", 1/2"x28	28	H04038L12-I28UNF TM...	4	3.8	45	11.8	3	13	4.6
	1/4"x28	7/16", 1/2"x28	28	H06046L13-I28UNF TM...	6	4.6	57	12.7	3	14	5.5
		7/16", 1/2"x28	28	H10092L23-I28UNEF TM...	10	9.2	73	22.7	4	25	10.2
No.10-24	5/16", 3/8"x24	9/16"-11/16"x24	24	H04029L11-I24UNC TM...	4	2.9	45	10.6	3	10	3.8
No.12-24	5/16", 3/8"x24	9/16"-11/16"x24	24	H04035L12-I24UNC TM...	4	3.5	45	11.6	3	11	4.5
	5/16", 3/8"x24	9/16"-11/16"x24	24	H06057L16-I24UNF TM...	6	5.7	57	15.9	3	15	6.8
	3/8"x24	9/16"-11/16"x24	24	H08074L19-I24UNF TM...	8	7.4	63	19.1	3	18	8.5
		9/16"-11/16"x24	24	H12119L29-I24UNEF TM...	12	11.9	83	28.6	4	27	13.2
1/4"x20	7/16", 1/2"x20	3/4"-1"x20	20	H04039L13-I20UNC TM...	4	3.9	45	12.7	3	10	5.2
	7/16", 1/2"x20	3/4"-1"x20	20	H10085L23-I20UNF TM...	10	8.5	73	22.9	4	18	9.8
	1/2"x20	3/4"-1"x20	20	H10099L26-I20UNF TM...	10	9.9	73	25.4	4	20	11.5
		3/4"-1"x20	20	H16159L38-I20UNEF TM...	16	15.9	92	38.1	5	30	17.8
5/16"x18	9/16", 5/8"x18	11/16"-1 11/16"x18	18	H06052L17-I18UNC TM...	6	5.2	57	16.9	3	12	6.5
	9/16", 5/8"x18	11/16"-1 11/16"x18	18	H12113L30-I18UNF TM...	12	11.3	83	29.6	4	21	12.8
	5/8"x18	11/16"-1 11/16"x18	18	H12119L33-I18UNF TM...	12	11.9	83	32.5	4	23	14.5
3/8"x16	3/4"x16		16	H08067L19-I16UNC TM...	8	6.7	63	19.1	3	12	8.0
	3/4"x16		16	H16159L38-I16UNF TM...	16	15.9	92	38.1	4	24	17.5
7/16"x14	7/8"x14		14	H08076L24-I14UNC TM...	8	7.6	63	23.6	4	13	9.3
	7/8"x14		14	H20187L44-I14UNF TM...	20	18.7	104	44.4	4	24	20.5
1/2"x13			13	H10089L26-I13UNC TM...	10	8.9	73	25.4	4	13	10.8
9/16"x12	1"-1 1/2"x12		12	H12103L30-I12UNC TM...	12	10.3	83	29.6	4	14	12.3
	1"-1 1/2"x12		12	H20199L51-I12UNF TM...	20	19.9	104	50.8	5	24	23.5
5/8"x11			11	H12110L32-I11UNC TM...	12	11.0	83	32.3	4	14	13.5
3/4"x10			10	H16135L38-I10UNC TM...	16	13.5	92	38.1	5	15	16.5
7/8"x9			9	H16152L45-I9UNC TM...	16	15.2	92	45.2	4	16	19.5
1"x8			8	H20170L51-I8UNC TM...	20	17.0	104	50.8	4	16	22.0

BSP (G)

Helical

External / Internal



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



Helical Flutes

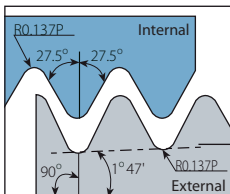
$2 \times D_o$ ($L_1 \leq 2 \times \text{Thread Diameter}$)

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
Standard	tpi	External / Internal	D	D2	L	Le	Z	Zt	mm
1/16"x28, 1/8"x28	28	H06058L16-EI28BSP TM...	6	5.8	57	16.3	3	18	6.7
1/8"x28	28	H08077L20-EI28BSP TM...	8	7.7	63	20.0	3	22	8.7
1/4"x19, 3/8"x19	19	H10099L27-EI19BSP TM...	10	9.9	73	26.7	4	20	11.8
3/8"x19	19	H16134L33-EI19BSP TM...	16	13.4	92	33.4	4	25	15.2
1/2", 3/4"x14	14	H16157L44-EI14BSP TM...	16	15.7	92	43.5	5	24	19.0
1", 1 1/2", 2", 2 1/2"x11	11	H20199L42-EI11BSP TM...	20	19.9	104	41.6	5	18	30.7

BSPT

Helical

External / Internal



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



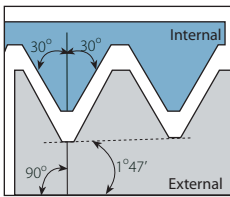
Helical Flutes

Thread	Pitch	Ordering Code	Dimensions mm			No. of Flutes	Teeth	Bore Dia.*	
Standard	tpi	External / Internal	D	D2	L	Le	Z	Zt	mm
1/16"x28	28	H06058L16-EI28BSPT TM...	6	5.8	57	16.3	3	18	6.7
1/8"x28	28	H08077L20-EI28BSPT TM...	8	7.7	63	20.0	3	22	8.7
1/4"x19	19	H10099L27-EI19BSPT TM...	10	9.9	73	26.7	4	20	11.8
3/8"x19	19	H16134L33-EI19BSPT TM...	16	13.4	92	33.4	4	25	15.2
1/2", 3/4"x14	14	H16157L44-EI14BSPT TM...	16	15.7	92	43.5	5	24	19.0
1", 1 1/2", 2", 2 1/2"x11	11	H20199L42-EI11BSPT TM...	20	19.9	104	41.6	5	18	30.7

NPT

Helical

External / Internal



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



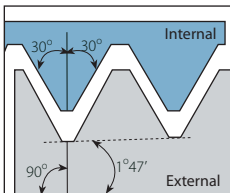
Helical Flutes

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
Standard	tpi	External / Internal	D	D2	L	Le	Z	Zt	mm
1/16"x27	27	H06053L09-EI27NPT TM...	6	5.3	57	9.4	3	10	6.3
1/8"x27	27	H08075L09-EI27NPT TM...	8	7.5	63	9.4	4	10	8.5
1/4"x18	18	H10094L14-EI18NPT TM...	10	9.4	73	14.1	4	10	11.1
3/8"x18	18	H12119L14-EI18NPT TM...	12	11.9	83	14.1	4	10	14.5
1/2", 3/4"x14	14	H16155L25-EI14NPT TM...	16	15.5	92	25.4	5	14	17.7, 23.0
1"-2"x11.5	11.5	H20199L33-EI11.5NPT TM...	20	19.9	104	33.1	5	15	29.0-56.0
2 1/2", 3"x8	8	H20199L38-EI8NPT TM...	20	19.9	104	38.1	4	12	66.5

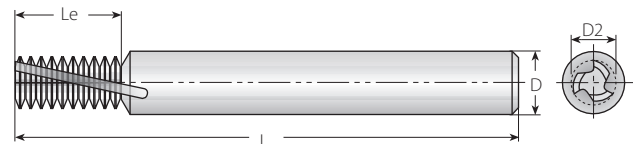
NPTF

Helical

External / Internal



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



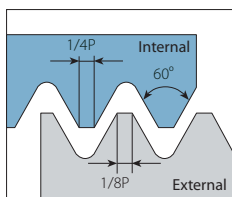
Helical Flutes

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
Standard	tpi	External / Internal	D	D2	L	Le	Z	Zt	mm
1/16"x27	27	H06053L09-EI27NPTF TM...	6	5.3	57	9.4	3	10	6.3
1/8"x27	27	H08075L09-EI27NPTF TM...	8	7.5	63	9.4	4	10	8.4
1/4"x18	18	H10094L14-EI18NPTF TM...	10	9.4	73	14.1	4	10	11.1
3/8"x18	18	H12119L14-EI18NPTF TM...	12	11.9	83	14.1	4	10	14.7
1/2", 3/4"x14	14	H16155L25-EI14NPTF TM...	16	15.5	92	25.4	5	14	17.9, 23.4
1"-2"x11.5	11.5	H20199L33-EI11.5NPTF TM...	20	19.9	104	33.1	5	15	29.4-56.2
2 1/2", 3"x8	8	H20199L38-EI8NPTF TM...	20	19.9	104	38.1	4	12	67.0

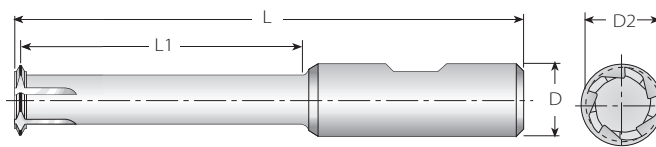
ISO Metric

Deep Threading

Internal



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



Deep Threading - Long Tools for Deep Holes

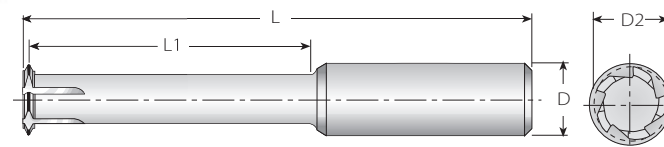
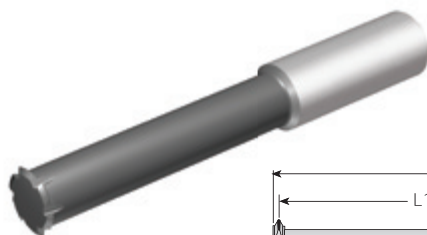
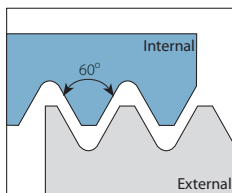
3 x Do (L1 ≤ 3 x Thread Diameter)

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.
M Coarse	mm	Internal	D	D2	L	L1	Z	Zt	mm
M6x1	1.0	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	2.0	D1T16102-I2.0ISO TM...	16	10.2	92	44	4	1	12.0
M16x2	2.0	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

Partial Profile 60°

Deep Threading

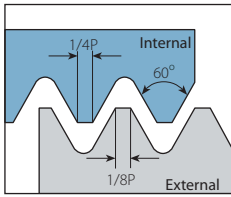
Internal



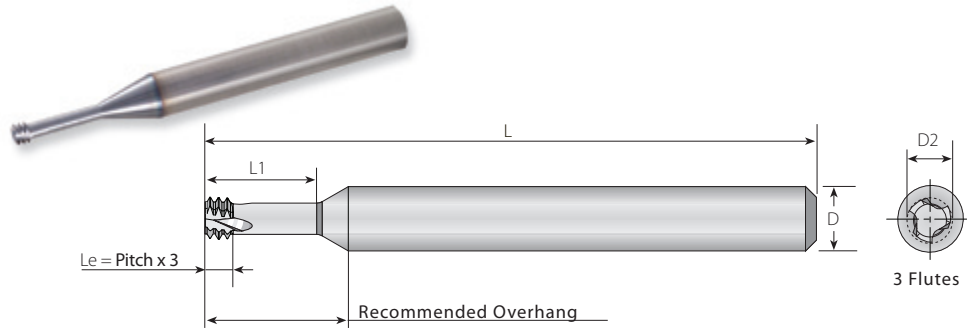
Deep Threading - Long Tools for Deep Holes

Min. Thread			Pitch		Ordering Code	Dimensions					
M coarse	M fine	UN, UNS, UNF, UNEF	mm	tpi	Internal	D	D2	L	L1	Z	Zt
M5x0.8	M5x0.5, M5X0.75	No.10-56UNS, No.10-48UNS, No.10-40UNS, No.10-36UNS, No.10-32UNF	0.5-0.8	32-56	D1T04390L160-ITA60 TM...	4	3.90	45	16	4	1
M6x1.0	M6x0.5, M6X0.75	No.12-56UNS, No.12-48UNS, ¼-40UNS, ¼-36UNS, ¼-32UNEF, ¼-28UNF, ¼-27UNS, ¼-24UNS	0.5-1.0	24-56	D1T06485L200-ITB60 TM...	6	4.85	51	20	5	1
M8x1.25	M7x0.5, M7x0.75, M7.5x1.0	⅝-48UNS, ⅝-40UNS, ⅝-36UNS, ⅝-32UNEF, ⅝-28UN, ⅝-27UNS, ⅝-24UNS, ⅝-20UN	0.5-1.25	20-48	D1T06590L250-ITF60 TM...	6	5.90	64	25	5	1
-	M10.5x0.5, M11x0.75, M11x1.0	⅞-32UN, ⅞-28UNEF, ⅞-27UNS, ⅞-24UNS	0.5-1.0	24-56	D1T10990L350-ITB60 TM...	10	9.90	73	35	6	1
M10x1.5	M10x1.0, M10X1.25	⅜-24UNF, ⅜-20UN, ⅞-18UNS, ⅞-16UN	1.0-1.50	16-24	D1T08790L320-ITC60 TM...	8	7.90	63	32	6	1
M12x1.75	M12x1.0, M12X1.25, M12x1.5	½-24UNS, ½-20UNS, ½-18UNS, ½-16UNS, ½-14UNS	1.0-1.75	14-24	D1T10990L380-ITD60 TM...	10	9.90	73	38	6	1
-	M13.5x1.0, M14x1.25, M14x1.5	⅞-24UNEF	1.0-1.75	14-24	D1T12119L450-ITD60 TM...	12	11.90	83	45	6	1

Internal



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



MilliPro

Miniature Thread Mills

2 x Do ($L1 \leq 2 \times \text{Thread Diameter}$)

Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
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	1.25
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	1.75
M2.5x0.45		0.45	D3T06019L052-I0.45ISO TM...	6	1.95	57	5.2	3	3	2.05
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-M40x1.0	1.0	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-M48x1.50	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	73	25.0	3	3	10.3
M16x2.0		2.0	D3T12119L330-I2.0ISO TM...	12	11.90	83	33.0	3	3	14.0
M20x2.5		2.50	D3T16159L413-I2.5ISO TM...	16	15.90	92	41.3	3	3	17.5

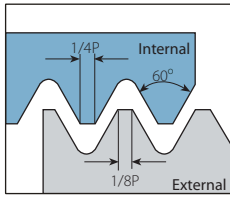
MilliPro

Miniature Thread Mills

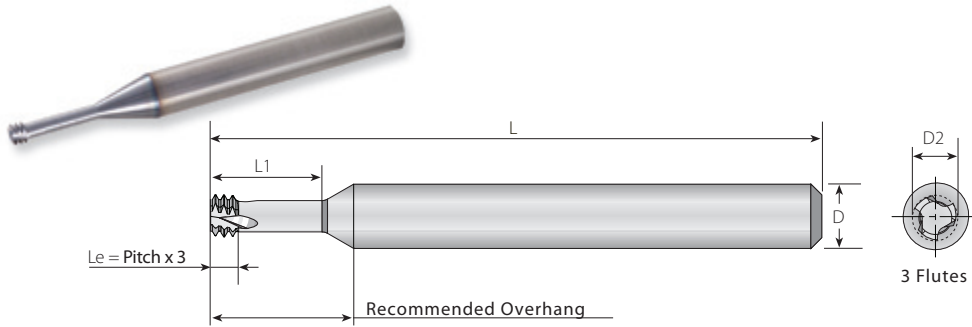
3 x Do ($L1 \leq 3 \times \text{Thread Diameter}$)

Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
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	1.25
M2x0.4		0.4	D3T03015L062-I0.4ISO TM...	3	1.55	30	6.2	3	3	1.6
M2x0.4		0.4	D3T06015L062-I0.4ISO TM...	6	1.55	57	6.2	3	3	1.6
M2.5x0.45		0.45	D3T03019L077-I0.45ISO TM...	3	1.95	30	7.7	3	3	2.05
M2.5x0.45		0.45	D3T06019L077-I0.45ISO TM...	6	1.95	57	7.7	3	3	2.05
M3x0.5	M3.5-M16x0.5	0.5	D3T03024L092-I0.5ISO TM...	3	2.40	30	9.2	3	3	2.5
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-M40x1.0	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

Internal



Defined by: ANSI B1.1:74
Tolerance class: 2B



MilliPro

Miniature Thread Mills

2 x Do (L1 ≤ 2 x Thread Diameter)

Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
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	1.6
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	2.1
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	3.5
	1/4"x28	28	D3T06052L132-I28UN TM...	6	5.25	57	13.2	3	3	5.5
No.10-24	5/16"x24	24	D3T06035L102-I24UN TM...	6	3.58	57	10.2	3	3	3.9
	5/16"x24	24	D3T08066L165-I24UN TM...	8	6.68	63	16.5	3	3	6.9
1/4"x20	7/16"x20	20	D3T06048L134-I20UN TM...	6	4.88	57	13.4	3	3	5.2
	7/16"x20	20	D3T10095L230-I20UN TM...	10	9.55	73	23.0	3	3	9.9
3/8"x16		16	D3T08067L191-I16UN TM...	8	6.70	63	19.1	3	3	8.0
7/16"x14		14	D3T10090L233-I14UN TM...	10	9.00	73	23.3	3	3	9.4

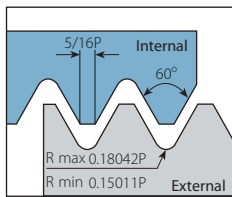
MilliPro

Miniature Thread Mills

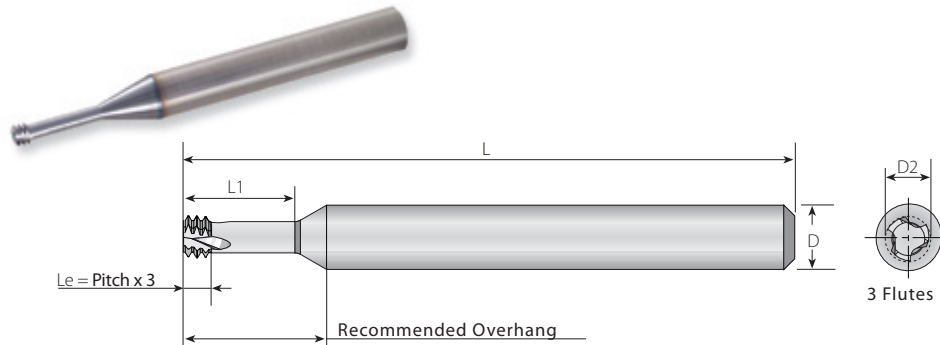
3 x Do (L1 ≤ 3 x Thread Diameter)

Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
UNC	UNF	tpi	Internal	D	D2	L	L1	Z	Zt	mm
	No.1-72	72	D3T03014L057-I72UN TM...	3	1.45	30	5.75	3	3	1.6
	No.1-72	72	D3T06014L057-I72UN TM...	6	1.45	57	5.75	3	3	1.6
No.2-56	No.3-56	56	D3T03016L070-I56UN TM...	3	1.65	30	7.0	3	3	1.8
No.4, No.5-40	No.6-40	40	D3T03021L090-I40UN TM...	3	2.10	30	9.0	3	3	2.3
No.4, No.5-40	No.6-40	40	D3T06021L090-I40UN TM...	6	2.10	57	9.0	3	3	2.3
No.5-40	No.6-40	40	D3T06024L100-I40UN TM...	6	2.45	57	10.0	3	3	2.6
No.6, No.8-32	No.10-32	32	D3T03025L110-I32UN TM...	3	2.55	30	11.0	3	3	2.8
No.6, No.8-32	No.10-32	32	D3T06025L110-I32UN TM...	6	2.55	57	11.0	3	3	2.8
No.8-32	No.10-32	32	D3T06032L130-I32UN TM...	6	3.20	57	13.0	3	3	3.4
	1/4"x28	28	D3T06052L196-I28UN TM...	6	5.25	57	19.6	3	3	5.5
	5/16"x24	24	D3T08066L245-I24UN TM...	8	6.68	63	24.5	3	3	6.9
1/4"x20	7/16"x20	20	D3T06048L198-I20UN TM...	6	4.88	57	19.8	3	3	5.1

Internal



Defined by: MIL-S-8879C
Tolerance class: 3B

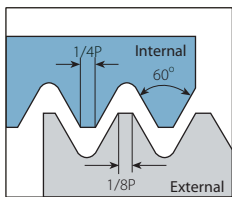


MilliPro - Miniature Thread Mills

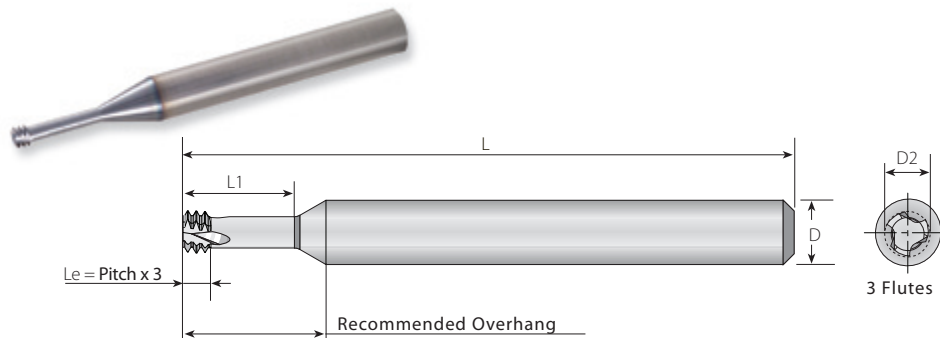
3 x Do ($L1 \leq 3 \times \text{Thread Diameter}$)

Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
UNJC	UNJF	tpi	Internal	D	D2	L	L1	Z	Zt	mm
0.138" (#6)	0.190" (#10)	32	D3T06027L110-I32UNJ TM...	6	2.70	57	11.0	3	3	2.8
	0.250" (1/4")	28	D3T06054L195-I28UNJ TM...	6	5.40	57	19.5	3	3	5.6
0.190" (#10)		24	D3T06037L149-I24UNJ TM...	6	3.70	57	14.9	3	3	4.0
	0.3125" (5/16")	24	D3T08067L241-I24UNJ TM...	8	6.70	63	24.1	3	3	7.0
0.250" (1/4")		20	D3T06050L195-I20UNJ TM...	6	5.00	57	19.5	3	3	5.3
	0.4375" (7/16")	20	D3T10096L335-I20UNJ TM...	10	9.60	73	33.5	3	3	10.0
0.3125" (5/16")	0.5625" (9/16")	18	D3T08064L241-I18UNJ TM...	8	6.40	63	24.1	3	3	6.75
0.375" (3/8")	0.750" (3/4")	16	D3T08077L290-I16UNJ TM...	8	7.70	63	29.0	3	3	8.1
0.4375" (7/16")	0.875" (7/8")	14	D3T10092L335-I14UNJ TM...	10	9.20	73	33.5	3	3	9.5
0.500" (1/2")		13	D3T10099L385-I13UNJ TM...	10	9.90	73	38.5	3	3	11.0

Internal



Defined by: ISO 5855
Tolerance class: 4h/6h-4H/5H



MilliPro - Miniature Thread Mills

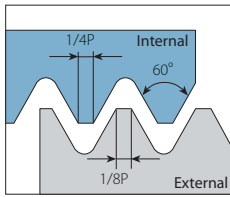
3 x Do ($L1 \leq 3 \times \text{Thread Diameter}$)

Thread	Pitch	Ordering Code	Dimensions mm			No. of Flutes	Teeth	Bore Dia.	
Standard	mm	Internal	D	D2	L	L1	Z	Zt	mm
MJ3x0.5	0.5	D3T06024L092-I0.5MJ TM...	6	2.40	57	9.2	3	3	2.6
MJ3.5x0.6	0.6	D3T06028L110-I0.6MJ TM...	6	2.85	57	11.0	3	3	3.0
MJ4x0.7	0.7	D3T06031L123-I0.7MJ TM...	6	3.15	57	12.3	3	3	3.4
MJ5x0.8	0.8	D3T06040L154-I0.8MJ TM...	6	4.05	57	15.4	3	3	4.3
MJ6x1.0	1.0	D3T06048L185-I1.0MJ TM...	6	4.80	57	18.5	3	3	5.1
MJ8x1.25	1.25	D3T08065L246-I1.25MJ TM...	8	6.50	63	24.6	3	3	6.9
MJ10x1.5	1.50	D3T10082L308-I1.50MJ TM...	10	8.20	73	30.8	3	3	8.7
MJ12x1.75	1.75	D3T10099L370-I1.75MJ TM...	10	9.90	73	37.0	3	3	10.4
MJ14x2	2.0	D3T12119L425-I2.0MJ TM...	12	11.90	83	42.5	3	3	12.25

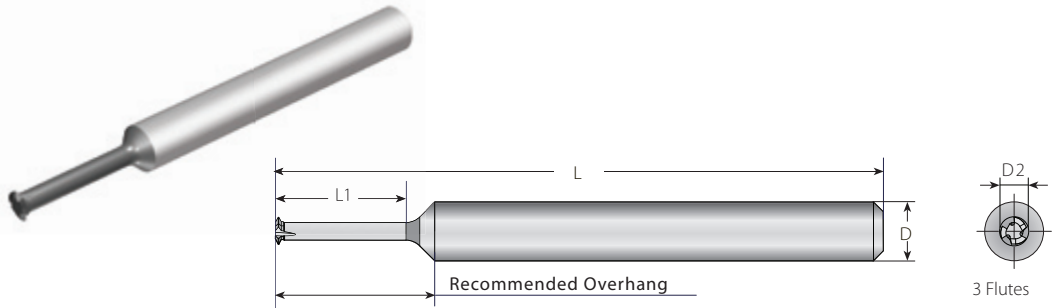
ISO Metric

MilliPro Dental

Internal



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



MilliPro Dental

Miniature Thread Mills for Dental Implants

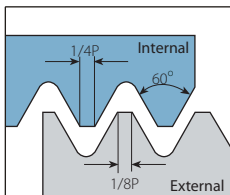
3xDo ($L1 \leq 3 \times \text{Thread Diameter}$)

Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.
M Coarse	M Fine	mm	Internal	D	D2	L	L1	Z	Zt	mm
M1.0x0.25	M1.4x0.25	0.25	D1T03007L031-I0.25ISO TM...	3	0.70	31	3.1	3	1	0.75
M1.2x0.25	M1.4x0.25	0.25	D1T03009L038-I0.25ISO TM...	3	0.90	31	3.8	3	1	0.95
M1.4x0.3	-	0.30	D1T03011L044-I0.30ISO TM...	3	1.05	31	4.4	3	1	1.15
M1.6x0.35	-	0.35	D1T03012L050-I0.35ISO TM...	3	1.20	31	5.0	3	1	1.30
M1.8x0.35	M2.0x0.35	0.35	D1T03014L056-I0.35ISO TM...	3	1.40	31	5.6	3	1	1.50
M2.0x0.4	-	0.40	D1T03015L062-I0.40ISO TM...	3	1.50	31	6.2	3	1	1.65
M2.5x0.45	-	0.45	D1T03019L077-I0.45ISO TM...	3	1.95	31	7.7	3	1	2.10

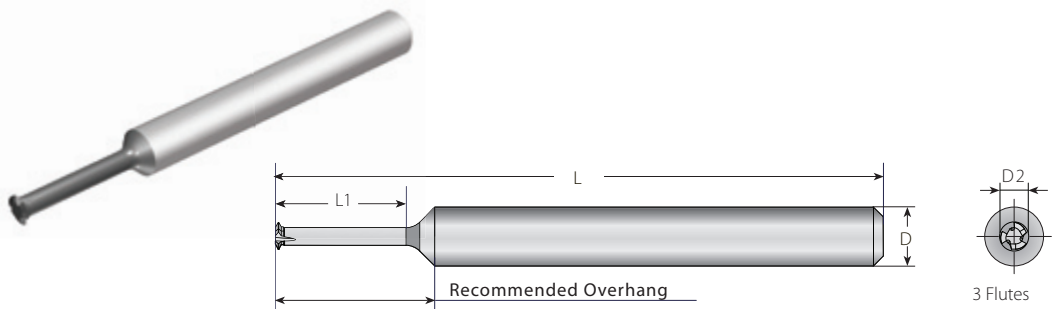
American UN

MilliPro Dental

Internal



Defined by: ANSI B1.1:74
Tolerance class: 2B



MilliPro Dental

Miniature Thread Mills for Dental Implants

3xDo ($L1 \leq 3 \times \text{Thread Diameter}$)

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.
UNF	tpi	Internal	D	D2	L	L1	Z	Zt	mm
0-80	80	D1T03011L046-I80UN TM...	3	1.15	31	4.6	3	1	1.30
1-72	72	D1T03014L065-I72UN T;M...	3	1.45	31	6.5	3	1	1.60

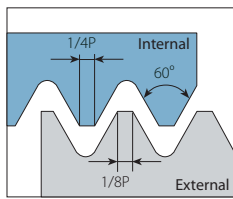
The MilliPro Dental line was specially designed for machining Titanium and Stainless Steel in high RPM.

MilliPro Dental D1T tools are also suitable for general use applications

ISO Metric

MilliPro EL

Internal



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



MilliPro EL

Miniature Thread Mills , Extra Long Tools

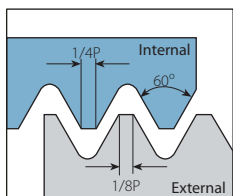
2 x Do (L1 ≤ 2 x Thread Diameter)

Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
M Coarse	M Fine	mm	Internal	D	D2	L	L1	Z	Zt	mm
M2x0.4		0.4	D3T06015L042-I0.4ISO TML...	6	1.55	100	4.2	3	3	1.6
M2.5x0.45		0.45	D3T06019L052-I0.45ISO TML...	6	1.95	100	5.2	3	3	2.05
M3x0.5	M3.5-M16x0.5	0.5	D3T06024L062-I0.5ISO TML...	6	2.40	100	6.2	3	3	2.5

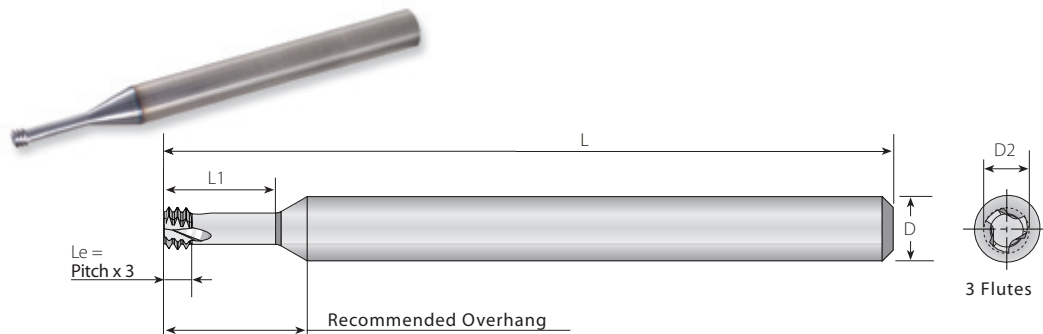
American UN

MilliPro EL

Internal



Defined by: ANSI B1.1:74
Tolerance class: 2B



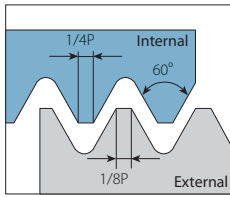
MilliPro EL

Miniature Thread Mills, Extra Long Tools

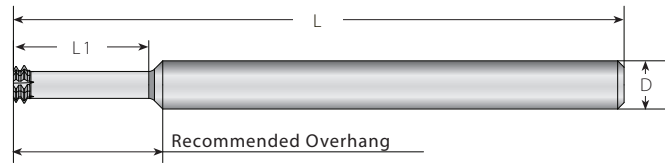
2 x Do (L1 ≤ 2 x Thread Diameter)

Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
UNC	UNF	tpi	Internal	D	D2	L	L1	Z	Zt	mm
No.2-56	No.3-56	56	D3T06016L050-I56UN TML...	6	1.65	100	5.0	3	3	1.8
No.4, No.5-40	No.6-40	40	D3T06021L060-I40UN TML...	6	2.10	100	6.0	3	3	2.3
No.6, No.8-32	No.10-32	32	D3T06025L074-I32UN TML...	6	2.55	100	7.4	3	3	2.8
No.8-32	No.10-32	32	D3T06032L100-I32UN TML...	6	3.20	100	10.0	3	3	3.4

Internal



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



Left Hand Tool

MilliPro HD

Miniature Thread Mills for Hard Materials Up to 62HRc

2 x Do (L1 ≤ 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	L1	Z	Zt	mm
M2x0.4		0.4	S2L06015L042-I0.4ISO TM...	6	1.55	76	4.60	4	2	1.6
M2.2x0.45		0.45	S2L06016L046-I0.45ISO TM...	6	1.65	76	5.05	4	2	1.8
M2.5x0.45		0.45	S2L06019L052-I0.45ISO TM...	6	1.95	76	5.65	4	2	2.05
M3x0.5	M3.5-M16x0.5	0.5	S2L06024L062-I0.5ISO TM...	6	2.40	76	6.75	4	2	2.55
M3.5x0.6		0.6	S2L06027L073-I0.6ISO TM...	6	2.75	76	7.90	4	2	2.95
M4x0.7		0.7	S2L06031L083-I0.7ISO TM...	6	3.15	76	9.05	4	2	3.35
M5x0.8		0.8	S2L06040L104-I0.8ISO TM...	6	4.05	76	11.20	4	2	4.3
M6x1.0	M8-M40x1.0	1.0	S2L06048L125-I1.0ISO TM...	6	4.80	76	13.50	5	2	5.1
M8x1.25		1.25	S2L08065L166-I1.25ISO TM...	8	6.50	80	17.85	5	2	6.8
M10x1.5	M12-M48x1.50	1.50	S2L08079L208-I1.50ISO TM...	8	7.90	80	22.30	6	2	8.6
M12x1.75		1.75	S2L10099L250-I1.75ISO TM...	10	9.90	101	26.75	6	2	10.4

MilliPro HD

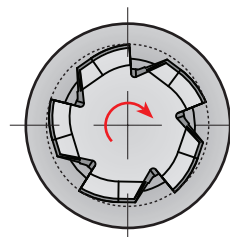
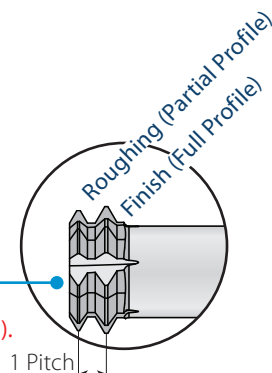
Miniature Thread Mills for Hard Materials Up to 62HRc

3 x Do (L1 ≤ 3 x Thread Diameter)

Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
M Coarse	M Fine	mm	Internal	D	D2	L	L1	Z	Zt	mm
M2x0.4		0.4	S2L06015L062-I0.4ISO TM...	6	1.55	76	6.60	4	2	1.6
M2.5x0.45		0.45	S2L06019L077-I0.45ISO TM...	6	1.95	76	8.15	4	2	2.05
M3x0.5	M3.5-M16x0.5	0.5	S2L06024L092-I0.5ISO TM...	6	2.40	76	9.75	4	2	2.55
M4x0.7		0.7	S2L06031L123-I0.7ISO TM...	6	3.15	76	13.05	4	2	3.35
M5x0.8		0.8	S2L06040L154-I0.8ISO TM...	6	4.05	76	16.20	4	2	4.3
M6x1.0	M8-M40x1.0	1.0	S2L06048L185-I1.0ISO TM...	6	4.80	76	19.50	5	2	5.1
M8x1.25		1.25	S2L08065L246-I1.25ISO TM...	8	6.50	80	25.85	5	2	6.8

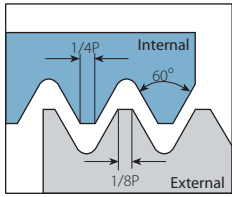
Two cutting teeth: Partial Profile for leading tooth followed by Full Profile for finishing.

The work direction should be from the top to the bottom (Climb Milling).

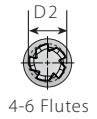
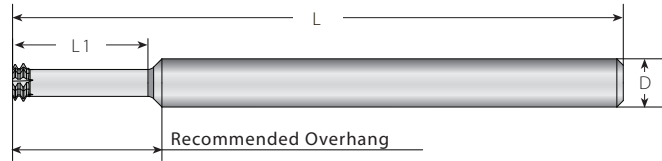


MilliPro HD Tools are left handed. For CNC use M04 code.

Internal



Defined by: ANSI B1.1:74
Tolerance class: 2B



Left Hand Tool

MilliPro HD

Miniature Thread Mills for Hard Materials Up to 62HRC

2 x Do (L1 ≤ 2 x Thread Diameter)

Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
UNC	UNF	tpi	Internal	D	D2	L	L1	Z	Zt	mm
No.2-56	No.3-56	56	S2L06016L050-I56UN TM...	6	1.65	76	5.45	4	2	1.80
No.3-48	No.4-48	48	S2L06019L060-I48UN TM...	6	1.90	76	6.53	4	2	2.10
No.4-40, No.5-40	No.6-40	40	S2L06021L060-I40UN TM...	6	2.10	76	6.64	4	2	2.35
No.5-40	No.6-40	40	S2L06024L072-I40UN TM...	6	2.45	76	7.84	4	2	2.65
	No.8-36	36	S2L06033L087-I36UN TM...	6	3.30	76	9.41	4	2	3.55
No.6-32, No.8-32	No.10-32	32	S2L06025L074-I32UN TM...	6	2.55	76	8.20	4	2	2.85
No.8-32	No.10-32	32	S2L06032L100-I32UN TM...	6	3.20	76	10.79	4	2	3.50
	No.10-32	32	S2L06037L100-I32UN TM...	6	3.70	76	10.80	4	2	4.17
	1/4"x28	28	S2L06052L132-I28UN TM...	6	5.25	76	14.11	5	2	5.55
No.10-24	5/16"x24	24	S2L06035L102-I24UN TM...	6	3.58	76	11.26	4	2	3.90
	5/16"x24	24	S2L08066L165-I24UN TM...	8	6.68	80	17.56	5	2	7.00
1/4"-20	7/16"x20	20	S2L06048L134-I20UN TM...	6	4.88	76	14.67	5	2	5.20
	7/16"x20	20	S2L10095L230-I20UN TM...	10	9.55	101	24.27	6	2	9.90
3/8"x16		16	S2L08076L197-I16UN TM...	8	7.65	80	21.29	5	2	8.00
7/16"x14		14	S2L10090L233-I14UN TM...	10	9.00	101	25.11	6	2	9.50
1/2"x13		13	S2L10099L256-I13UN TM...	10	9.90	101	27.55	6	2	10.90

MilliPro HD

Miniature Thread Mills for Hard Materials Up to 62HRC

3 x Do (L1 ≤ 3 x Thread Diameter)

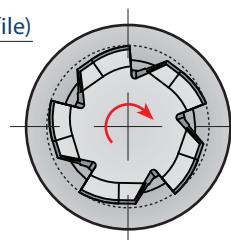
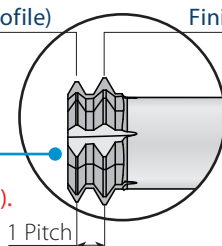
Thread		Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	Bore Dia.*
UNC	UNF	tpi	Internal	D	D2	L	L1	Z	Zt	mm
No.4-40, No.5-40	No.6-40	40	S2L06021L090-I40UN TM...	6	2.10	76	9.64	4	2	2.35
No.5-40	No.6-40	40	S2L06024L100-I40UN TM...	6	2.45	76	10.64	4	2	2.65
No.6-32, No.8-32	No.10-32	32	S2L06025L110-I32UN TM...	6	2.55	76	11.79	4	2	2.85
No.8-32	No.10-32	32	S2L06032L130-I32UN TM...	6	3.20	76	13.79	4	2	3.50
	1/4"x28	28	S2L06052L196-I28UN TM...	6	5.25	76	20.51	5	2	5.55
	5/16"x24	24	S2L08066L245-I24UN TM...	8	6.68	80	25.56	5	2	7.00
1/4"x20	7/16"x20	20	S2L06048L198-I20UN TM...	6	4.88	76	21.07	5	2	5.20
7/16"x14		14	S2L10090L335-I14UN TM...	10	9.00	101	35.31	6	2	9.50

Roughing (Partial Profile)

Finish (Full Profile)

Two cutting teeth: Partial Profile for leading tooth followed by Full Profile for finishing.

The work direction should be from the top to the bottom (Climb Milling).

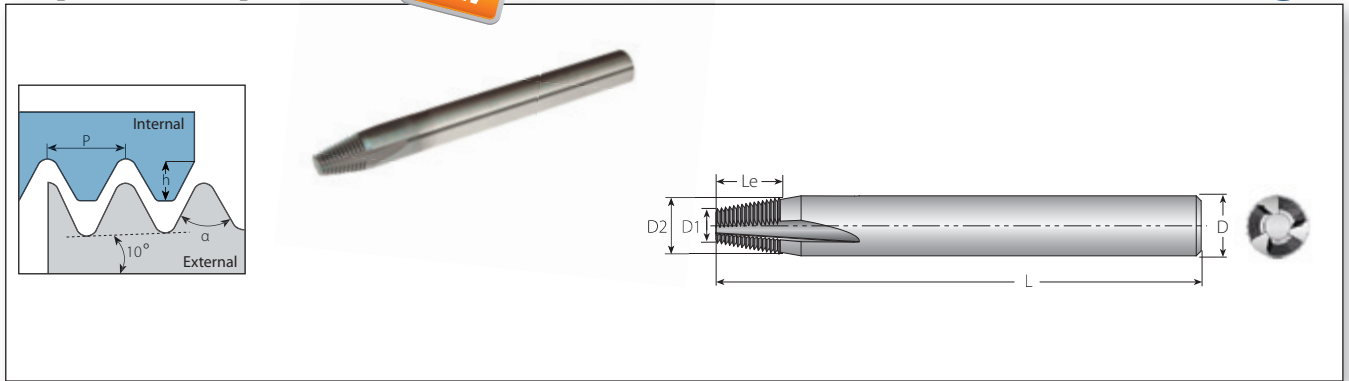


MilliPro HD Tools are left handed. For CNC use M04 code.

Tap 60°, Tap 55°



Straight

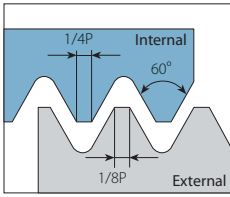


Straight Flutes - Taper

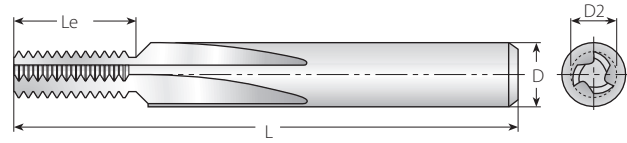
TM Solid Straight Flutes for Bone Plate Applications

Pitch	Ordering Code	Taper	Thread Angle	Profile Height	Dimensions mm					No. of Flutes	Teeth
mm	Internal		α	h	D	D2	D1	L	Le	Z	Zt
0.4	S06059L080-I0.4TAP60 TM...	20°	60°	0.20	6	5.9	3.2	57	8.0	3	20
0.5	S06059L090-I0.5TAP60 TM...	20°	60°	0.25	6	5.9	2.9	57	9.0	3	18
0.3	S03028L039-I0.3TAP55 TM...	20°	55°	0.18	3	2.8	1.5	38	3.9	3	13
0.35	S04039L063-I0.35TAP55 TM...	20°	55°	0.20	4	3.9	1.8	45	6.3	3	18
0.4	S06059L100-I0.4TAP55 TM...	20°	55°	0.29	6	5.9	2.5	57	10.0	3	25
0.5	S06059L090-I0.5TAP55 TM...	20°	55°	0.33	6	5.9	2.9	57	9.0	3	18
0.6	S06059L066-I0.6TAP55 TM...	20°	55°	0.47	6	5.9	3.8	57	6.6	3	11

External / Internal



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



Straight Flutes - External

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	
Min. Dia.	mm	External	D	D2	L	Le	Z	Zt	h mm
M3	0.50	S06059-E0.5ISO TM...	6	5.90	57	15.0	3	30	0.31
M4.5	0.75	S08079-E0.75ISO TM...	8	7.90	63	19.5	3, 5 *	26	0.46
M6	1.00	S10099-E1.0ISO TM...	10	9.90	72	24.0	5	24	0.61
M10	1.50	S12119-E1.5ISO TM...	12	11.90	83	30.0	5	20	0.92
M14	2.00	S12119-E2.0ISO TM...	12	11.90	83	30.0	5	15	1.23
M24	3.00	S16159-E3.0ISO TM...	16	15.90	92	36.0	5	12	1.84
M36	4.00	S16159-E4.0ISO TM...	16	15.90	92	40.0	5	10	2.45
M64	6.00	S20199-E6.0ISO TM...	20	19.90	104	36.0	5	6	3.68

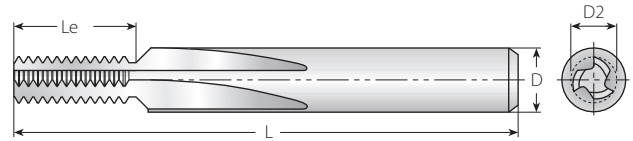
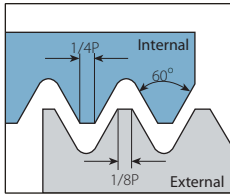
* Available with 3 and 5 flutes. Add 3 or 5 to the ordering code (TM3.../TM5...)

Straight Flutes - Internal

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	
Min. Dia.	mm	Internal	D	D2	L	Le	Z	Zt	h mm
M4.5	0.75	S04030-I0.75ISO TM...	4	3.00	42	6.7	3	9	0.43
M8	0.75	S06059-I0.75ISO TM...	6	5.90	57	15.0	3	20	0.43
M5	0.80	S04036-I0.8ISO TM...	4	3.60	42	8.0	3	10	0.46
M6	1.00	S06040-I1.0ISO TM...	6	4.00	57	9.0	3	9	0.58
M12	1.00	S08079-I1.0ISOTM...	8	7.90	63	20.0	3, 5 *	20	0.58
M8	1.25	S06050-I1.25ISO TM...	6	5.00	57	12.5	3	10	0.72
M10	1.50	S06059-I1.5ISO TM...	6	5.90	57	15.0	3	10	0.87
M14	1.50	S10099-I1.5ISO TM...	10	9.90	72	24.0	5	16	0.87
M18	1.50	S12119-I1.5ISO TM...	12	11.90	83	30.0	5	20	0.87
M12	1.75	S08079-I1.75ISO TM...	8	7.90	63	19.2	3, 5 *	11	1.01
M16	2.00	S10099-I2.0ISO TM...	10	9.90	72	24.0	5	12	1.15
M18	2.00	S12119-I2.0ISO TM...	12	11.90	83	30.0	5	15	1.15
M20	2.50	S12119-I2.5ISO TM...	12	11.90	83	30.0	5	12	1.44
M24	3.00	S16159-I3.0ISO TM...	16	15.90	92	36.0	5	12	1.73
M30	3.50	S16159-I3.5ISO TM...	16	15.90	92	38.5	5	11	2.02
M36	4.00	S16159-I4.0ISO TM...	16	15.90	92	40.0	5	10	2.31
M48	5.00	S20199-I5.0ISO TM...	20	19.90	104	40.0	5	8	2.89
M64	6.00	S20199-I6.0ISO TM...	20	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...)

External / Internal



Defined by: ANSI B1.1:74
Tolerance class: 2A/2B

Straight Flutes - External

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	
Min. Dia.	tpi	External	D	D2	L	Le	Z	Zt	h mm
No.6	32	S06059-E32UN TM...	6	5.90	57	14.3	3	18	0.49
No.12	28	S08079-E28UN TM...	8	7.90	63	19.9	3, 5 *	22	0.56
1/4"	20	S10099-E20UN TM...	10	9.90	72	22.9	5	18	0.78
5/16"	18	S10099-E18UN TM...	10	9.90	72	24.0	5	17	0.87
3/8"	16	S12119-E16UN TM...	12	11.90	83	28.6	5	18	0.97
9/16"	12	S12119-E12UN TM...	12	11.90	83	29.6	5	14	1.30
1"	8	S16159-E8UN TM...	16	15.90	92	38.1	5	12	1.95
1 3/8"	6	S20199-E6UN TM...	20	19.90	104	38.1	5	9	2.60

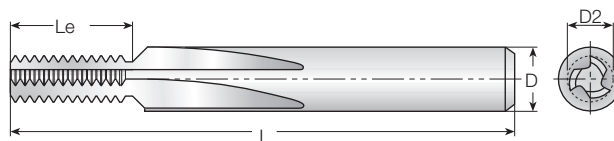
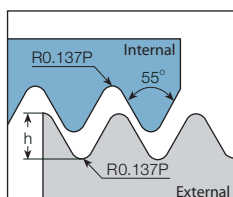
* Available with 3 and 5 flutes. Add 3 or 5 to the ordering code (TM3.../TM5...)

Straight Flutes - Internal

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	
Min. Dia.	tpi	Internal	D	D2	L	Le	Z	Zt	h mm
No.8	36	S04030-I36UN TM...	4	3.00	42	6.3	3	9	0.41
No.8	32	S04030-I32UN TM...	4	3.00	42	6.3	3	8	0.46
5/16"	32	S06059-I32UN TM...	6	5.90	57	14.3	3	18	0.46
No.12	28	S04036-I28UN TM...	4	3.60	42	8.2	3	9	0.52
7/16"	28	S08079-I28UN TM...	8	7.90	63	19.9	3, 5*	22	0.52
No.12	24	S06040-I24UN TM...	6	4.00	57	8.5	3	8	0.61
1/4"	20	S06040-I20UN TM...	6	4.00	57	10.2	3	8	0.73
9/16"	20	S10099-I20UN TM...	10	9.90	72	22.9	5	18	0.73
5/16"	18	S06050-I18UN TM...	6	5.00	57	12.7	3	9	0.81
9/16"	18	S10099-I18UN TM...	10	9.90	72	24.0	5	17	0.81
3/8"	16	S06059-I16UN TM...	6	5.90	57	14.3	3	9	0.92
3/4"	16	S12119-I16UN TM...	12	11.90	83	28.6	5	18	0.92
7/16"	14	S08079-I14UN TM...	8	7.90	63	18.1	3, 5*	10	1.05
1/2"	13	S08079-I13UN TM...	8	7.90	63	19.5	3, 5*	10	1.13
9/16"	12	S10099-I12UN TM...	10	9.90	72	23.3	5	11	1.22
1"	12	S12119-I12UN TM...	12	11.90	83	29.6	5	14	1.22
5/8"	11	S10099-I11UN TM...	10	9.90	72	23.1	5	10	1.33
3/4"	10	S12119-I10UN TM...	12	11.90	83	27.9	5	11	1.47
7/8"	9	S16159-I9UN TM...	16	15.90	92	33.3	5	12	1.63
1"	8	S16159-I8UN TM...	16	15.90	92	38.1	5	12	1.83
1 1/8"	7	S16159-I7UN TM...	16	15.90	92	36.3	5	10	2.09
1 3/8"	6	S20199-I6UN TM...	20	19.90	104	38.1	5	9	2.44
1 3/4"	5	S20199-I5UN TM...	20	19.90	104	40.6	5	8	2.93
2"	4.5	S20199-I4.5UN TM...	20	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...)

External / Internal



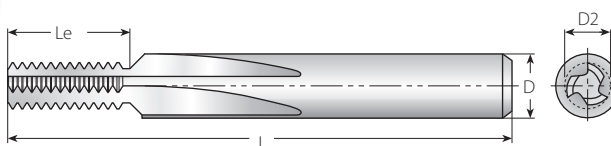
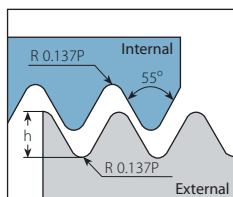
Defined by: B.S.84:1956, DIN 259, ISO228/1:1982
Tolerance class: Medium class A

Straight Flutes

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	
Min. Dia.	tpi	External / Internal	D	D2	L	Le	Z	Zt	h mm
1/4"	20	S06040-EI20BSW TM...	6	4.00	57	10.16	3	8	0.81
5/16"	18	S06050-EI18BSW TM...	6	5.00	57	11.29	3	8	0.90
3/8"	16	S06059-EI16BSW TM...	6	5.90	57	14.29	3	9	1.02
7/16"	14	S08079-EI14BSW TM...	8	7.90	63	18.14	3, 5*	10	1.16
1/2"	12	S08079-EI12BSW TM...	8	7.90	63	19.05	3, 5*	9	1.36
5/8"	11	S10099-EI11BSW TM...	10	9.90	72	23.09	5	10	1.48
3/4"	10	S12119-EI10BSW TM...	12	11.90	83	27.94	5	11	1.63
7/8"	9	S12119-EI9BSW TM...	12	11.90	83	28.22	5	10	1.81
1"	8	S16159-EI8BSW TM...	16	15.90	92	38.10	5	12	2.03
1 1/8"	7	S16159-EI7BSW TM...	16	15.90	92	36.29	5	10	2.32
1 3/8"	6	S16159-EI6BSW TM...	16	15.90	92	38.10	5	9	2.71
1 5/8"	5	S20199-EI5BSW TM...	20	19.90	104	40.64	5	8	3.25
1 7/8"	4.5	S20199-EI4.5BSW TM...	20	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...)

External / Internal



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

Straight Flutes

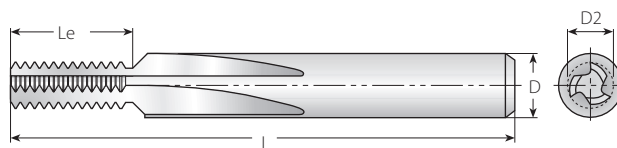
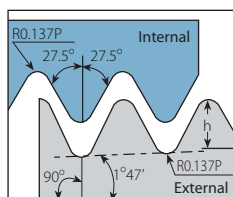
Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	
Min. Dia.	tpi	External / Internal	D	D2	L	Le	Z	Zt	h mm
1/16"	28	S06059-EI28BSP TM...	6	5.90	57	14.51	3	16	0.58
1/4"	19	S08079-EI19BSP TM...	8	7.90	63	18.72	3, 5*	14	0.86
1/2"	14	S12119-EI14BSP TM...	12	11.90	83	29.03	5	16	1.16
1"	11	S16159-EI11BSP TM...	16	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

Straight

External / Internal



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

Straight Flutes

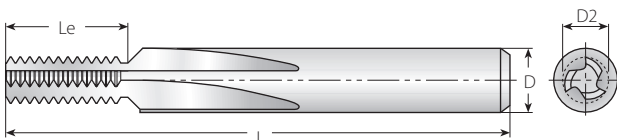
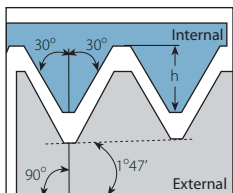
Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	
Min. Dia.	tpi	External / Internal	D	D2	L	Le	Z	Zt	h mm
1/16"	28	S06059-EI28BSPT TM...	6	5.90	57	9.98	3	11	0.58
1/4"	19	S08079-EI19BSPT TM...	8	7.90	63	14.71	3, 5*	11	0.86
1/2"	14	S12119-EI14BSPT TM...	12	11.90	83	19.96	5	11	1.16
1"	11	S16159-EI11BSPT TM...	16	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

Straight

External / Internal



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

Straight Flutes

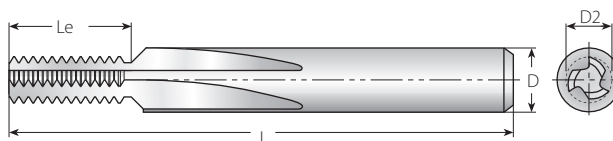
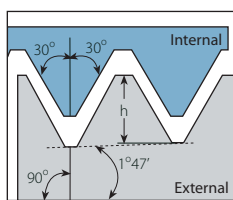
Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	
Min. Dia.	tpi	External / Internal	D	D2	L	Le	Z	Zt	h mm
1/16"	27	S06059-EI27NPT TM...	6	5.90	57	9.41	3	10	0.66
1/4"	18	S08079-EI18NPT TM...	8	7.90	63	14.11	3, 5*	10	1.01
1/2"	14	S12119-EI14NPT TM...	12	11.90	83	19.96	5	11	1.33
1"	11.5	S16159-EI11.5NPT TM...	16	15.90	92	26.51	5	12	1.64
2 1/2"	8	S16159-EI8NPT TM...	16	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

Straight

External / Internal



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

Straight Flutes

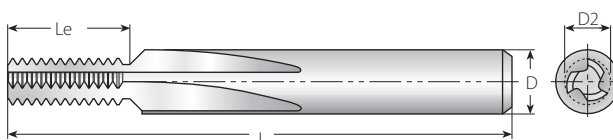
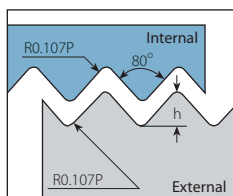
Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	
Min. Dia.	tpi	External / Internal	D	D2	L	Le	Z	Zt	h mm
1/16"	27	S06059-EI27NPTF TM...	6	5.90	57	9.41	3	10	0.64
1/4"	18	S08079-EI18NPTF TM...	8	7.90	63	14.11	3, 5*	10	1.0
1/2"	14	S12119-EI14NPTF TM...	12	11.90	83	19.96	5	11	1.35
1"	11.5	S16159-EI11.5NPTF TM...	16	15.90	92	26.51	5	12	1.63
2 1/2"	8	S16159-EI8NPTF TM...	16	15.90	92	38.10	5	12	2.38

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

Pg

Straight

External / Internal



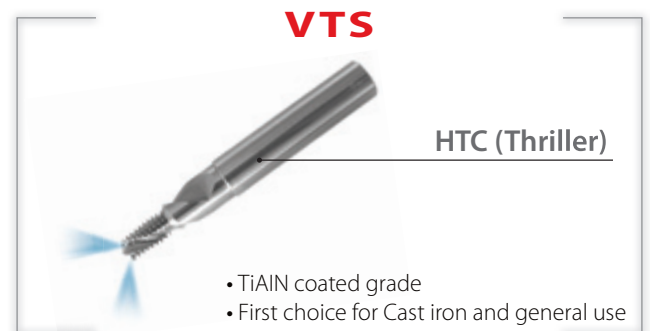
Defined by: DIN 40430
Tolerance class: Standard

Straight Flutes

Thread	Pitch	Ordering Code	Dimensions mm				No. of Flutes	Teeth	
	tpi	External / Internal	D	D2	L	Le	Z	Zt	h mm
Pg7	20	S08079-EI20PG TM...	8	7.90	63	19.05	3, 5*	15	0.61
Pg9, 11, 13.5, 16	18	S10099-EI18PG TM...	10	9.90	72	23.99	5	17	0.67
Pg21, 29, 36, 42, 48	16	S12119-EI16PG TM...	12	11.90	83	28.58	5	18	0.76

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

Grades and Their Applications



TM Gen Software and updated versions can be downloaded from www.vargus.com

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

Material Group	Vardex No.	Material		Hardness Brinell HB	Vc [m/min]			Feed [mm/tooth]				
					Helicool, HCR, HCC, Helical, Straight, Deep Threading		MilliPro	Helical	Straight	Deep Threading	Helicool HCC HCR	MilliPro
					VTH	VTS						
P Steel	1	Unalloyed steel	Low carbon (C=0.1-0.25%)	125	80-250	50-180	60-120	0.03-0.15	0.01-0.1	0.10-0.35	0.025-0.3	0.02-0.16
	2		Medium carbon (C=0.25-0.55%)	150	80-230	50-140	60-120	0.03-0.1	0.01-0.08	0.08-0.30	0.02-0.26	0.02-0.16
	3		High Carbon (C=0.55-0.85%)	170	80-200	50-120	60-90	0.03-0.08	0.01-0.06	0.08-0.30	0.02-0.23	0.02-0.16
	4	Low alloy steel (alloying elements ≤5%)	Non hardened	180	60-180	60-170	60-90	0.03-0.1	0.03-0.07	0.08-0.30	0.02-0.22	0.015-0.16
	5		Hardened	275	60-170	60-160	50-80	0.03-0.07	0.03-0.07	0.08-0.30	0.01-0.15	0.015-0.07
	6		Hardened	350	60-160	60-150	50-80	0.01-0.03	0.005-0.01	0.05-0.15	0.01-0.1	0.015-0.03
	7	High alloy steel (alloying elements >5%)	Annealed	200	40-100	40-90	50-80	0.03-0.05	0.01-0.03	0.10-0.24	0.01-0.13	0.015-0.09
	8		Hardened	325	30-80	30-70	50-80	0.01-0.03	0.005-0.01	0.05-0.15	0.01-0.12	0.015-0.03
	9	Cast steel	Low alloy (alloying elements <5%)	200	80-250	70-200	70-90	0.03-0.1	0.01-0.03	0.08-0.30	0.01-0.15	0.015-0.16
	10		High alloy (alloying elements >5%)	225	60-170	60-150	60-80	0.01-0.03	0.005-0.01	0.05-0.15	0.01-0.1	0.015-0.03
M Stainless Steel	11	Stainless steel Ferritic	Non hardened	200	60-150	50-140	60-90	0.04-0.1	0.01-0.05	0.11-0.35	0.01-0.13	0.015-0.16
	12		Hardened	330	60-120	50-110	50-80	0.01-0.05	0.005-0.01	0.05-0.24	0.01-0.12	0.015-0.03
	13	Stainless steel Austenitic	Austenitic	180	60-140	60-130	60-90	0.04-0.1	0.007-0.02	0.11-0.35	0.01-0.12	0.015-0.16
	14		Super Austenitic	200	60-130	50-120	50-80	0.04-0.1	0.007-0.02	0.11-0.35	0.01-0.1	0.015-0.16
	15	Stainless steel Cast Ferritic	Non hardened	200	60-160	50-150	60-90	0.04-0.1	0.01-0.03	0.11-0.35	0.01-0.15	0.015-0.16
	16		Hardened	330	60-110	50-100	50-80	0.03-0.05	0.005-0.01	0.10-0.24	0.01-0.1	0.015-0.03
	17	Stainless steel Cast austenitic	Austenitic	200	60-150	50-140	60-90	0.04-0.1	0.01-0.03	0.11-0.35	0.01-0.12	0.015-0.16
	18		Hardened	330	60-100	50-90	50-80	0.03-0.05	0.005-0.01	0.10-0.24	0.01-0.1	0.015-0.03
K Cast Iron	28	Malleable Cast iron	Ferritic (short chips)	130	60-70	60-150	50-80	0.01-0.03	0.007-0.02	0.05-0.15	0.01-0.15	0.015-0.03
	29		Pearlitic (long chips)	230	60-150	80-100	60-90	0.03-0.05	0.005-0.01	0.10-0.24	0.01-0.12	0.02-0.12
	30	Grey cast iron	Low tensile strength	180	70-160	50-140	70-100	0.025-0.1	0.007-0.02	0.09-0.25	0.01-0.13	0.02-0.16
	31		High tensile strength	260	40-120	40-110	60-90	0.03-0.05	0.005-0.01	0.10-0.24	0.01-0.12	0.02-0.12
	32	Nodular SG iron	Ferritic	160	40-110	40-100	70-100	0.05-0.1	0.007-0.02	0.09-0.25	0.01-0.13	0.02-0.16
	33		Pearlitic	260	40-100	40-90	60-90	0.03-0.05	0.005-0.01	0.10-0.24	0.01-0.12	0.02-0.12
	34	Aluminium alloys Wrought	Non aging	60	200-300	150-250	60-250	0.1-0.25	0.05-0.15	0.12-0.40	0.04-0.4	0.025-0.15
N(K) Non-Ferrous Metals	35	Aluminium alloys	Aged	100	150-250	100-220	60-150	0.1-0.2	0.03-0.1	0.10-0.32	0.03-0.36	0.025-0.16
	36		Cast	75	100-200	80-150	60-250	0.1-0.2	0.05-0.15	0.10-0.32	0.03-0.36	0.025-0.16
	37		Cast & aged	90	120-220	90-160	60-150	0.1-0.15	0.03-0.1	0.10-0.30	0.1-0.3	0.015-0.16
	38	Aluminium alloys	Cast Si 13-22%	130	200-300	150-250	250	0.1-0.2	0.05-0.15	0.10-0.32	0.03-0.36	0.03-0.15
	39	Copper and copper alloys	Brass	90	200-300	150-250	60-250	0.1-0.25	0.05-0.15	0.12-0.40	0.04-0.43	0.025-0.16
	40		Bronze and non leaded copper	100	150-250	100-220	60-150	0.1-0.2	0.03-0.1	0.10-0.32	0.03-0.36	0.03-0.15
	19	High temperature alloys	Annealed (Iron based)	200	30-60	30-50	60	0.04-0.1	0.007-0.02	0.11-0.35	0.007-0.09	0.015-0.16
	20		Aged (Iron based)	280	20-50	20-40	50	0.01-0.03	0.005-0.01	0.05-0.15	0.006-0.07	0.015-0.03
S(M) Heat Resistant Material	21		Annealed (Nickel or Cobalt based)	250	15-35	15-30	35	0.01-0.03	0.005-0.01	0.05-0.15	0.005-0.06	0.015-0.03
	22		Aged (Nickel or Cobalt based)	350	15-30	15-25	30	0.01-0.03	0.005-0.01	0.05-0.15	0.005-0.06	0.015-0.03
	23	Titanium alloys	Pure 99.5 Ti	400Rm	40-80	30-70	30-50	0.03-0.05	0.007-0.02	0.10-0.24	0.006-0.07	0.015-0.07
	24		α+β alloys	1050Rm	20-50	20-45	25-35	0.03-0.05	0.007-0.02	0.10-0.24	0.006-0.07	0.015-0.07
H(K) Hardened Material	25	Extra hard steel	Hardened & tempered	45-50HRC	15-45	15-35	45	0.005-0.01	0.003-0.006	0.025-0.06	0.004-0.04	-
	26			51-55HRC	15-40	15-30	30	0.005-0.01	0.003-0.006	0.025-0.06	0.004-0.04	-

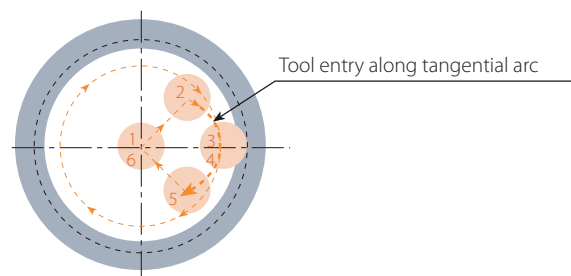
* Recommendation:

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]



MilliPro HD

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

Material Group	Vardex No.	Material		Hardness Brinell HB	Vc [m/min]	Feed f [mm/tooth] by Cutting Dia.=D2				
					VTH	1.5-2.5	2.5-5	5-7	7-9	9-11
P Steel	6	Low alloy steel (alloying elements≤5%)	Hardened	350	25-160	0.04	0.05	0.06	0.07	0.08
	8	High alloy steel (alloying elements>5%)	Hardened	325	25-180					
M Stainless Steel	12	Stainless steel Ferritic	Hardened	330	25-120	0.04	0.05	0.06	0.07	0.08
	16	Stainless steel Cast Ferritic	Hardened	330	25-110					
	18	Stainless steel Cast Austenitic	Hardened	330	25-100					
K Cast Iron	28	Malleable cast iron	Ferritic (short chips)	130	25-160	0.05	0.06	0.07	0.08	0.1
	29		Pearlitic (long chips)	230	25-150	0.04	0.05	0.06	0.07	0.08
	30	Grey cast iron	Low tensile strength	180	25-130	0.05	0.06	0.07	0.08	0.1
	31		High tensile strength	260	25-100	0.04	0.05	0.06	0.07	0.08
	32	Nodular SG iron	Ferritic	160	25-125	0.04	0.05	0.06	0.07	0.09
	33		Pearlitic	260	25-90	0.03	0.04	0.05	0.06	0.07
S(M) Heat Resistant Material	21	High temperature alloys	Annealed (Nickel or Cobalt based)	250	15-35	0.03	0.04	0.05	0.06	0.07
	22		Aged (Nickel or Cobalt based)	350	15-30					
	23	Titanium alloys	Pure 99.5 Ti	400Rm	25-70					
	24		α+β alloys	1050Rm	25-50					
H(K) Hardened Material	25	Extra hard steel	Hardened & tempered	45-50HRC	25-70	0.04	0.05	0.06	0.07	0.08
	26			51-55HRC	25-60	0.03	0.04	0.05	0.06	0.07
	27			56-62HRC	25-50	0.02	0.03	0.04	0.05	0.06

HTC Recommended Grades, Cutting Speed and Feed

Material Group	Material		Hardness Brinell HB	Strength (N-mm ²)	Vc[m/min]		fb[mm/rev]		fz[mm/tooth]	
					VTN	VTS	≤6mm	≤12mm	≤6mm	≤12mm
K Cast Iron	Cast Iron	Grey cast iron	≤150	≤500	50-80	80-120	0.10-0.15	0.15-0.22	0.02-0.05	0.05-0.10
		Grey cast iron, heat treated	150-300	500-1000	50-80	80-120	0.10-0.15	0.15-0.22	0.02-0.05	0.05-0.10
		Spher. graph. Cast Iron	≤200	≤700	50-80	80-120	0.10-0.15	0.15-0.22	0.02-0.05	0.05-0.10
	Copper	Short Chips, Brass, Bronze, Red Brass	≤200	≤700	100-300	—	0.10-0.30	0.06-0.10	0.03-0.06	0.06-0.10
N(K) Non-Ferrous Metals	Aluminium/Magnesium	Aluminium, Magnesium non-alloy	≤100	≤350	100-400	100-400	0.10-0.25	0.25-0.30	0.03-0.06	0.06-0.10
		Aluminium, Wrought Alloy, Breaking Strain (A5) < 14%	≤180	≤600	100-400	100-400	0.10-0.25	0.25-0.30	0.03-0.06	0.06-0.10
		Aluminium, Wrought Alloy, Breaking Strain (A5) ≥ 14%	≤180	≤600	100-400	100-400	0.03-0.06	0.06-0.12	0.03-0.06	0.06-0.10
		Aluminium, Cast Alloy, Si<10%	≤180	≤600	100-300	100-400	0.10-0.25	0.25-0.30	0.03-0.06	0.06-0.10
		Aluminium, Cast Alloy, Si≥10%	≤180	≤600	—	100-300	0.10-0.25	0.25-0.30	0.03-0.06	0.06-0.10
K	Plastic	Thermo Plastics	—	—	60-120	60-120	0.10-0.25	0.25-0.30	0.03-0.06	0.06-0.10
		Thermosetting Plastic	—	—	60-100	60-100	0.10-0.25	0.25-0.30	0.03-0.06	0.06-0.10
		Fibre Reinforced Plastic	—	—	40-60	60-80	0.10-0.15	0.15-0.22	0.02-0.05	0.05-0.10

Vc - Cutting Speed [m/min]

fb (Drilling) - Feed per Revolution [mm/rev]

fz (Threading) - Feed per Tooth [mm/tooth]