

SOLID CARBIDE TIALN THREAD MILLS






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Europa Tool 8TH EDITION



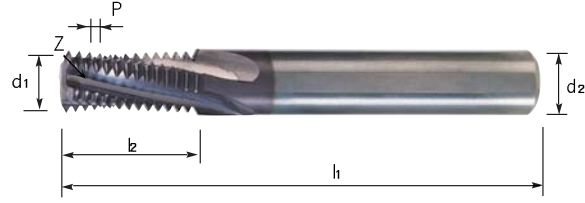
SOLID CARBIDE TIALN THREAD MILLS

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FOR ISO METRIC INTERNAL THREAD - DIN 13

MG DIN 374HA TIALN COATED 60°

Series No. 180323



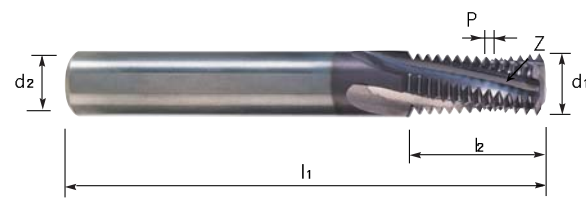
MATERIAL : SOLID CARBIDE
 SHANK : DIN6535 HA
 SPRIAL ANGLE :15 DEG
 THREAD LENGTH : 2XD

NOMINAL DIA. (D)	PITCH (P)	CUTTER DIA. d1	O/ALL LENGTH l1	THREAD LENGTH l2	SHK DIA. d2	NO.OF FLUTES (Z)	EUROPA ORDER CODE
M6	1.0	4.50	57	13	6	3	1803230600
M8	1.25	6.00	65	17.5	6	3	1803230800
M10	1.5	7.50	72	21	8	4	1803231000
M12	1.75	9.50	80	26.25	10	4	1803231200
M14	2.0	10.00	83	30	10	4	1803231400
M16	2.0	12.00	92	34	12	4	1803231600

FOR UNC INTERNAL THREAD - ANSI B 1.1

MG DIN 374HA TIALN COATED 60°

Series No. 182323



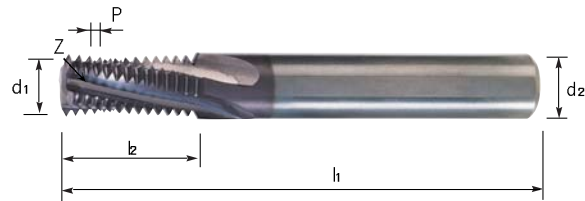
MATERIAL : SOLID CARBIDE
 SHANK : DIN6535 HA
 SPRIAL ANGLE :15 DEG
 THREAD LENGTH : 2XD

NOMINAL DIA. (D)	PITCH (P)	CUTTER DIA. d1	O/ALL LENGTH l1	THREAD LENGTH l2	SHK DIA. d2	NO.OF FLUTES (Z)	EUROPA ORDER CODE
1/4	20	4.50	57	14	6	3	1823230160
5/16	18	5.80	65	16.9	6	3	1823230200
3/8	16	7.00	72	20.6	8	4	1823230240
7/16	14	8.00	72	23.6	8	4	1823230280
1/2	13	9.50	80	27.4	10	4	1823230320
9/16	12	10.00	83	31.8	10	4	1823230360
5/8	11	12.00	92	34.6	12	4	1823230400
3/4	10	14.00	104	40.6	14	5	1823230480
7/8	9	15.90	100	39.51	16	4	1823230560
1"	8	19.20	120	38.1	20	4	1823230640
1.1/8	7	19.90	120	43.54	20	4	1823230720

FOR ISO METRIC FINE INTERNAL THREAD - DIN 13

MG DIN 374HA TIALN COATED 60°

Series No. 181323



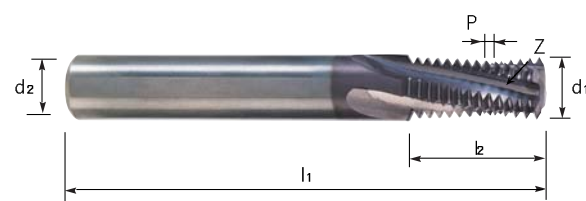
MATERIAL : SOLID CARBIDE
 SHANK : DIN6535 HA
 SPRIAL ANGLE :15 DEG
 THREAD LENGTH : 1.5XD

NOMINAL DIA. (D)	PITCH (P)	CUTTER DIA. d1	O/ALL LENGTH l1	THREAD LENGTH l2	SHK DIA. d2	NO.OF FLUTES (Z)	EUROPA ORDER CODE
M8	1.0	6.00	57	13	6	3	1813230800
M8	0.75	6.00	57	12.75	6	3	1813230801
M10	1.0	8.00	63	16	8	4	1813231000
M12	1.5	9.50	72	19.5	10	4	1813231200
M12	1.25	9.50	72	18.75	10	4	1813231201
M12	1.00	9.50	72	19	10	4	1813231202
M14	1.50	10.00	83	22.5	10	4	1813231400
M14	1.00	10.00	83	22	10	4	1813231401
M16	1.50	12.00	83	25.5	12	4	1813231600
M16	1.00	12.00	83	25	12	4	1813231601
M18	1.50	14.00	92	28.5	14	5	1813231800
M18	1.00	14.00	92	28	14	5	1813231801
M20	1.50	16.00	92	31.5	16	5	1813232000
M20	1.00	16.00	92	31	16	5	1813232001

FOR UNF INTERNAL THREAD - ANSI B 1.1

MG DIN 374HA TIALN COATED 60°

Series No. 183323

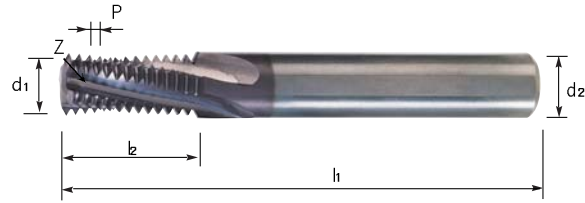


NOMINAL DIA. (D)	PITCH (P)	CUTTER DIA. d1	O/ALL LENGTH l1	THREAD LENGTH l2	SHK DIA. d2	NO.OF FLUTES (Z)	EUROPA ORDER CODE
1/4	28	5.00	57	13.6	6	3	1833230160
5/16	24	6.00	65	16.9	6	3	1833230200
3/8	24	8.00	72	20.1	8	4	1833230240
7/16	20	8.00	72	24.1	8	4	1833230280
1/2	20	10.00	80	26.7	10	4	1833230320
9/16	18	12.00	83	29.6	12	4	1833230360
5/8	18	12.00	92	33.9	12	4	1833230400
3/4	16	14.00	104	39.7	14	5	1833230480
7/8	14	15.90	100	39.91	16	4	1833230560
1-1.1/2	12	15.90	100	38.1	16	4	1833230640

FOR NPT INTERNAL THREAD

MG DIN 374HA TIALN COATED 60°

Series No. 183423



MATERIAL : SOLID CARBIDE
 SHANK : DIN6535 HA
 SPRIAL ANGLE :15 DEG
 THREAD LENGTH : 2XD

NOMINAL DIA. (D)	PITCH (P)	CUTTER DIA. d1	O/ALL LENGTH l1	THREAD LENGTH l2	SHK DIA. d2	NO.OF FLUTES (Z)	EUROPA ORDER CODE
7.6	27	1/8	60	9.41	8	4	1834230080
9.9	18	1/4-3/8	70	14.1	10	4	1834230160
15.9	14	1/2-3/4	100	19.96	16	4	1834230320
15.9	11.5	1-2.1/2	100	26.5	16	4	1834230640

ADVANTAGE OF THREAD MILLING

- Higher cutting speeds and feeds than tapping
- Reduce the horse power required(vs tapping)
- Make smaller, easier to remove, chips than taps
- Controlling chips load thanks to the cutting parameters.
- One tool for blind holes and through holes.
- In some cases, only one tool will machine both internal and external threads.
- Pitch diameter can be controlled by CNC offset.
- One tool for right and left hand threads
- Full thread to the bottom of a blind
- No reversal of the spindle required
- Consistent, predictable production even in exotic materials.
- Exact pitch, no widening of the thread
- Cut multiple lead threads with only program change
- Outstanding workpiece surface thanks to variation of the cutting parameters.

PROGRAMMING OF THREAD MILLING

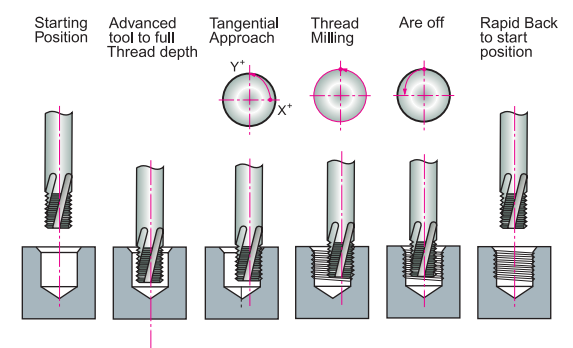
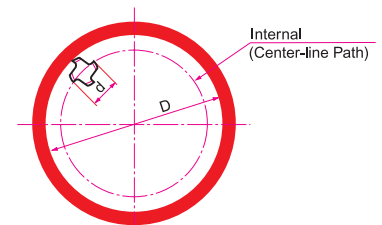
Program Data

G Codes for Thread Milling

G00 Fast Feed Linear	G41 Cutter Radius Compensation Left	M08 Coolant On
G01 Linear Movement	G42 Cutter Radius Compensation Right	X Horizontal Co-ordinate
G02 Circular/Helical Interpolation C.W.	G43 Tool Length Compensation Plus	Y Horizontal Co-ordinate
G03 Circular/Helical Interpolation A.C.W.	G49 Tool Length Compensation Cancel	Z Vertical Co-ordinate
G17 X, Y Plane(Vertical Machining)	G90 Absolute Command	I X Co-ordinate to Center of Arc Travel
G18 Z, X Plane(Horizontal Machining)	G91 Incremental Command	J Y Co-ordinate to Center of Arc Travel
G19 Y, Z Plane(Using 90° Head)	M03 Clockwise Rotation of Spindle	S Spindle Speed R.P.M.
G40 Cutter Radius Compensation Cancel	M05 Spindle stop	F Feed mm/min

CNC Internal Thread Milling

G90	G00	X...	Y...	Z5	S...
G91	G00	Z...(A3+2)			
		Y...(A5)			
G41	G01	X...(A6)	F...		
G03	X...(A6)	Y...(A6)	Z...(A4)	I...(A6)	J0
G03	X0	Y0	Y...(A2)	I0	J...(A1)
G03	X...(A6)	Y...(A6)	Z...(A4)	I0	J...(A6)
G00	G40	X...(A6)	Y...(A5)		
G90	Z5				



<Explanation of Parameters>

- A1** : 1/2 Nominal Thread Diameter 1/2D
- A2** : Thread Pitch
- A3** : Thread Depth
- A4** : 1/4P(for climb milling and right-hand thread)
- A5** : Beginning of Contour in Y 0.5xP
- A6** : Arc Off (A1 - A5)

RECOMMENDED CUTTING SPEED

Material	Cutting Speed (m/min)	Feed per Tooth(fz)	
		Cutter Diameter ≤ φ8.0	Cutter Diameter > φ8.0
Low Carbon Steel Medium Carbon Steel	80-250	0.03 0.07	0.05 0.15
High Carbon Steel	50-250	0.03 0.07	0.05 0.15
Alloy Steel	50-180	0.02 0.05	0.05 0.12
Heat Treated Steel	50-180	0.02 0.05	0.05 0.12
Stainless Steel	80-200	0.03 0.07	0.05 0.12
Cast Iron	50-180	0.03 0.07	0.05 0.15
Chrome-Nickel Alloys Titanium Alloys	20-180	0.02 0.05	0.04 0.10
Non Ferrous Material	100-400	0.04 0.10	0.08 0.25

TO CALCULATE SPEED & FEED RATES

Calculate R.P.M of cutter

$$N = \frac{1000 \times V}{d \times \pi}$$

Calculate Feed per Revolution

$$F_1 = fz \times Z \times N$$

Finally Calculate Feed at Tool Center Line

$$F_2 = \frac{F_1 \times (D-d)}{D}$$

- N:** R.P.M
V: Recommended Cutting Speed
d: Diameter of Cutter
F₁: Feed at Cutting Edge
fz: Recommended Feed per Tooth
Z: Number of Teeth
F₂: Feed at Center Line of Cutting
F₁: Feed at Cutting Edge
D: Major Diameter of Component

