

Programming Instruction

CNC Thread Milling With Circular Thread Mills Type EP



Dimension: _____

Nominal thread diameter D: _____ Inch

Thread pitch P: _____ Inch

Drilled hole diameter D₁: _____ Inch

Company: _____

Workpiece: _____

Material: _____

Date: _____

Tool: _____

Cutting material: _____

Article no.: _____

Coating: _____

Flutes z: _____

Cutter diameter d₁: _____ Inch (measured on the cutting part)

Cutter radius compensation k¹⁾: _____ Inch 0.05 x P

Cutter radius to be programmed 2): _____ Inch (1/2 d₁ – k)

Thread depth b: _____ Inch

Cutting speed v_c: _____ SFM (n = $\frac{v_c \times 12}{d_1 \times \pi}$) S = _____

Feed (milling) f_z: _____ Inch (v_f = f_z x z x n) F = _____ (contour)

Please note: For milling feed related to the path of the tool axis: $v_f = \frac{v_f \text{ contour} \times (D - d_1)}{D}$. F = _____ (axis)
Then, in block N40 1/2 F (tool axis) and in block N60 F (tool axis).

Required parameters:

E1 = 1/2 nominal thread diameter	1/2 D = _____ Inch
E2 = thread pitch 3)	P = _____ Inch
E3 = thread depth	b = _____ Inch
E4 = 1/4 P (for climb milling and right-hand threads)	1/4 P = _____ Inch
E5 = beginning of contour in y	0.5 x P = _____ Inch
E6 = run-in loop	(E1 – E5) = _____ Inch
E7 = number of repetitions	(E3 / E2) = _____ Inch

CNC internal thread milling (climb milling, on the contour, incremental, acc. DIN 66025)

N 10	G 54	G 90	G 00	X	Y	Z 2	S	T 01 2)	M 03
N 20	G 91	G 00	Z- (E3+2)						
N 30	Y (E5)								
N 40	G 41	G 01		X (E6)		F (milling, contour)			
N 50	G 03	X- (E6)		Y (E6)		Z (E4)	I- (E6)	J 0	
N 60	G 03	X 0		Y 0		Z (E2)	I 0	J- (E1)	
..... ⁴⁾									
N 70	G 00	G 40	Y- (E6+E5)						
N 80	G 90	Z 2							

1) The cutter radius measured over the tooth crests of the threaded part must be reduced by the amount of the cutter radius compensation. This is necessary to achieve a depth of cut to the middle of the 6H/ISO2 nut tolerance. Please note, however, that this also depends on the radial deflection of the tool (tensile strength of the material, projecting length of the tool).
 2) The cutter radius to be programmed is normally included in the tool memory.
 3) For right-hand threads + (screwing out); for left-hand threads – (screwing in).
 5) **Block N 60 must be repeated with the number of threads (E7).**