

Programming Instruction

CNC Thread Milling With Thread Mills Type GSF



Dimension: _____ Company: _____
 Nominal thread diameter D: _____ Inch Workpiece: _____
 Thread pitch P: _____ Inch Material: _____
 Drilled hole diameter D₁: _____ Inch Date: _____

Tool: _____ Cutting material: _____
 Article no.: _____ Coating: _____
 Flutes z: _____

Cutter diameter d₁: _____ Inch (measured on the cutting part)
 Cutter radius compensation k¹⁾: _____ Inch $\frac{\text{thread diameter}}{100} =$ _____
 Cutter radius to be programmed 2): _____ Inch (1/2 d₁ - k)
 Countersinking depth I_s: _____ Inch
 Cutting speed v_c: _____ SFM ($n = \frac{v_c \times 12}{d_1 \times \pi}$) S = _____
 Feed (countersinking) f_s: _____ Inch/rev. (v_s = f_s x n) F = _____ (countersinking)
 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 N50 1/2 F (tool axis) and in block N70 F (tool axis).

Required parameters:

E1 = 1/2 nominal thread diameter	1/2 D	=	_____	Inch
E2 = thread pitch 3)	P	=	_____	Inch
E3 = countersinking depth	I _s	=	_____	Inch
E4 = 1/3 P (for climb milling and right-hand threads)	1/3 P	=	_____	Inch
E41 = 21/3 P (for climb milling and left-hand threads)	21/3 P	=	_____	Inch
E5 = 1/2 drilled hole diameter	1/2 D ₁	=	_____	Inch
E6 = run-in loop	1/2 D + 1/2 D ₁	=	_____	Inch

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

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N 10      G 54      G 90      G 00      X .....   Y .....   Z 2      S .....   T 01 2)   M 03
N 20      G 91      Z- ..... (E3)
N 30      G 01      Z- 2      F ..... (countersinking)
N 40      Z ..... (E4) or (E41) for left-hand threads
N 50      G 41      Y- ..... (E5)  F ..... (milling, contour)
N 60      G 03      X 0      Y ..... (E6)   Z ..... (1/2 E2)  I 0      J ..... (1/2 E6)
N 70      G 03      X 0      Y 0          Z ..... (E2)    I 0      J- ..... (E1)
N 80      G 03      X 0      Y- ..... (E6)  Z ..... (1/2 E2)  I 0      J- ..... (1/2 E6)
N 90      G 00      G 40      X 0          Y ..... (E5)
N100     G 90      Z 2
    
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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).