PROGRAMMING OF THREAD MILLING

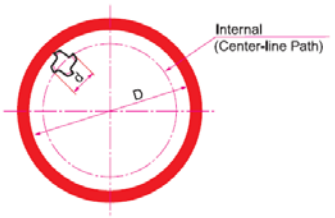
Program Data

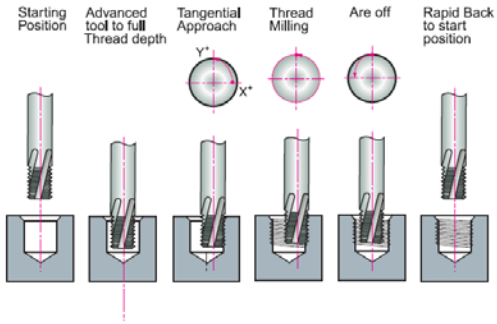
G Codes for Thread Milling

G00	Fast Feed Linear
G01	Linear Movement
G02	Circular/Helical Interpolation C.W.
G03	Circular/Helical Interpolation A.C.W.
G17	X, Y Plane(Vertical Machining)
G18	Z, X Plane(Horizontal Machining)
G19	Y, Z Plane(Using 90° Head)
G40	Cutter Radius Compensation Cancel
G41	Cutter Radius Compensation Left
G42	Cutter Radius Compensation Right
G43	Tool Length Compensation Plus
G49	Tool Length Compensation Cancel
G90	Absolute Command
G91	Incremental Command
M03	Clockwise Rotation of Spindle
M05	Spindle stop
M08	Coolant On
X	Horizontal Co-ordinate
Y	Horizontal Co-ordinate
Z	Vertical Co-ordinate
I	X Co-ordinate to Center of Arc Travel
J	Y Co-ordinate to Center of Arc Travel
S	Spindle Speed R.P.M.
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 Lron	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
F_1: Feed at Cutting Edge
fz: Recommended Feed per Tooth
Z: Number of Teeth
F_2: Feed at Center Line of Cutting
F_1: Feed at Cutting Edge
D: Major Diameter of Component