Turning:

Rapid Traverse - G00
N_ G00 X_ Z_

Linear Interpolation (Feed Traverse) - G01
N_ G01 X_ Z_ F_

F - Feed rate in mm/rev.

Circular Interpolation (Feed Traverse) - G02/G03
N_ G02/G03 X_ Z_ R_F_

R - Radius in mm.
F - Feed rate in mm/rev.

Canned Cycle - Finishing Cycle - G70
G70 P_ Q_ F_

P - Start line of program.
Q - End line of program.
F - Feed rate in mm/rev.

Canned Cycle - Rough Turning Cycle - G71
G71 U_ R_

U - Depth of cut in mm.
R - Retraction amount in mm.

G71 P_ Q_ U_ W_ F_

P - Start line of program.
Q - End line of program.
U - Stock left (tolerance) in x-axis for finishing operation in mm.
W - Stock left (tolerance) in z-axis for finishing operation in mm.
F - Feed rate in mm/rev.

Canned Cycle - Rough Facing Cycle - G72
G72 W_ R_

W - Depth of cut in mm.
R - Retraction amount in mm.

G72 P_ Q_ U_ W_ F_

P - Start line of program.
Q - End line of program.
U - Stock left (tolerance) in x-axis for finishing operation in mm.
W - Stock left (tolerance) in z-axis for finishing operation in mm.
F - Feed rate in mm/rev.

Grooving, Threading, Drilling:

Rapid Traverse - G00
N_ G00 X_ Z_

Linear Interpolation (Feed Traverse) - G01
N_ G01 X_ Z_ F_

F - Feed rate in mm/rev.

Circular Interpolation (Feed Traverse) - G02/G03
N_ G02/G03 X_ Z_ R_F_

R - Radius in mm.
F - Feed rate in mm/rev.

Canned Cycle - Finishing Cycle - G70
G70 P_ Q_ F_

P - Start line of program.
Q - End line of program.
F - Feed rate in mm/rev.

Canned Cycle - Rough Turning Cycle - G71
G71 U_ R_

U - Depth of cut in mm.
R - Retraction amount in mm.

G71 P_ Q_ U_ W_ F_

P - Start line of program.
Q - End line of program.
U - Stock left (tolerance) in x-axis for finishing operation in mm.
W - Stock left (tolerance) in z-axis for finishing operation in mm.
F - Feed rate in mm/rev.

Canned Cycle - Axial Drilling Cycle - G74
G74 R_

R - Retraction amount in mm along z-axis.

G74 Z_ Q_ F_

Z - Overall drill depth in mm along z-axis.
Q - Pecking depth in microns.
F - Feed rate in mm/rev.

Canned Cycle - Radial Grooving Cycle - G75

G75 R_

R - Retraction amount in mm along x-axis.

G75 X_ Z_ P_ Q_ R_ F_

X - Distance from the center line to the groove surface in mm.
Z - Final depth of z-coordinate value of groove in mm.
P - Peck increment on x-axis in microns.
Q - Depth of cut in microns along z-axis.
R - Relief amount of the tool at the cutting bottom.
F - Feed rate in mm/rev.

Canned Cycle - Threading Cycle – G76

G76 P[(m) (r) (a)] Q(d min) R(d)

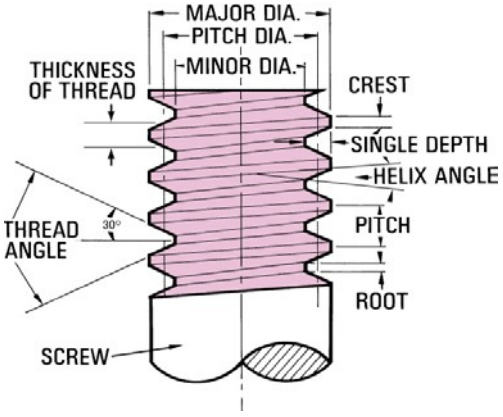
m - Number of idle passes.
r - Chamfering angle.
a - Angle of tool tip.
d min - Minimum thread depth in microns.
d - Finishing allowance in mm.

G76 X_ Z_ P_ Q_ R_ F_

X - Distance from the center line to the root diameter in mm.
Z - Length of thread in mm.
P - Height of thread in microns.
Q - Depth of cut in first cut microns.
R - Taper value (if the thread profile is having taper, then input minus value, otherwise input R0).
F - Pitch or lead of thread in mm.

THREADING CALCULATIONS:

- Height of thread, $H = 0.61343 \times pitch$
- Core diameter, $d = D - (2 \times H)$
  where, $d =$ core diameter of thread in mm.
  $D =$ major diameter of thread in mm.
  $H =$ height of thread in mm.
- Lead, $L = pitch \times no.of\ starts$
  where, for single start thread, $no.of\ starts = 1$.
  for double start thread, $no.of\ starts = 2$.
  for treble start thread, $no.of\ starts = 3$.



Milling and Mirroring:

Rapid Traverse - G00
N_ G00 X_ Y_

Linear Interpolation (Feed Traverse) - G01
N_ G01 X_ Y_ F_

F - Feed rate in mm/rev.

Circular Interpolation (Feed Traverse) - G02/G03
N_ G02/G03 X_ Y_ R_F_

R - Radius in mm.
F - Feed rate in mm/rev.

Mirroring Operation

M98P0014000 - M98 subroutine call, address O4000
M70 - Mirror about x axis on
M80 - Mirror about x axis off
M71 - Mirror about y axis on
M81 - Mirror about y axis off
M99 - Return from subroutine/end subroutine