ME 213L Manufacturing processes Lab

Vishal Neeli

February 23, 2021

1 Machine codes

Syntax	Function
G54	workpiece coordinate system
G90	absolute coordinate system
G91	moving coordinate system(attached to tool)
G00 Xx_f Zz_f	The tool goes from current position to x_f and z_f
G01 Xx_f Zz_f Ff	tool moves from current position to x_f and z_f at feed rate f.
G02 Xx_f Zz_f Rr Ff	Circular interpolation - the tool moves to x_f, z_f along the arc of radius r at feed rate f in clockwise sense
G03 Xx_f Zz_f Rr Ff	Circular interpolation - the tool moves to x_f, z_f along the arc of radius r at feed rate f in anticlockwise sense
G32 Xx_{minor} Zz_f Fp	Threading - Execute this command from $X = x_{minor}$ and Z outside the work piece. Here, z_f is the min diameter point of the last thread
G73 Uu Ww Rr	Canned cycle - u and z are the radial distance and z distance of the cut, r is the number of cyles
G73 Pp Qq Uu Ww	Canned cylce - p and q are the start and end line numbers of the path. u and w are the radial and z direction finishing allowances.
G28 U00 V00	Moves to home
M03 Ss	Spindle rotates clockwise at s rpm
M04 Ss	Spindle rotates anticlockwise at s rpm
M05	Spindle stops
M06 Tt	Tool changes to tool t
M30	Program ends

2 Tools to use

- Facing: It is the reduction of length of workpiece (along z) - Use tool 5

- Turning: Reducing the diameter - use tool 5

- Grooving: Make a cavity into the workpiece - use tool 98

- Circular interpolation: use tool 5

- Threading: use tool 103

- Drilling: use tool 174

- Boring: use tool 145

- Internal grooving: use tool 168

- Internal threading: use tool 171