

This week's laboratory assignment involves continued use of the CAM software (Mastercam X4) to create a part program for the cylindrical part shown in Figure 1, post-processing the program and running it on the Emco-Meier CNC turning machine.

1. Using the Mastercam X manual (if necessary), create a part program for the part shown in Figure 1. The workpiece is Aluminum 7075-T6 and a diameter of 1 in. and a length of 3 in. Use the following process parameters:
 - Machine Type:
 - MPLPC120.LMD (EMCO PC120 Lathe)
 - Tool:
 - Roughing:
 - Tool number 2
 - Nose radius: 0.032 inch
 - 80 deg. diamond
 - Finishing:
 - Tool number 5
 - Nose radius: 0.015 inch
 - 55 deg. diamond
 - Neutral offset shank, neg. 3 deg. side cutting (edge angle)
 - Right handed (cut direction: negative)
 - Cutting conditions:
 - Spindle speed: 2000 RPM (CCW)
 - Max. speed: 4000 RPM
 - Feed rate: 10 in./min.
 - Tool change location: x=1, z=1.5
 - Coolant: flood
 - Max. facing depth of cut: 0.030"
 - Max. roughing depth of cut: 0.060"
 - Max. finish depth of cut: 0.010"
2. After the geometry and/or part program is created, you must store it on your network drive space or personal storage media.
3. Post processing will create ISO or EIA codes in an ASCII format for the CNC you specify. Execute the CNC post processing, being sure to disable comment insertion. After the CNC data is processed, you need to save the .NC file onto a floppy disk for transfer to the Emco lathe using a name with the structure: OXXXX (letter O followed by 4 digits—the program number—with no file extension.) If you haven't got any error message, exit from Mastercam X4 and print out the .NC file.
4. Take the part program to room 58, load it onto the lathe (by TA or Mike Sherwood) and perform a simulation. If the program works, make an actual cut. If not, bring the program back and perform debugging.

Write a report describing the overall procedure used in Mastercam X4, changes made in the part program and your observation. Also include in the report the printout from Mastercam X4 drawing and the generated part program.

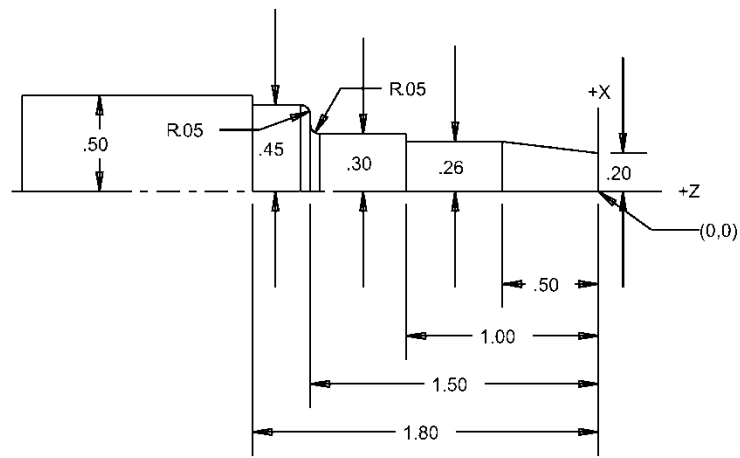


Figure 1: Geometry of the finished turned part.