ME 410 Block Project

Purpose and Plan

Students will develop general knowledge and skills of the manual lathe and mill machines. Students will also become aware of the importance of GDT (Geometric Dimensioning and Tolerancing). This project will teach tool changing, zeroing, facing, drilling, reaming, and slots, as well as the use of parallels, vises, and tooling plates on the manual mill. On the lathe, students will learn tool changing, turning, drilling, grooving, and parting operations.

Using the existing drawing package for the block, you will create a detailed manufacturing plan for the mill and the lathe portions of the project. Using the plan, you will machine the parts from a piece of 2” x 2” x 2” aluminum square stock and a 3.5” x ½” round stock.

Deliverables

The following list details the expectations of deliverables for this project. Complete a single report as a team, including an assessment section completed individually by each team member.

• Picture of finished component(s) as well as photos during manufacturing.
• Detailed manufacturing plan for each material cutting operation using the template found on the course website.
• One page discussion on how machining practices and procedures differed from initial manufacturing plans. Also make suggestions on how to improve the procedure to make the manufacturing process leaner (more efficient, repeatable, and higher quality).
• Marked up drawing package comparing actual dimensions to those called out on the drawings. Clearly indicate places where you are out of tolerance.
• One page discussion of fit, finish, and tolerancing, including commentary on how your parts fit with other group’s parts.
• Project assessment (completed by each team member):
  o Individually: Each member provides two personal strengths and two improvements with regards to the operations performed or lessons learned during this project.
  o Team: List two strengths of your team and two possible improvement encountered during this project.
  o Project: List one strength and one improvement you have found for the block project itself.