Manufacturing Project

Requirements

• Component Requirements
  • One part machined on the mill
  • One other part machined on the lathe
  • Can also use the band saw, belt sander, etc.
  • Can include a 3rd machined component, but no more
  • Variety of hardware from the student shop also available
    • Machine screws & nuts
    • Flat washers, lock washers, etc.
    • Check with Steve for other hardware (eg. O-Rings, Snap Rings)

• Assembly Requirements
  • Must include one interference fit
    • Use reamers in the shop (0.249, 0.3115, 0.374, 0.4365)
    • Goal is an interference of 0.001" (i.e. one-thousandths)
  • If needed, you can also use threads and fasteners for additional assembly requirements

• Complexity:
  • Two additional features required
    • Plate: Squaring sides, chamfering, drilling, threading
    • Round: Facing, turning, chamfering, drilling, threading, creating shoulder, grooves

• Material
  • Aluminum
  • Use available stock
    • Up to 5” of 5” wide plate (0.25” or 0.50” thick)
    • Up to 6” of 0.25”, 0.38” or 0.5” diameter round

• Hand-Drawn Sketch due on Wednesday @5p
  • Illustrate the assembled part as well as basic dimensions of each component
  • Briefly explain how each part will be made (from raw stock to finished part)
  • Use the title block template on the web
Manufacturing Project

Timeline

• Hand Sketches Due ......................... 2/14
• Hand Sketch Feedback ..................... 2/15
• CAD Drawings Due .......................... 2/19
• CAD Drawings Feedback ................. 2/21
• Final CAD Drawings & Time Estimate .... 2/26
• Fabrication

  • Can begin as soon as CAD Drawings are approved and you have scored at least 80% on the General Shop Knowledge Quiz at the Engineering Student Shop WebCT site.
  • Sign up for a 2-hour lathe or mill session. Everyone must be finished by the end of March

Manufacturing Project

Deliverables

• Report
  • Audience: To your boss explaining a potential new product
  • Format: a typical technical report
  • Required Content:
    • Manufacturing processes
    • Final drawings
    • Comparison of drawings to actual prototype including dimensions
    • Time accounting and comparison to prediction
    • Recommendations for next generation prototype

• Prototype
Examples

• CD Holder
• Cup Holder
• IPod Holder