MANU 130 Lathe Project 2 Process Plan

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Rough Stock

1. Select Aluminum rod, $\phi = 1.375$", length = 4.25".

Bandsaw

2. If necessary, cut off 4.25" of material.

Manual Lathe

3. Load into 3-jaw chuck.
4. Face material.
5. Drill through-hole in center with $\frac{1}{2}$" twist drill.
6. Remove from 3-jaw chuck and prepare to turn between centers.
7. Turn outer diameter to final dimension. ($\phi = 1.313" \pm 0.010"$)
8. Transfer to 3-jaw chuck.
9. Face material.
10. Bore inner diameter to final dimension. ($\phi = 0.625" \pm 0.010"$, depth = 0.500")
11. Reverse material in chuck to work opposite face.
12. Face to final length. ($4.000 \pm 0.010"$)
13. Bore inner diameter to final dimension. ($\phi = 0.625 \pm 0.010"$)

Vertical Mill

14. Mount in vise with block.
15. Mill top of part to depth 0.061" with $\frac{5}{8}$" end mill.
16. Flip over in vise to mill opposite surface to depth 0.061".
17. Clamp upright in vise.
18. Find center. Holes are 0.339" on each axis (x and y).
19. Drill hole with #7 twist drill to depth 0.610.
20. Countersink hole. (90°, depth = 0.500" for $\phi = 0.300$")
21. Tap hole. ($\frac{1}{4}$-20 UNC-1B to depth = 0.500", 10 turns.)
22. Repeat as needed for remaining three holes.
23. Deburr as needed.

Table 1: Inspection Report

Dimension	Value(")	Max(")	Min(")	Actual(")	In Tol?
Length	4.000	4.010	3.990		
Inner Diameter 1	0.625	0.635	0.615		
Inner Diameter 2	0.625	0.635	0.615		
Outer Diameter	1.313	1.323	1.303		