MANU 130 Mill Test Process Plan

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Rough Stock

1. Select 2" square Aluminum bar.

Bandsaw

2. Cut bar to length 3.125".

Vertical Mill

3. Set in vise with $1\frac{1}{2}$" parallels.
4. Face top of material with 4-flute, $\frac{3}{4}$" end mill. Spindle speed should be 3000 RPM, feed rate 60 IPM.
5. Face reference sides with endmill.
6. Mill remaining sides to final dimensions. Length is $3.000" \pm 0.011"$. Width is $1.875" \pm 0.009"$.
7. Drill center hole with U twist drill bit. Drill at 2000 RPM. Center hole is centered 1.500" from edge along length, 0.938" from edge along width.
8. Countersink center hole. Use 90° countersink bit to depth 0.066" for final countersink radius $\phi = 0.500"$. Countersink speed should not exceed 400 RPM.
9. Tap center hole 7/16-14 UNC - 1B to depth 1.000". (14 turns)
10. Drill first corner hole (0.375" from edges of reference corner) with $\frac{13}{32}$" twist drill. Drill at 2000 RPM.
11. Counterbore corner hole with $\phi = 0.625"$ counterbore to depth 0.406". Counterbore speed should not exceed 650 RPM.
12. Drill and counterbore remaining corner holes. Corner hole centers are 2.250" apart along axis of length and 1.125" apart along axis of width.

13. Reverse workpiece in vise to prepare bottom surface. Mill bottom to final dimension. ($1.500" \pm 0.007"$)

14. Deburr as needed.

Table 1: Inspection Report

Dimension	Value(")	Max(")	Min(")	Actual(")	In Tol?
Length	3.000	3.011	2.989		
Width	1.875	1.884	1.866		
Height	1.500	1.507	1.493		