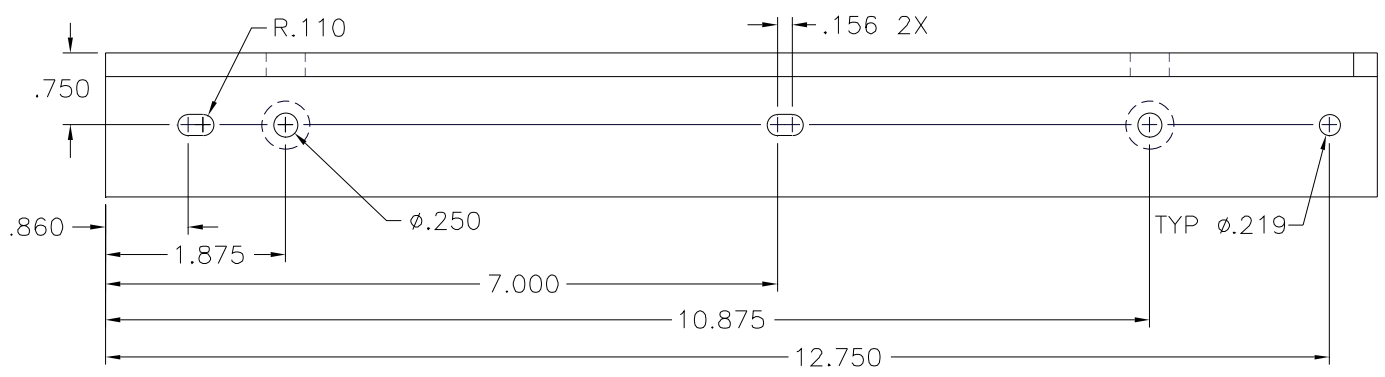
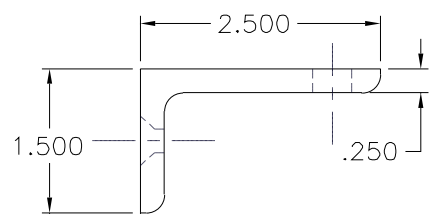
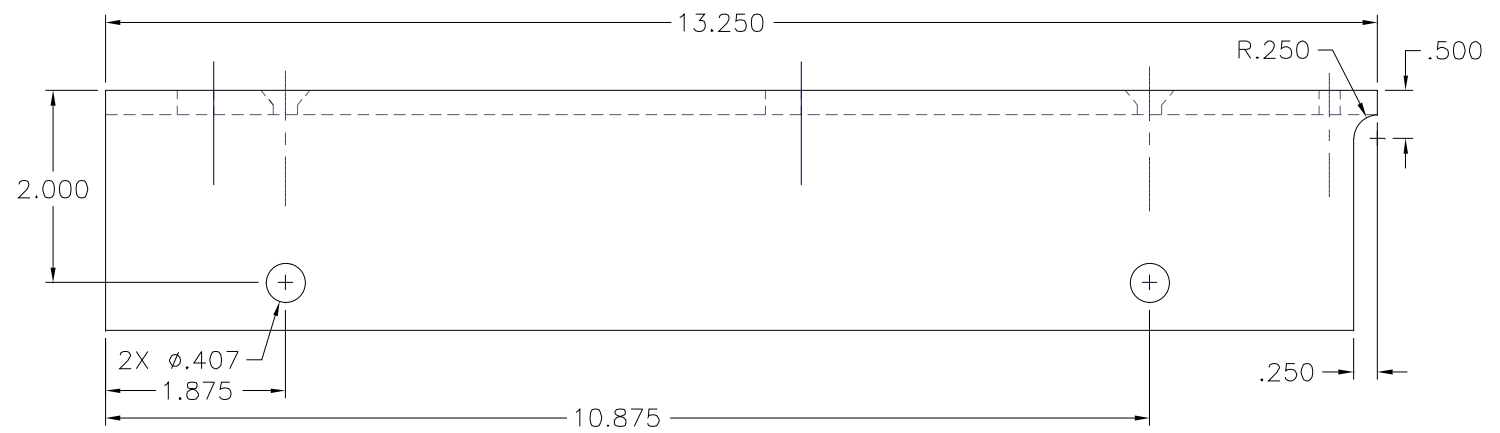


④ GUIDE BAR
DETAIL



① BRACKET
DETAIL

2	.25		STEEL, ZINC PLATED	FLAT WASHER (HEAVY)	E
3	M5.0		STEEL, ZINC PLATED	FLAT WASHER	D
1	.25-20 X .75		STEEL, BLACK FINISH	SOCKET HEAD CAP SCREW	C
3	M5.0 X 0.8 - 16mm		STEEL, BLACK FINISH	SOCKET HEAD CAP SCREW	B
1	M6.0 X 1.0 - 20mm		STEEL, BLACK FINISH	FLAT HEAD SOCKET SCREW	A
REQ'D	SIZE	SPEC	MATERIAL	DESCRIPTION	ITEM

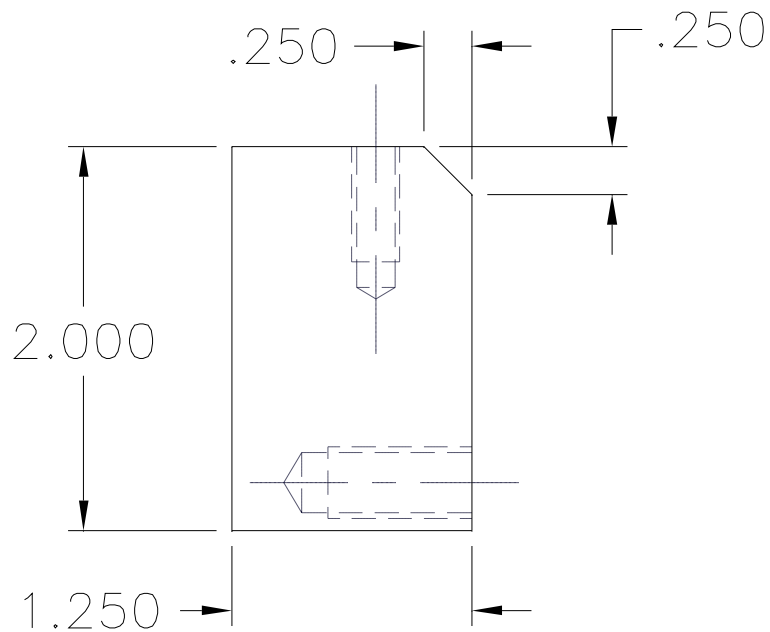
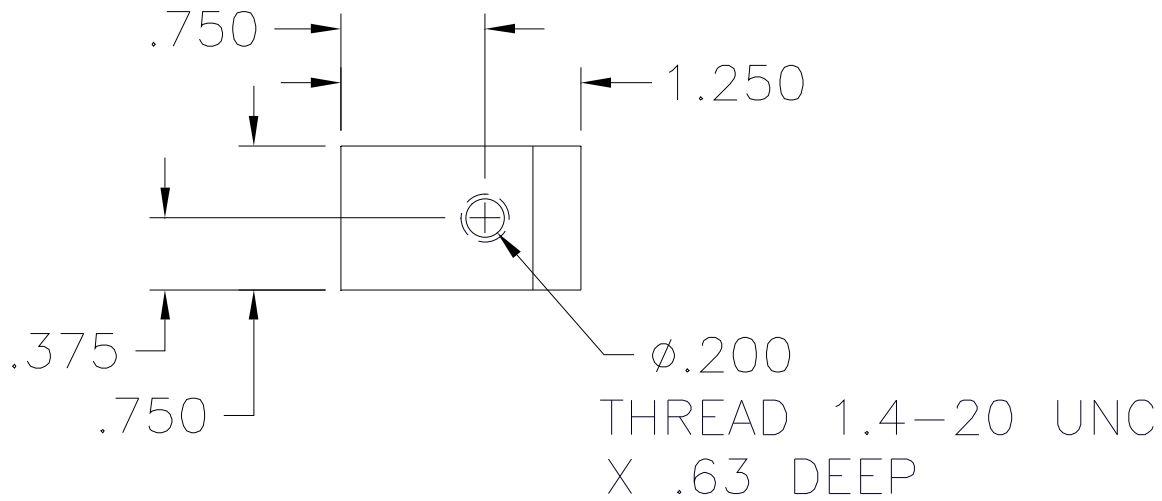
PURCHASED MATERIALS REQUIRED FOR ONE ASSEMBLY

1	M6.0 X 1.0 X 16.0mm		HEADLESS SET SCREW, BLACK FINISH	DOG SCREW (MODIFIED)	7
1	2-5/8" X 6-1/4"	6061-T6	ALUMINUM FLAT BAR	CS TABLE	6
1	ø1" ROUND BAR	ASTM B36	BRASS BAR, FULL HARD	NUT	5
1	2.00 X .25 X 15.0"	6061-T6	ALUMINUM PLATE	GUIDE BAR	4
2	ø.75 X 3.50 ROUND	1018	STEEL ROUND BAR	POST	3
2	.75 PLATE	6061-T6	ALUMINUM PLATE	GUSSET	2
1	2.5 X 1.5 X .25	6061-T6	ALUMINUM ANGLE	BRACKET	1
REQ'D	SIZE	SPEC	MATERIAL	DESCRIPTION	ITEM

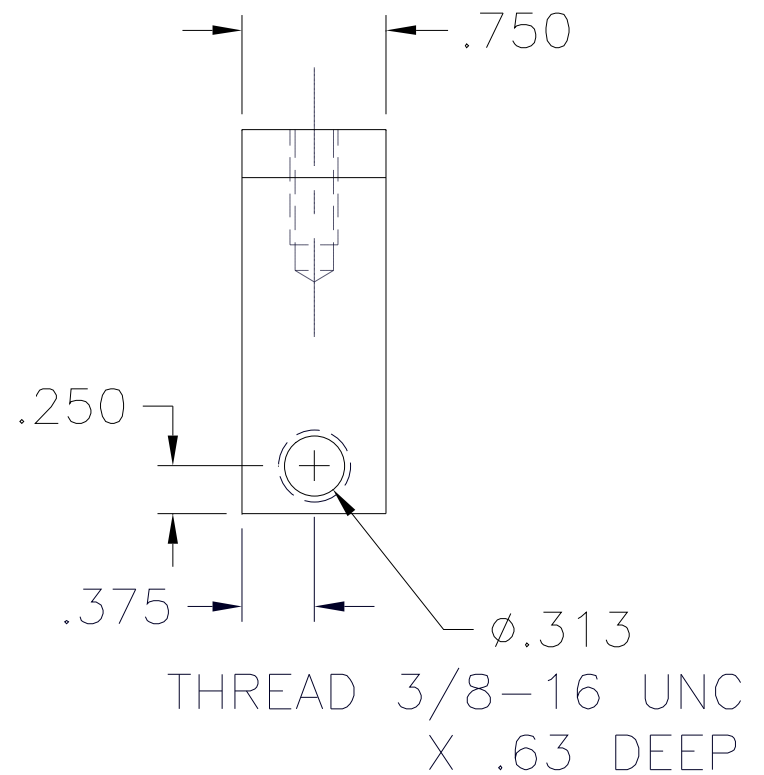
COMPONENTS REQUIRED FOR ONE ASSEMBLY

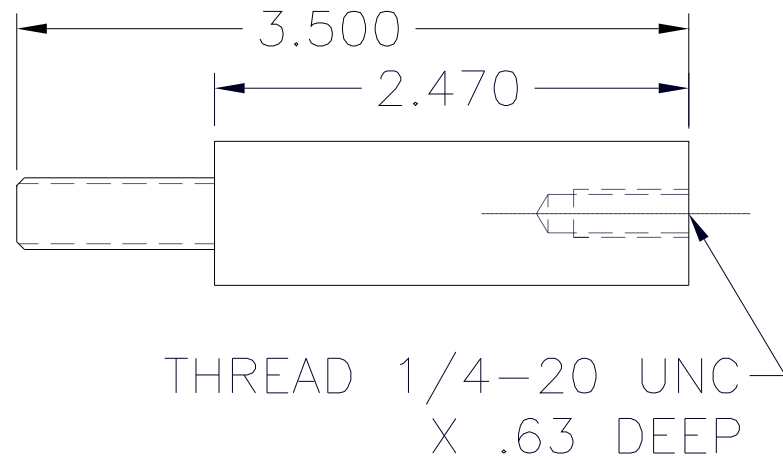
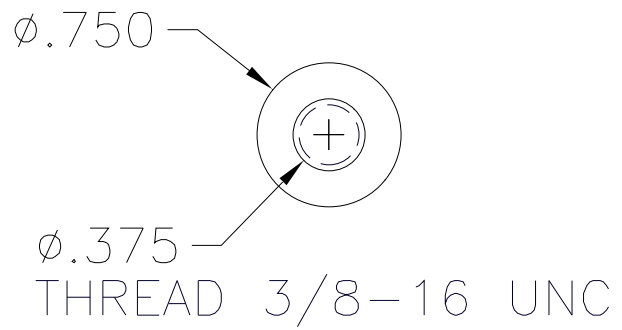
NOTES:

1. DIMENSIONS ARE IN INCHES, UNLESS CALLED OUT OTHERWISE.
2. STANDARD TOLERANCES: .XX ±.01, .XXX ±.005, ANGLES ±.5°, BREAK EDGES .01, FILLET INSIDE CORNERS .01 MAX, SURFACE FINISH RMS32.
3. REMOVE CROSS SLIDE FROM LATHE, REMOVE NUT MOUNTING SCREWS AND REMOVE NUT FROM FEED SCREW.
4. MODIFY CS TABLE OR MAKE A REPLACEMENT OF ALUMINUM, ALSO MAKE A BRASS GIB, DUPLICATE OF ORIGINAL.
MAKE THE DOG SCREW, INSTALL IN THE CS TABLE. SCREW CAN ENGAGE HOLE IN TOP OF CUSTOM NUT FOR NORMAL OPERATIONS (EXPECT SOME EXTRA END-PLAY IN CS. TO USE THE TRACER, POSITION THE DOG SCREW IN FRONT OF THE NUT, TO LIMIT THE INFEED DISTANCE OF THE CUTTER ON EACH PASS OVER THE WORK.
6. SOME FORCE IS REQUIRED TO KEEP THE CUTTER ENGAGED WITH THE WORK. SPRINGS DON'T DO WELL. A PNEUMATIC SPRING WOULD BE PERFECT, MAINTAINING CONSTANT FORCE THROUGHOUT THE CS TRAVEL.
7. MOUNT A DIAL INDICATOR ON THE CS TO SET UP THE ANGLE OF THE GUIDE BAR. AN MT2 TAPER ANGLE IS .049951 INCHES PER INCH OF LENGTH INCLUDED ANGLE. DIVIDE BY 2, MULTIPLY BY 5 FOR .12488 INCHES OF TAPER OVER 5" OF CS TRAVEL. MAKE SHALLOW CUTS TO CREATE THE TAPER. BE SURE CUTTER IS ON THE LATHE CENTERLINE.

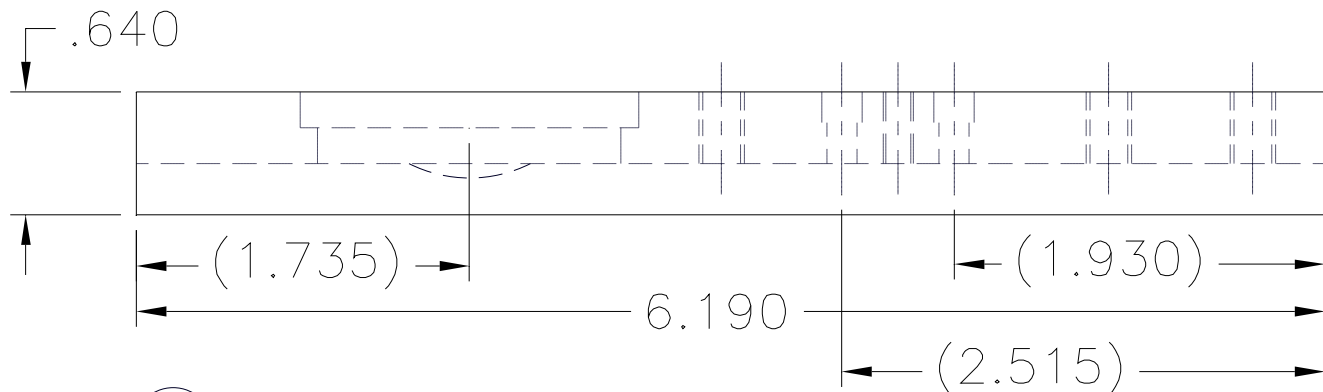
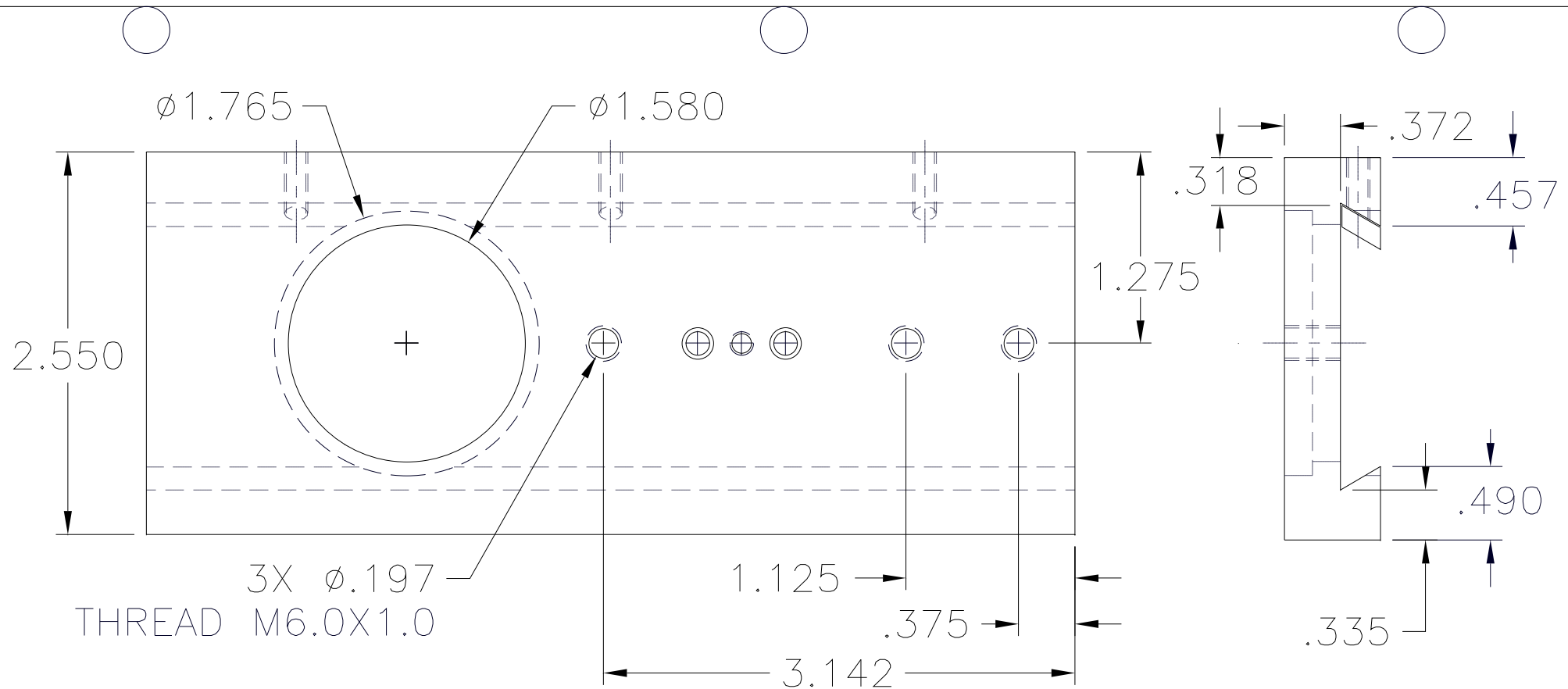


② GUSSET
 DETAIL

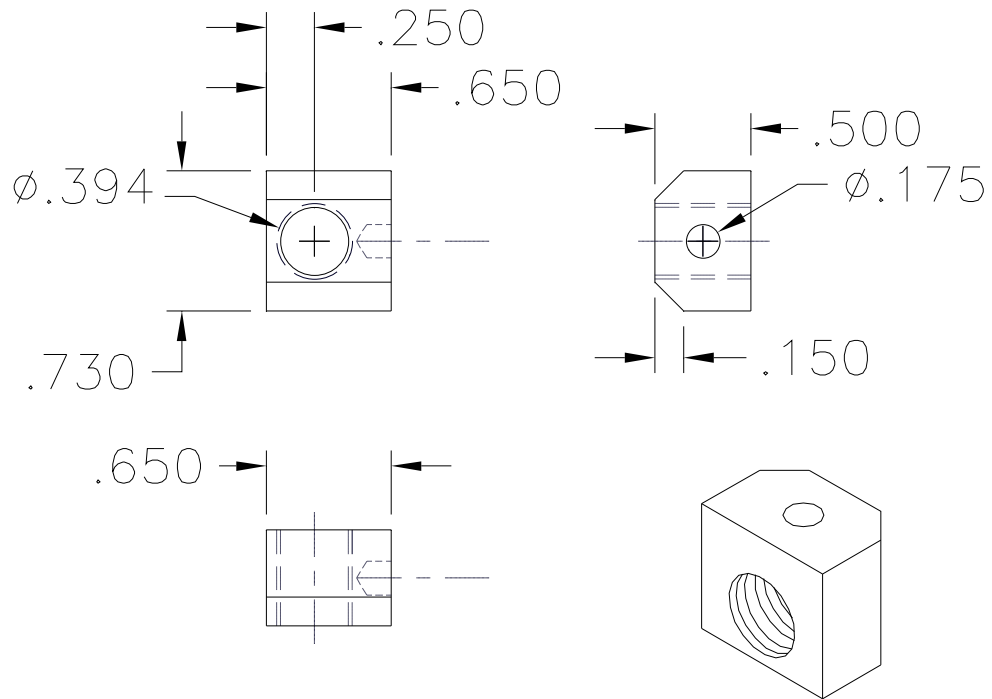




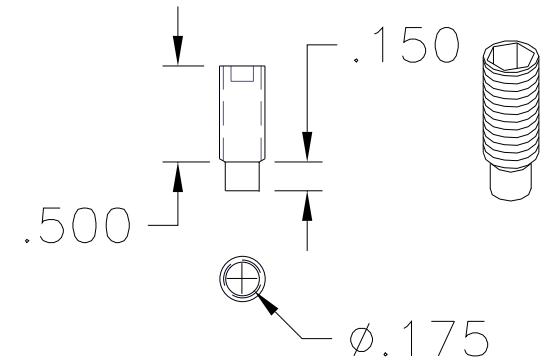
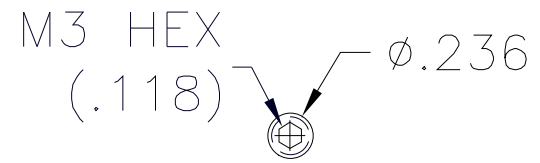
③ POST
 DETAIL



⑥ TABLE, CS
MODIFY OR REPLICATE



⑤ NUT, CS FEED
DETAIL



⑦ DOG SCREW
DETAIL

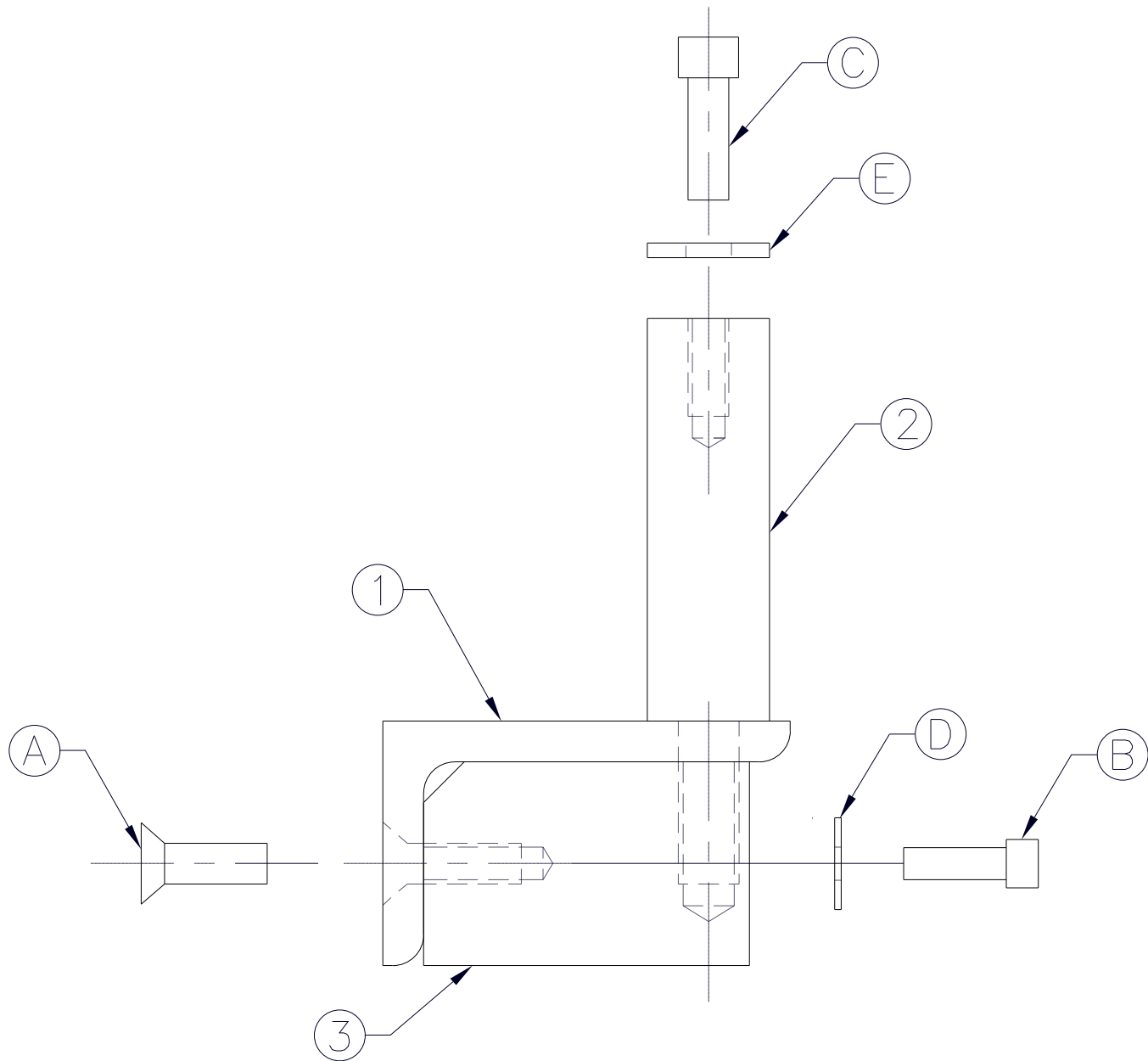


TABLE ASSEMBLY

Guide assembly ready to attach to the Minilathe bedway. The 3 M5 holes in the back of the bed are used. Note that the 2 flat head assembly screws must be at or below flush. The holes were slotted to fit a second lathe. Not all are equal. Guide bar (pc 4) is not yet attached. If rigidity is a concern, add 2 new bolt holes between, and in-line with the existing hole pattern.



Guide assembly installed on the back of the Minilathe Bedway. Guide bar is in place, ready for adjustment to a desired taper angle. See drawing notes.

This 7x10 lathe has several accessories installed, including 15-inch feet made from Unistrut rail, Leadscrew handwheel, 4-inch diameter chuck and back plate, feed lever release that trips the half-nut actuator open, bar on the side of the CS to mount a 1-inch dial indicator, fine feed gear train, and others.



Lathe ready to setup for cutting a Morse Taper on a workpiece. The box under the Headstock protects the motor and jackshaft speed reducer assembly from chips and bumps. The round post on the Compound (aka Topslide) accepts several types of tool holder. Note that the Compound base is reduced in height by .25 inches, and the pivot center is moved forward by .875 inches to be directly under the tool post. Several holes have been drilled/tapped into the CS table, to accept experimental accessories. The dial indicator is in place, the mount appears in another photo.



Frontal view of the 7x10 lathe showing the taper guide installed, as well as the other new features. The apron handwheel has a spacer installed to eliminate the problem of colliding with the controller cover, and the Cross Slide handcrank is also extended about 1 inch for clearance away from the crank of the compound slide



Another view of the lathe general arrangement.

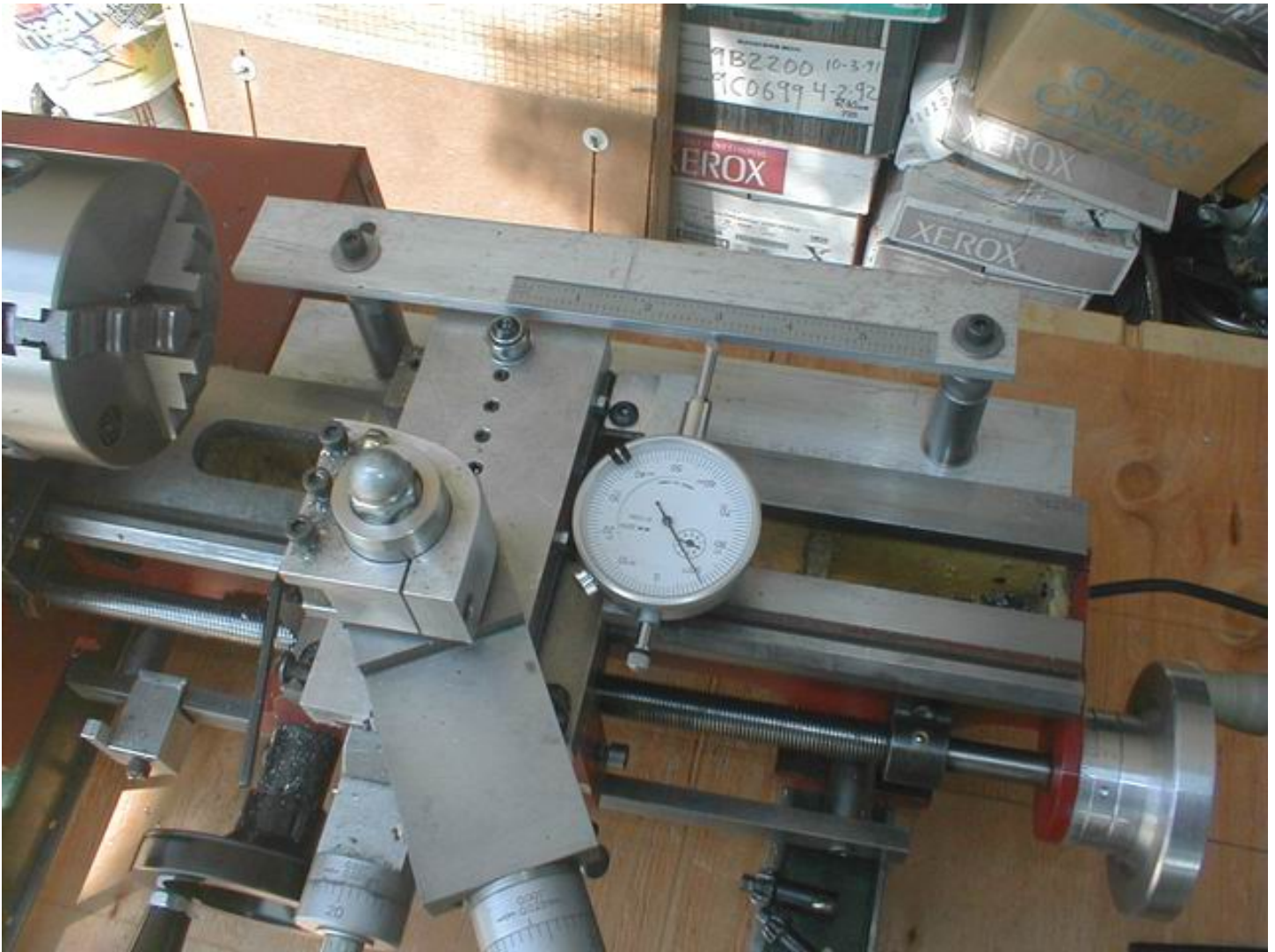
Visible on the left side of the Carriage is the Saddle Clamp in the Design of Vikki Ford. It is actuated by a shortened M5 Hex Wrench instead of a British style "Tommy Arm".



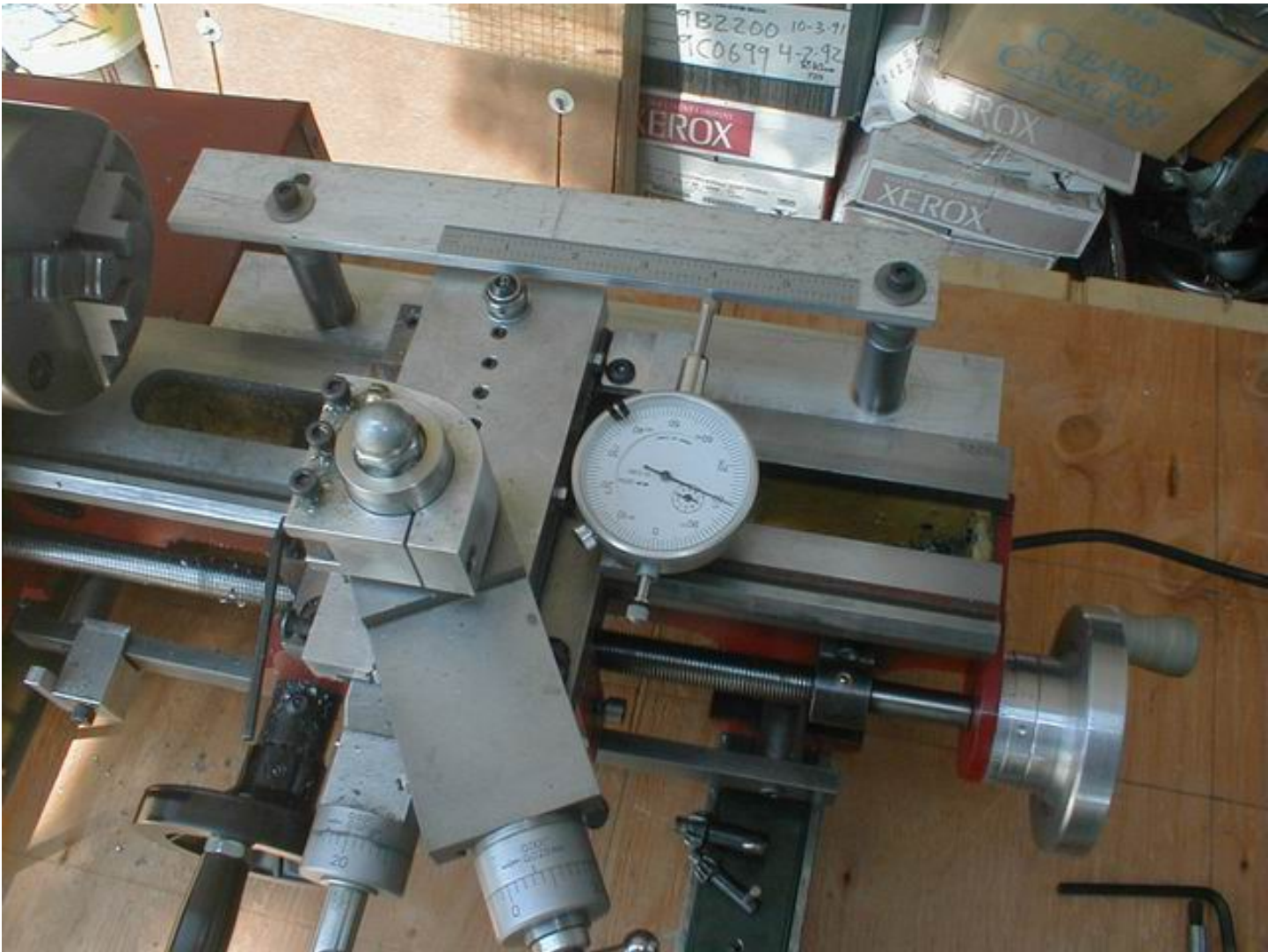
Adjusting the angle of the guide bar on the Taper attachment. Note that the scale is placed with the 3" mark over the tip of the indicator, and that the dial reads 90.

The tab on the side of the indicator mount is seen attached to a hole drilled/ tapped into the top of the Saddle casting. This layout was poorly done, the screw is too close to the gib adjustment screws on the Cross Slide table, but it just clears with a button head screw installed.

A tool holder is installed on the Compound post.



The carriage has been moved such that the indicator is under the 4" mark of the scale. The indicator now shows a displacement of 80, 10 thousands different from the previous view. The guide bar now is ready to cut a taper of .020 inches per inch of travel. On the end of the CS table is a ball bearing that will follow the guide bar in cutting the actual taper. In the lower left corner of the view, the adjustable half-nut tripper can be seen.



more pdf files available on

www.toolsandmods.com

All ideas, procedures, modifications and whatever is described or shown here is to be used at risk of the reader.

Take care and work safely.