

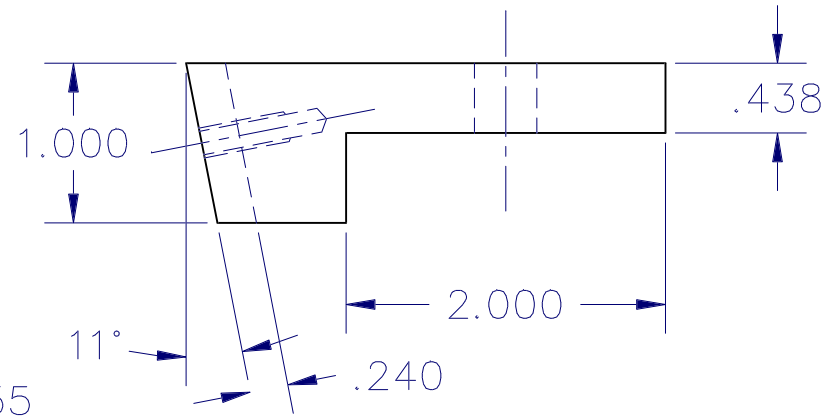
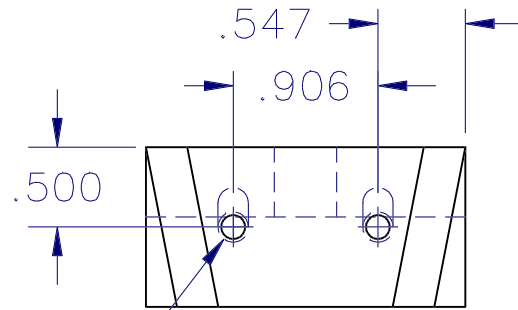
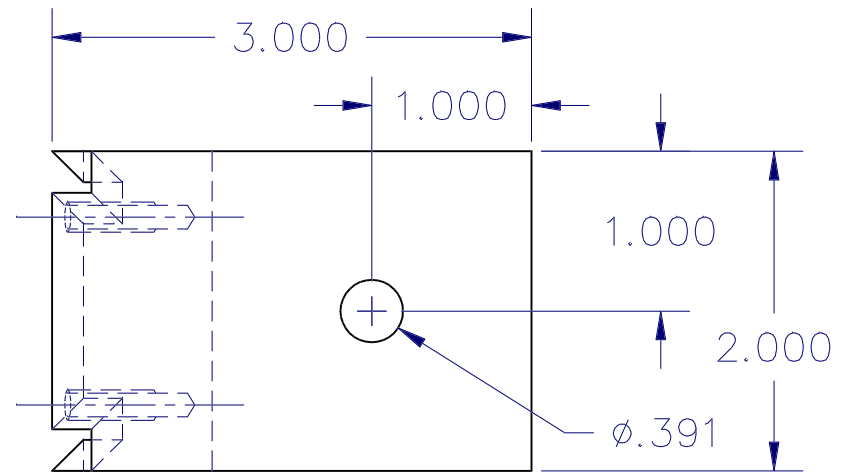
The slot angles and the front angle on my model are 15 degrees.  
 You may desire them to be different.  
 (< 10 degrees may be better for front.slope).  
 End mills were used for most of the operations on forming the block

#### Tool bit grinding:

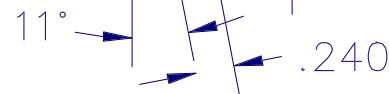
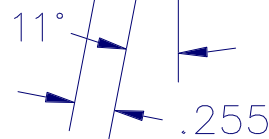
The best way for me is to use a disk or belt sander with the table at 30 degrees and the miter gauge at 30 degrees also. Just swipe the bit across the disk/belt until you get a nice looking face.(shaped like a diamond). That's all there is to it. The tool will work for turning or facing. Reason for two slots: Turning right to left or left to right.

Original Drawing Received from Richard <phrh@worldnet.att.net>  
 from the 7x10 user group, Oct 21, 2000

FREEBY DIAMOND TOOL HOLDER  
 DIMENSIONED VIEWS BY  
 RALPH\_PATTERSONUS  
 24 APRIL 2002



2X DRILL  $\phi.149$   $\downarrow.750$   
 TAP #10-24  $\downarrow.563$   
 PERPENDICULAR TO SURFACE



FREEBY TOOLHOLDER, COMPOUND MOUNT  
 DETAILS

A Diamond Tool Holder for the 7x\*\* Minilathe

Here is a description of the tool holder I made to replace the compound, and be used for roughing work. Turns out, the tool does fine finish cuts too. Also, at the bottom, are 5 photos to show the general arrangement. Included is a drawing of the new arrangement, and of the original Freeby design for installation on the compound slide.

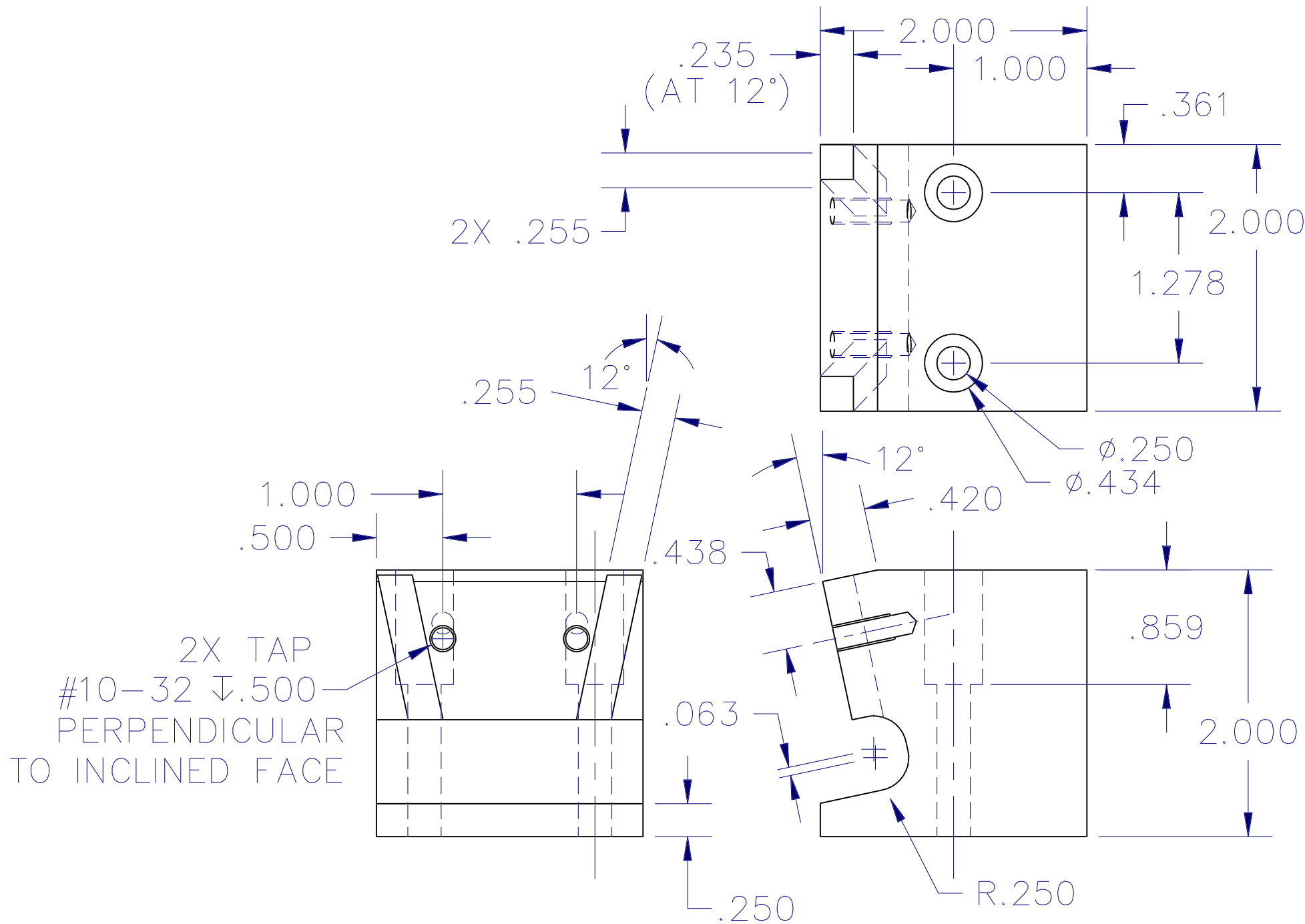
The lathe shown with the tool holder installed, is fitted with a wttool.com Wholesale Tool 4" 3-Jaw chuck, The roll of masking tape is just a convenient object, 3-3/4" diameter, to show the range of work possible with the tool holder. Note that the CS has been modified with the Gordon Scott 1" extension block, and that the handle of the CS has a 1" extender between the dial and the handle. Reduces interference with the compound motions.

The tool holder began as a slice of 2x2x2 Aluminum, 6061-T6 alloy, milled square, then clamped at a 12 degree angle in the mill vise to cut the face and undercut. The undercut was made with a 1/2" diameter ball end mill. The grooves to accept the cutting tool, 1/4" square, were made with a 1/4" endmill cutter, The angled grooves were made possible by rotating the mill vise by that amount, first to the right, and finally to the left. The clamp screw holes were laid out and drilled/tapped before the part was released from the vise jaws.

The block was rotated 90 degrees to make the flat for the cutter on top. Last, the block is positioned square upright to drill and counterbore the two boltholes to match the holes in the Compound swivel plate. I have found that there is some variation in the swivel plate hole spacing so, you must measure carefully to achieve alignment of the holes. Not shown in the drawing, is the 8mm pilot hole in between the two bolt holes, required to fit over the nub on top of the swivel plate.

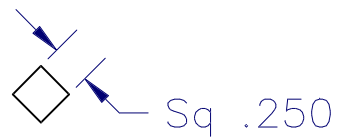
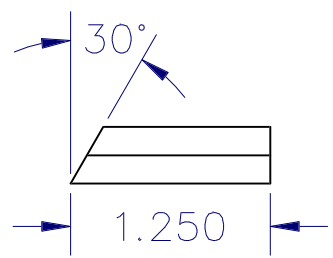
Also not shown, are two #4 screws installed in the sides of the block, just protruding into the counterbores for the bolts. These screws prevent the bolts from falling out and becoming lost between installations on the lathe. It is maddening to want to mount the Diamond Cutter and not be able to find the bolts!

Enjoy the project, it is pretty short.  
Ralph



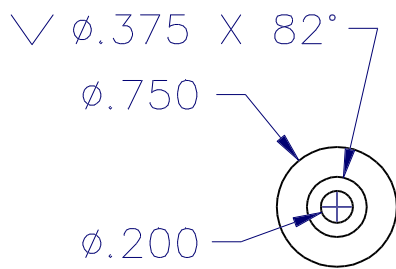
02 FEBRUARY, 2004  
 RALPH PATTERSON

HOLDER, CS MOUNTED  
 DETAILS

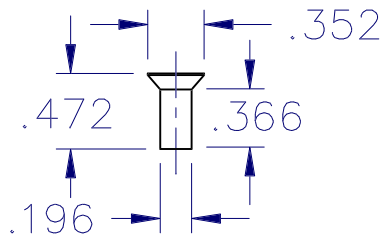
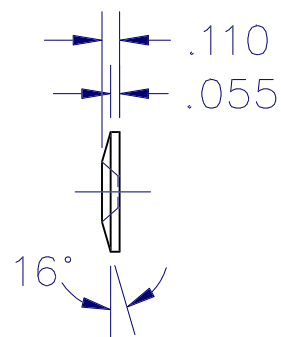


CUTTER  
DETAILS

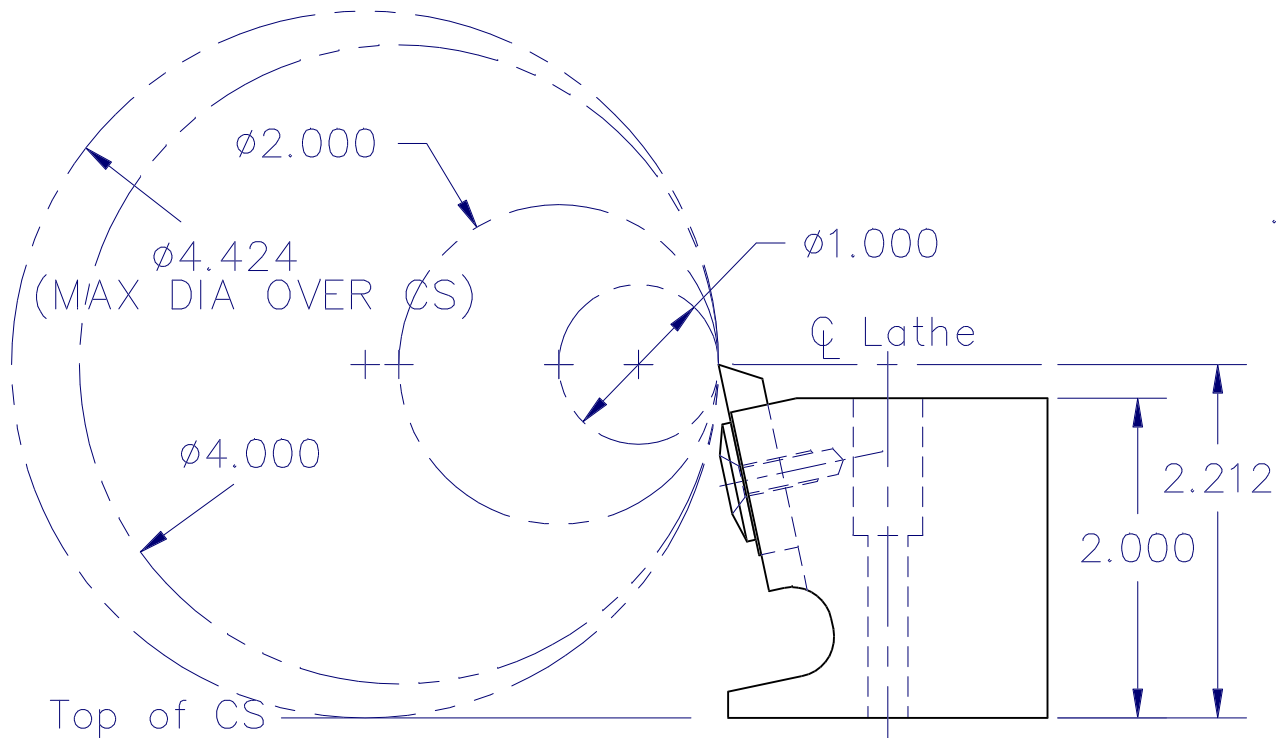
(HALF OF STANDARD 1/4" HSS BLANK)



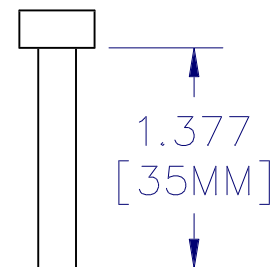
RETAINER  
DETAILS  
CRS



SCREW M5X.8  
DETAILS

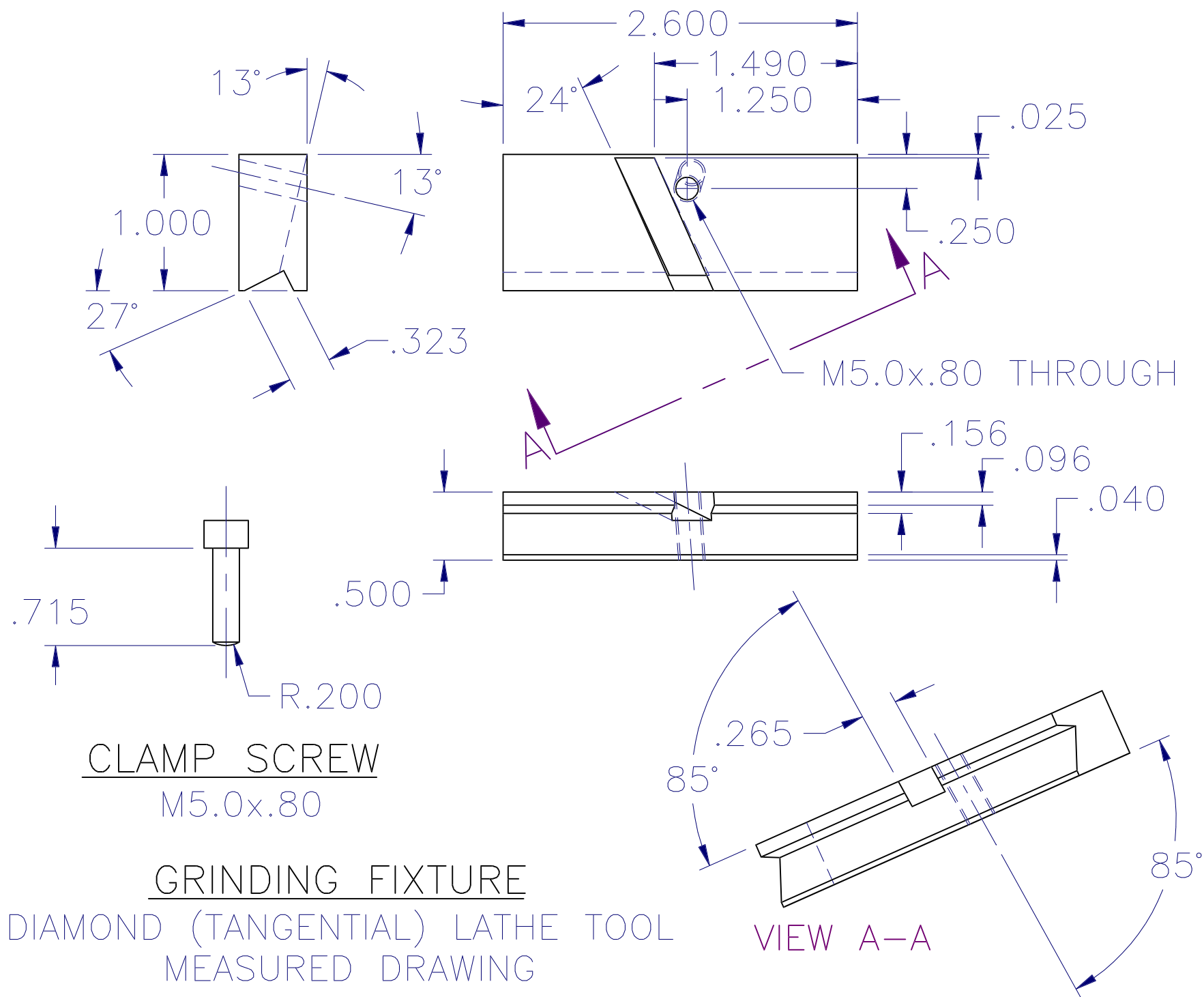


WORKING GEOMETRY  
RELATIONSHIPS



BOLT, SHCS 6X1.0mm  
DETAILS

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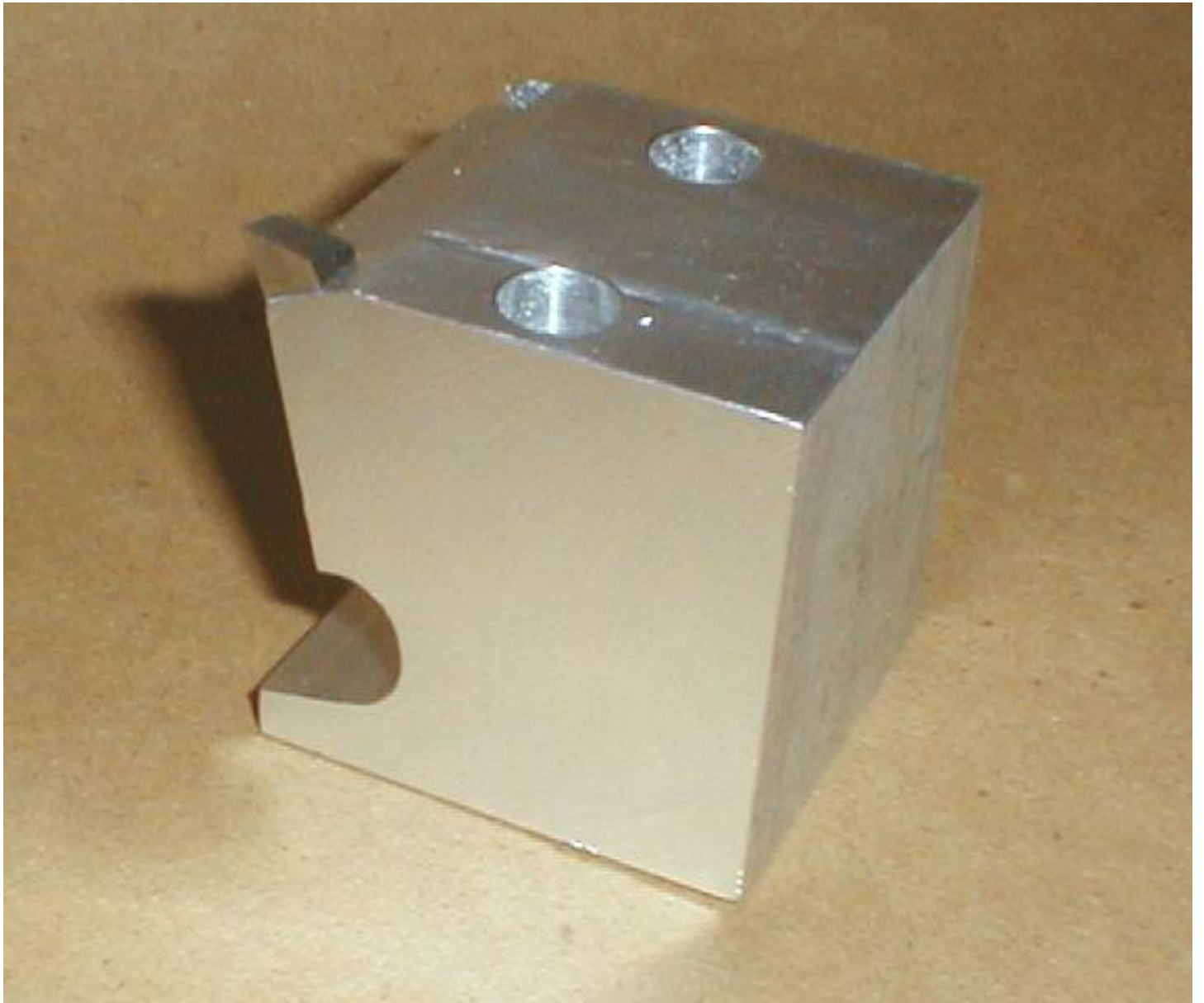


CLAMP SCREW  
 M5.0x.80

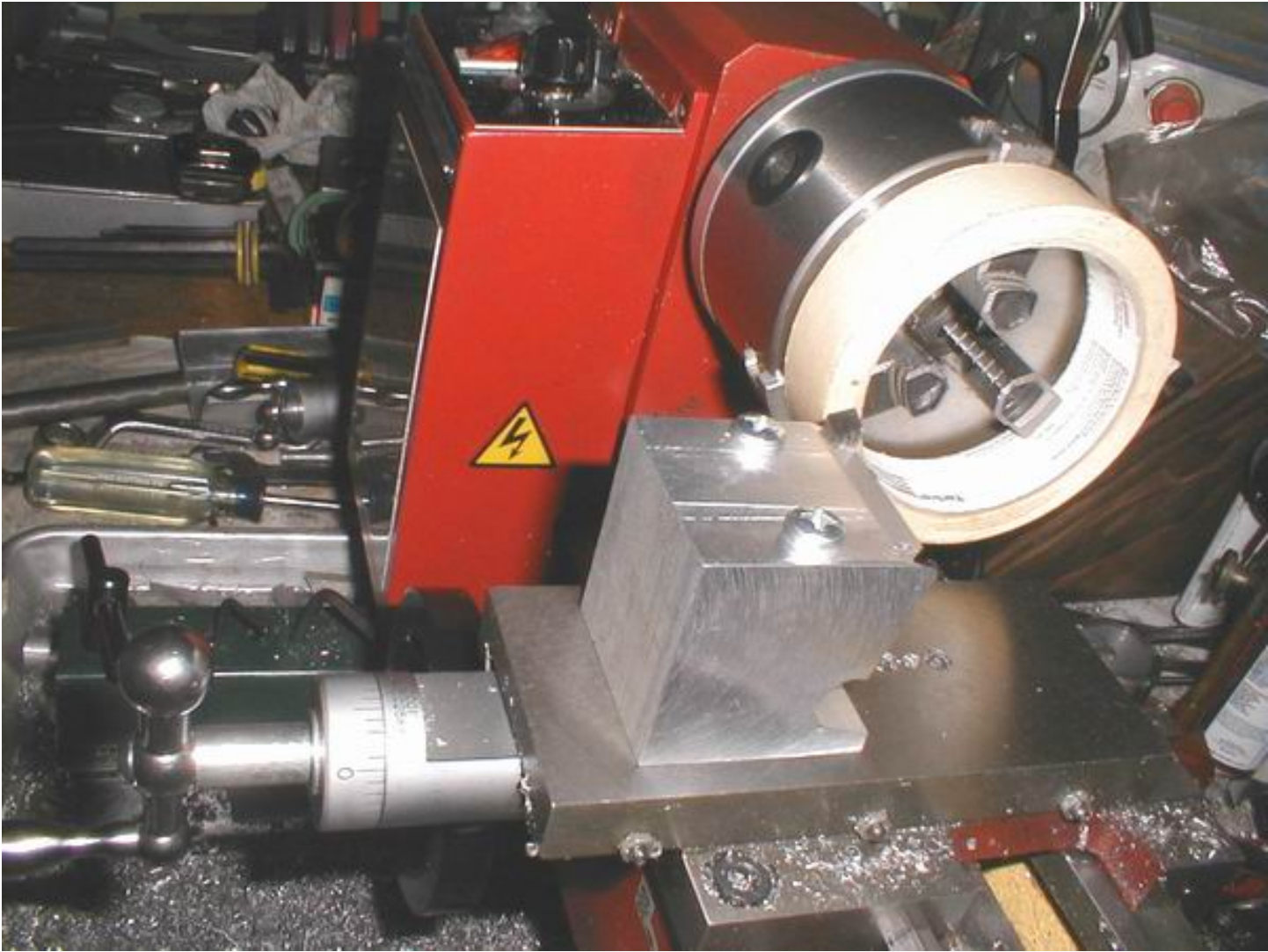
GRINDING FIXTURE  
 DIAMOND (TANGENTIAL) LATHE TOOL  
 MEASURED DRAWING

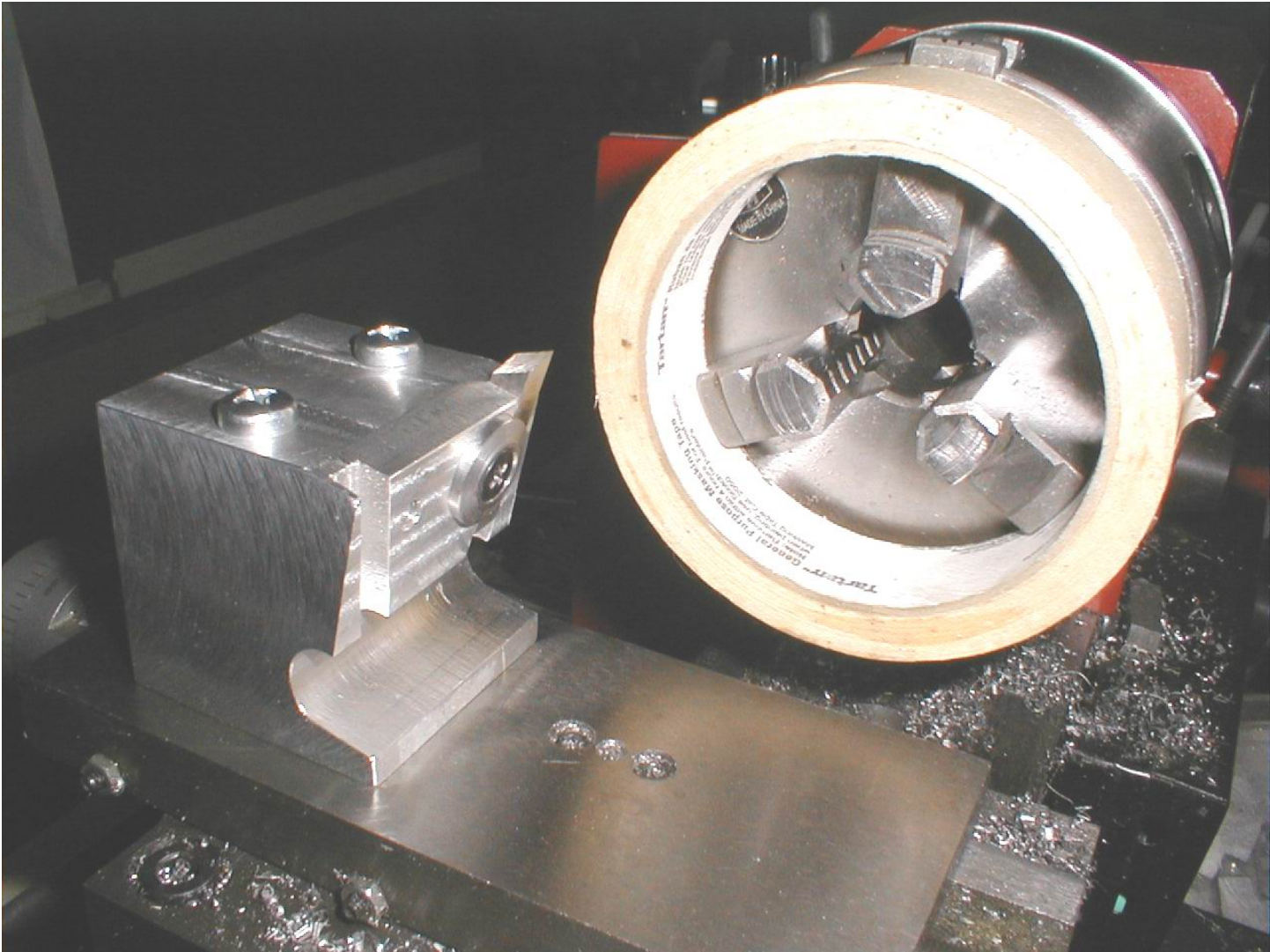
VIEW A-A















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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.