

***Hovarter Custom Vise  
VX20W Wagon Vise  
Assembly Instructions***

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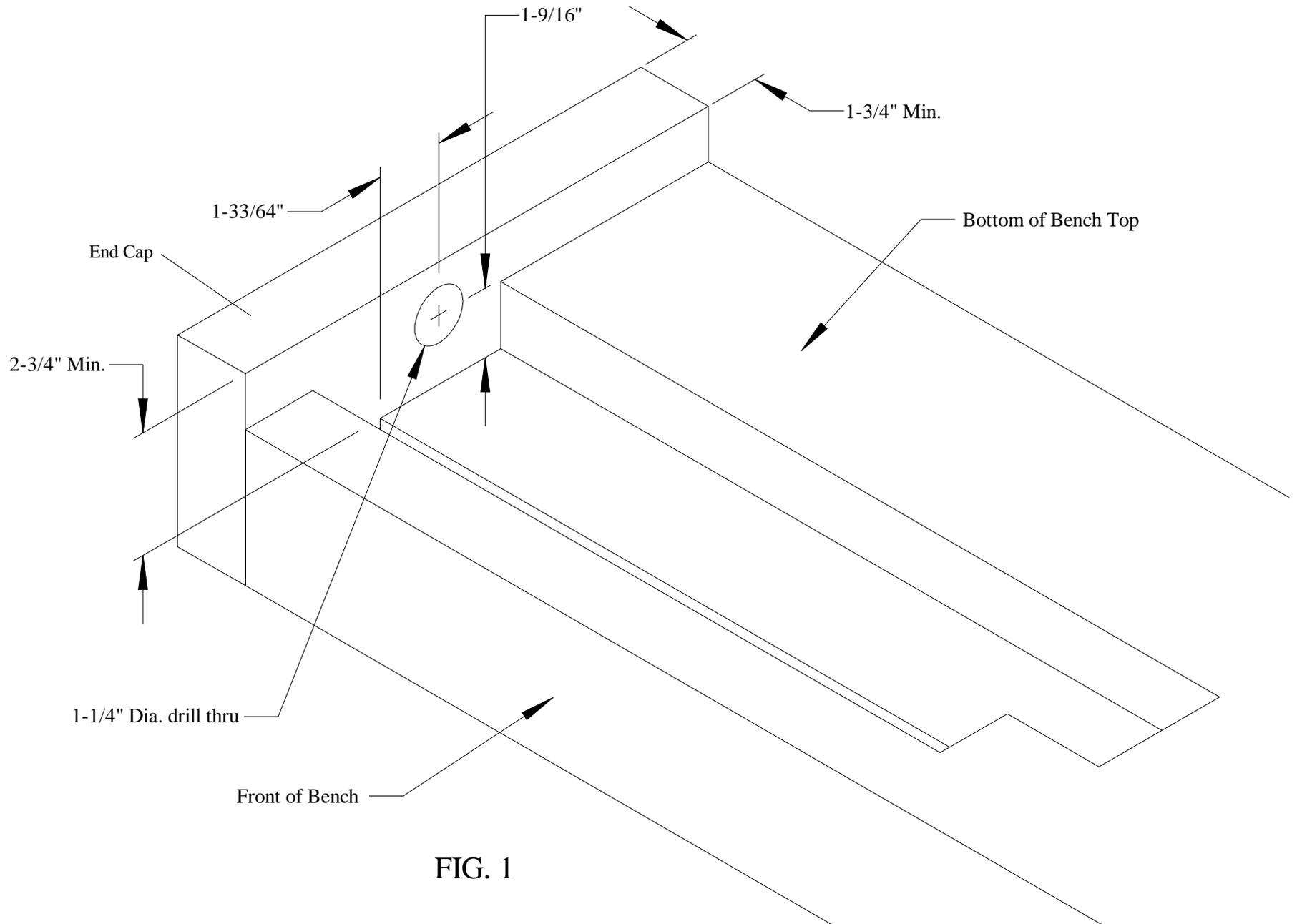
The Hovarter Custom Vise VX20W is a revolutionary new quick action vise mechanism based off of the popular VX20 leg vise. The VX20W utilizes a special clutch mechanism to allow the dog block to be quickly positioned by sliding along the clamp shaft to allow a workpiece to be clamped to the bench top. Additionally, a workpiece may be clamped vertically between the dog block and the end of the shaft. The vise is easy to install with one end of the clamp shaft installed in a bearing mounted in the bench end cap and the other end secured in a bearing and bracket assembly to the bottom of the bench top.

#### REQUIREMENTS:

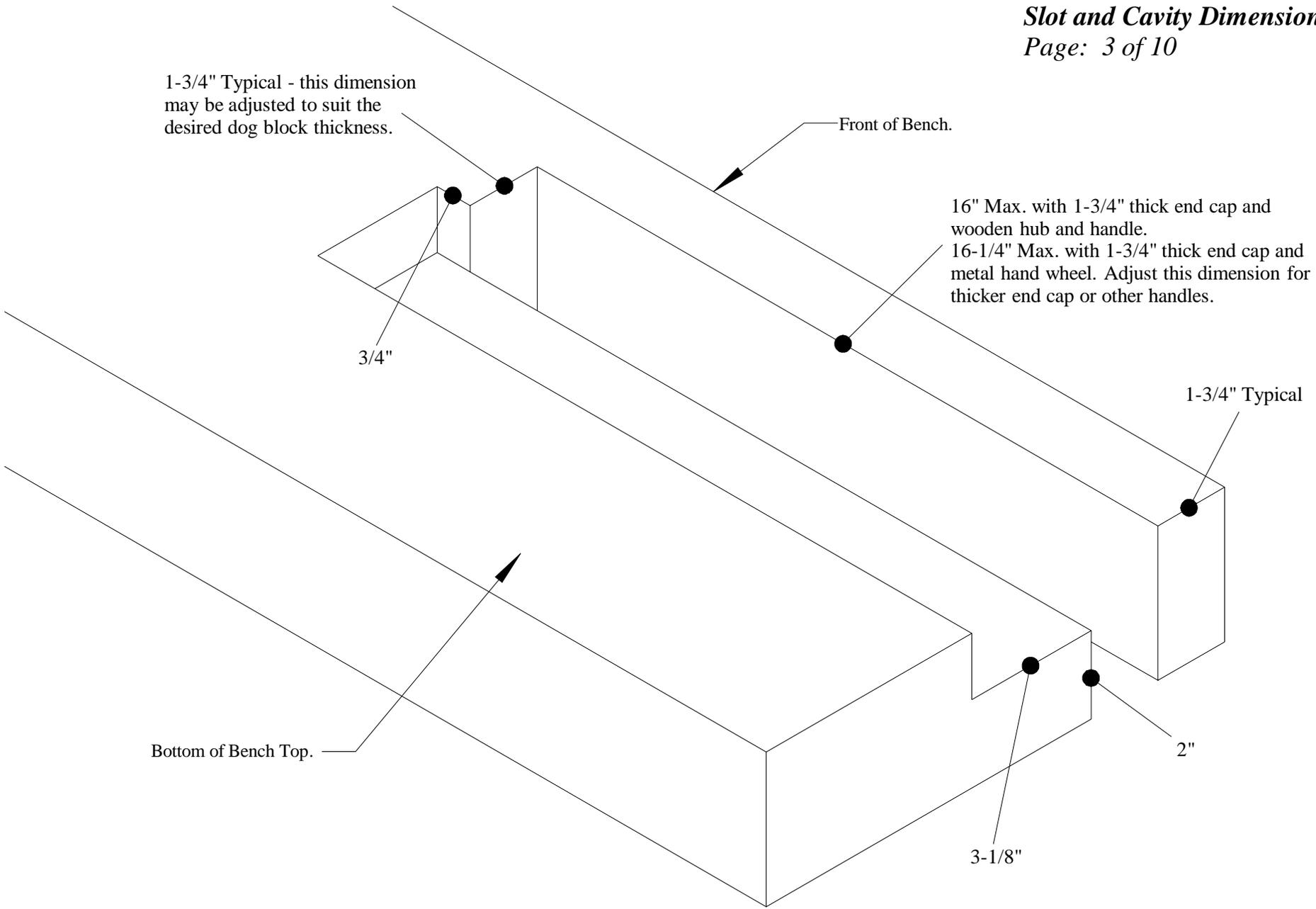
The end cap must be securely mounted to the work bench top. The thrust loads from the vise are transferred through a thrust washers and into the end cap. A bolted connection into the end cap or other secure method should be used. If the end cap is not secure enough it may flex outward during clamping and you will lose clamping force. The vise is designed to use an end cap that is 1-3/4" minimum thickness. If you use a thicker end cap you will have to adjust the slot dimensions accordingly.

The dog block bolts to the vise mechanism and is restrained from rotating by the fit in the slot. Carefully fit the dog block to the slot so you have free movement but not excessive slop. If your bench top is over 3" thick you should create a cavity in the bench top as shown so there is not excessive torque applied to the dog block and vise mechanism. For a bench top under 3" thick you may create a longer dog block and simply mount the vise assembly to the bottom of the bench top without creating a cavity.

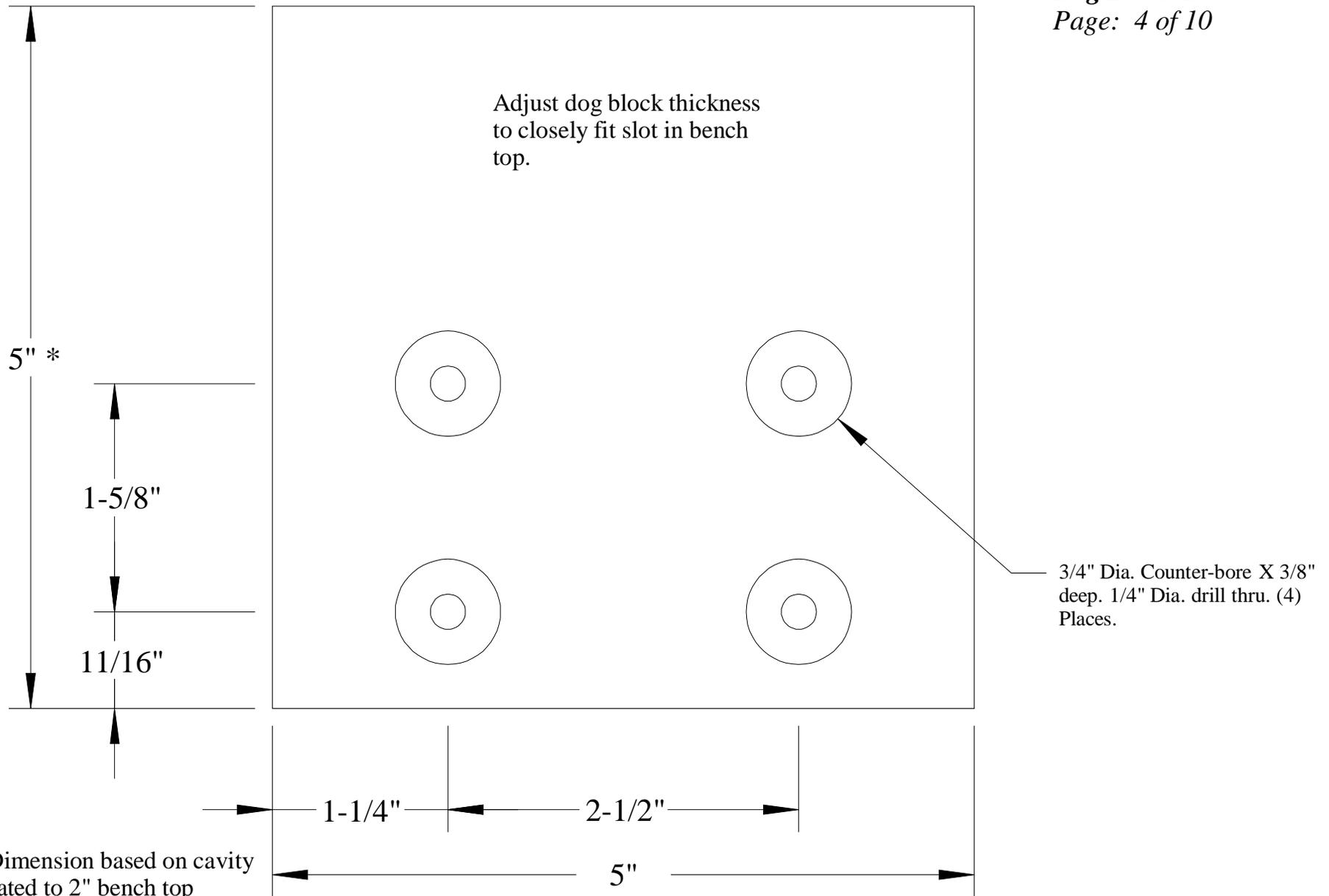
The mechanism and clamp shaft requires clearance from legs, stretchers or any other obstruction under the bench top. Typically the bench top is offset on the legs to provide more overhang on the side of the bench with the wagon vise. The length of the slot in the bench top may be reduced as desired if you need more clearance. You will still have to provide clearance for the clamp shaft however. Please consult us if you have further questions about clearances.



**FIG. 1**

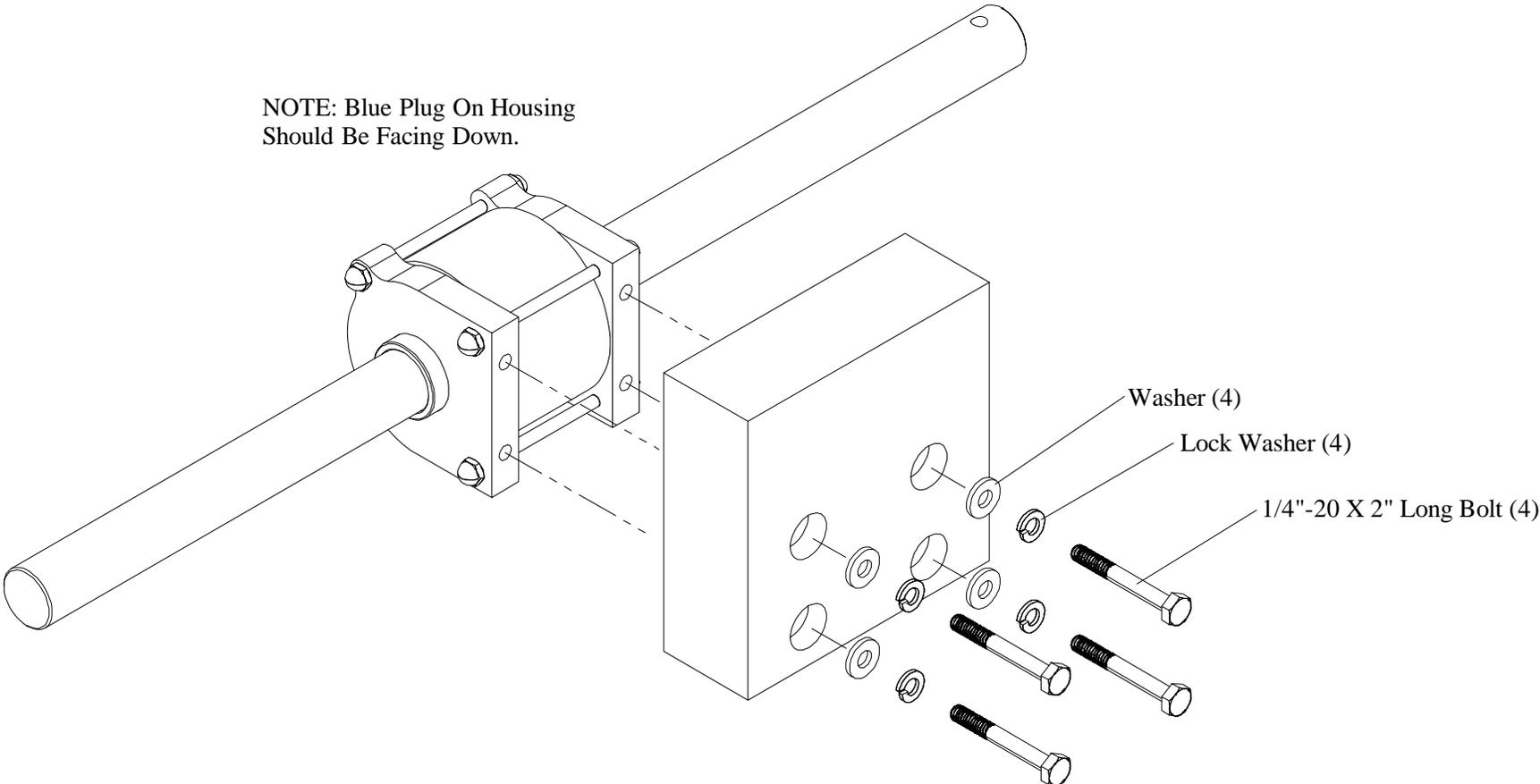


**FIG. 2**



\* 5" Dimension based on cavity excavated to 2" bench top thickness. Add some material to this dimension to allow final fitting after assembly.

FIG. 3

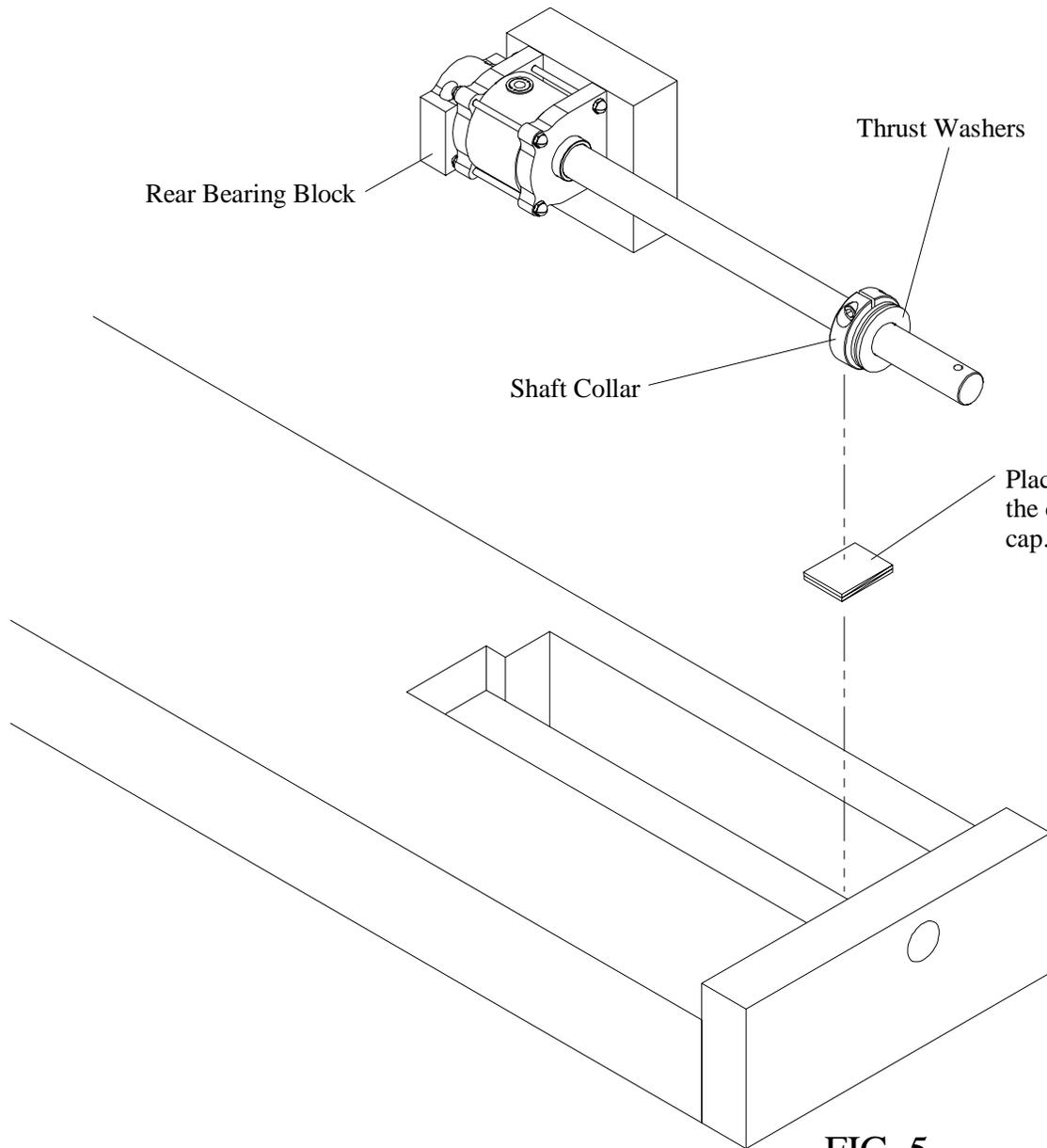


**FIG. 4**

Step 1: Make a dog block according to the drawing on page 3. The dog block can be made with your choice of rectangular or round dog holes. It should fit closely in the slot in the bench top. Shoot for 0.010 to 0.020" clearance. A piece of copy paper is about 0.003" thick so you should be able to fit 4 or 5 sheets of copy paper between the dog block and the slot. It should also be slightly long so it protrudes above the bench top and can be trimmed to fit after installation. Install the dog block to the vise housing as shown in Fig. 4. If the dog block is narrower than 1-3/4" you will have to purchase shorter 1/4" - 20 bolts. If it is wider than 1-3/4" you will have to make the counter-bores deeper.

***Install Vise Assembly Into  
Prepared Cavity In Bench  
Top***

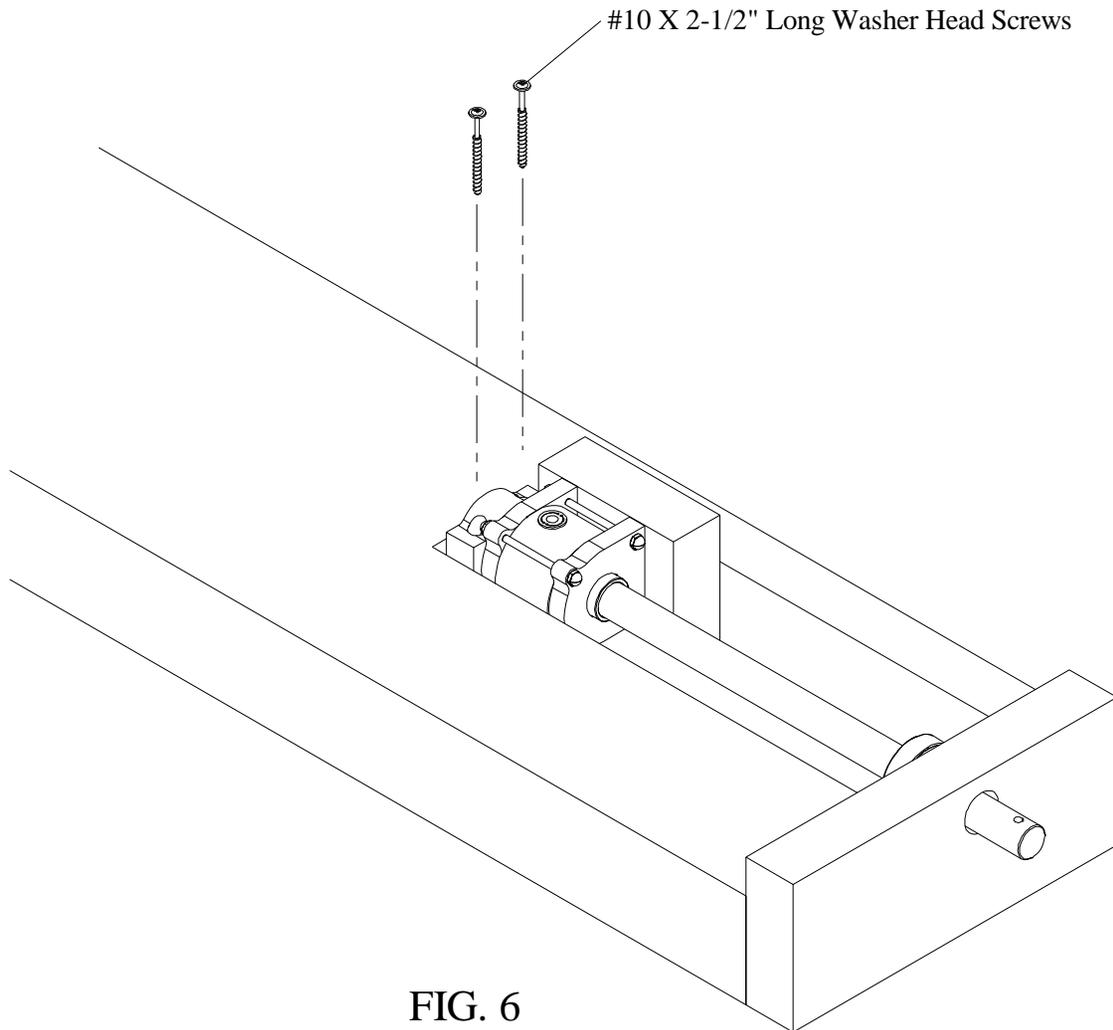
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Step 2: Place the bench top upside down on top of saw horses or blocks to allow observation of the dog block as it moves in the slot. Place the shaft collar and thrust washers on the shaft with the washers facing the end cap. Place the rear bearing block as shown on the clamp shaft. Angle the assembly and place the clamp shaft through the hole in the end cap as shown in Fig. 5. After placing the assembly into position, shim under the shaft collar to center the shaft in the end cap hole.

**FIG. 5**

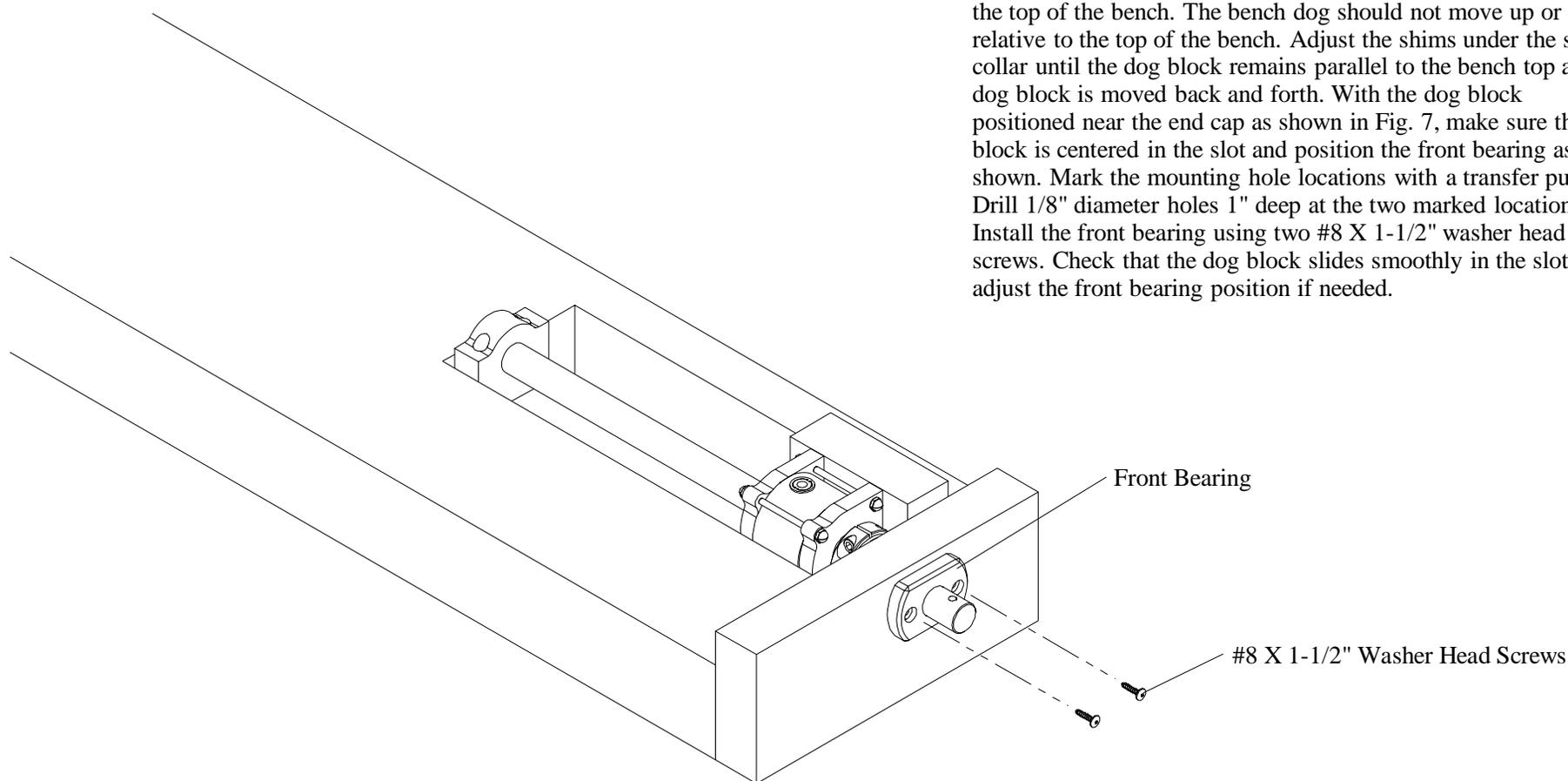
***Install Vise Assembly Into  
Prepared Cavity In Bench  
Top - Cont'd  
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**FIG. 6**

Step 3: Position the dog block to the end of the slot as shown in Fig. 6. The shaft should protrude out from the end cap by approximately 2". The back end of the clamp shaft should extend fully into the rear Delrin bearing block with the hand wheel or handle installed. In some cases if you have a shorter slot the clamp shaft will extend through the rear bearing block. Center the dog block in the slot and make sure it will move freely in the slot while holding the shaft in position (the clamp shaft must be rotated to the unclamped position). Re-position the dog block to the position shown and re-check that it is centered in the slot. Once you are satisfied everything is positioned properly mark the rear bearing block hole locations with a transfer punch. Move the assembly forward and drill two 9/64" diameter holes 7/8" deep. Fasten the bracket securely to the bottom of the bench top with two #10 X 2-1/2" washer head screws.

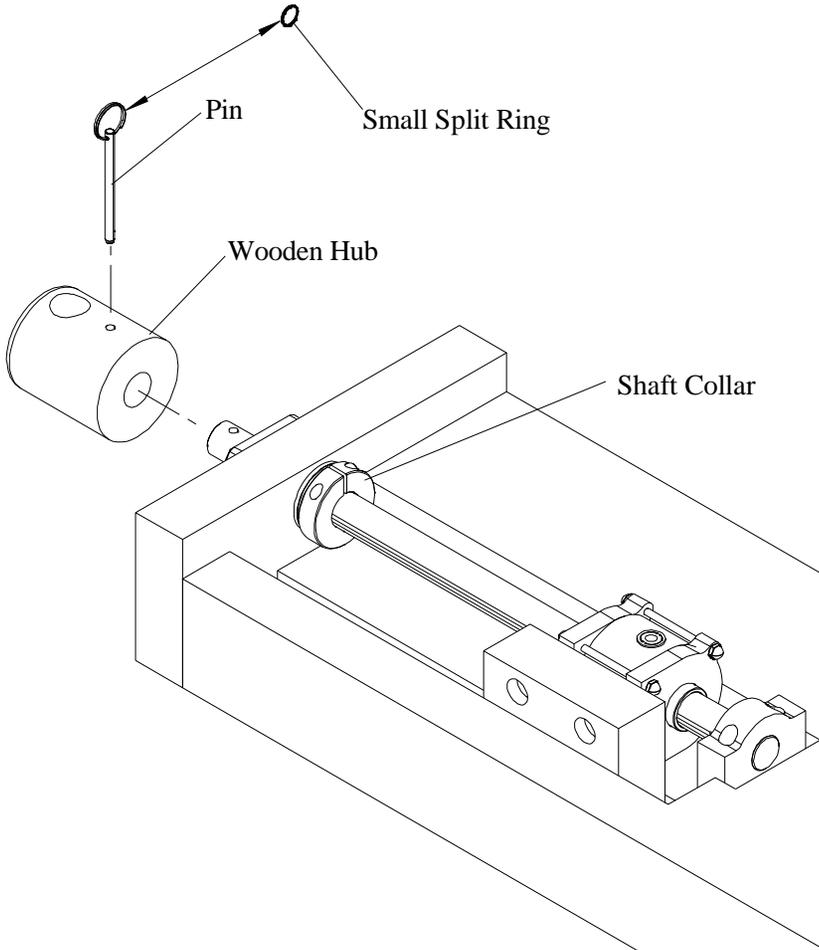
Step 4: While holding the clamp shaft in position, slide the dog block to the end cap side and observe the dog block compared to the top of the bench. The bench dog should not move up or down relative to the top of the bench. Adjust the shims under the shaft collar until the dog block remains parallel to the bench top as the dog block is moved back and forth. With the dog block positioned near the end cap as shown in Fig. 7, make sure the dog block is centered in the slot and position the front bearing as shown. Mark the mounting hole locations with a transfer punch. Drill 1/8" diameter holes 1" deep at the two marked locations. Install the front bearing using two #8 X 1-1/2" washer head screws. Check that the dog block slides smoothly in the slot and adjust the front bearing position if needed.



**FIG. 7**

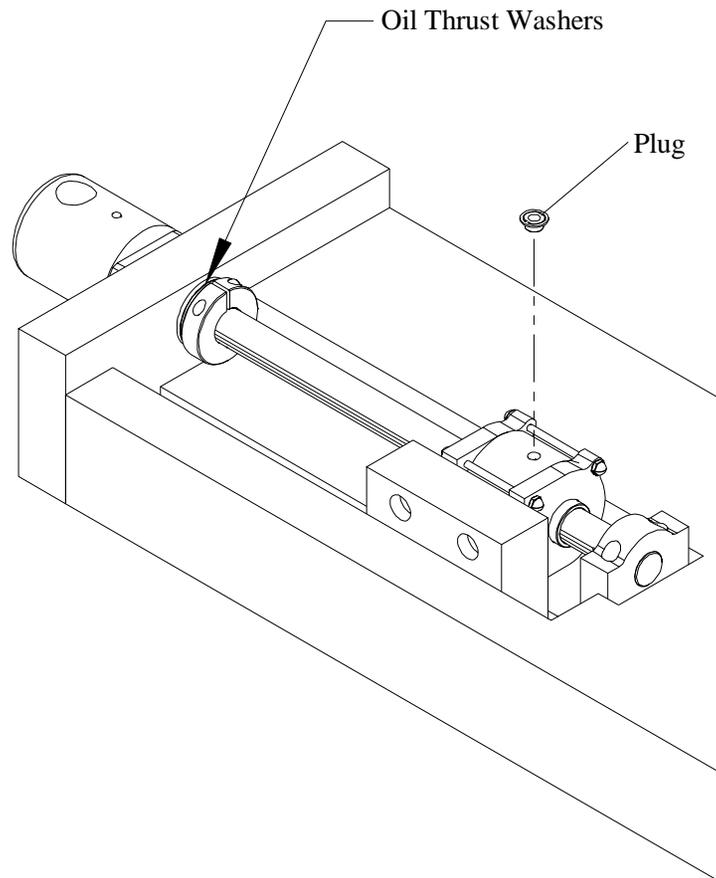
***Install Wooden Hub or Hand Wheel***

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Step 5: Insert the wooden hub (or metal hand wheel) onto the clamp shaft and line up the cross hole. Push the pin through the hub and clamp shaft to secure. See Fig. 8. If desired, the small split ring may be installed in place of the large split ring. Hold the hub tightly against the front bearing and move the shaft collar so that it traps the two thrust washers against the end cap. Tighten the shaft collar securely with a 1/4" hex key wrench (not included). Check that the clamp shaft turns freely and adjust the shaft collar if necessary.

**FIG. 8**



**FIG. 9**

Lightly polish the clamp shaft occasionally using a Mirlon ultra fine abrasive pad or 1200 grit wet/dry sand paper. Wipe with a clean cloth and apply paste wax to the clamp shaft. Let dry and buff. The paste wax will help prevent corrosion and make the sliding action incredibly smooth and easy.

Annually, or if you notice an increase in mechanism friction, grease the internal cam. The internal cam is accessed by removing the blue plug from the housing. See Fig. 9. The plug is removed by grasping the handle and pulling outward. Use a small blade screwdriver to apply a pea sized amount of grease. Insert the blade of the screwdriver only 1/2" into the housing and wipe the grease onto the cam which is located towards the rear of the vise (the side nearest the rear bearing and bracket). Operate the vise to distribute the grease.

Put a few drops of oil on the thrust washers. They are made of porous bronze and will retain oil for a very long time.

Your vise has been greased using Lucas Oil Products Red "N" Tacky #2 EP grease. This is a smooth, tacky, red lithium complex grease fortified with rust and oxidation inhibitors. It is able to withstand heavy loads for extended periods of time and is especially good for sliding surfaces. This grease is very economical and widely available at home centers and auto parts stores. If you substitute a different brand of grease make sure it is a NLGI #2 EP (extreme pressure).