

patent pending

Hovarter Custom Vise

VX 20

Assembly Instructions

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The Hovarter Custom Vise VX 20 is a revolutionary new quick action vise mechanism that may be used as a face vise or leg vise. The VX 20 utilizes a special clutch mechanism to allow the vise jaw to be quickly positioned against the workpiece. When the clamp handle is turned the clutch simultaneously grips the clamp shaft and securely tightens the vise jaw against the workpiece. When the clamp handle is turned to unclamp the clutch releases and the vise jaw is again free to slide in and out.

The VX 20 also uses a unique quick release pin to mount the handle to the clamp shaft. This allows the handle and vise jaw to be quickly removed by pulling the quick release pin and the clamp shaft may be retracted flush with the vise leg. The VX 20 clamp shaft is retained in the housing and will not fall out. This is a great feature to have if you need to clamp large items like large doors to the front of your bench. Additionally a repositionable shaft collar allows the use of a wooden hub and handle, metal hand wheel or custom designed handle to be used with the vise hardware and also easily allows the handles to be interchanged.

The VX 20 consists of a housing with a mounting base and a bearing at the rear of the housing. There is no front bearing in the housing, instead a separate Delrin bearing is supplied which is mounted to the bench leg or apron. This allows the weight of the vise jaw, clamp shaft and handle to be supported by the large forward placed Delrin bearing to provide very smooth and effortless movement.

The following directions show the VX 20 being used with a traditional pin board parallel guide, but the mechanism may be used with pin-less mechanisms such as chain or scissors type parallel guides. Please keep in mind that whatever parallel guide you use make sure it provides a good amount of rigidity with minimal deflection. The vise mechanism has 1/4" of clamp travel but if the parallel guide used has too much deflection poor clamping may result. If you are unsure if your parallel guide will work please consult us.

***Install Delrin Bearing Into
Bench Leg***
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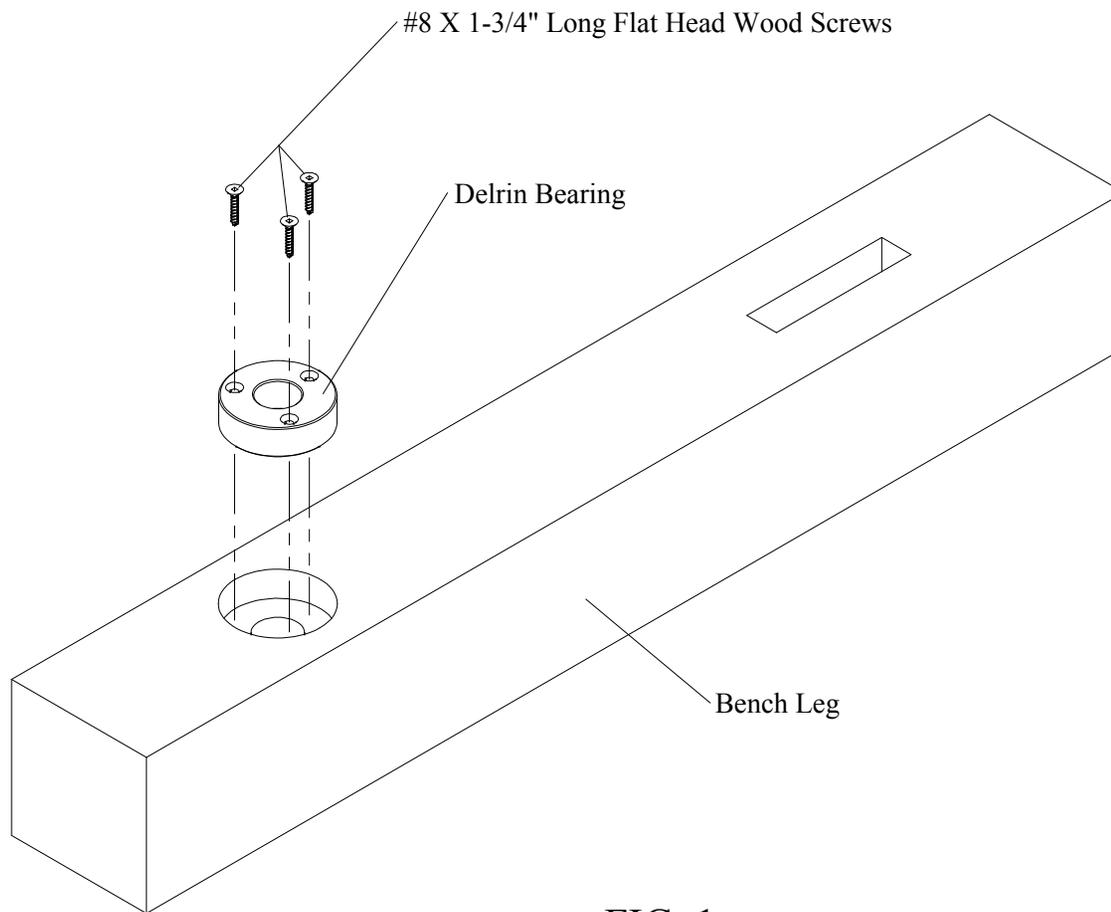


FIG. 1

Step 1: Construct the Bench leg and vise jaw to finished dimensions. Drill the holes in the bench leg and vise jaw according to the leg hole dimensions and jaw hole dimensions drawings.

Step 2: Insert the Delrin bearing into the 2-1/2" diameter hole in the bench leg. The bearing should be flush or slightly below the face of the bench leg. Mark the mounting hole locations and drill 1/8" diameter holes 1" deep. Fasten the bearing using the three flat head wood screws provided. See Fig. 1.

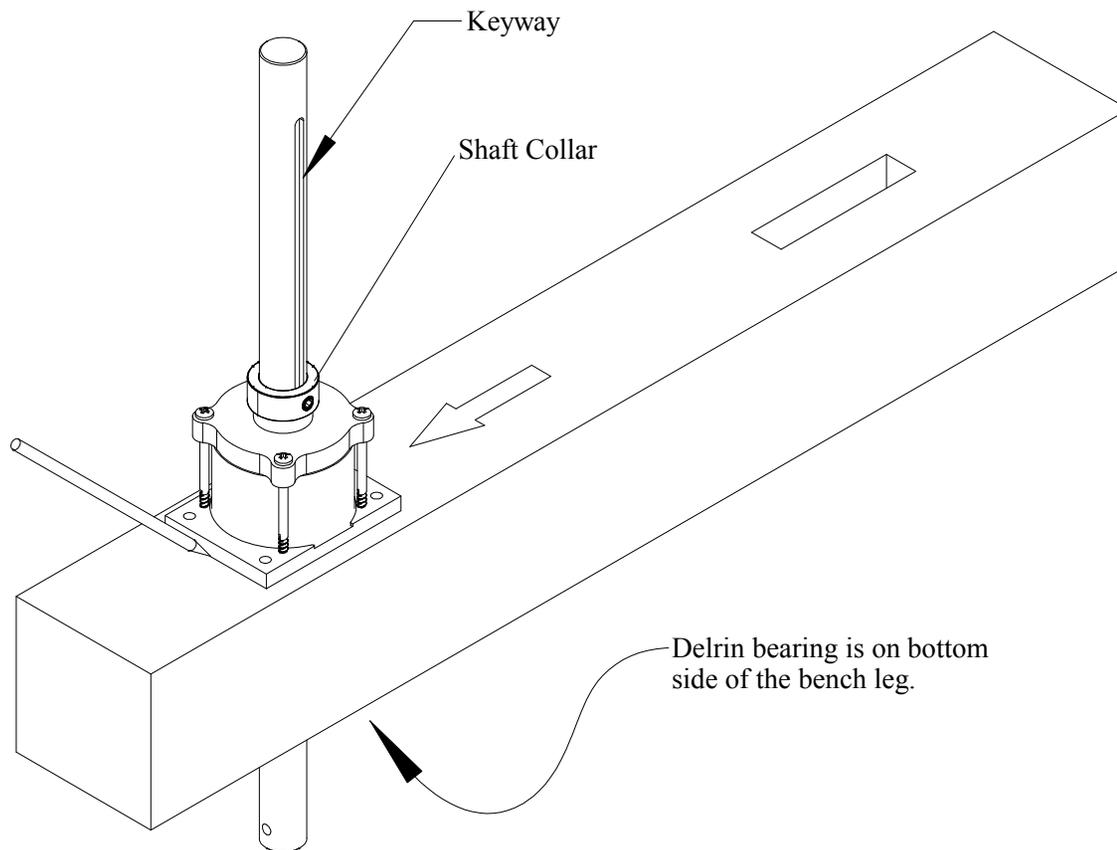


FIG. 2

Step 3: Temporarily tighten the shaft collar on the shaft as shown in Fig. 2 to hold the shaft about mid way in the housing.

Step 4: Make sure the VX 20 is in the unclamped state (the shaft should be free to slide) and place the assembly into position on the leg. The clamp shaft should pass through the Delrin bearing on the other side of the leg.

Step 5: Push on the housing in the direction of the arrow until it stops. Make sure the housing stays flat against the leg. Make a pencil mark at the edge of the mounting base as shown. Repeat this for the other four sides of the mounting base.

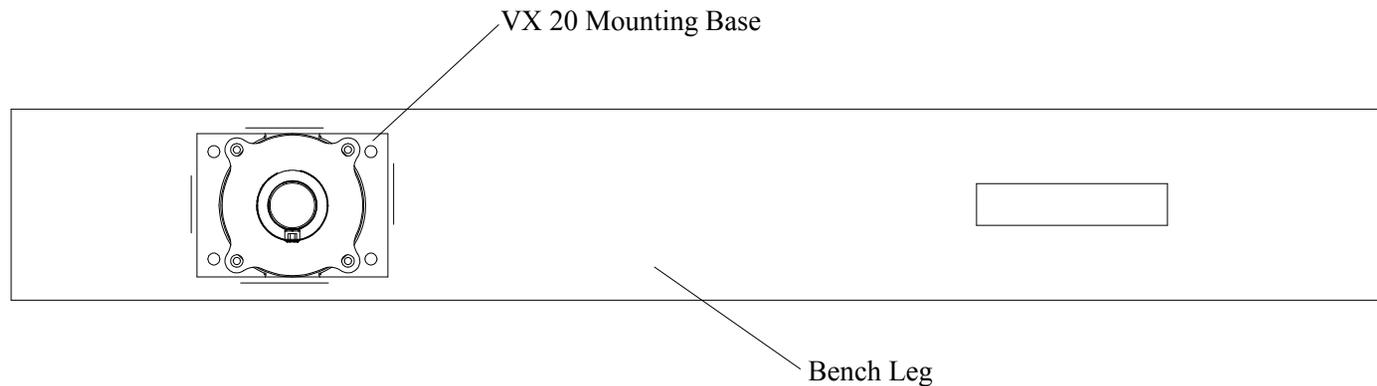


FIG. 3

Step 6: You should end up with four pencil lines roughly 1/8" away from the mounting base as shown in Fig. 3. Position the mounting base centered between the pencil marks and mark the mounting hole locations. A transfer punch is ideal for this but a brad point drill bit will also do.

Step 7: Remove the VX 20 and drill 9/64" diameter holes 1-1/8" deep at the four marked locations. Orient the clamp shaft keyway to the right as viewed from the front. This will prevent the keyway from becoming a saw dust trap. See Fig. 2. Install the VX 20 using the #10 X 1-1/2" long washer head screws.

***Install Washer, Shaft Collar,
Jaw and Hub or Hand Wheel
Page: 5 of 7***

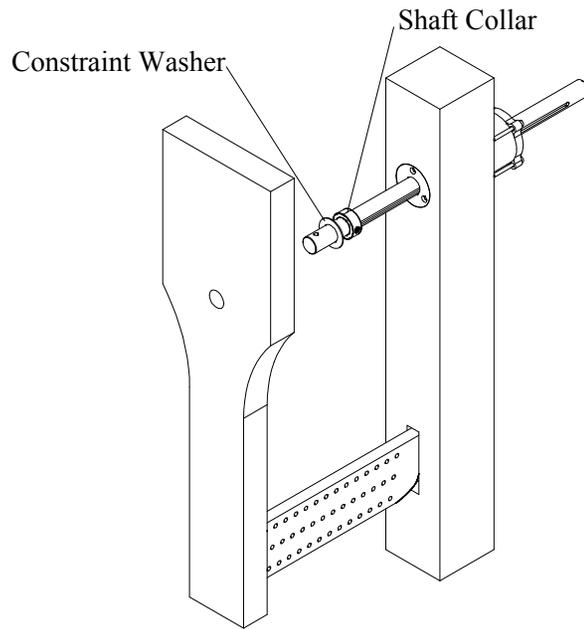


FIG. 4

Step 8: Place the shaft collar and 1-3/4" dia. constraint washer on the clamp shaft as shown in Fig. 4. Install the jaw on the clamp shaft so the clamp shaft protrudes through the jaw a couple of inches. The constraint washer should fit into the 1-3/4" diameter hole drilled in the back side of the jaw.

Step 9: Place the wooden hub on the clamp shaft and visually line up the cross holes. If you are using a metal hand wheel this process is the same. Insert the quick release pin into the cross hole in the hub and make sure it is completely through the clamp shaft and protrudes slightly out the other side of the hub. See Fig. 5.

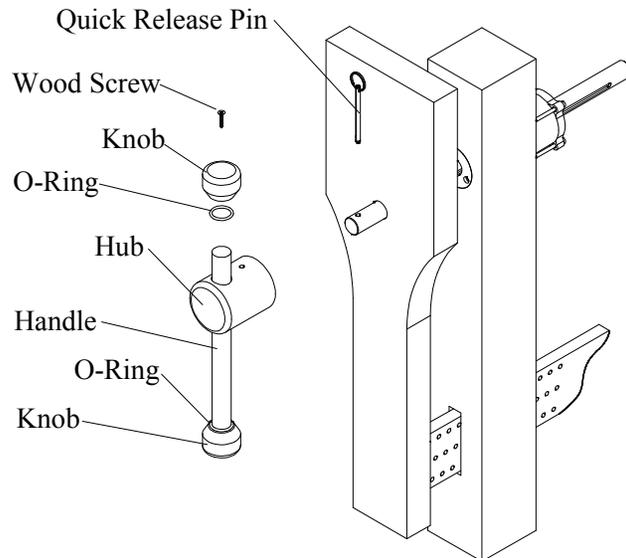


FIG. 5

Glue suede leather onto the inside faces of the vise jaw and bench leg and bench top.

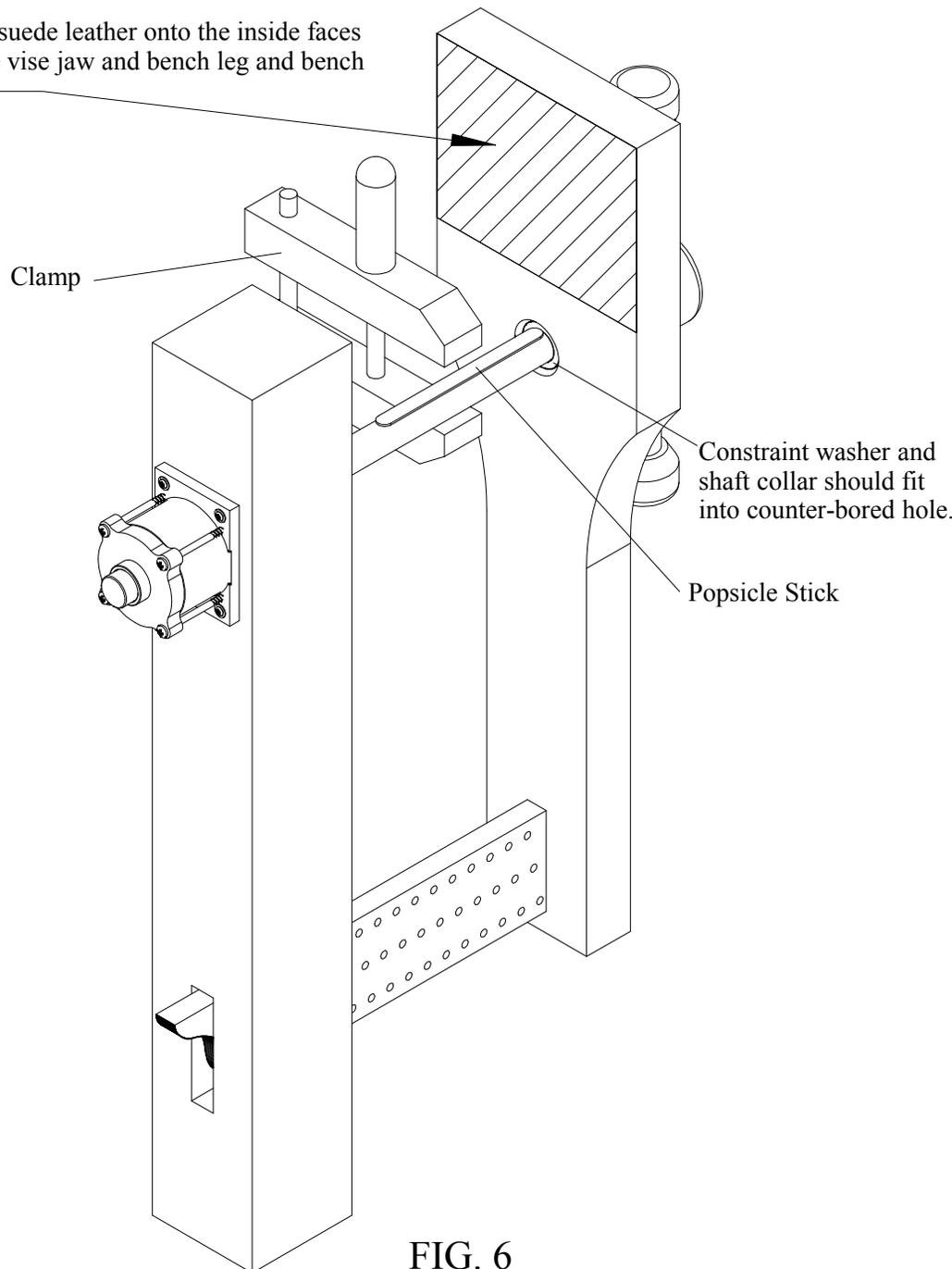


FIG. 6

Step 10: Open the jaw fully so you have access to the shaft collar as shown in Fig. 6. Clamp a Popsicle stick or other thin and narrow stick to the clamp shaft so that it holds the shaft collar and constraint washer tightly against the jaw. There should not be a gap between the jaw and the hub. Pull the quick release pin and remove the hub and jaw. Make sure the shaft collar is tight against the end of the Popsicle stick and firmly tighten the shaft collar using the included hex key wrench. Re-assemble everything and make sure the quick release pin can be installed and removed easily and there is not a large gap between the hub and jaw. Adjust the shaft collar for the proper fit. When you are satisfied the shaft collar is set correctly you can make a wooden gauge to allow you to quickly set the collar depth when you remove the jaw. You can also use a combination square as a depth gauge. If you remove the jaw frequently you can glue the constraint washer into the jaw with a dab of hot melt glue so you don't have to keep track of it.

Step 11: Glue one of the knobs on the handle. If wood shrinkage has made the fit too loose, glue a 3/4" wide strip of paper to the end of the handle, let dry and then glue the knob onto the handle. Sand the parts and apply the finish of your choice. Assemble the handle with O - rings onto the hub as shown in Fig. 5. Drill a 7/64" diameter hole into the end of the free knob and into the handle and fasten with the #8 X 1-1/4" flat head wood screw.

Step 12: Glue suede leather onto the inside face of the vise jaw and the bench leg and bench top. Contact cement or regular wood glue works well. The suede leather is necessary with a leg vise to increase friction and provide a little bit of compliance. For best performance the leather should start at the top of the jaw and continue down for at least 6 inches.

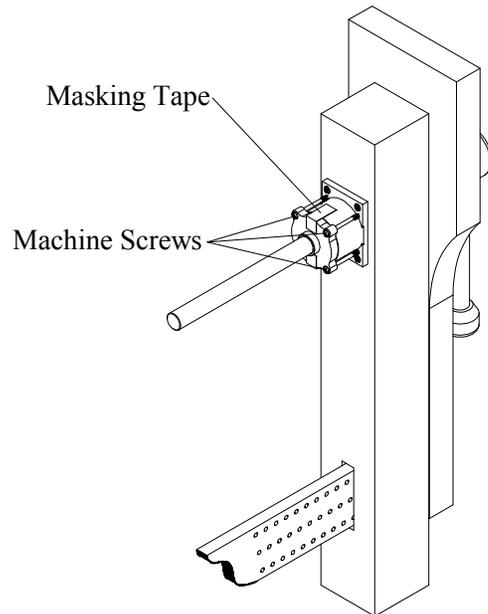


FIG. 7

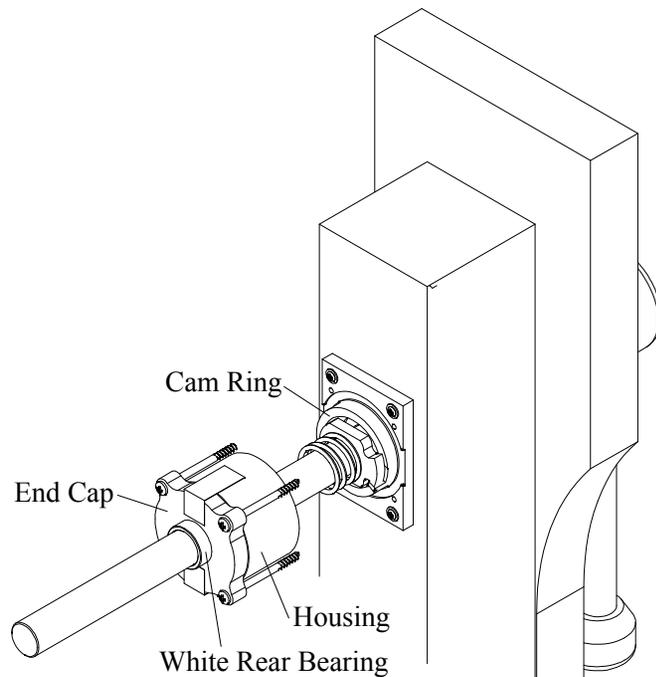


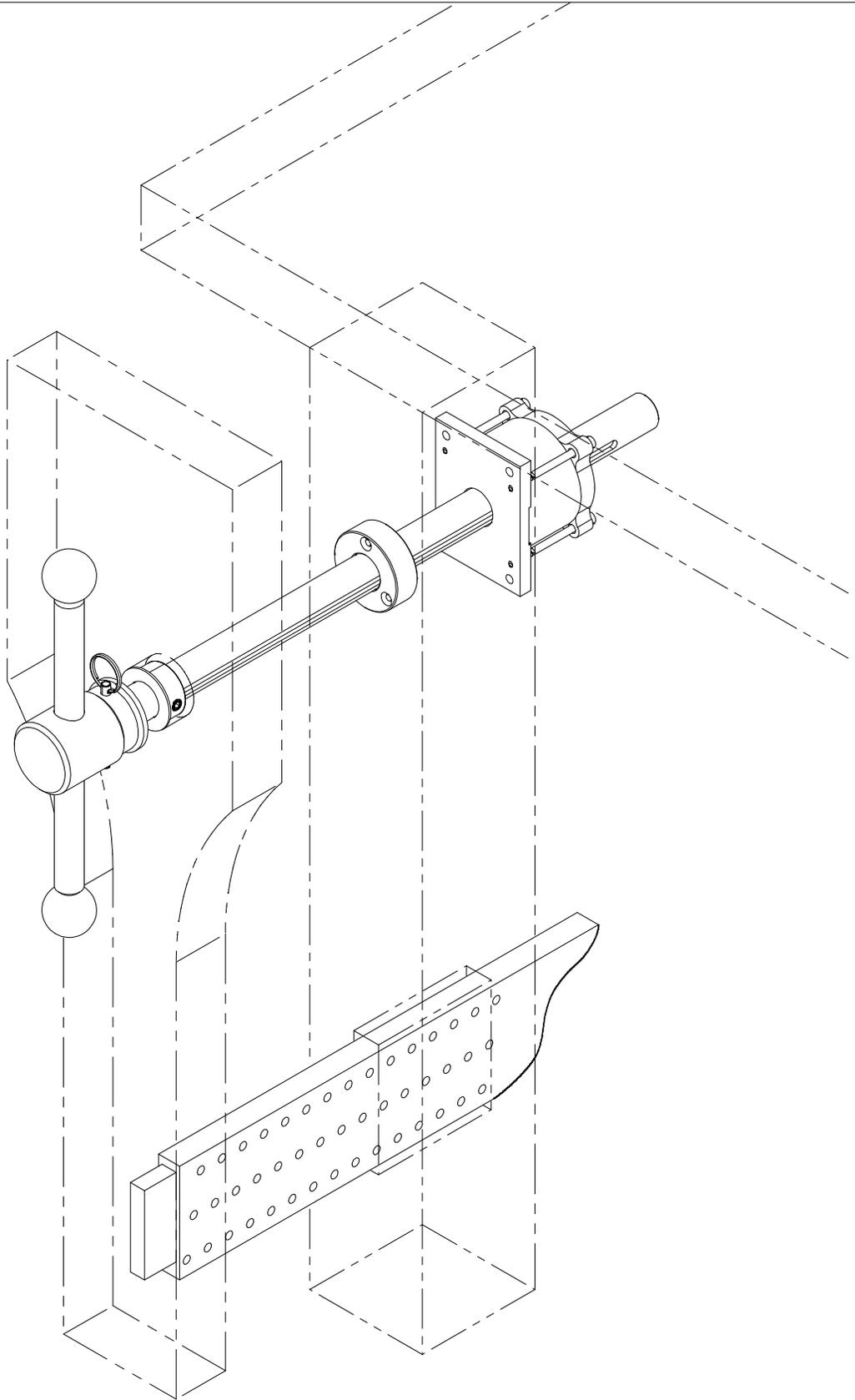
FIG. 8

Lubricate the VX 20 on a yearly basis or if you feel extra friction in operation. The housing and end cap must be removed to apply grease to the mechanism.

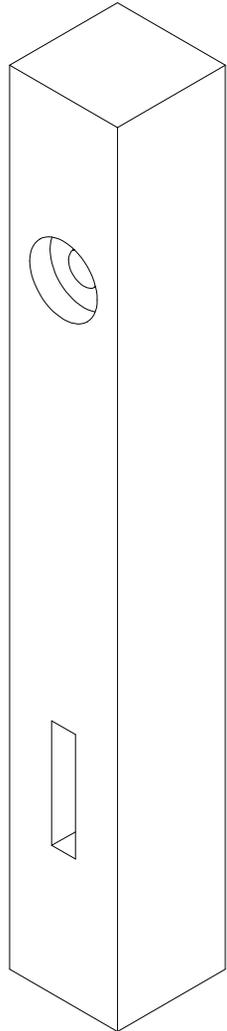
IMPORTANT: Make sure the vise is in the unclamped state and the clamp shaft can be moved freely. This will ensure that there is no load on the internal spring. Close the vise jaw fully.

Apply masking tape as shown in Fig. 7 to hold the housing and end cap together. This is not required but it will allow all the parts to remain together and more importantly will allow the proper orientation of the label upon re-assembly. Using a #2 Phillips screwdriver, remove the 4 machine screws that hold the mechanism together. You may leave them in the end cap. Grasp the white rear bearing and pull the cap with the machine screws and the housing rearward as shown in Fig. 8. All of the internal parts should remain in position. Apply a liberal amount of grease on the entire circumference of the cam ring. If the mechanism is dirty you may clean it off with a paper towel and then apply the grease. 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). Re-assemble the cap and housing by finger tightening all the machine screws and then tighten firmly with a phillips screwdriver.

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.



<p>Hovarter Custom Vise</p>	<p>Title: Assembly Phantom View</p>	<p>P/N: N/A</p>
<p>www.hovartercustomvise.com © 2014 Lenco Tools LLC</p>	<p>Vise Model: VX 20</p> <p>File Name: VX 20 Jaw Hole Dimensions</p>	<p>Revision:</p> <p>Date: 8/23/2014</p>

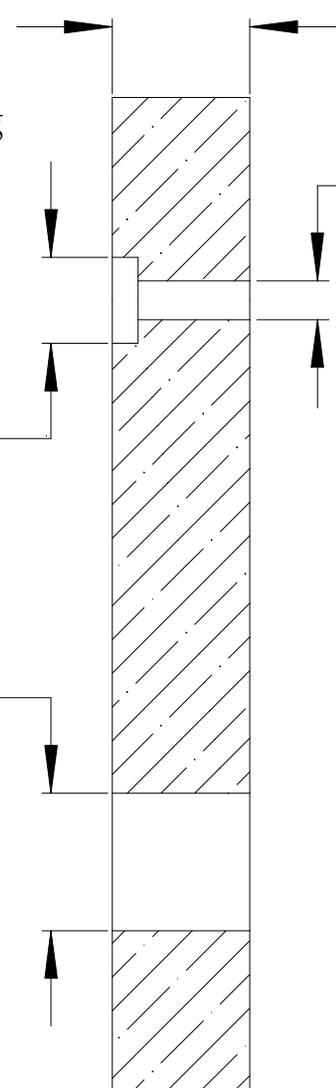


3" Minimum Width to Allow Shaft to Retract Flush with Front of Leg

2-1/2" Drill 3/4" Deep

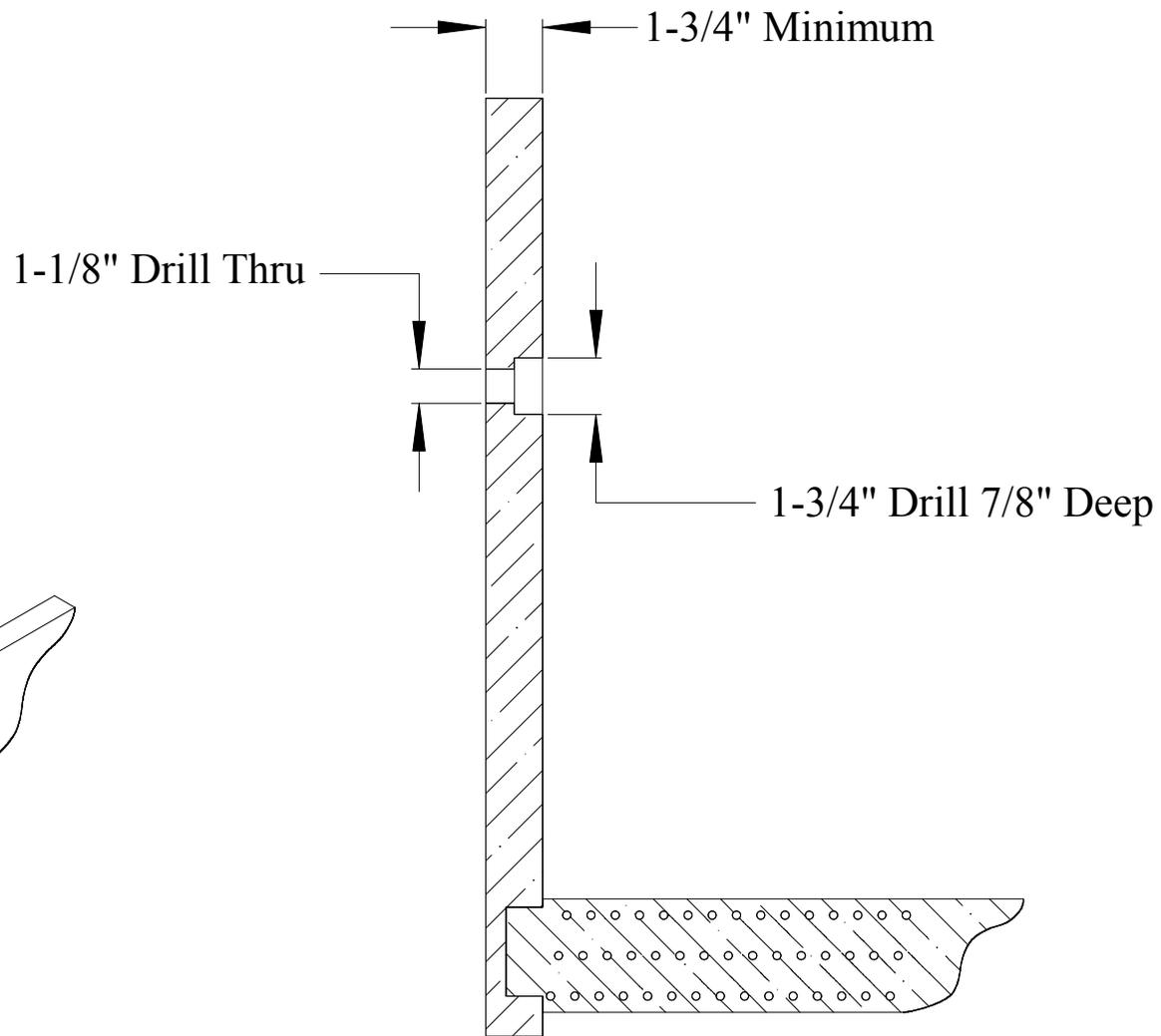
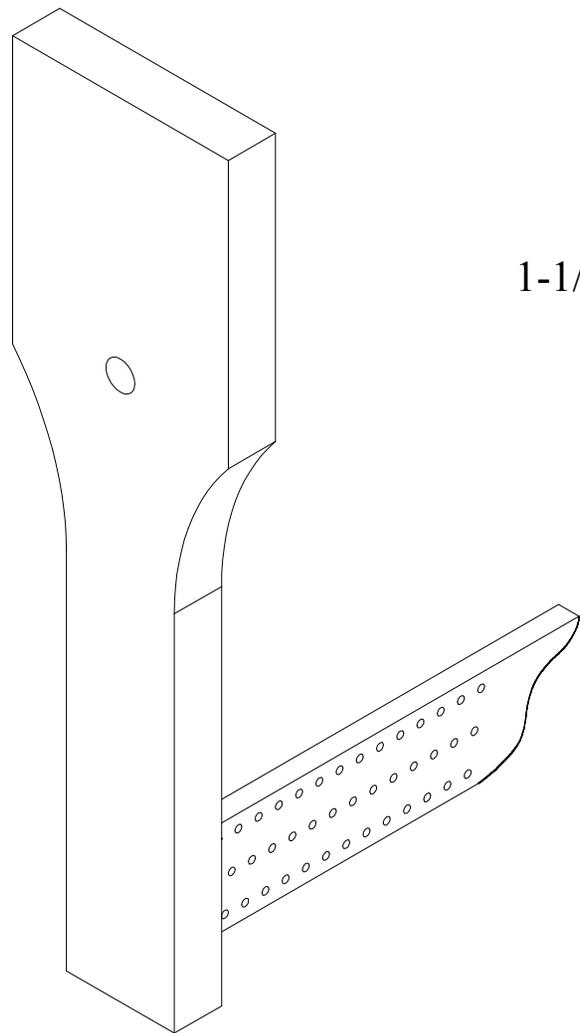
1-1/8" Drill Thru

Mortise Height Should allow 1/8" Minimum Clearance From Top and Bottom of Parallel Guide



Section at hole centerline

<p>Hovarter Custom Vise</p>	<p>Title: Leg Hole Dimensions</p>	<p>P/N: N/A</p>
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Section at hole centerline

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	Vise Model: VX 20	Revision:
	File Name: VX 20 Jaw Hole Dimensions	Date: 8/23/2014