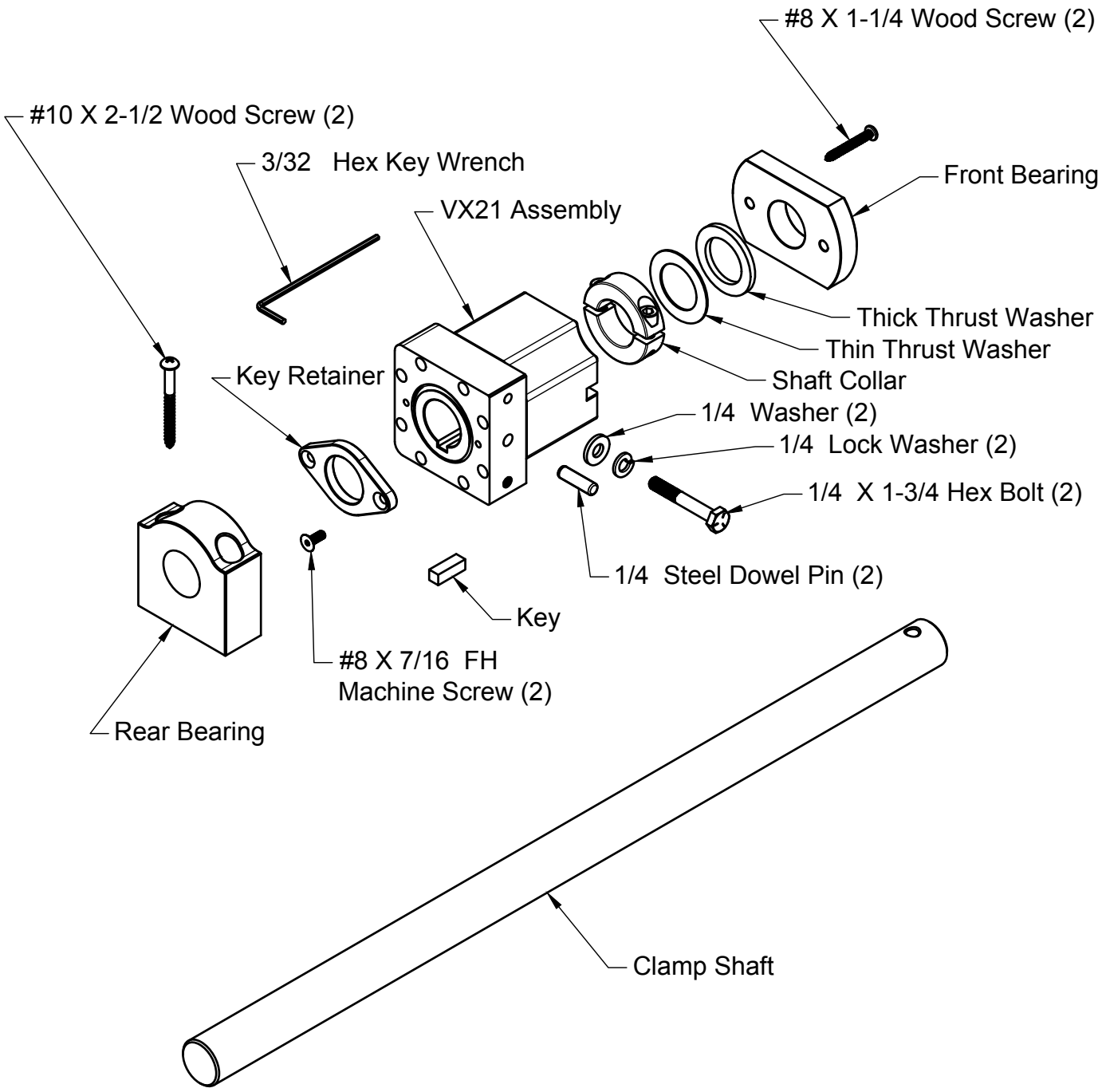
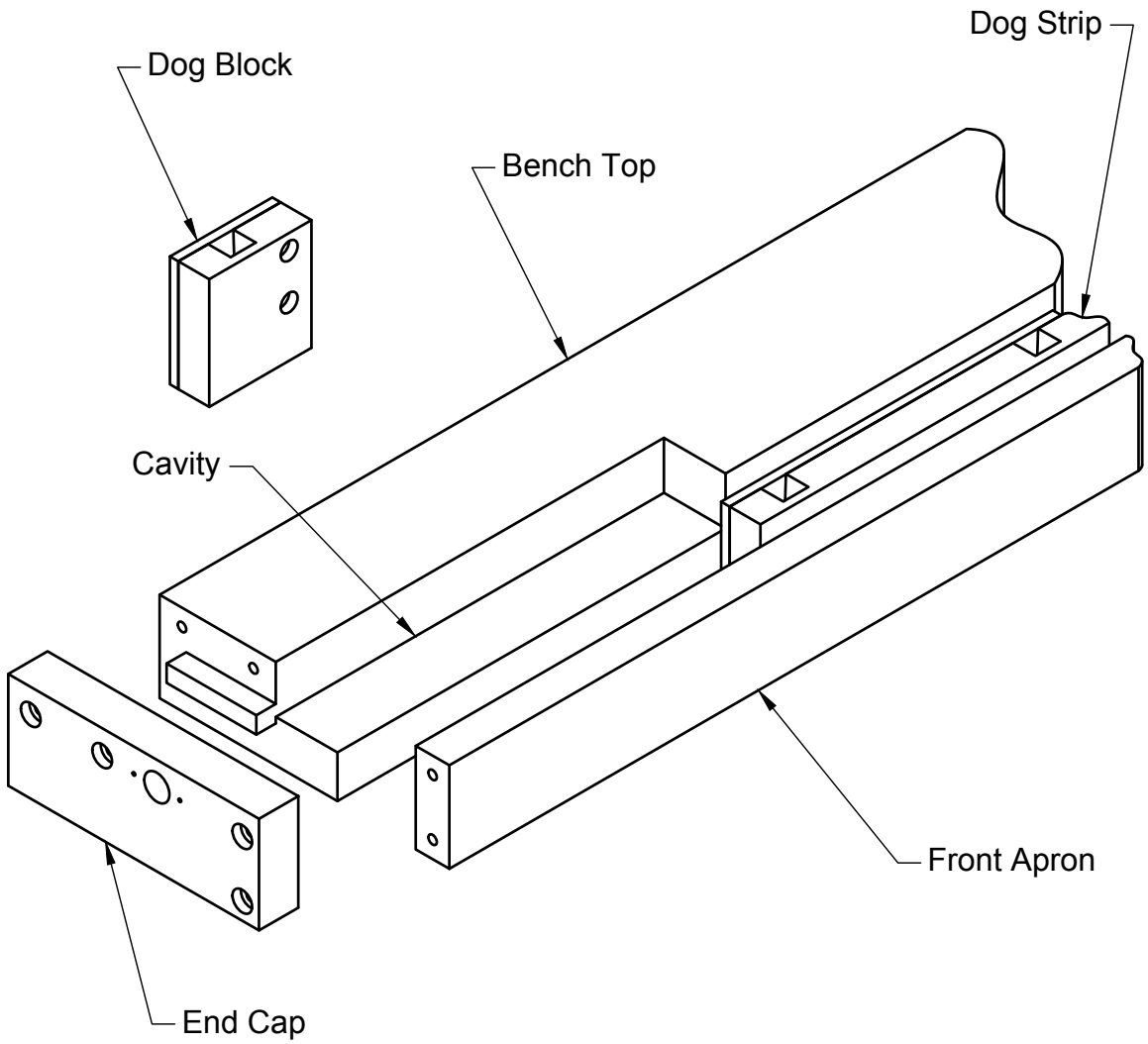


The above parts are included with the VX21 wagon vise hardware purchase. All parts except the clamp shaft are packaged together in a small box. Please contact us if you find anything missing.



The parts shown above are for a split top Roubo type of work bench with a 4" thick top, 1-3/4" thick end cap with bolted connections and traditional style square bench dogs. The design can be altered as you desire by dovetailing the end cap corner to front apron. The end cap thickness may also be altered as desired but 1-3/4" is a practical minimum. You may also use round dog holes instead of the traditional square dog holes.

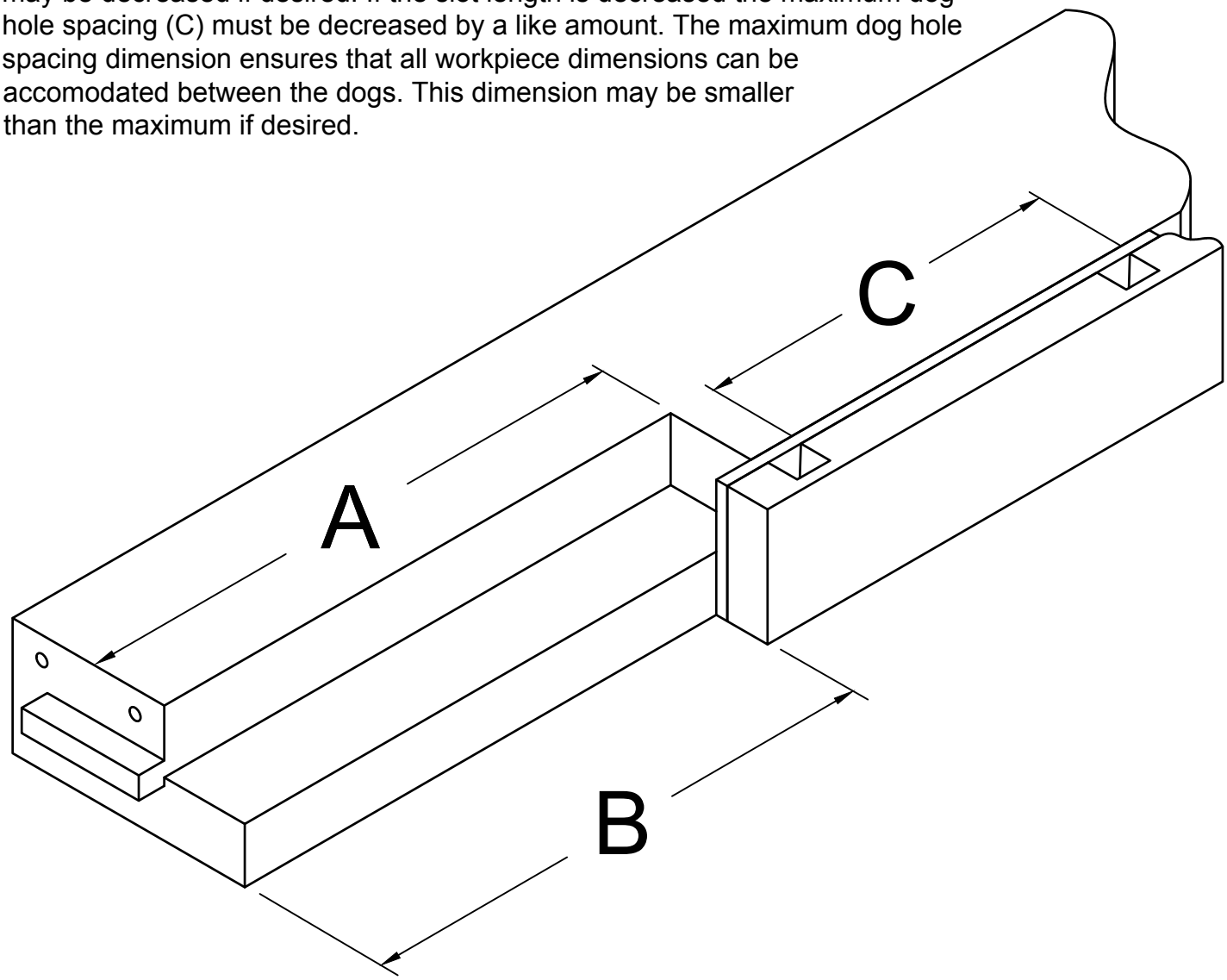
The cavity length from the end cap will vary based on your end cap thickness and the type of handle you choose. The dimensions on the following drawings will give you a good baseline and you can alter the dimensions based on your particular needs.

The cavity may be cut using a router, a circular saw or using a drill to waste away the material and then clean up with a chisel.The cavity may also be created when you glue up the laminations. It is important that the floor of the cavity where the rear bearing mounts be flat and to the proper dimensions.

The dog block and dog strip are created from a laminate if you use square dogs and from solid material if you would like to use round dogs with drilled holes. The thickness of the dog block will have to reduced slightly relative to the dog strip to neccesitate sliding movement.

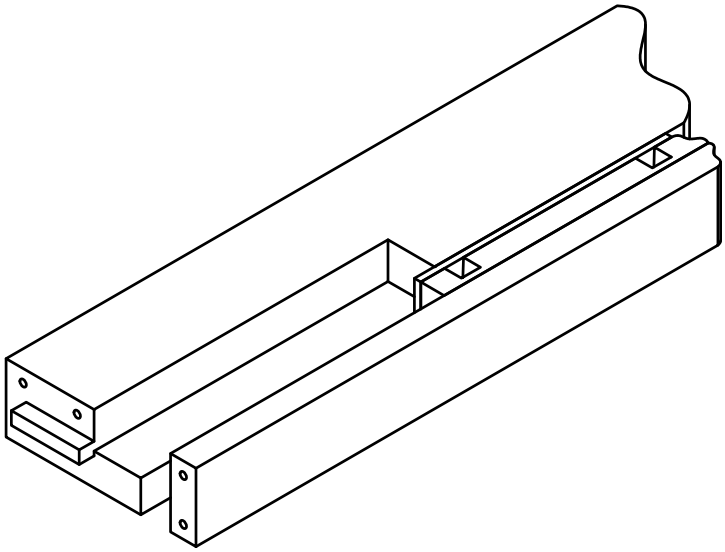
To mount the end cap using bolts, 3/8" diameter will suffice. Counterbore the holes in the end cap to accept the washer size for your particular bolt. The bolts can can be installed into cross dowels for a secure hold.

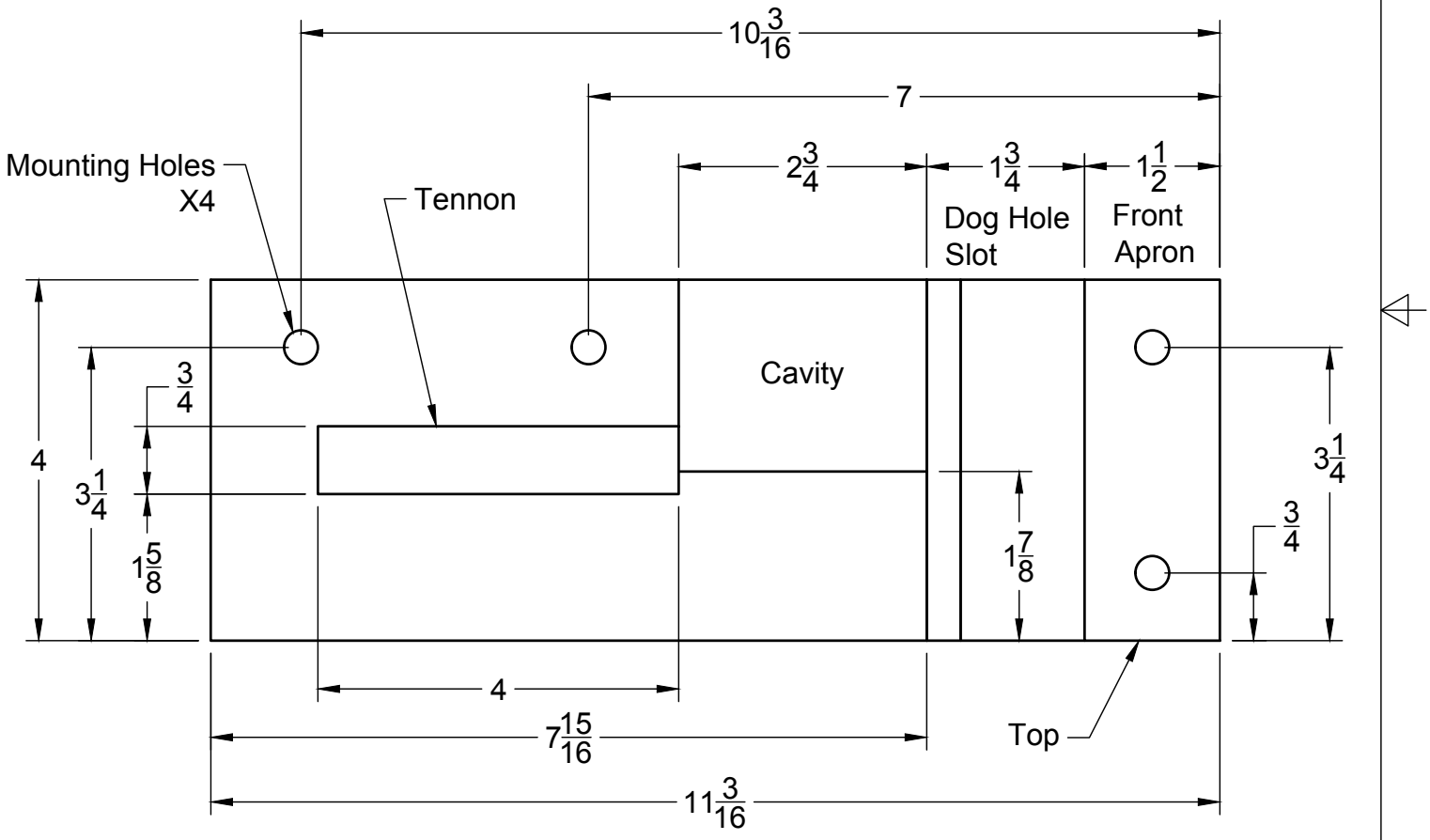
The slot length (B) shown below is a maximum dimension. This dimension may be decreased if desired. If the slot length is decreased the maximum dog hole spacing (C) must be decreased by a like amount. The maximum dog hole spacing dimension ensures that all workpiece dimensions can be accomodated between the dogs. This dimension may be smaller than the maximum if desired.



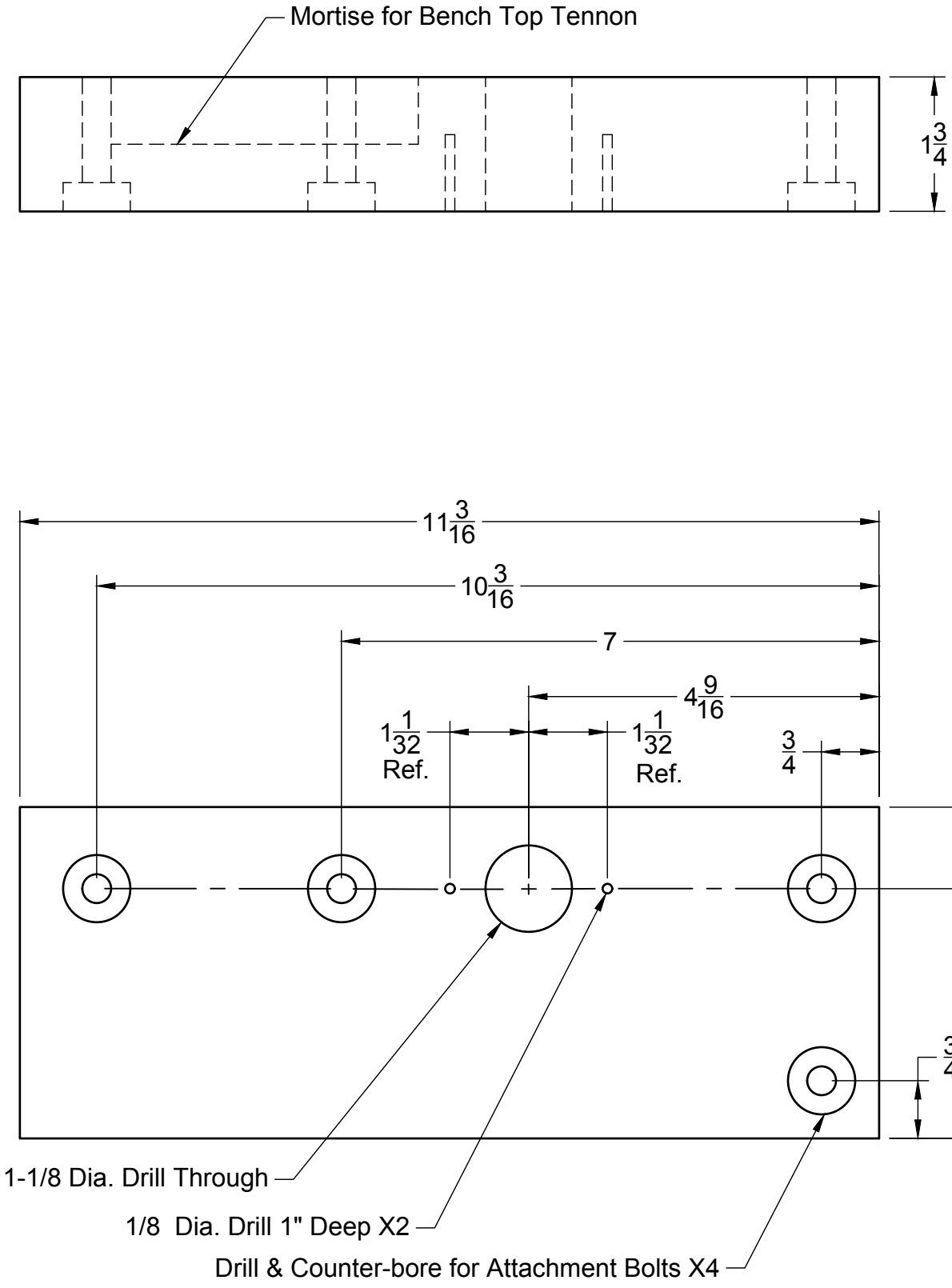
CAVITY LENGTH (A), SLOT LENGTH (B) & MAX. DOG HOLE SPACING (C)			
OPTION*	A	B	C
5" ROUND PROFILE HANDWHEEL	17-5/16"	16-1/8"	11-1/4"
6" SQUARE PROFILE HANDWHEEL	17-1/8"	15-15/16"	11-1/16"
WOODEN HUB & HANDLE	16-5/8"	14-7/16"	10-9/16"

* All options shown are with a 1-3/4" thick end cap - adjust for thicker end cap.

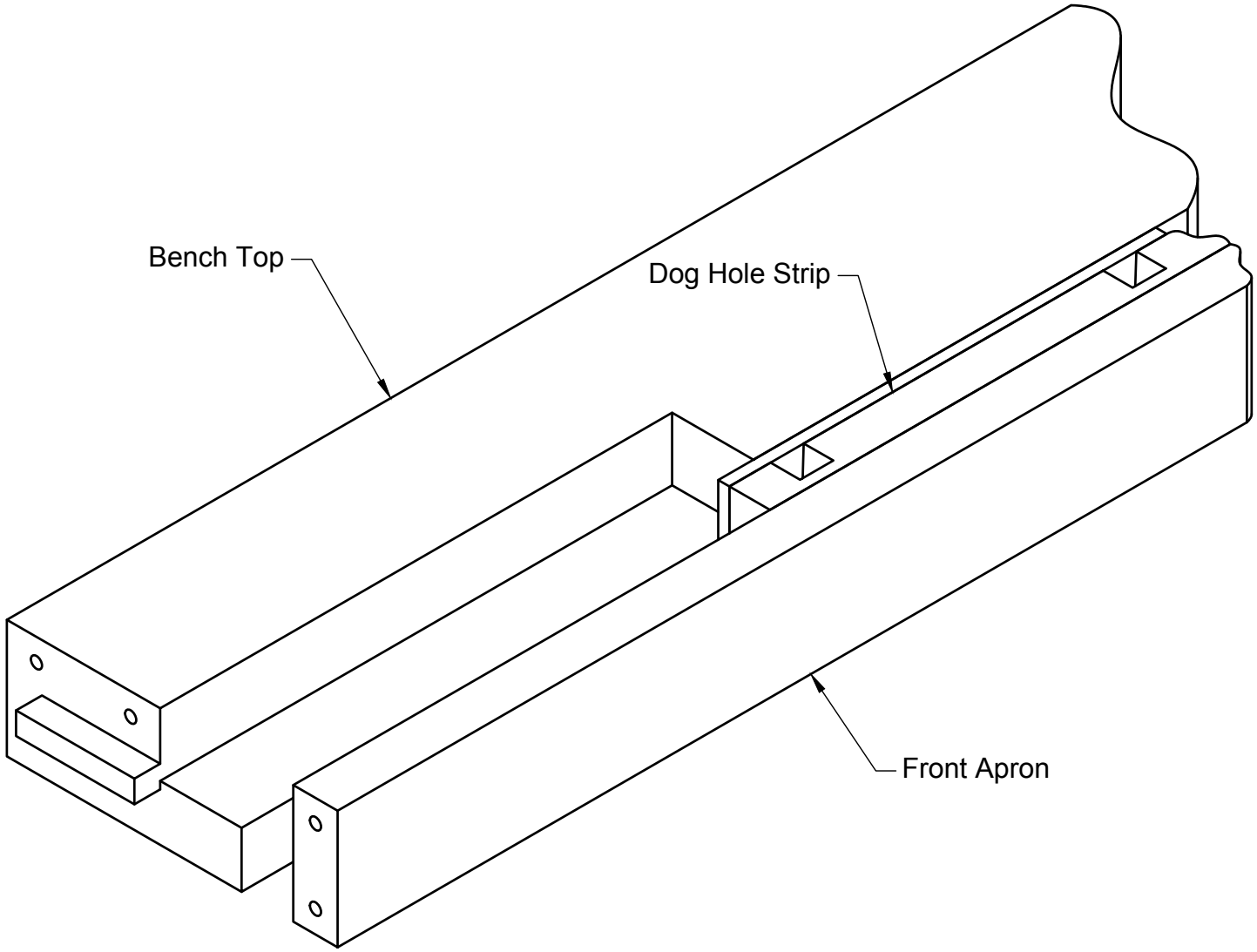




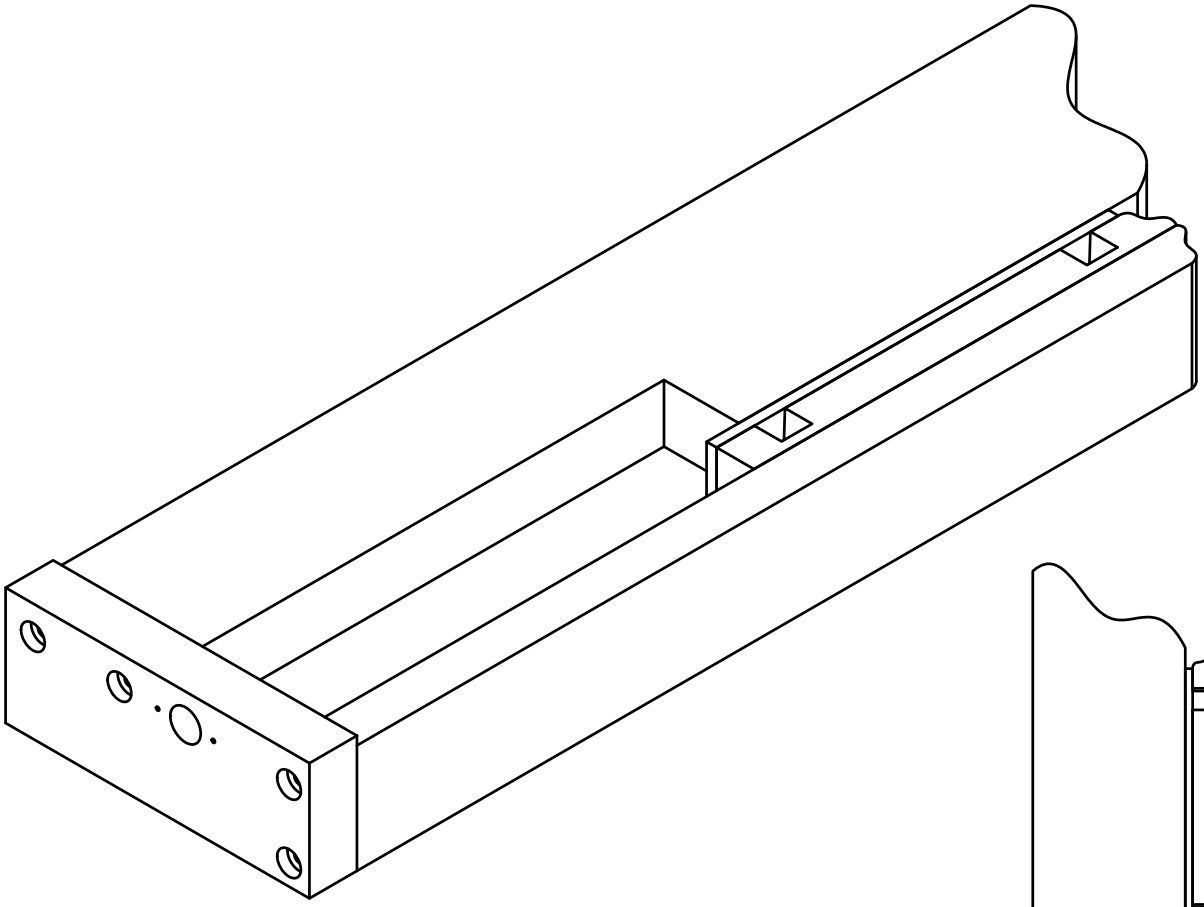
Bench Top With Dog Hole Strip and Front Apron Layout

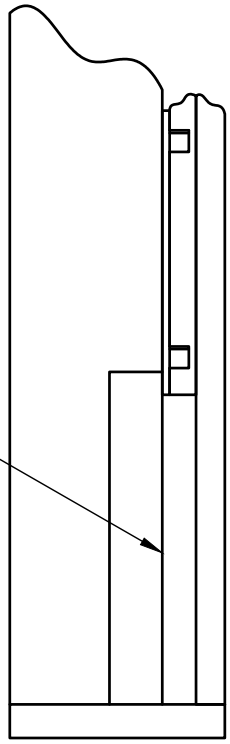


End Cap Layout



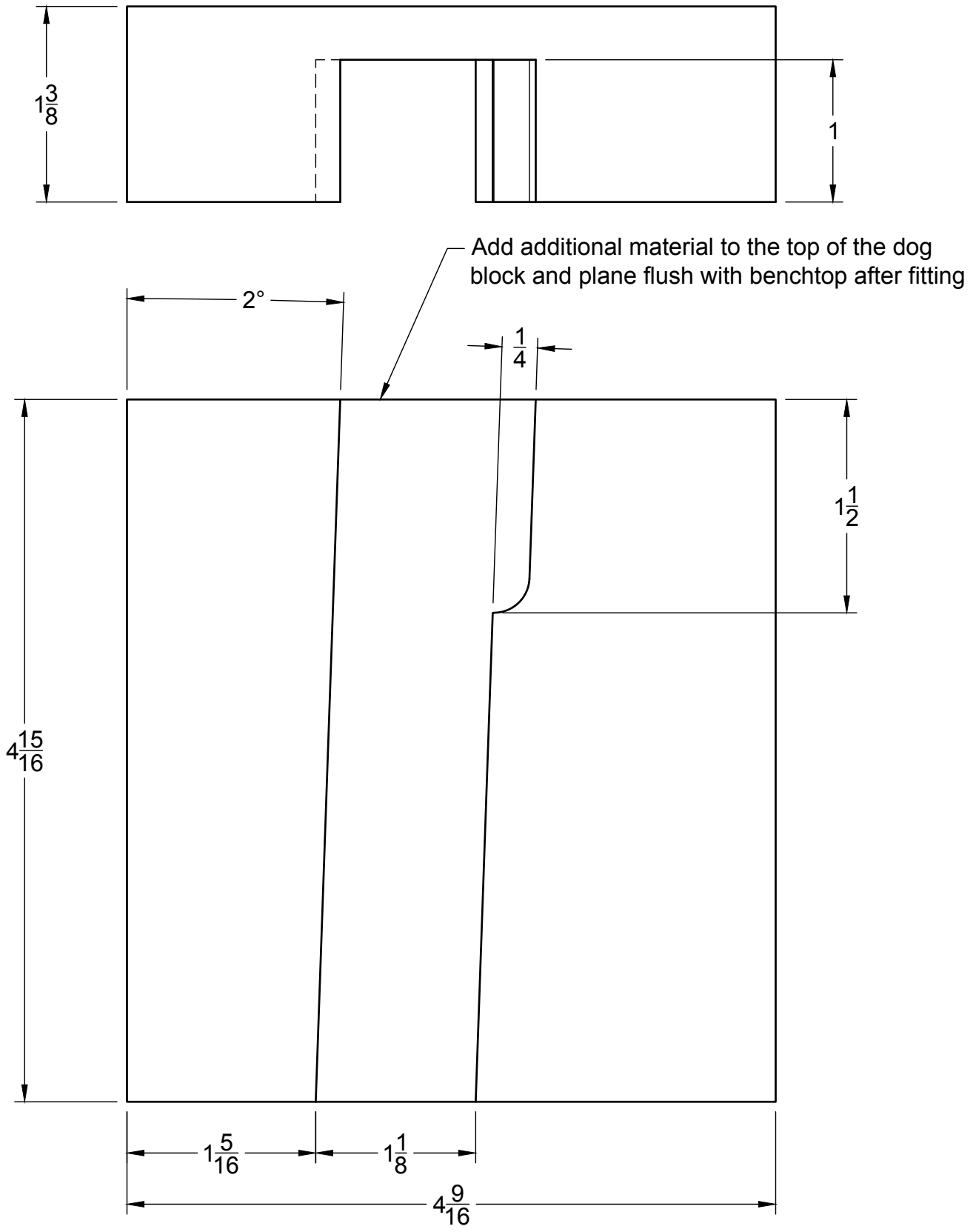
After completing the glue up of the dog hole strip and excavating the cavity in the bench top, glue the dog hole assembly to the bench top making sure the slot length is correct. When this is done the front apron may be glued to the dog hole strip. Temporarily install the end cap to make sure the front apron is aligned with the bench top. NOTE: If you are dovetailing the end cap to the front apron that sub-assembly will have to be completed first and then attached to the bench top.



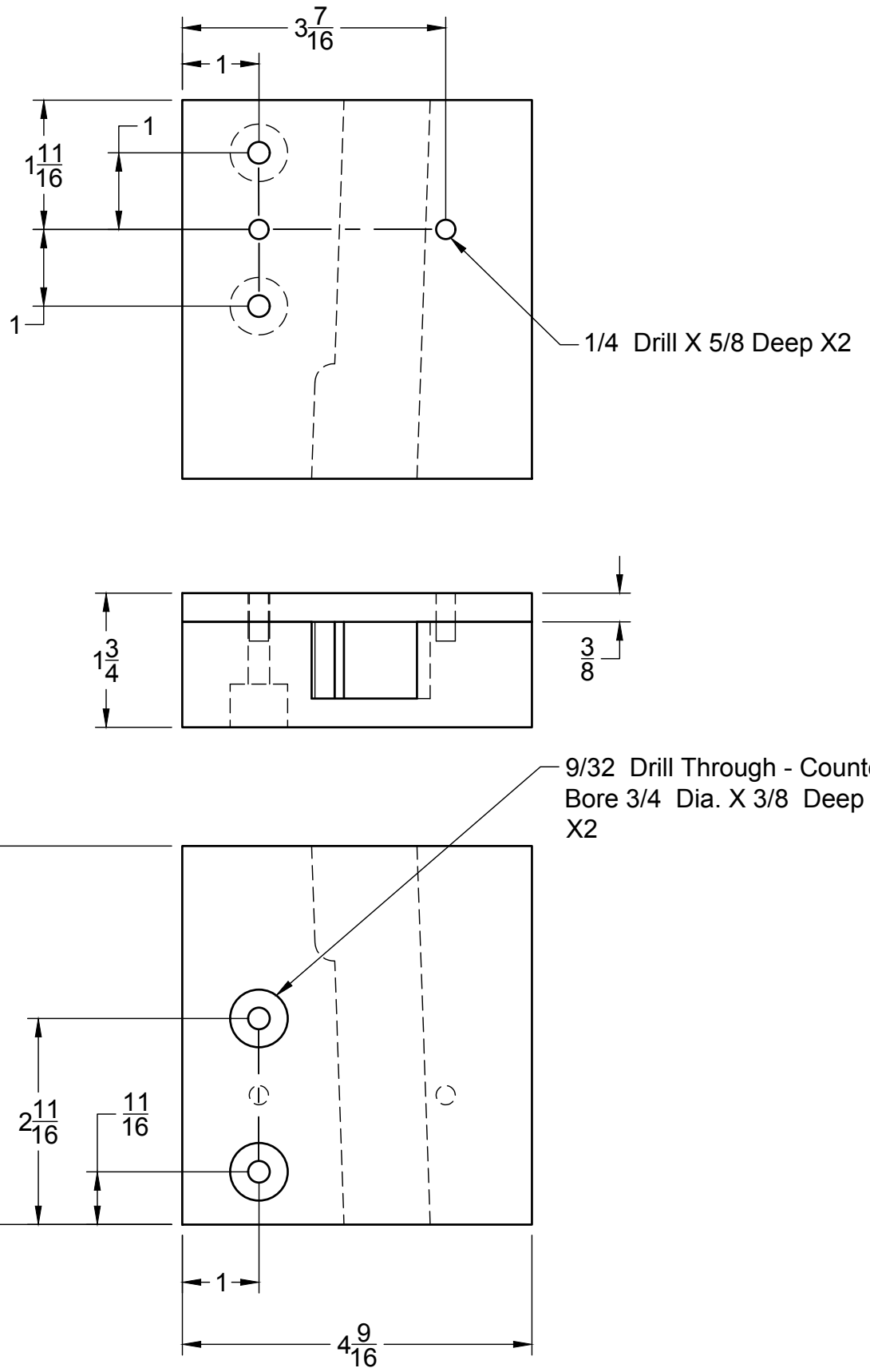


Ensure that the slot width is a consisten width for the entire length when installing the end cap.

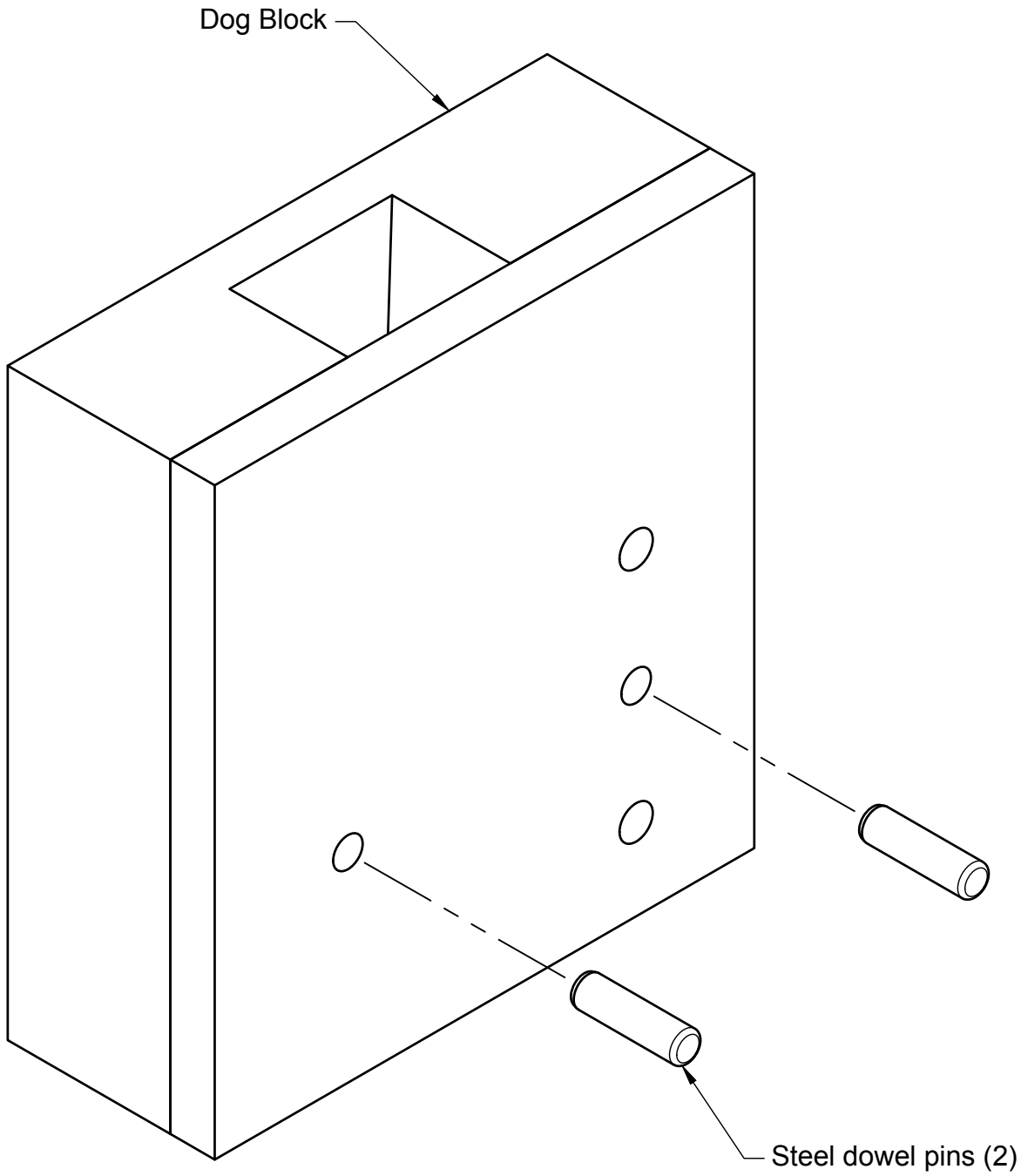
Assemble the end cap to the bench top assembly. Make sure the slot for the dog block is a consistent width or you may have binding or excessive play.
Build the dog block next based on the drawings on the next 3 pages. Mill the cavity for the dog and then glue on a 3/8" thick cap. Once the dog block assembly is complete fit it in the slot in the bench top and make sure there is enough clearance in the slot to slide freely but not too much to make it sloppy. Once you are happy with the fit then drill the dog block mounting and locating holes.



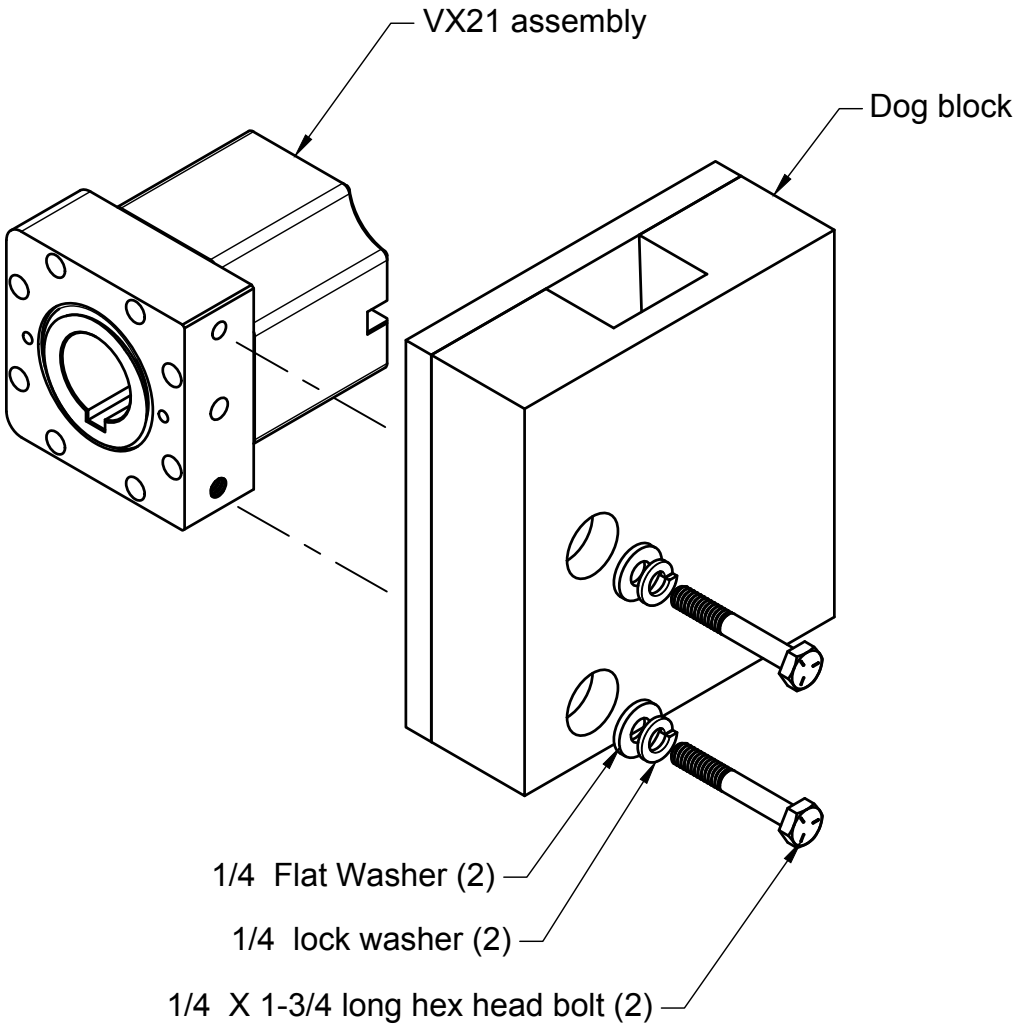
Dog Block Layout



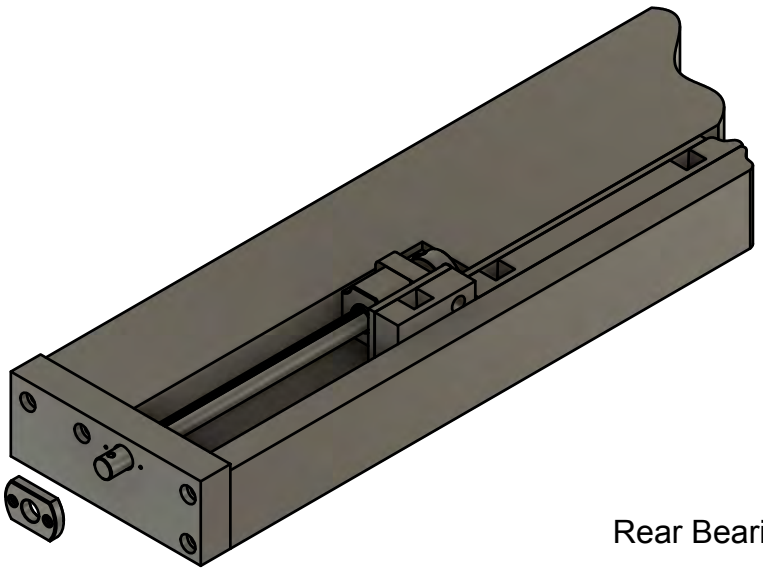
Dog Block Mounting Hole Layout

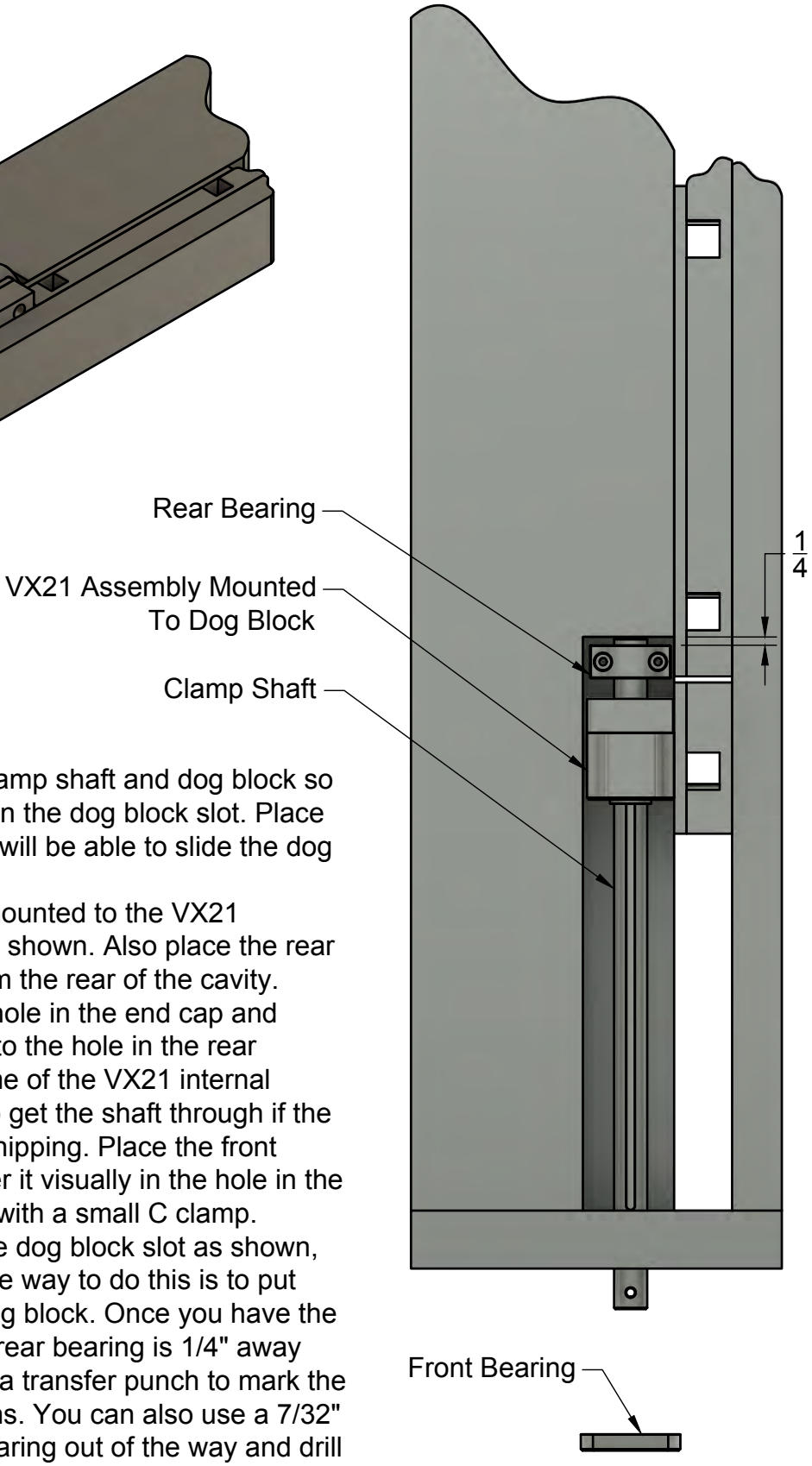


Install the two steel dowel pins into the 1/4" drilled holes in the dog block. They should be a light press fit into the block. You can tap them in with a hammer or press them in with a C-clamp or vise. They should protrude 1/4" from the surface of the dog block.



Align the dowel pins in the dog block with the hole and slot in the VX21 assembly and fasten the dog block to the VX21 assembly with 1/4" bolts, lock washers and washers as shown. Use a 7/16" socket wrench to tighten securely.

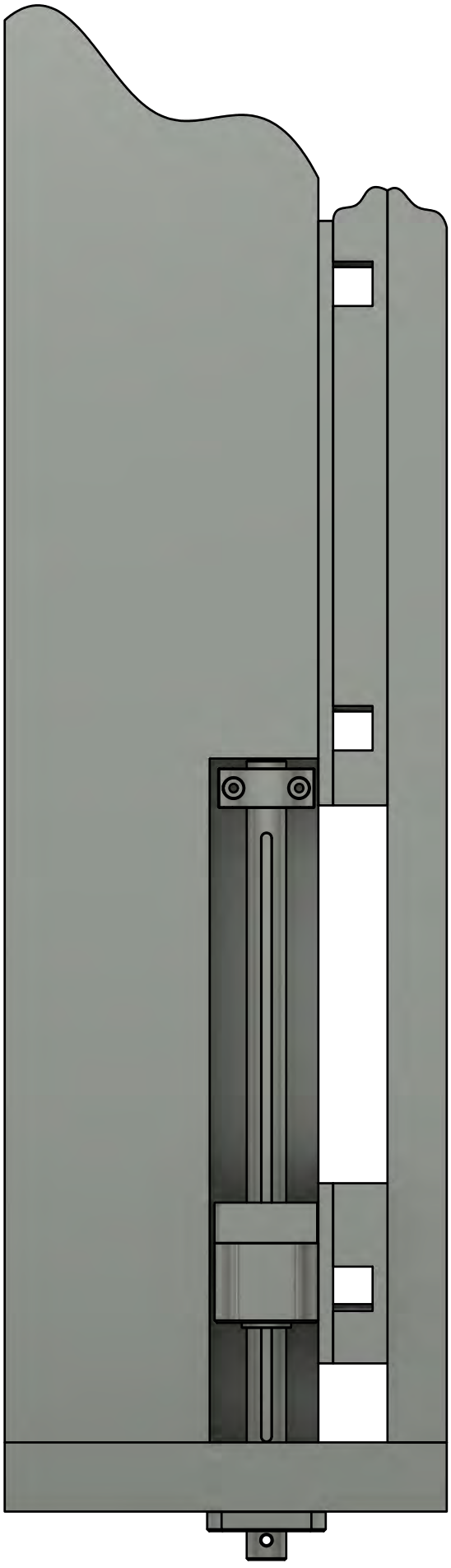




The following steps will align the clamp shaft and dog block so that the dog block will freely travel in the dog block slot. Place blocks under the bench top so you will be able to slide the dog block back and forth.

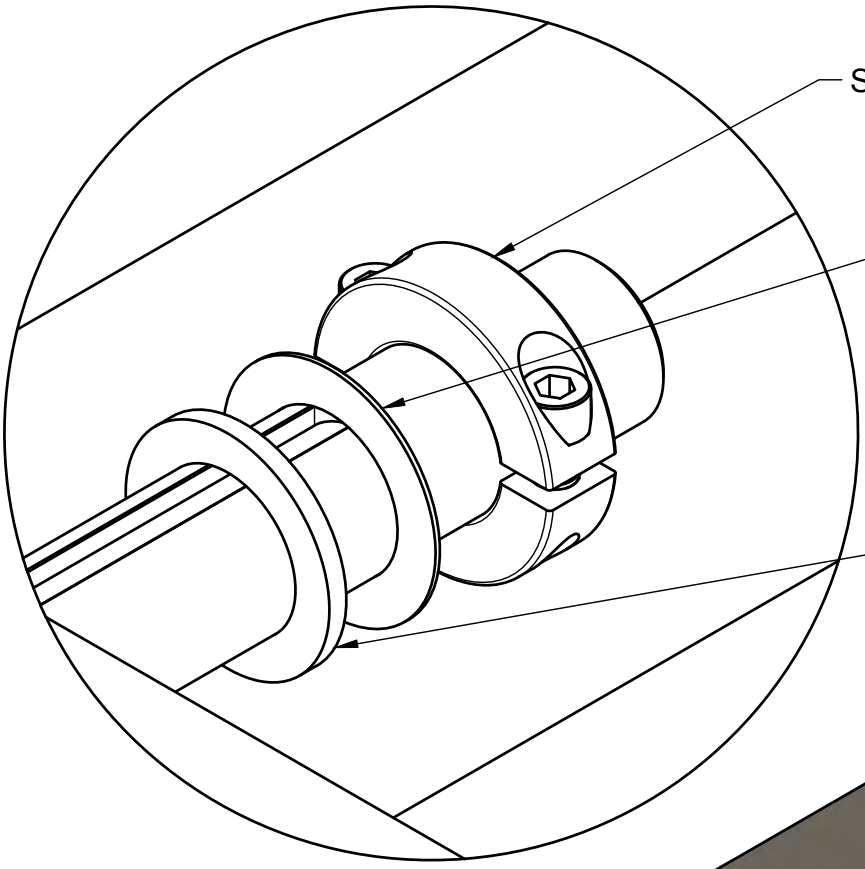
Temporarily place the Dog Block mounted to the VX21 assembly into the dog block slot as shown. Also place the rear bearing in the cavity about 1/4" from the rear of the cavity. Insert the clamp shaft through the hole in the end cap and through the VX21 assembly and into the hole in the rear bearing You may have to align some of the VX21 internal components by using your finger to get the shaft through if the internal parts have shifted during shipping. Place the front bearing over the clamp shaft, center it visually in the hole in the end cap and clamp to the end cap with a small C clamp.

With the dog block positioned in the dog block slot as shown, center the dog block in the slot. One way to do this is to put paper shims on each side of the dog block. Once you have the dog block centered make sure the rear bearing is 1/4" away from the rear of the cavity and use a transfer punch to mark the rear bearing mounting hole locations. You can also use a 7/32" drill bit to do this. Move the rear bearing out of the way and drill the two mounting holes 9/64" diameter and 1" deep. Now install the rear bearing using the two #10 X 2-1/2" long wood screws. Make sure the rear bearing is aligned so the clamp shaft can turn freely.

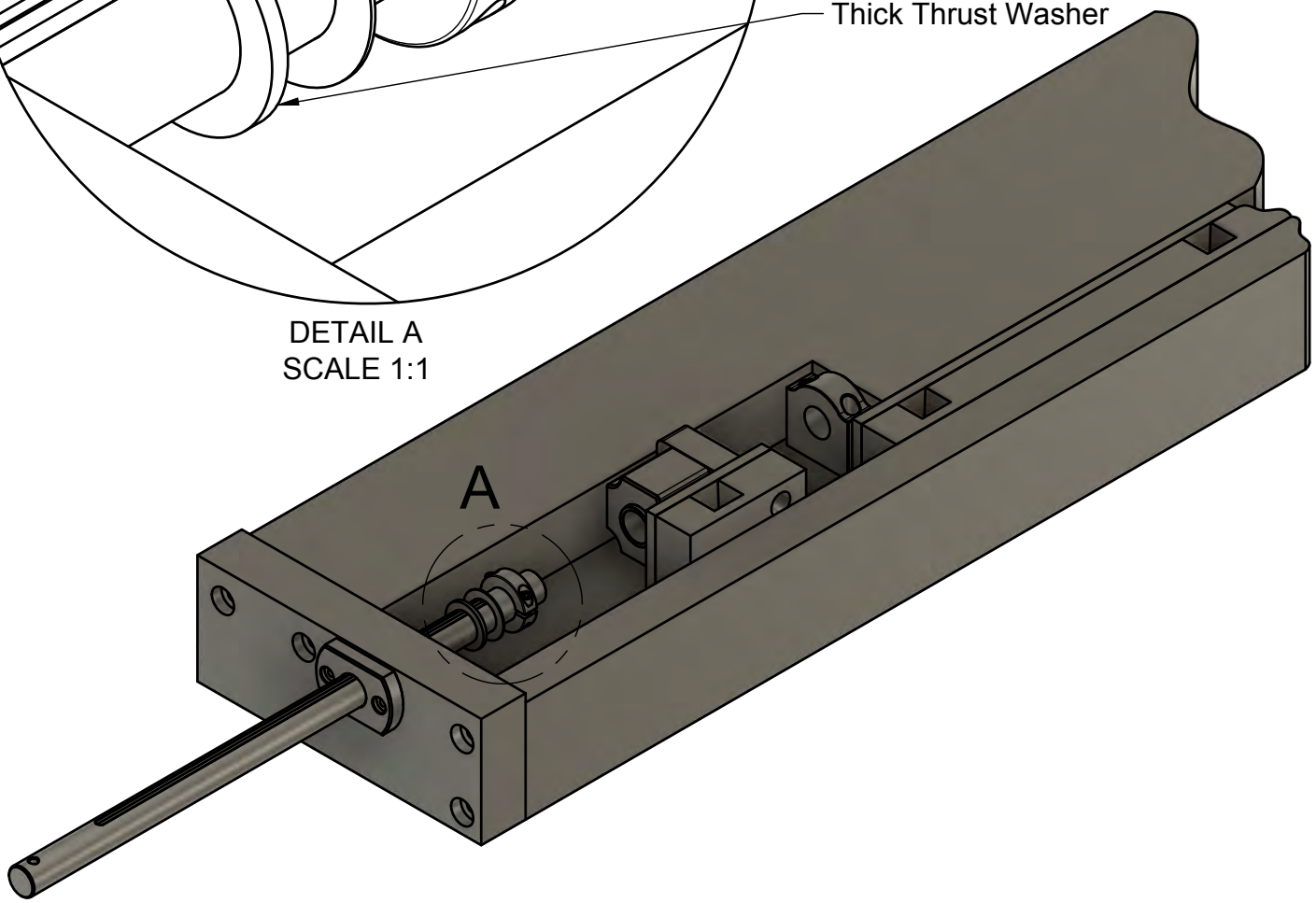


Slide the dog block toward the end cap and observe the top of the dog block relative to the top of the work bench. The dog block should not rise or fall as it travels back and forth. If it does adjust the front bearing up or down until there is no rise or fall of the dog block as it traverses back and forth.

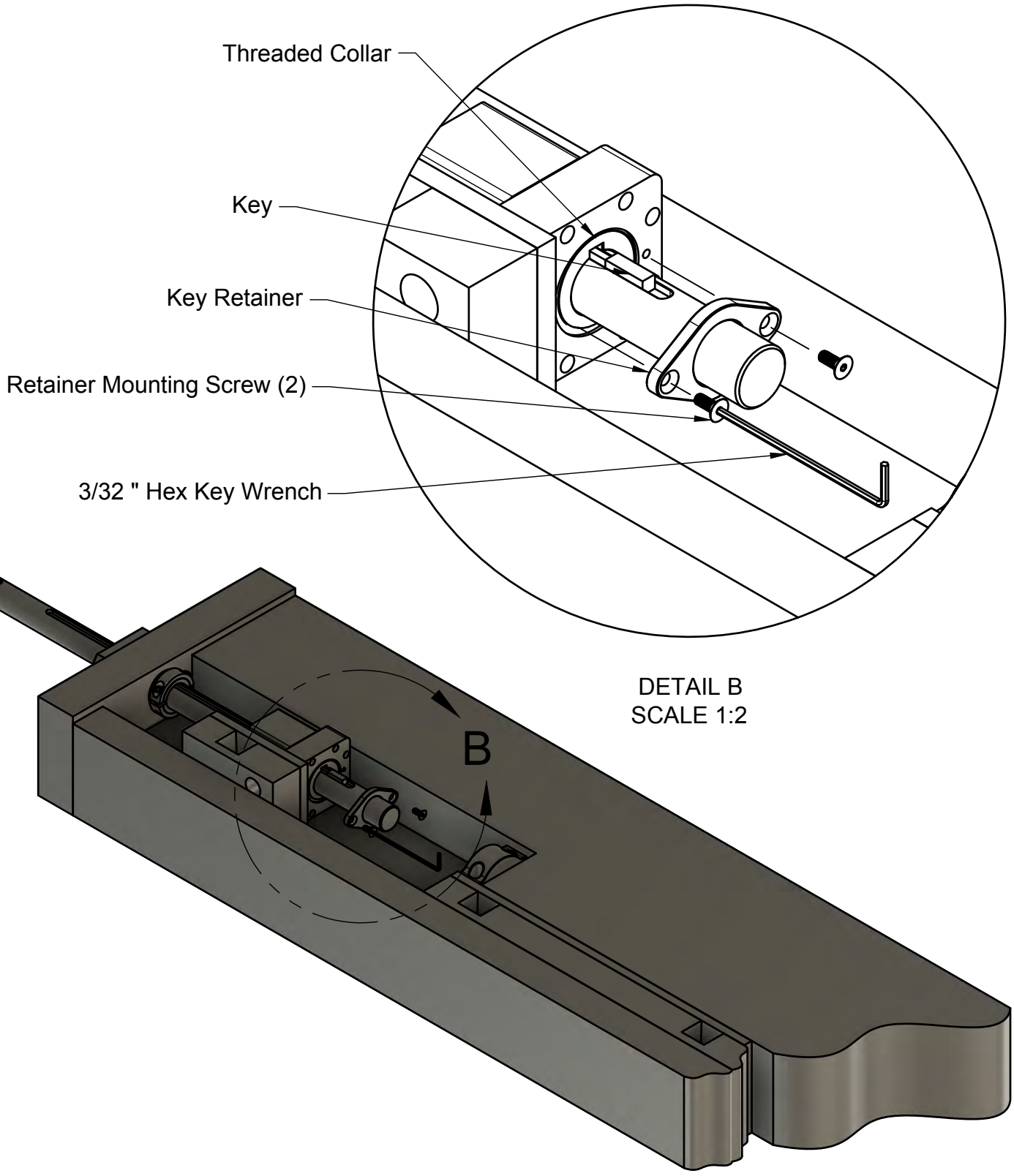
Now position the dog block as shown and make sure it is centered in the dog block slot. The front bearing should now be positioned properly. Use a 7/32" diameter transfer punch or drill bit to mark the front bearing mounting hole locations. Drill 1/8" diameter holes 1" deep at the two marked locations.Install the front bearing using two #8 X 1-1/2" washer head screws. Check to make sure the dog block slides freely and does not rise or fall. Adjust the front bearing until the dog block slides back and forth correctly. There is enough play between the front bearing mounting holes and the mounting screws to allow slight adjustments if needed. You are now ready for the final assembly of the vise.



DETAIL A
SCALE 1:1

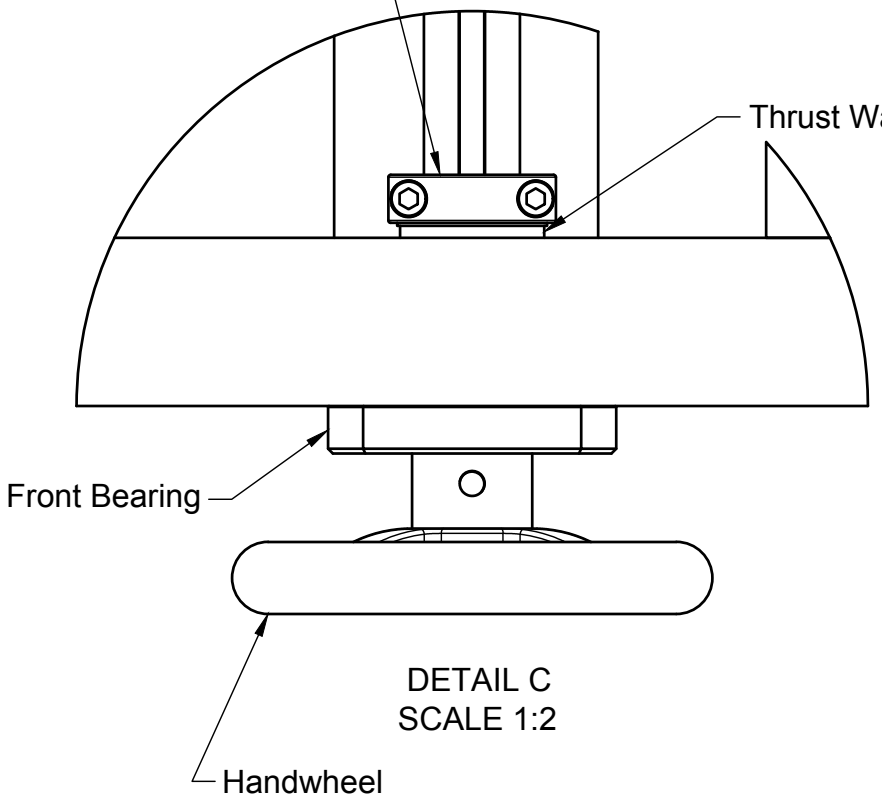


Place the thick thrust washer, the thin thrust washer and the shaft collar onto the clamp shaft as shown above. Slide the clamp shaft through the VX21 assembly and towards the rear bearing.

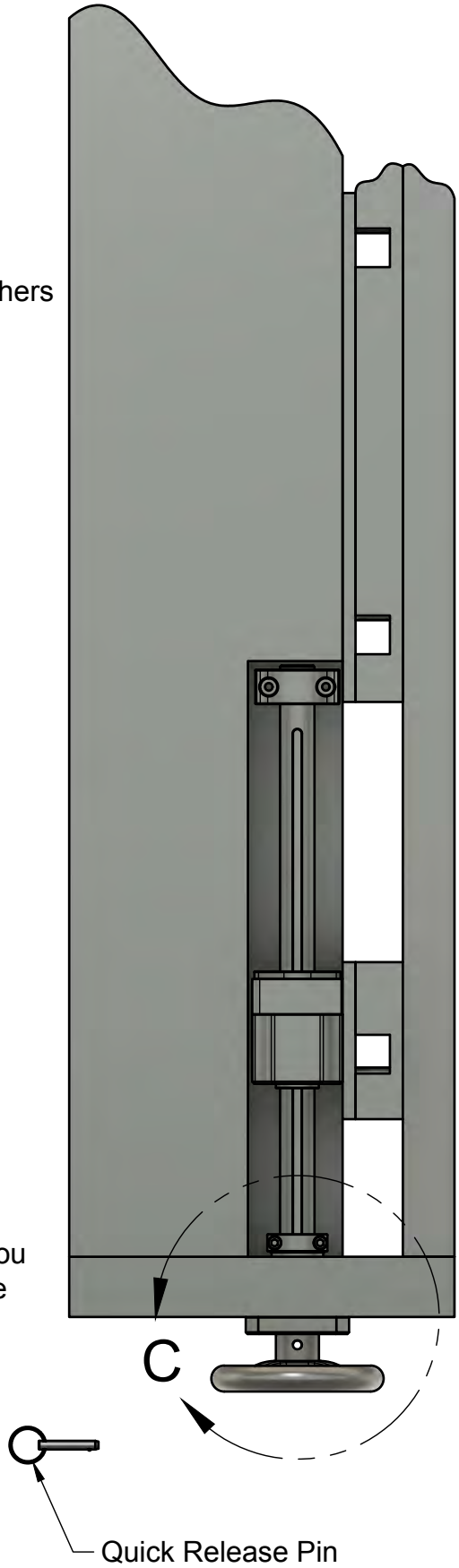


DETAIL B
SCALE 1:2

Place the key into the keyway slot in the clamp shaft and align it with the keyway in the threaded collar as shown above. Slide the key into the threaded collar and place the key retainer onto the shaft aligning the mounting holes in the key retainer with the threaded holes in the base of the VX21 assembly. Use the 3/32" hex key wrench to thread the screws into the mounting holes. Tighten both screws securely. Slide the clamp shaft into the rear bearing.



DETAIL C
SCALE 1:2



Place the handwheel (or whatever handle option you chose) onto the clamp shaft and align the cross hole. Insert the quick release pin into the hole to secure the handwheel to the shaft. Push the shaft collar towards the end cap while pushing the handwheel against the front bearing. Tighten the shaft collar securely to the shaft using a hex key wrench (not included). You want to have minimal end play in this assembly but don't make the shaft collar so tight to the thrust washers that resistance is felt when turning.