Lie-Nielsen TOOLWORKS® INC.

Chain Drive Vise Installation Instructions

Revised 6/24/13

Chain Drive Vise Parts List

(1)- 1 1/8”, 5 tpi, ACME Threaded Rod 20 1/2”

(1)- 1 1/8”, 5 tpi, ACME Threaded Rod 19 1/2”

(1)- Vise Screw Flange

(1)- Chain

(1)- T-Handle with 1/4-20x 1 1/2” Oval Head Screw

(2)- Vise Stand Offs

(2)- 3” ACME Nut 1 1/8 x 5 tpi

(4)- Bronze Flange/Bushing

(2)- Small Sprockets
Note: Each Sprocket should have 2 set screws inserted in each.

(2)- Jam Nuts

(1)- 3/8-24 x 1/2” Bolt
(1)- 1 3/8”x 1/8” Stop Washer

(8)- 5/16-18 x 1 1/2” Socket Head Cap Screws (for mounting Vise Standoffs)

(2)- 5/16-18 x 1 1/2” Flat Head Cap Screws (for mounting the Vise Screw Flange)

(2)- Keys

(8)- Bearing Washers

(4)- Needle Bearings

Preparing Your Bench For Vise Hardware

Notching Bench Skirt For Standoffs

Many benches have a skirt around the bench top. The standoffs need to be mounted as close as possible to the front of the bench without interfering with your dog hole board. This is to give you the maximum vise jaw travel possible. The notch should be 22″ wide and remove all material up to the dog holes.

PLEASE NOTE:
The 22″ notch is for installing the 12″ Chain Drive vise. The notch should be expanded as follows for the 18″ and 22″ vise.

Measuring for Vise Screw Holes

18″ Vise: 28″ notch
24″ Vise: 34″ notch

First measure 4 5/8″ from the end of the bench to find the first hole position.

Please Note: Measurement in picture it taken from the 1″ mark.

You then need to figure out the centers of the holes to allow the shoulder vise to pass through the front of the bench. These measurements will vary from bench to bench due to the varying thicknesses of bench tops. Using a combination square, measure from the bottom of the bench top to the underside of the bench skirt.

Transfer that measurement to the outside of the bench skirt and extend the measurement across the front of the bench skirt. This will give you the position of the underside of the bench top on the front of the bench.

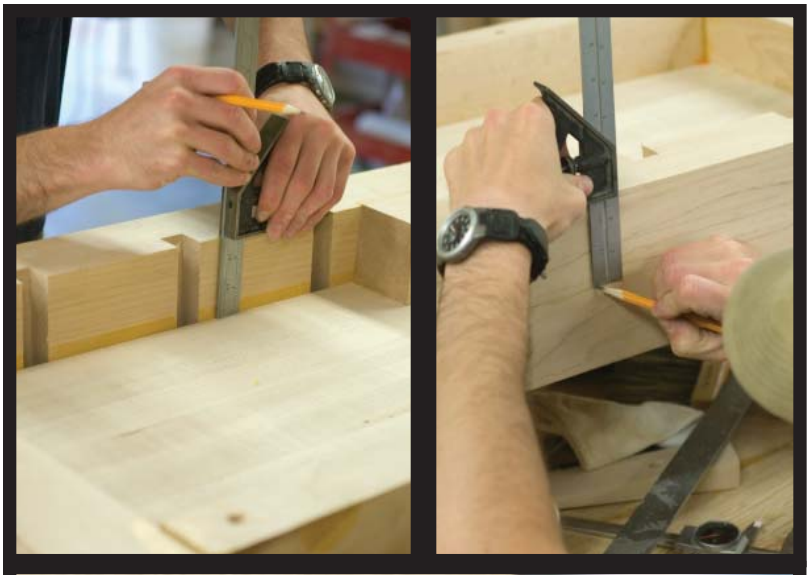
From that mark you need to measure 1 1/64″ toward the bottom of the skirt. This will give you the center of the first hole.

Please Note: In this photo the measurement is taken from the 5″ mark on the tape to ensure accuracy.

Next from the mark just made, measure over 13 5/16″ . This is the center to center measurement for the second hole.

PLEASE NOTE:
This is the center to center measurement for the 12” Chain Drive Vise. The center to center measurement will change depending on which vise you purchased as follows:

18″ Chain Drive center to center: 19 5/16″
24″ Chain Drive center to center: 25 5/16″



Double check that the measurement of the bottom of the bench top is accurate for the second hole center.

Drill a 1 1/4″ hole on center at each mark made. This hole should be drilled all the way through the bench skirt

It is important that these holes are square to the face.

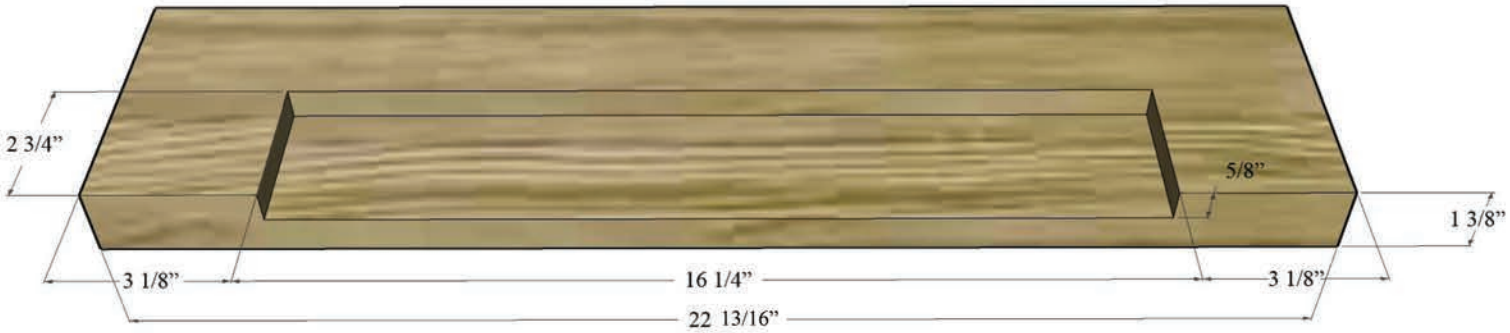
Making the 12″ Vise Shell

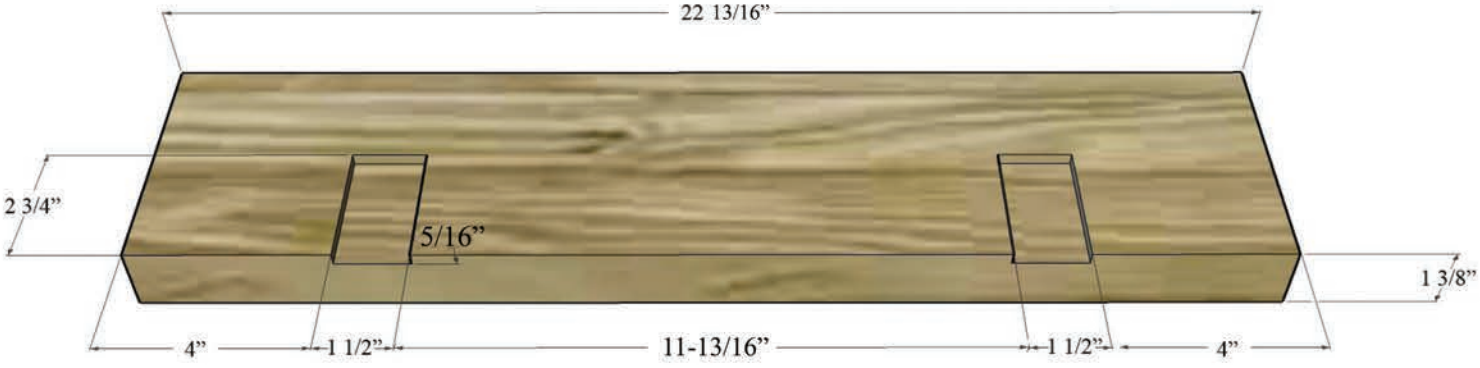
Note: A complete and oiled vise shell is available for purchase.
Please visit www.lie-nielsen.com for more information.

To make the vise shell you need to cut two pieces at 22 13/16" x 5 1/4″ x 1 3/8". You then need to mill out cavities on both pieces so when you glue them up they will create the proper cavity for the chain/sprocket.

Please Note: If you want to cut the full cavity on one piece of wood you will need one piece at 22 13/16" x 5 1/4" x 1 3/4" and the other piece to complete the shell at 22 13/16" x 5 1/4"x 1" .

These drawings provide the proper measurements to create the vise shell components.





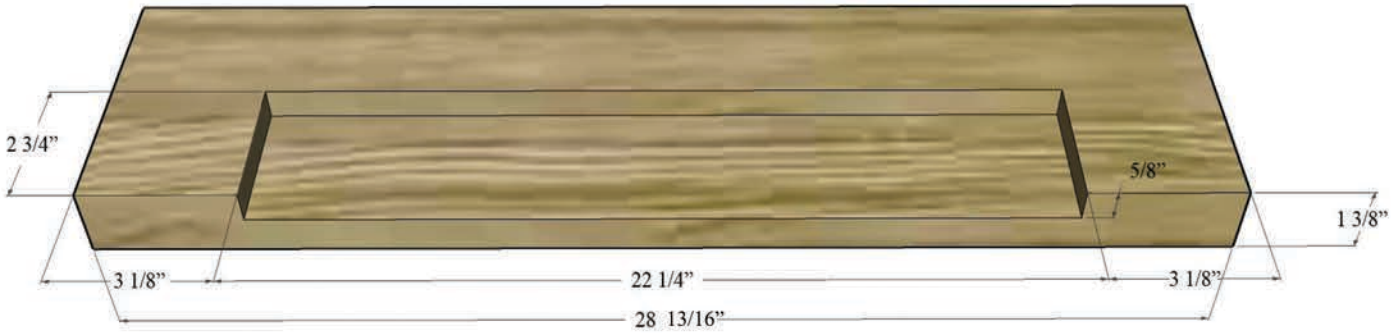
Making the 18″ Vise Shell

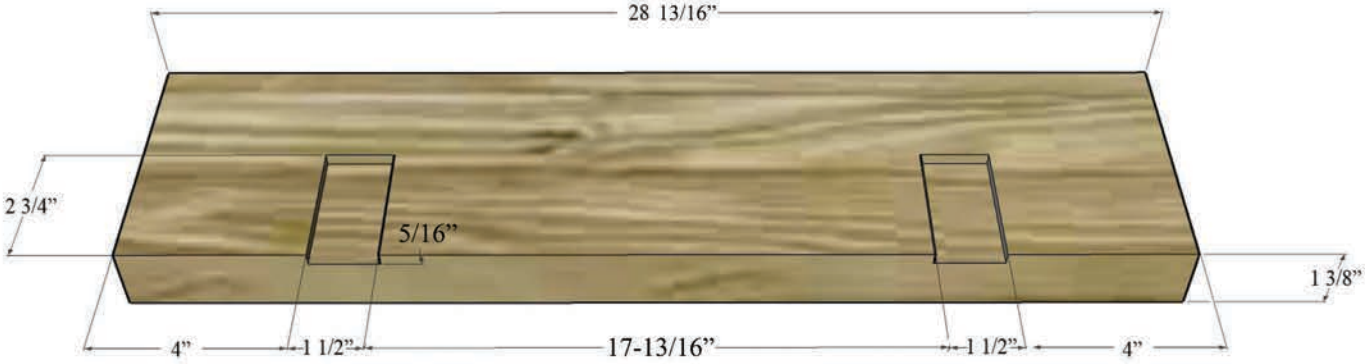
Note: A complete and oiled vise shell is available for purchase. Please visit www.lie-nielsen.com for more information.

To make the vise shell you need to cut two pieces at 28 13/16" x 5 1/4″ x 1 3/8″ . You then need to mill out cavities on both pieces so when you glue them up they will create the proper cavity for the chain/sprocket.

Please Note: If you want to cut the full cavity on one piece of wood you will need one piece at 28 13/16" x 5 1/4″ x 1 3/4″ and the other piece to complete the shell at 28 13/16" x 5 1/4″ x 1″.

These drawings provide the proper measurements to create the vise shell components.





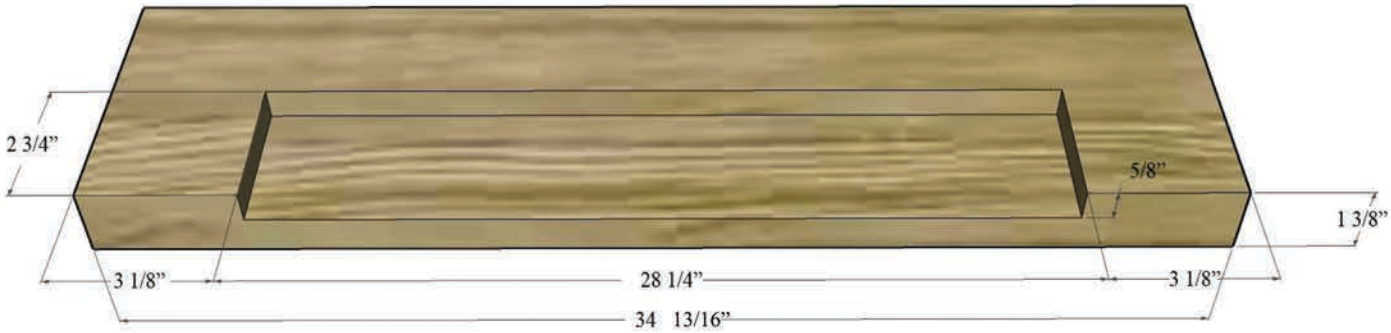
Making the 24″ Vise Shell

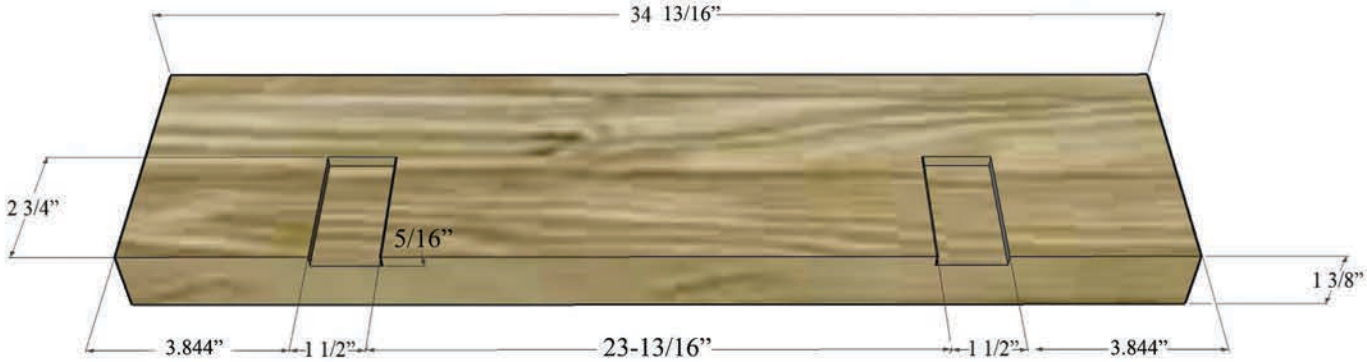
Note: A complete and oiled vise shell is available for purchase.
Please visit www.lie-nielsen.com for more information.

To make the vise shell you need to cut two pieces at 34 13/16" x 5 1/4″ x 1 3/8″ . You then need to mill out cavities on both pieces so when you glue them up they will create the proper cavity for the chain/sprocket.

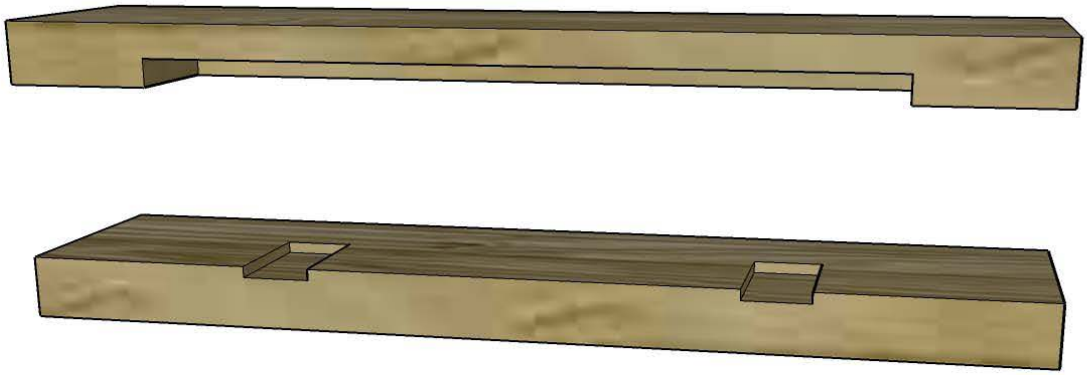
Please Note: If you want to cut the full cavity on one piece of wood you will need one piece at 34 13/16" x 5 1/4″ x 1 3/4″ and the other piece to complete the shell at 34 13/16" x 5 1/4″ x 1″.

These drawings provide the proper measurements to create the vise shell components.





Please Note: The length of the jaw is left long, to be finished flush with the side of your bench. Also, the inside face of the jaw will need to be flattend to fit your bench.

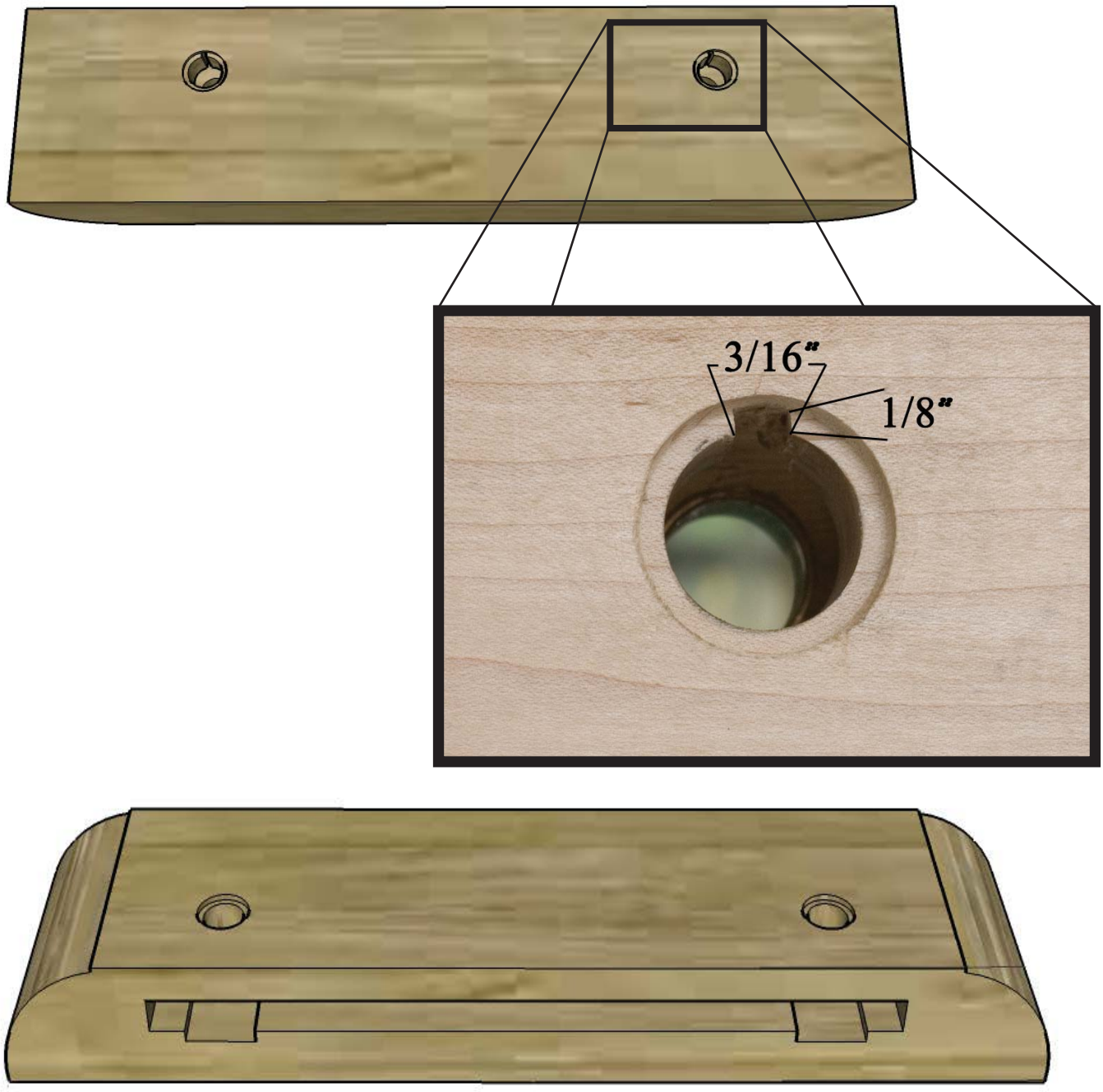


After making the two pieces for the shell you will then need to glue them in this orientation. Make sure the two pieces are flush on the top and sides and clamp them together until the glue has dried (Note: Use more clamps then you think you would need).

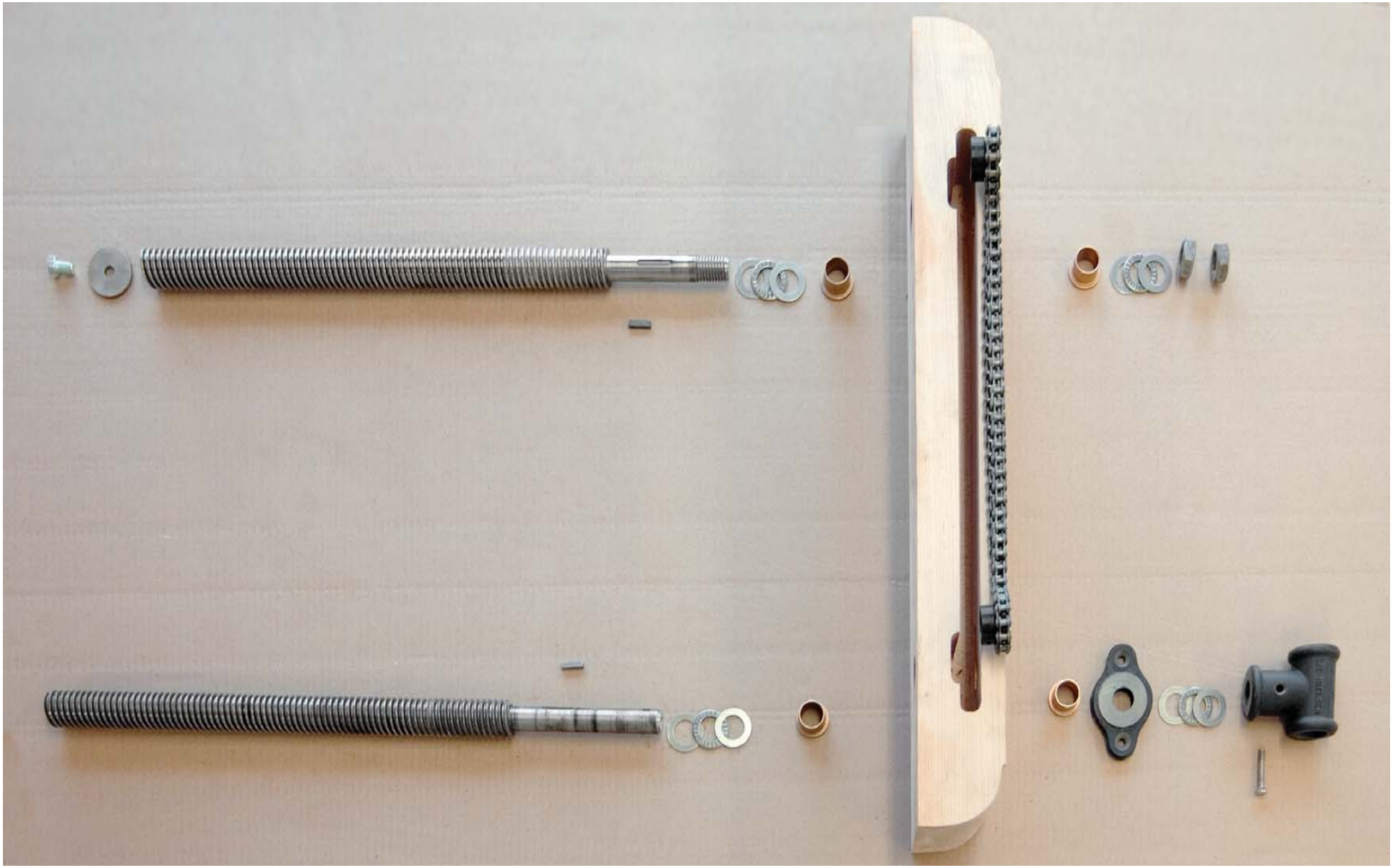
PLEASE NOTE: The center to center measurement on this drawing is for the 12˝ Chain Drive Vise. The measurement will change for the 18˝ and 24˝ Chain Drive Vise as follows:
18˝ Chain Drive Vise center to center: 19 5/16˝
24˝ Chain Drive Vise center to center: 25 5/16˝
When you drill the holes for the screws you must counter bore for the bushings &Bearings. The Horizontal center line is 3 1/2˝ down from the top of the jaw. The vertical center line for the first hole is 4 5/8˝ in fro the edge. Measure center to center for the 2nd hole which is 13 5/16˝ for the 12˝ vise jaw.
DO THIS ON BOTH SIDES OF THE JAW (being as precise as possible). It is best to drill the counter bores first, from largest to smallest. Starting with 1 1/4˝ bit, drill in 1/8˝ from vise face. This needs to be done on all center marks except the outside hole that will be covered with the T-Handle. Next Drill a 1 1/8˝ bore 1/8˝ in from the top of the first counter bore (or vise face for the hole covered with T-Handle).

The final step is to drill a 7/8" hole on each center mark all the way through the shell. Each of these operations should be done on a drill press that is perfectly square and true.

Next you need to create a keyway for the key to pass through. This keyway should be done to each side but only on the inside face. You will need to make the keyway a minimum of 3/16" wide, 1/8" high and make sure it passes all the way through the inside face. Please Note: Cut this keyway on the bottom of the hole (Same side as the groove for the chain/sprocket assembly).



The design of the edges of the shell is up to you. On ours, we put a traditional quarter round edge with a small decorative fillet to the face.



Chain Drive Vise Assembly

Please Note: The following shows the initial bearing assembly of only one of the vise screws. The steps are the same for both vise screws for this initial step.

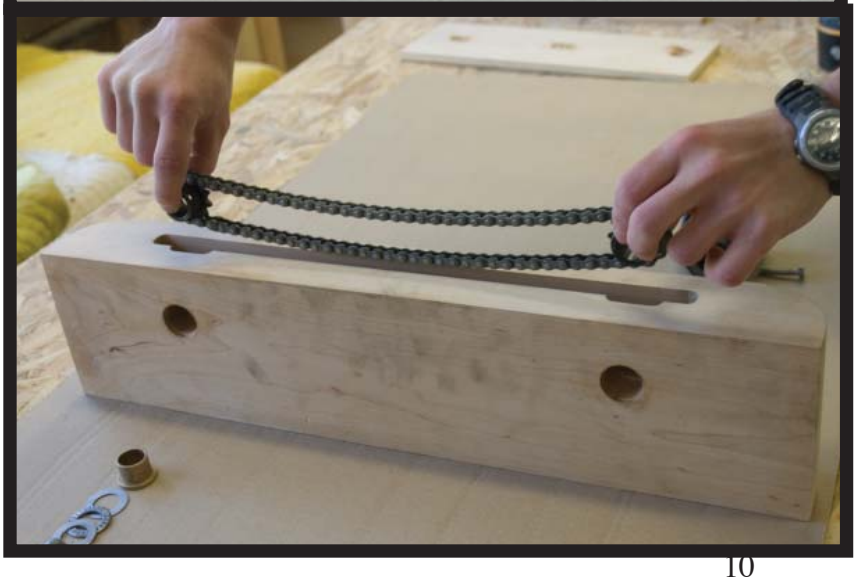
Place 1 washer, 1 needle bearing, 1 washer, and one bronze flange bushing (in this order) onto the vise screw.

Lock the bearing assembly in place with the small key by inserting it into the milled groove on the shaft.

Note: This key fits snuggly but can fall out if not careful.

Repeat this step for the other vise screw.

Next, place chain around the two small sprockets. It is helpful if both sprockets have their key hole in the same position.



Place chain/sprocket assembly into vise shell so the flanges on the sprockets slide into the secondary grooves.

Take note of the position of the key hole in the sprocket.

Line up the key with the key hole and slide the rods through the vise shell.

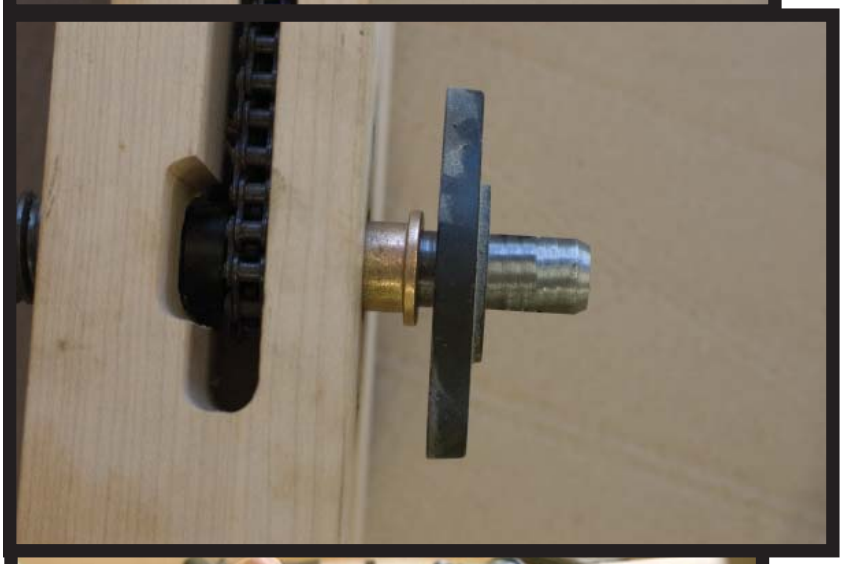
Note: it may take a little finesse but the vise screws should slide through without much force.

Place 1 bronze flange bushing, 1 washer, 1 needle bearing, and 1 more washer (in that order) on the vise screw that has a secondary thread at the tip.

Spin on one jam nut until the bronze flange sits flush in its mount.

Note: Make sure you don't over tighten the jam nut.

Then spin on the second jam nut to lock the first jam nut into position.



For the vise screw that mounts the T-handle you will need to perform an extra few steps.

Place the bronze flange/bushing and vise screw flange (in that order) on to the vise screw, pushing the bronze flange into the vise shell.

With the flange holes evenly spaced on both sides to the base, use the F bit and drill pilot holes to mark screw position.

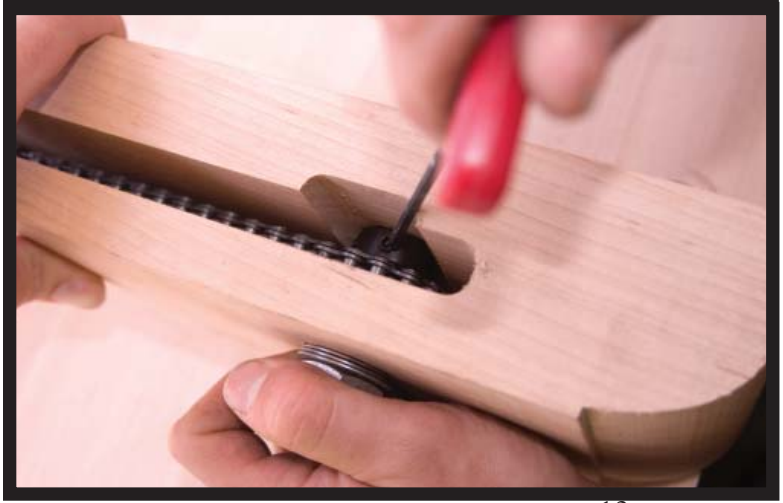
Remove the vise screw flange.

Drill holes on the marks made in the previous step using F bit, drill the holes 1 1/2" deep.

Place the vise screw flange, 1 washer, 1 Needle Bearing, 1 Washer (In that order) on the non-secondary threaded vise screw.

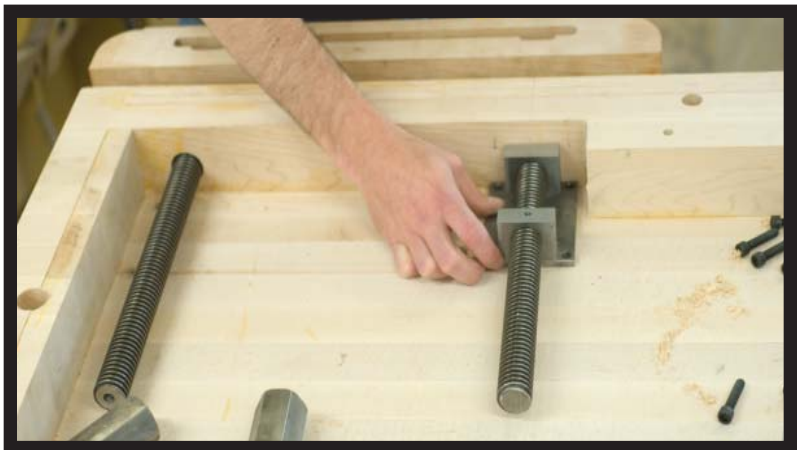
Place T-Handle on vise screw and install the Oval Head Screw.

With an Allen wrench, install the 5/16-18 x 1 1/2” Flat Head Cap Screws to mount the vise screw flange.



With 1/8” Allen wrench tighten down set screws on small sprockets

Installing Chain Drive Assembly on Bench

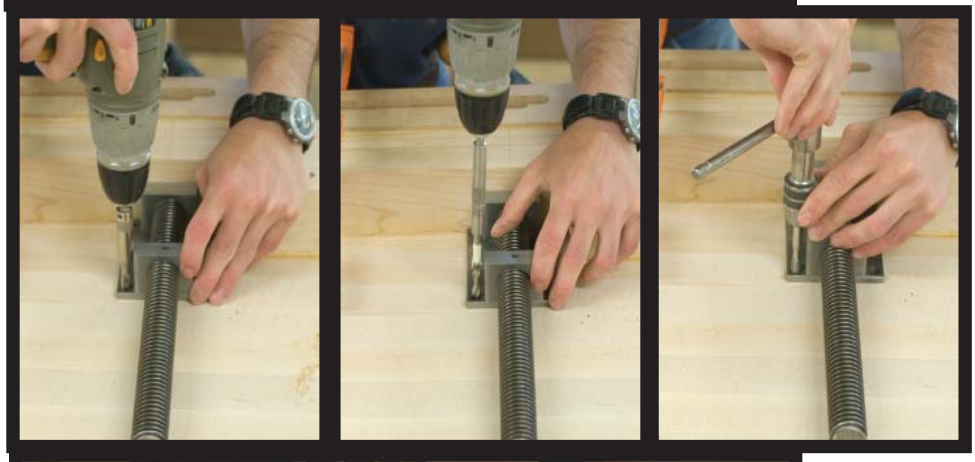


The next step is to mount the assembly to your workbench. It is important that you time the nuts so the shoulder closes evenly against the front of the bench.

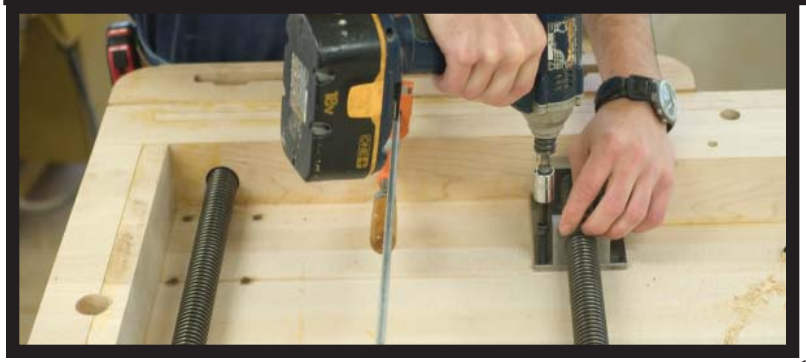
First insert vise assembly through the two holes drilled in workbench. Slide the inside standoff over inside vise screw without the ACME nut in place.

Slide vise assembly tight against the bench making sure that the standoff has also been pushed into the bench skirt.

Clamp vise assembly to the bench.



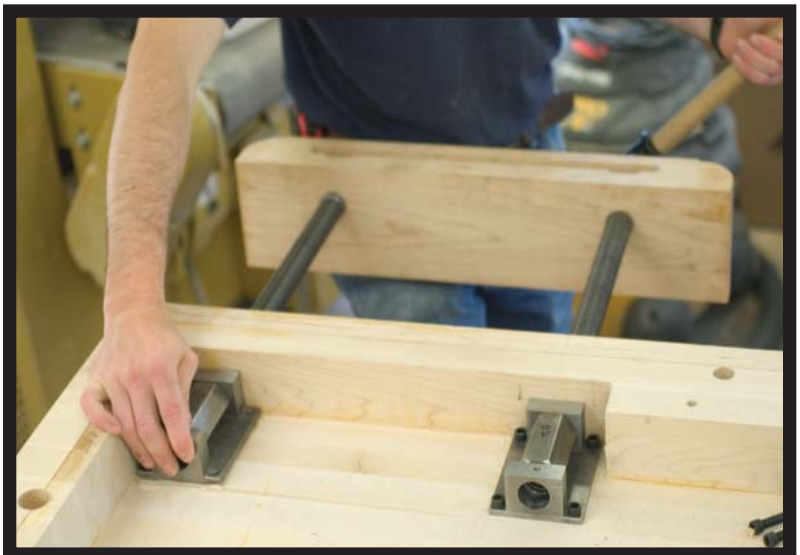
Making sure that the standoff is pressed all the way into the bench skirt. Drill a pilot hole with a 5/64" hinge bit, followed by a 1/4" drill bit 1 1/2" deep (make sure you mark the drill bit or use a depth stop so you don't blow through the top of the bench). Then tap each hole with a 5/16-18 tap.



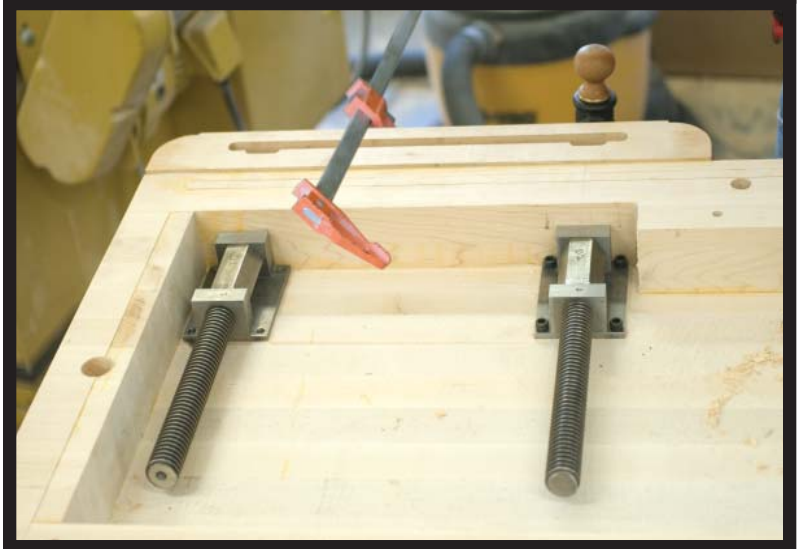
Finally, install all (4) 5/16-18 x 1 1/2" Socket Head Cap Screws to mount the first plate.

Remove the vise assembly from the bench.

Timing the ACME Nuts

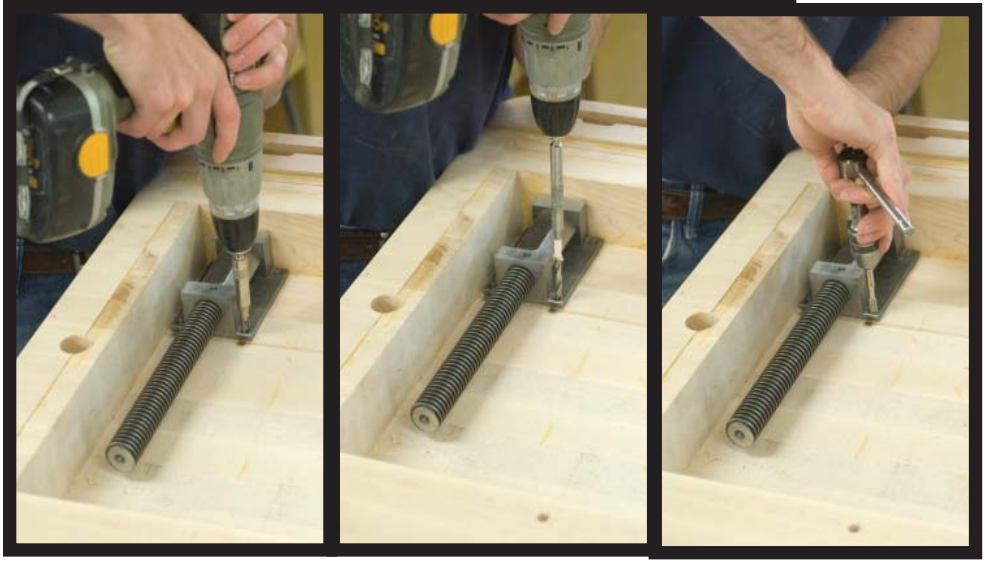


Install both ACME nuts between each stand-off and while holding pressure on the loose standoff, place vise assembly back into the holes and screw vise assembly all the way into the bench.



It is okay if the second standoff isn't flush against the bench skirt, this is all part of properly timing the nuts.

Reclamp the vise shell tightly to the bench to ensure that there is no gap between the inside face of the shell and the bench.



Repeat the same process used to mount the first standoff.

Install the last (4) Socket Head Cap Screws.

It is a good idea to mark each standoff and the down position of the ACME nuts so you will always know their proper position.

The final step is to tightly install the 3/8”-24 x 1/2”Bolt with the Stop washer on the end of the vise screw.

Enjoy your new Lie-Nielsen Chain Drive Vise!