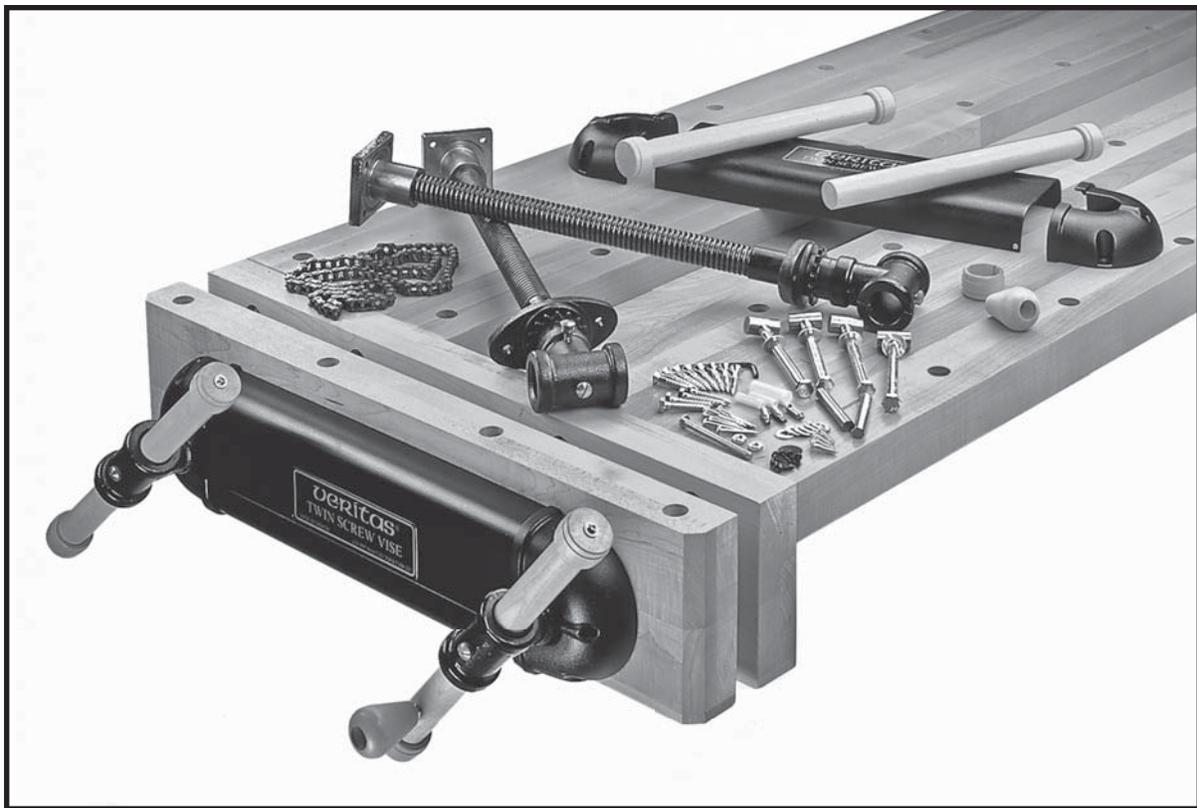


veritas®

Twin-Screw Vise



Important Note:

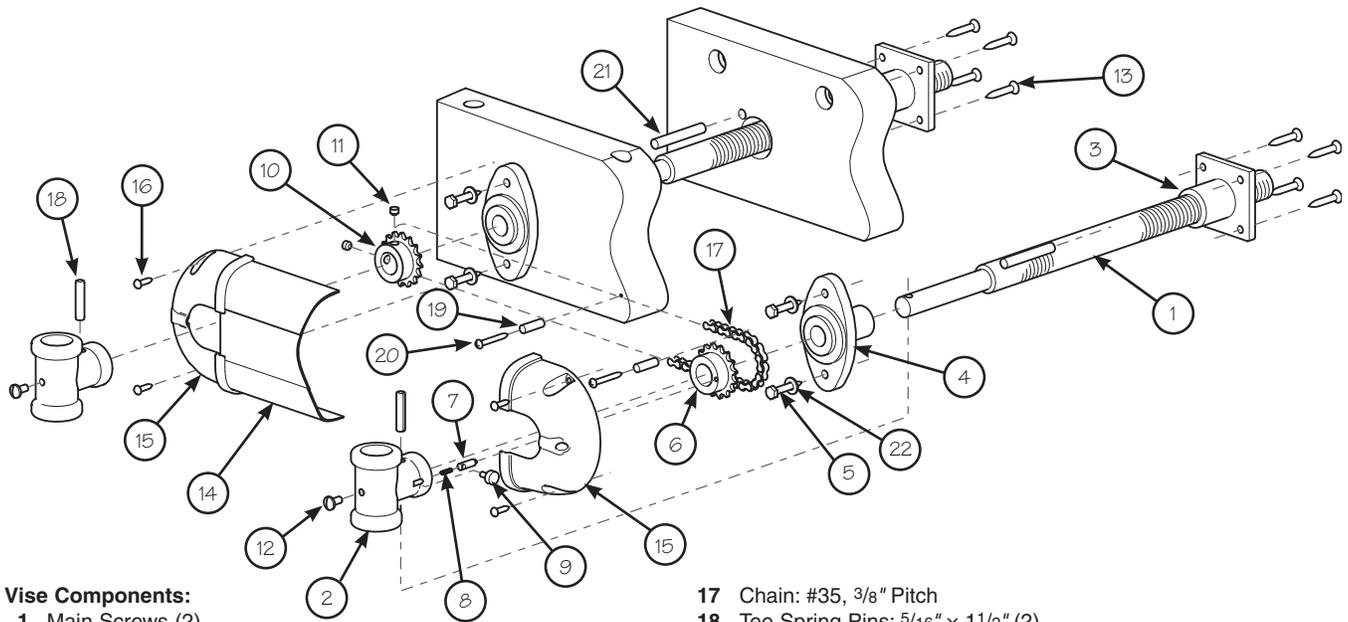
*If you are the kind of person who only looks at instruction sheets **after** something goes wrong, this is one product where you should mend your ways. If you ignore these instructions, we can almost guarantee trouble.*

Please try to save all your innovative design urges until after you have installed the vise. As a bare minimum, at least read through the instructions before you start being creative.

The two easiest ways to screw up are:

- By drilling holes in the wrong place and at an angle.*
- By using warped wood with the intention of straightening it out with bolts, screws and brute force later.*

It isn't a lot of fun to follow instructions exactly but this is one time when it will save you a lot of grief.



Vise Components:

- 1 Main Screws (2)
- 2 Tees (2)
- 3 Nuts (2)
- 4 Thrust Plates (2)
- 5 Thrust Plate Lag Bolts: 1/4" x 1 1/2" Long (4)
- 6 Driving Sprocket
- 7 Drive/Shear Pin (2) [* 2nd pin is included as a spare.]
- 8 Spring
- 9 Drive Pin Knob
- 10 Follower Sprocket
- 11 Follower Sprocket Set Screws: 5/16-18 x 1/4" (2)
- 12 Handle Thumbscrews (2)
- 13 Nut Mounting Screws: #14 x 1 1/2" (8)
- 14 Main Chain Cover
- 15 Chain Cover End Caps (2)
- 16 Chain Cover Screws: #10 x 3/4" (4)

- 17 Chain: #35, 3/8" Pitch
- 18 Tee Spring Pins: 5/16" x 1 1/2" (2)
- 19 Chain Roller (2)
- 20 Chain Roller Screws: #10 x 1 1/2" (2)
- 21 Dowel Pins: 3/8" x 2 1/2" (2)
- 22 1/4" Flat Washers (4)

Not Shown:

- 5/32" Hex Key
- 1/2 Link
- Full Link
- Vise Handles and Hardware (see page 9)

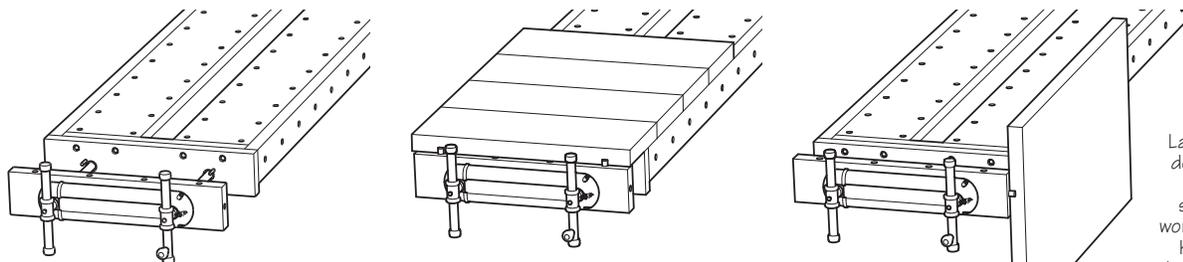
Rear Jaw Mounting Hardware:

- 3/8-16 x 5" Hex Bolts (4)
- 3/8" Flat Washers (4)
- 3/8-16 x 1 1/8" Round Nuts (4)

Used as an end vise, the Veritas® Twin-Screw Vise is very versatile. It can, and should, have vertical dog holes drilled on the top face of the front jaw and corresponding dog holes on the top of your bench for clamping large objects or for panel gluing. Holes can also be drilled horizontally in the side faces of the front jaw and corresponding holes along the side of your bench to clamp objects such as doors for planing. The dog holes in the front jaw should be counterbored 1" dia. by 2" deep from the bottom of the jaw. This will allow you to reach under and push the dog above the surface, if it should slip under. On account

of the relatively tall front jaw (6"+), the dog holes may have to be drilled from the top side, in the same position as the counterbores in the bottom side.

Vertical dog holes drilled along the top of your bench can be used in conjunction with the Veritas® line of bench accessories. 3/4" holes should be drilled. Horizontal holes drilled in the front jaw and corresponding holes drilled horizontally in the bench skirt will enable you to clamp large panels or doors for planing, etc.



Boards glued up on top surface between round bench dogs.

Large panel or door clamped along the side of your workbench using horizontally drilled holes in a skirt and round bench dogs.

The Veritas Twin-Screw Vise is designed to enable you to skew the front jaw in either direction. By simply disengaging the spring-loaded drive/shear pin, you may turn either screw independently of the other to produce the required skew. For example, if you are gluing boards between bench dogs and one side closes up before the other, you can disengage the pin and turn one screw to compensate.

Note: The vise should **not** be skewed more than one full turn in either direction.

To realign the jaws, turn the handle you moved to skew the vise in the opposite direction (back to where it was) and you will hear and see the drive pin "click" back into place. If you try to disengage the pin with the jaws clamped tight, you may find that you have to first slacken the vise screw containing the pin.

The drive pin also acts as a shear pin. If you apply excessive force to either screw, the pin will shear before the vise becomes damaged. (A spare drive/shear pin is supplied.)

Requirements

The Veritas Twin-Screw Vise is designed to be used as either an end vise or as a front vise on any bench. To build the vise, you will require two hardwood jaws (front and rear), at least 6" high, and any length you desire. These may be solid or laminated from hardwood. The vise is designed to work with a 1³/₄" to 2¹/₄" thick front jaw. This may be made from a solid piece or can be laminated together. The rear jaw should be at least 1³/₄" thick.

The vise with the standard-length cover (05G12.21) is supplied with 39" of ³/₈" pitch chain, which will give you approximately a 16⁷/₈" center-to-center screw distance. The vise with the long cover (05G12.22) comes with an additional 53" long chain, allowing a center-to-center screw distance of 24".

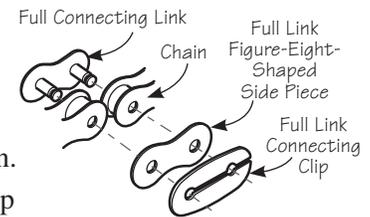
If you require a closer center-to-center screw distance, the chain and cover supplied must be reduced in length. To shorten the chain, you must file the peened heads off the link pins (both ends) and remove the figure-eight-shaped side piece.

This will allow you to take the remainder of the link out, leaving you with two identical female ends on your chain.



Assemble the spring-clip-type connecting link as per diagram:

1. Slip two ends of chain over link.
2. Put figure-eight-shaped side piece on.
3. Slide connecting clip into place.



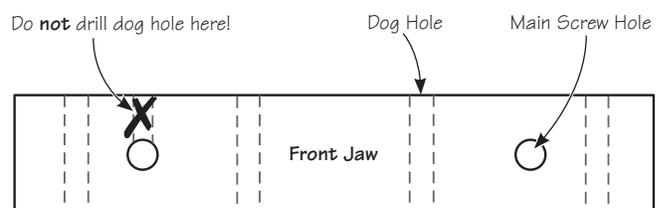
Bear in mind that when a complete link is removed from the chain, the center-to-center screw distance is reduced by ³/₈" for every link removed. Shown below is a table that cross-references the center-to-center screw distance and the number of links in the chain.

Number of Links with Chain Fully Assembled Including Spring Clip Connecting Link. (Center-to-Center)

# of Links	Distance	# of Links	Distance	# of Links	Distance
72	24"	61	19 ⁷ / ₈ "	50	15 ³ / ₄ "
71	23 ⁵ / ₈ "	60	19 ¹ / ₂ "	49	15 ³ / ₈ "
70	23 ¹ / ₄ "	59	19 ¹ / ₈ "	48	15"
69	22 ⁷ / ₈ "	58	18 ³ / ₄ "	47	14 ⁵ / ₈ "
68	22 ¹ / ₂ "	57	18 ³ / ₈ "	46	14 ¹ / ₄ "
67	22 ¹ / ₈ "	56	18"	45	13 ⁷ / ₈ "
66	21 ³ / ₄ "	55	17 ⁵ / ₈ "	44	13 ¹ / ₂ "
65	21 ³ / ₈ "	54	17 ¹ / ₄ "	43	13 ¹ / ₈ "
64	21"	53	16 ⁷ / ₈ "	42	12 ³ / ₄ "
63	20 ⁵ / ₈ "	52	16 ¹ / ₂ "	41	12 ³ / ₈ "
62	20 ¹ / ₄ "	51	16 ¹ / ₈ "	40	12"

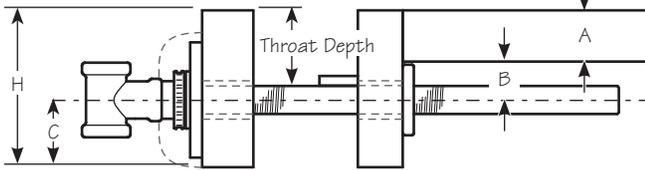
Note: When determining your center-to-center screw distance, check before you drill to make sure the location where you want to put your vertical dog holes does not interfere with the cross-drilled holes for the main screws.

The cover must also be shortened to match the reduction in center-to-center screw distance. A hacksaw can be used to reduce the length, but take care not to distort the cover when holding it in a vise or clamping it to a bench top while cutting.



The center height of the screws should be at least 1½" below the underside of your bench top to allow room for the vise nuts and screws to clear. The jaws must also be high enough to allow room for the thrust plates and chain cover. Referring to the sketch below, keep in mind that the height of the jaws should be at least equal to the sum of: the thickness of the core of your bench; plus 1½" (one-half the nut height plus clearance); plus 2⅝" (one-half the thrust plate height plus the ⅜" clearance for the chain cover). Jaws of this height will result in a throat depth equal to your bench core thickness plus 1".

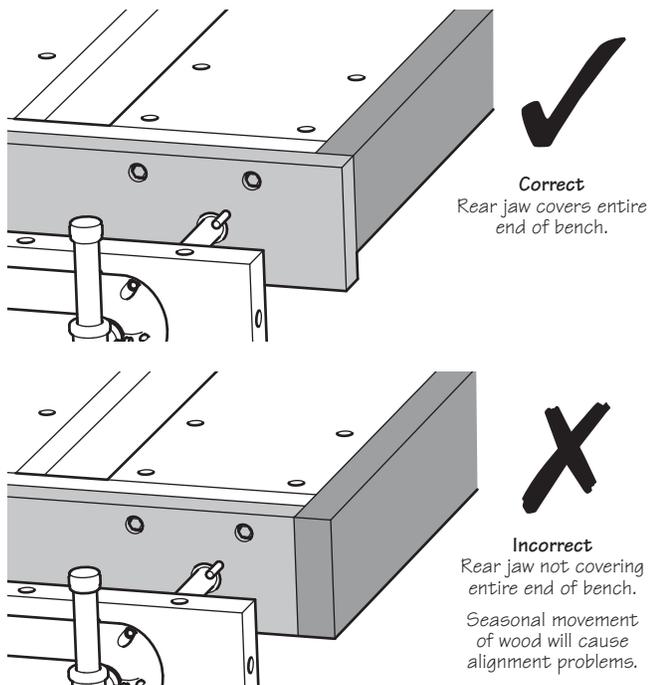
(The throat depth may be increased by making deeper jaws and mounting the screws lower, if desired.)



- A. Bench Core Thickness
- + B. 1½" (one-half of nut height)
- + C. 2⅝" (one-half of thrust plate height + ⅜" clearance)

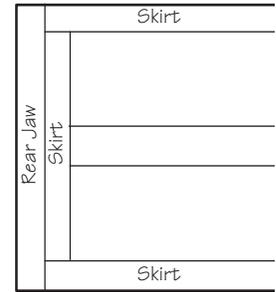
- = H. Minimum Jaw Height

The jaw should cover the entire end of your bench to prevent vise alignment problems due to seasonal wood movement.

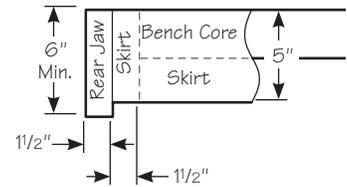


Note to Builders of a Veritas® Workbench:

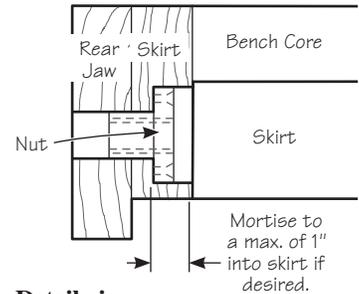
If you are installing the Veritas Twin-Screw Vise on a bench built according to the Veritas Workbench Plans, 05L06.02, 05G15.12 or 05G15.11 (as discussed in *Act 3, Step 3* of the twin-slab bench instruction booklet), we make the following suggestions. The end skirt on the Veritas Workbench is not tall or thick enough to be the rear jaw for the twin-screw vise. As mentioned in the workbench instruction booklet and drawing, **do not** drill dog holes on the skirt that will hold your twin-screw vise. Make your rear jaw 1½" thick, the same height as your front jaw (at least 6" tall) and the full width of the end of your bench, and attach it directly to your bench skirt. This will give you an extremely solid rear jaw. One small drawback of this method is that your jaw opening will be slightly reduced due to the thickness of the rear jaw assembly. If you wish, the nuts may be mortised into the skirt. Even if you don't mortise the nuts into the skirt, the twin-screw vise gives you ample capacity.



Top view of Veritas Workbench.



Side view.



Detail view.

To attach the rear jaw to the end skirt, simply drill and countersink for #14 × 2½" wood screws (minimum four screws) through the rear jaw and screw into the bench skirt. Plug the countersunk holes. **Do not** glue the rear jaw onto the skirt so that, should you ever need to replace or resurface your rear jaw, it can be readily removed. Although the kit contains four hex bolts and round nuts, they are required only for retrofitting to an existing bench that has no skirt. Your end skirt will provide ample support for your rear jaw, which needs only to be screwed in place as described.

Installation

Before you begin to install your Veritas Twin-Screw Vise, **please read the instructions completely**. There are several tips and hints that will make your vise easier to install and work better.

As you begin to assemble the vise, you will notice the two vise screws are not identical. In the instructions, we tell you to assemble the vise with the driving screw (the one with the spring-loaded drive pin) on the right and follower screw on the left. If you wish to reverse this, it is all right to do so. Simply interchange the left and right vise screw at step #11, putting the screw with the drive pin on the left.

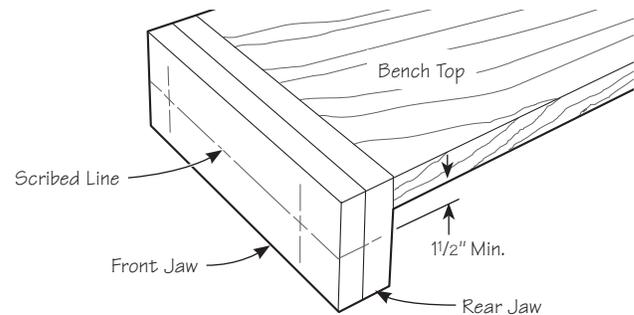
Before you begin, it is also a good idea to remove the heavy rust-inhibiting wax coating from the vise screws. Mineral spirits and an old toothbrush will do an excellent job. After they have been installed, the screws should be coated with grease. Wipe off any that ends up on the thread crown. It is effective only on the sides and root of the thread anyway. Don't worry about grease coming in contact with your work; the steel dowel pins prevent that.

Installation Steps

- Ensure that all parts are present:
 - two vise screws with nuts, T-handles, sprockets, thrust plates, and washers
 - two vise handles, four end caps, one speed knob
 - Chain cover. Note that the vise with the long cover (05G12.22) comes with an additional 53" long chain.
 - Bag containing:
 - $\frac{5}{32}$ " hex key
 - four $\frac{3}{8}$ -16 \times 5" hex bolts, round nuts, and washers
 - two #10 \times 1 $\frac{1}{2}$ " round-head wood screws and chain rollers
 - two $\frac{3}{8}$ " dia. \times 2 $\frac{1}{2}$ " steel dowel pins
 - one $\frac{1}{4}$ -20 \times 3" round-head screw
 - six $\frac{1}{4}$ " washers
 - one nylon bushing
 - two $\frac{1}{4}$ -20 hex nuts
 - four $\frac{1}{4}$ " \times 1 $\frac{1}{2}$ " lag bolts
 - one 39" long chain
 - one chain link
 - one $\frac{1}{2}$ " link
 - eight #14 \times 1 $\frac{1}{2}$ " flat-head wood screws
 - four #8 \times 1 $\frac{1}{4}$ " round-head wood screws
 - four #10 \times $\frac{3}{4}$ " round-head wood screws

- Remove the nuts from the ends of the screws.

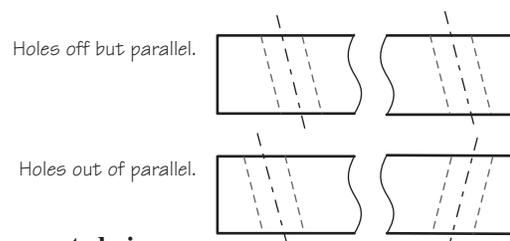
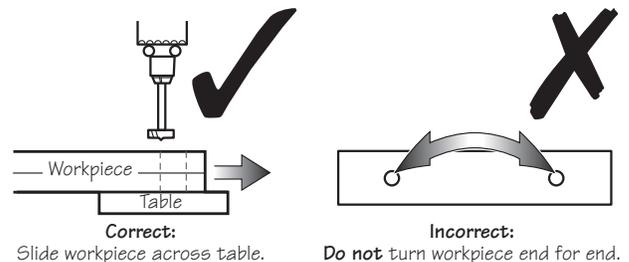
- Scribe horizontal and vertical lines on the front jaw where the vise screw center line will be.



This line should be at least 1 $\frac{1}{2}$ " lower than the underside of the bench top to allow room for the nuts and screws to travel under the bench. For maximum throat depth, this line may be scribed $\frac{25}{8}$ " from the bottom of the jaw, provided the screw center line will still remain at least 1 $\frac{1}{2}$ " below the underside of your bench.

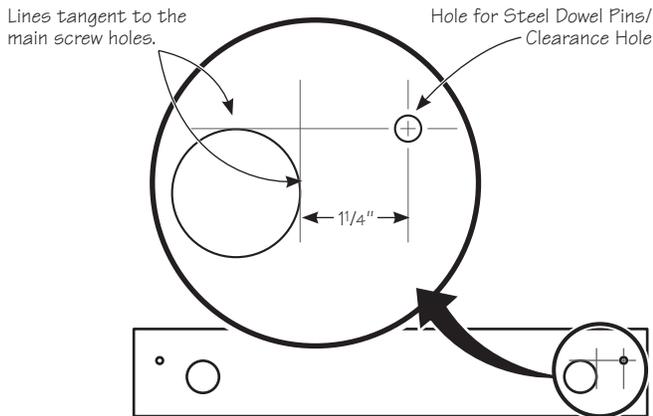
- Once the front jaw is correctly marked, clamp the front and rear jaws together for drilling. Be sure to mark the top or sides of the jaws to maintain alignment on reassembly.
- Using a 1 $\frac{1}{2}$ " saw tooth or forstner bit in a drill press (either bit will give an accurate, smooth hole), drill completely through both jaws and remove the clamps.

Tip: When drilling the holes for screws, nuts, etc., **do not** rotate or turn the workpiece on the drill-press table. (See illustration.) Instead, slide the workpiece over. If your drill press is slightly out of alignment (off 90° from table to spindle), you will double the error by turning your workpiece end for end rather than sliding it along the drill-press table.



Exaggerated views.

6. You need to drill two holes in the rear jaw for the steel dowel pins, which will keep your work off the vise screws, and two corresponding clearance holes in the front jaw. All four holes are drilled in the **inside faces** of the front and rear jaws. Lay out the holes as follows and drill the holes for the rear jaw $\frac{3}{8}$ " dia. by 1" deep and the ones for the front jaw $\frac{1}{2}$ " dia. by $1\frac{5}{8}$ " deep.

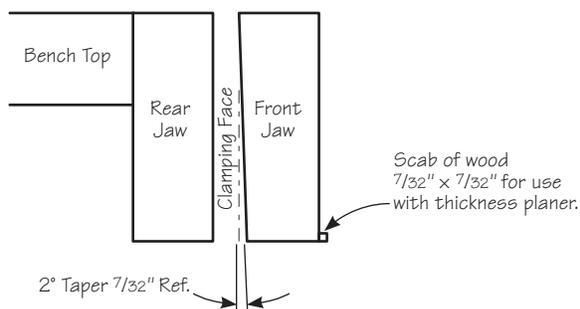


Rear jaw & front jaw, inside face.

Now drill vertical and horizontal dog holes in the front jaw.

Note: When determining your center-to-center screw distance, check before you drill to make sure the location where you want to put your vertical dog holes does not interfere with the cross-drilled holes for the main screws.

7. Lightly sand the edges of the drilled holes to clean them up. Before assembling your vise, taper the **inside** face of the front jaw at a constant angle as shown. This will ensure that pieces clamped in the vise will always be gripped at the top of the jaws. This can be done by using a hand plane or a belt sander. By temporarily adding a scab of wood on one side (using glue or double-sided tape), it can be passed through a thickness planer.



8. Insert the vise screw nuts into the back of the rear jaw, aligning them square. Using a $\frac{1}{4}$ " drill bit in the screw holes, lightly mark the centers. Before removing the nuts, mark both the orientation for

realignment and the hole each came from. Remove the nuts and, using the center marks, drill $\frac{7}{32}$ " pilot holes, 1" deep. Replace the nuts and, using the #14 flat-head screws, secure the nuts in place.

Tip: Use wax on the screws to ease their entry.

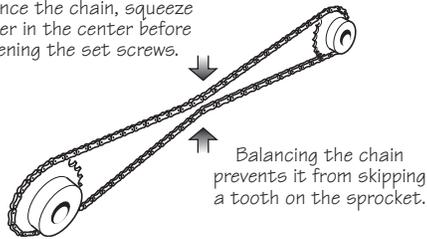
9. You are now ready to install the rear jaw of your vise. There are four $\frac{3}{8}$ -16 \times 5" long hex bolts, round nuts and washers supplied to secure the rear jaw to your bench. If you have unbolted and removed the end cap (or end skirt) from your bench to install the twin-screw vise, then with the new rear jaw placed $\frac{1}{16}$ " to $\frac{1}{32}$ " above the old end cap, simply transfer the holes to the new rear jaw. Drill and counterbore the holes, reassemble, and plane both jaws flush with the bench top. If this is an installation to a Veritas Workbench, see the section entitled **Note to Builders of a Veritas® Workbench**. However, if this is a new installation onto any other type of bench, see the section entitled **Fitting the Rear Jaw to Your Bench**.

After the rear jaw has been installed, insert the $\frac{3}{8}$ " dia. steel pins by tapping them into place (if loose secure them with epoxy). There should be no more than $1\frac{1}{2}$ " protruding from the jaw.

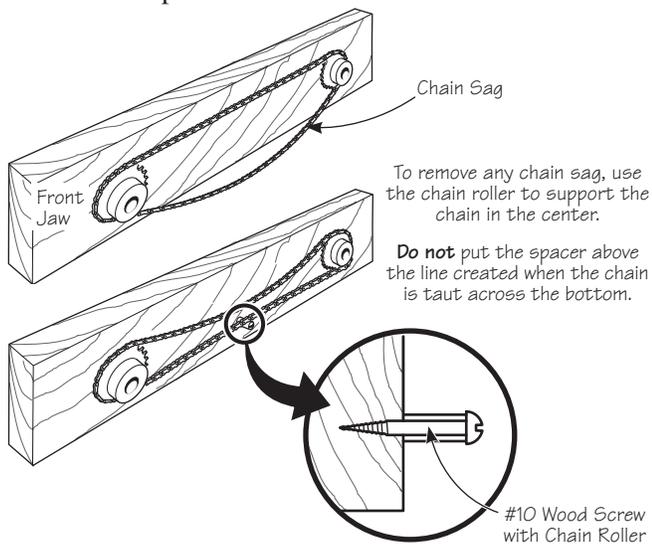
10. You are now ready to assemble your front jaw. When assembling your front jaw, check the marks made earlier to be sure it is oriented the same as when you drilled the holes. With the chain wrapped around the sprockets, set the vise screws into the front jaw (with the spring-loaded pin engaged in the sprocket, and on the right-hand side). Holding the front jaw, line up the screws with the nuts in the rear jaw, then turn each screw progressively and independently (trying to keep the vise jaws parallel to one another) until the front jaw is closed. Only tighten the screws so they hold the weight of the front jaw. Tap the front jaw until the top and ends are flush with the rear jaw. Likewise, tap the thrust plates so they are approximately vertical. Once everything is properly aligned, use a $\frac{1}{4}$ " drill bit to mark the four hole locations through the thrust plates, then drill $\frac{3}{16}$ " diameter holes $1\frac{1}{4}$ " deep. Using a $\frac{1}{4}$ " washer under each lag bolt, tighten the four lag bolts securely in place, but do **not** overtighten.

11. To "zero", or permanently align the vise jaws, make sure the spring pin is engaged in the hole on the right-hand sprocket, balance the chain by grasping it with two fingers in the center, then tighten the two set screws on the left sprocket with the hex key provided. The vise is now aligned and should stay square. Seasonal wood movement may cause the front jaw to become slightly misaligned with the rear jaw. Should this occur, loosen both set screws and simply repeat this step for realignment. The chain cover end caps have a small opening to allow access to the set screws without removing the cover.

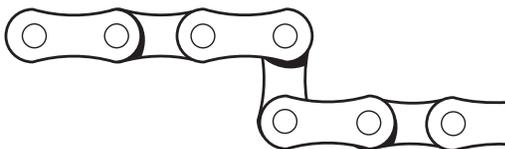
To balance the chain, squeeze together in the center before tightening the set screws.



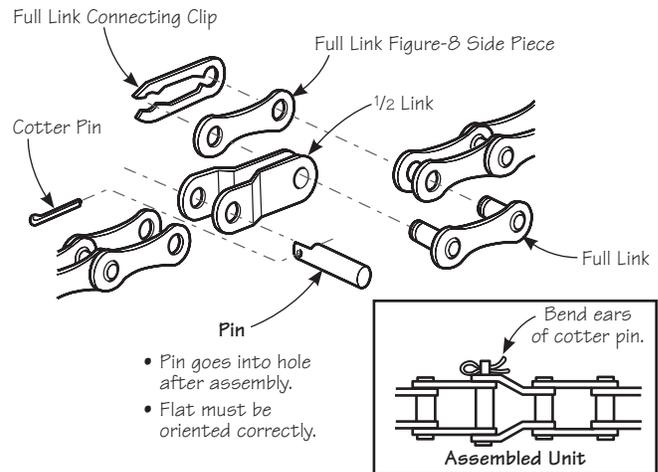
If after installing your chain you observe any sag, use one or two of the #10 wood screws and chain rollers to support the bottom of the chain. **Do not** install the spacer any higher than the bottom of the chain loop when taut.



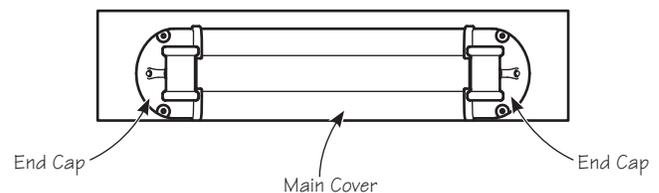
If there is a great amount of sag in your chain (more than $\frac{1}{2}$ a link), the $\frac{1}{2}$ link may be used. To determine if the $\frac{1}{2}$ link can be used, there must be enough slack to fold the chain into the shape of the letter Z (see illustration).



If this is the case, to remove $\frac{1}{2}$ of a link you must first remove a full link (as shown on page 3) then add the $\frac{1}{2}$ link supplied. The $\frac{1}{2}$ link is assembled in the same manner as the full link (and must be installed next to the full link). To lock the $\frac{1}{2}$ link, insert the pin, then slide the cotter pin through the small hole and spread open the cotter pin (see illustration).

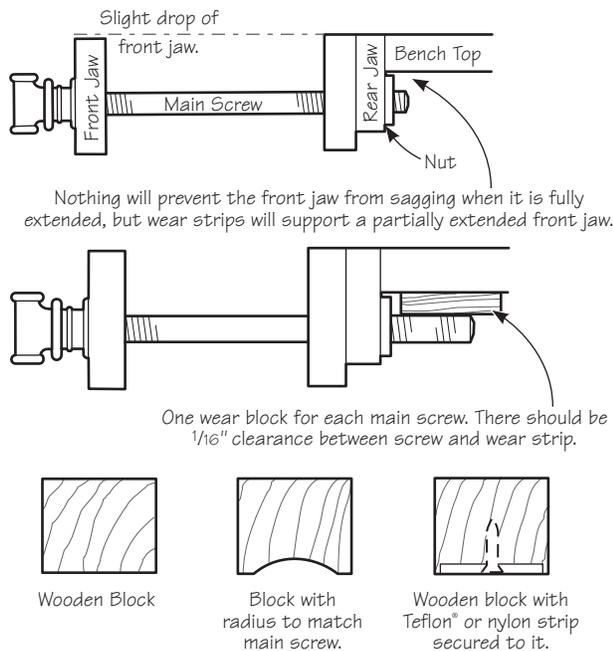


- To install the chain cover, hold the two end caps in place over the ends of the main cover as shown below. The flange on the end caps should overlap the main cover by their width (approximately $\frac{1}{4}$ "). With a third hand (supplied by a friend or family member), mark the four screw hole locations onto the front jaw. Put the end caps and main cover aside and drill $\frac{5}{32}$ " pilot holes for the mounting screws, $\frac{3}{4}$ " to 1" deep. Secure one end cap with two screws, but do not tighten them fully. Slip one end of the main cover under this end cap, followed by holding the other end cap over the opposite end of the main cover. Install the remaining two screws and tighten all.



- Install your assembled vise handles. (See section entitled **Vise Handles** for assembly instructions.) They are slipped into the Tees and locked into place by turning the handle thumbscrews. With the vise shut tight, plane the top jaw surfaces flush with the adjacent bench top. Now lubricate the vise screws as explained earlier and your vise is ready to use.

Note: Due to the nature of the design of the Veritas Twin-Screw Vise, the front jaw may have a tendency to drop from vertical when fully extended. Unlike most vises, there are no guide rods present. We cannot put guide rods on our vise because it has been designed to skew. The tendency for the front jaw to drop is caused by the necessary clearance between the threads in the nut and on the vise screw, and the weight of the front jaw. This drop may occur only when the vise is nearly halfway open. If this situation bothers you, you may add wear strips along the underside of your bench. The weight of the front jaw will cause the screws to rub along the strip and not allow the front jaw to drop (except when fully extended). See illustration.

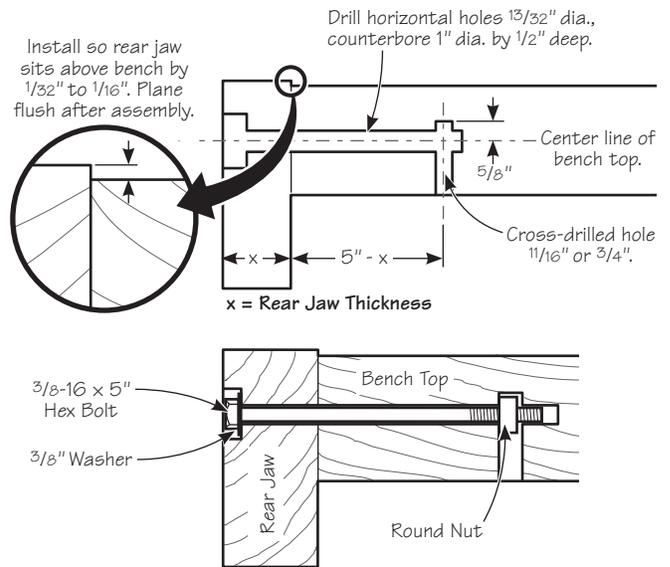


Wear strip profiles.

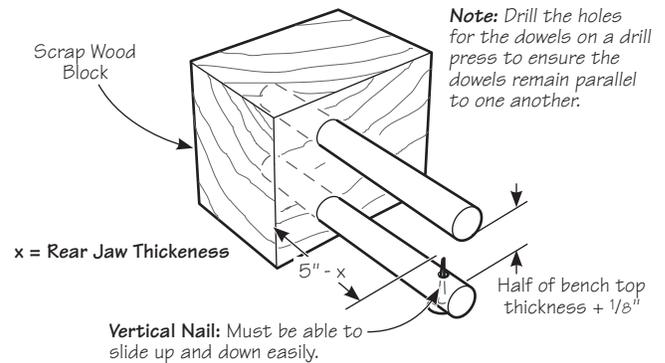
Fitting the Rear Jaw to Your Bench

(For retrofitting the vise to an existing bench.)

Holes will have to be drilled through the rear jaw and into your bench to secure it; three or four holes drilled horizontally through the rear jaw and into the center of the bench core, and three or four intersecting cross-drilled holes for the nuts.



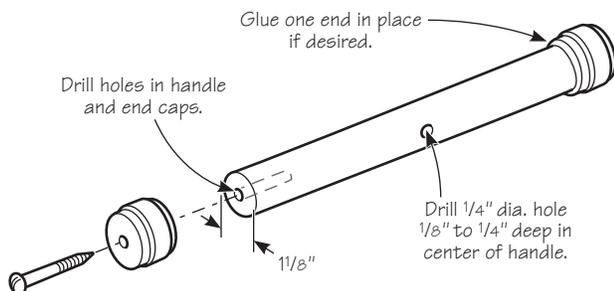
The horizontal holes should first be drilled 13/32" dia. through the rear jaw. Then, with the rear jaw 1/32" to 1/16" proud of your bench top, transfer these holes and continue drilling them 3 5/8" to 4" deep. The intersecting cross-drilled holes should now be drilled. To ensure that the cross-drilled holes intersect with the horizontal holes, a simple alignment tool can be made from 3/8" dowel, a block of scrap, and a nail.



After the horizontal holes are drilled in your bench top, slip the top dowel into the hole and the bottom one should slide under your bench top. Tap the sliding nail against the underside of your bench. This will give you the center mark for the cross-drilled hole. Drill the cross-drilled holes to a depth equal to half your bench core thickness plus $\frac{5}{8}$ " to $\frac{3}{4}$ ". Place a small amount of crumpled paper into the bottom of these holes, followed by the round nuts. (The paper acts as a spring, allowing you to adjust the height of the nut so that the bolt can be easily threaded into it.) With the nut oriented so the thread is in line with the horizontal holes, fasten the rear jaw to your bench and tighten the hex bolts with a socket wrench. Now plane the jaw flush with the bench top.

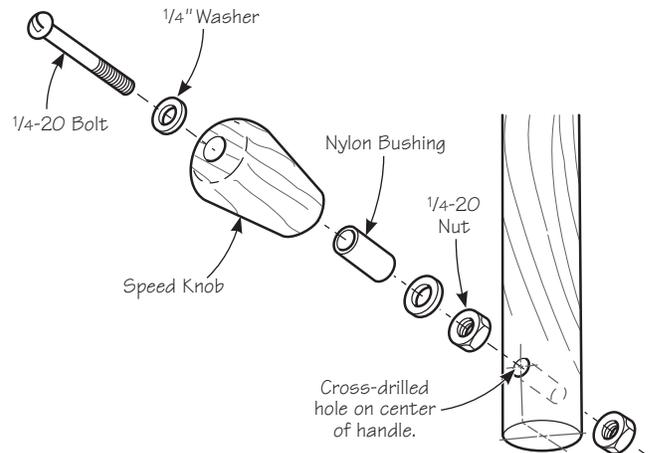
Vise Handles

Supplied with your twin-screw vise are the components to make two vise handles, with end caps, and one speed knob. As shown in the illustration, drill $\frac{9}{64}$ " pilot holes in the center of each end of the wooden handles, and $\frac{11}{64}$ " clearance holes in the center of the end caps. A good way of ensuring alignment of these holes is to put each end cap on the handle ends before drilling the $\frac{9}{64}$ " pilot hole. Remove each end cap and enlarge the hole in it to $\frac{11}{64}$ ". Secure the end caps in place with the $\#8 \times 1\frac{1}{4}$ " long round-head screws provided.



To assemble the speed knob, take one of your handles (right side if you are right handed) and drill a $\frac{17}{64}$ " hole through the center (see illustration at right).

Insert the nylon bushing into the speed knob, slip the washer, speed knob/nylon bushing and second washer onto the $\frac{1}{4}$ -20 bolt. After tightening the first nut up to the washer, the speed knob should still be able to spin free. Insert the bolt through the vise handle and bring the second nut finger tight against the handle. Using two wrenches, tighten the nuts against the handle, leaving the speed knob free to rotate. Tighten the handle thumbscrew with the speed knob facing out and you are ready to go.



You may want to put an elastic band at each end next to the end cap to cushion the handles as they drop against the Tees.

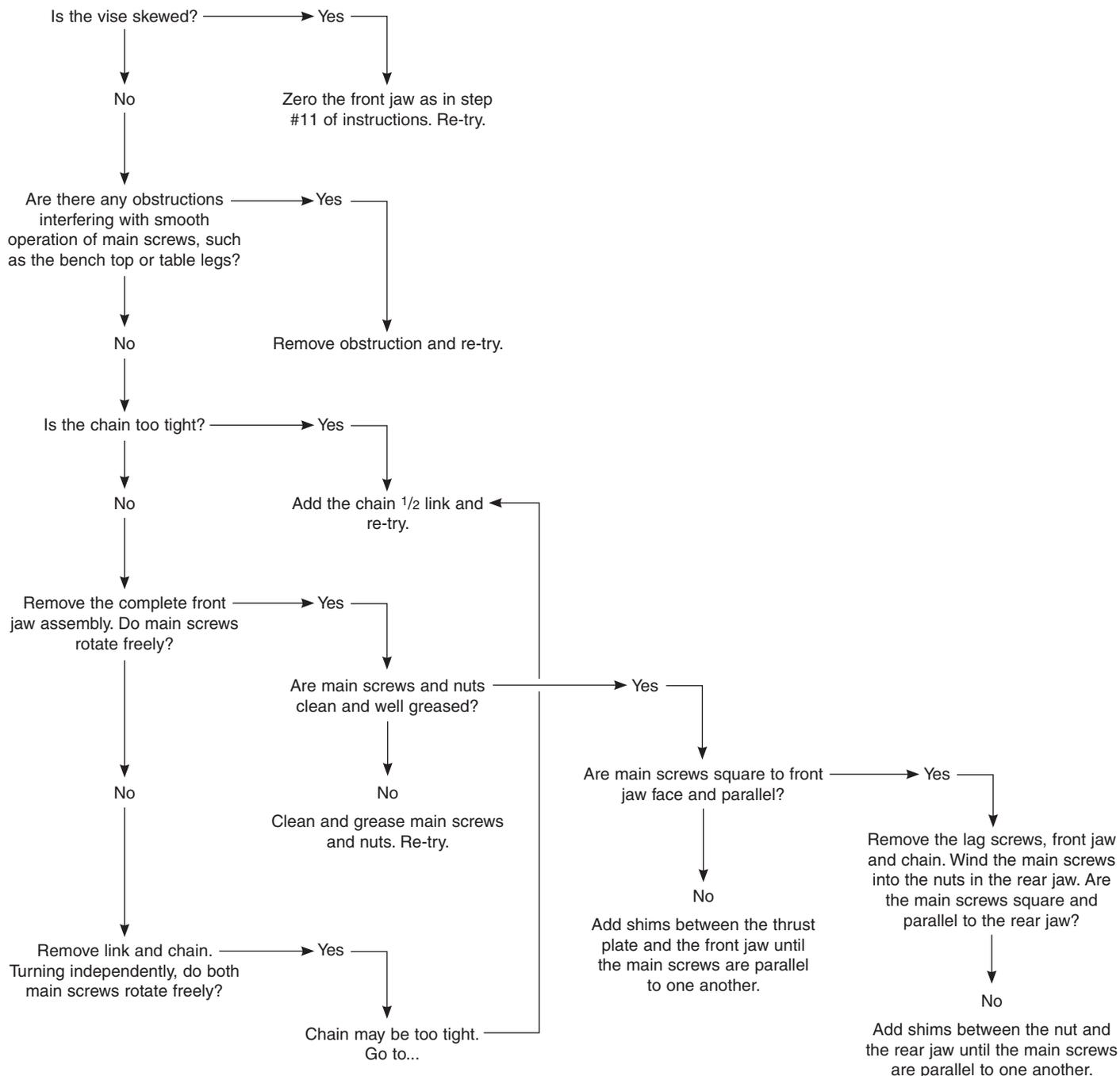
If after installing your twin-screw vise you experience any resistance in turning either T-handle, we suggest that you follow our diagnostic flow chart to determine and correct the problem. (See back cover.)

Notes

Diagnostic Flow Chart

Before you begin, try loosening the #14 wood screws holding the nuts and the 1/4" lag screws holding the thrust plates. Overtightening may have caused components to become misaligned and to bind.

Problem: Main screws are difficult to turn



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