

# Get a Grip with a Moxon Vise



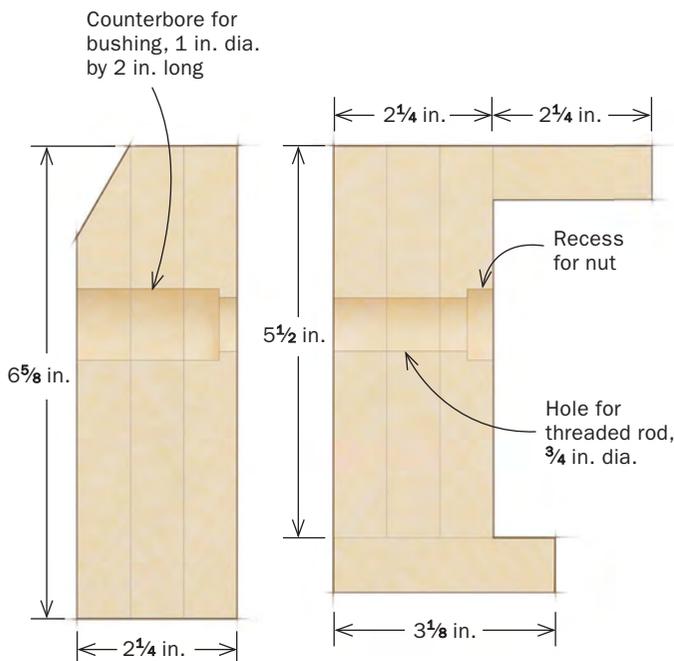
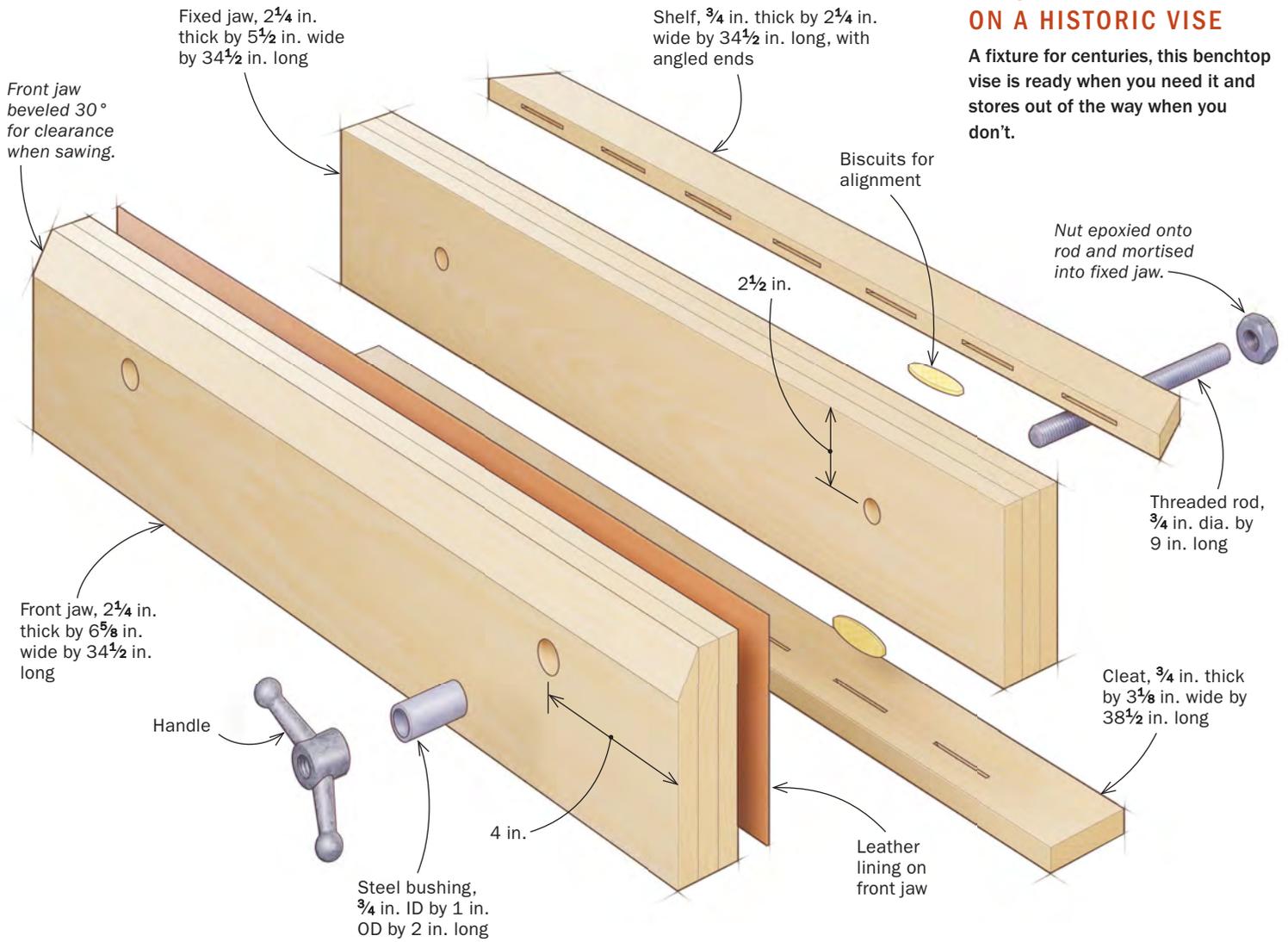
Elevate your workholding with this traditional twin-screw fixture

BY MIKE FARRINGTON

Moxon vises, sometimes called twin screws, are great to have around the shop. They're super for holding work, especially for joinery, gripping narrow rails for tenoning and full case sides for dovetailing equally well. The one featured in this article has an awesomely generous 24 in. between centers. And, unlike some other vises with that span, a Moxon vise doesn't require complicated or expensive hardware. For the version here, you can buy everything at a home center. Even if you change the span, the construction remains the same. Moxon vises also raise the work several inches from your bench, which can be a great help for detail work or aching backs. Lastly, since they clamp to your bench, you don't need to commit to a vise location. I move mine around depending on what I'm doing, then stow it out of the way when I'm done.

## AN UPDATED TAKE ON A HISTORIC VISE

A fixture for centuries, this benchtop vise is ready when you need it and stores out of the way when you don't.



**Each jaw is a lamination.** This lets you create thick, stable jaws from thin, readily available stock. Once the glue dries, cut them to final width and length.



**Pad the front jaw with leather.** Attach with spray adhesive and trim to size. The leather reduces the chance of marring workpieces and improves the grip.

# DRILL THE JAWS

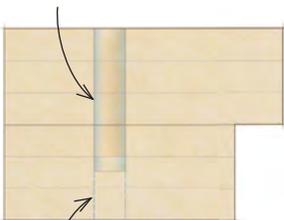


**Before drilling, temporarily attach the jaws' inside faces together.** Use double-sided tape, making sure the top edges are flush. The holes must be perfectly in line for the vise to work. The tape acts as an out-of-the-way clamp, letting you keep the pieces together while not interfering with drilling.



**Clamp the jaws to the drill-press table.** With the movable jaw on top, drill a  $\frac{3}{4}$ -in. hole through it and partway into the fixed jaw. This allows you to accurately drill through the fixed jaw separately.

1. Drill through the front jaw and as far into the rear jaw as your bit will go.



2. Later, you'll use the drilled portion to align the bit for completing the hole.



I've made a number of these—in different sizes, in softwood and hardwood, with higher- and lower-end hardware. They all work well, and they all follow this design.

## Thick, laminated jaws

This build starts with the jaws. I laminate three pieces of  $\frac{4}{4}$  stock for each jaw. To help with stability, I mill the boards in two stages. First, I do the minimum to get the six boards parallel and glue them up while they're a little wide and long. After they sit for a few days, I lightly joint the face, then plane just enough to bring the opposite face parallel.

After that, I cut to width and length. I recommend making the movable jaw wider than the fixed one. With the vise cinched shut, the overhanging jaw registers against the workbench, leaving the fixed jaw's face coplanar with the front edge of the bench, adding bearing surface between the jaws.

## Carefully drilled holes

With the jaws complete, you can drill for the bushings and screws. The bushings prevent the jaws from racking much, going a long way toward ensuring even clamping pressure across workpieces. They also let the movable jaw travel more easily and extend its life, since there's no wood running on metal.



**Without unclamping the parts, drill for the bushing using a larger bit.** This hole allows for a tight fit to the bushing. Farrington uses the bushing itself to set the drill's depth stop. This larger hole should go only into the fixed jaw, not the movable one. Leaving the jaws clamped while changing bits will ensure the holes are concentric.



Drilling these holes is the most important step in the project because their accuracy has a direct impact on how well your vise works. Fortunately, I have a pretty neat way to ensure that the holes line up.

To start, secure the two jaws together using double-sided tape, making sure the tops are flush. Mark the hole locations and clamp the taped jaws to your drill-press table. The movable jaw should face up. First drill the 3/4-in.-dia. hole for the screw as deep as possible. If you can drill through both jaws, great; that's the best-case scenario. If not, just be certain the bit goes through the movable jaw and imprints the inside face of the fixed jaw, allowing you to drill through it accurately later.

Now drill the movable jaw for the bushing. Without unclamping the jaws or adjusting the table, chuck a Forstner bit that



**Epoxy in the bushings.** After separating the two jaws, use a pea-size dab of epoxy and spread it thoroughly around the bushing. You want to avoid any squeeze-out here.

# ASSEMBLE THE VISE

**Epoxy a nut to the threaded rod.** This nut prevents the rod from spinning freely in the jaw. Again, use only a minimal amount of epoxy.



**Mortise the nut into the back of the fixed jaw.** With the rod in the hole, Farrington uses a flat-back marking knife to mark around the nut (left). He then chops and pares to his lines, aiming for a friction fit. Mortise only as deep as the nut's width.



matches the outside diameter of the bushing and drill. Make test holes to verify that your bit allows for a press fit. Depending on the length of the bushing, this can be a stepped hole, or it can go through the movable jaw. Leaving the jaws clamped while changing drill bits will ensure that the two holes are concentric.

Finish at the drill press by prying the two jaws apart and drilling the  $\frac{3}{4}$ -in. hole through the fixed jaw. From there, head to the tablesaw to bevel the front of the movable jaw. Clipping off this corner lets you angle your handsaw without obstruction when you're cutting half-blind dovetails.

## TIP

**Lightly file and wax the rough threaded rod.** Filing knocks off burrs on the threads that can hang up the knobs in use. The paste wax makes for even smoother spinning.





### Add the hardware

I used off-the-shelf hardware for this vise. It works fine, and it's inexpensive and readily available. I've used Acme-threaded stuff in the past, which is a nice upgrade if you can afford it. Either way, the steps are pretty similar.

Installing the bushing is easy. Since it should fit tightly into the hole anyway, I spread just a pea-size dab of epoxy around the bushing before hammering it into place, paying attention to squeeze-out.

I also epoxy a nut onto the end of each threaded rod after cutting them to length. To trap the screw in the jaw, I mortise the nut into the back of the fixed jaw. I mark the nut's thickness on the back of my mortise chisel for a rough depth gauge.



**Add a cleat and shelf to the fixed jaw.** Attach one at a time starting with the shelf to simplify the glue-ups. Biscuits help when aligning the parts. Flush the fixed jaw's inside face (left). Any protruding or uneven surfaces here will become unwanted pressure points when you clamp boards in the vise, and may affect how well it works.



**Install the movable jaw and handles before jointing the top surface.** Tighten the handles to cinch the movable jaw to the fixed jaw, and use a long plane to smooth the top surface of the vise. You'll use this as a reference surface for joinery, so it must be straight and true.



# SETUP IS SIMPLE

**Overhanging jaw and cleat add to quality of life.** The overwide movable jaw ensures the inside of the fixed jaw sits flush with the bench's edge, extending the clamping surface. The cleat below the fixed jaw is a low-profile surface for clamping the vise to the bench.



If you get your hardware from the home center, lightly file the threaded rod smooth and wax it. Otherwise the handles are likely to hang up on the threads in use.

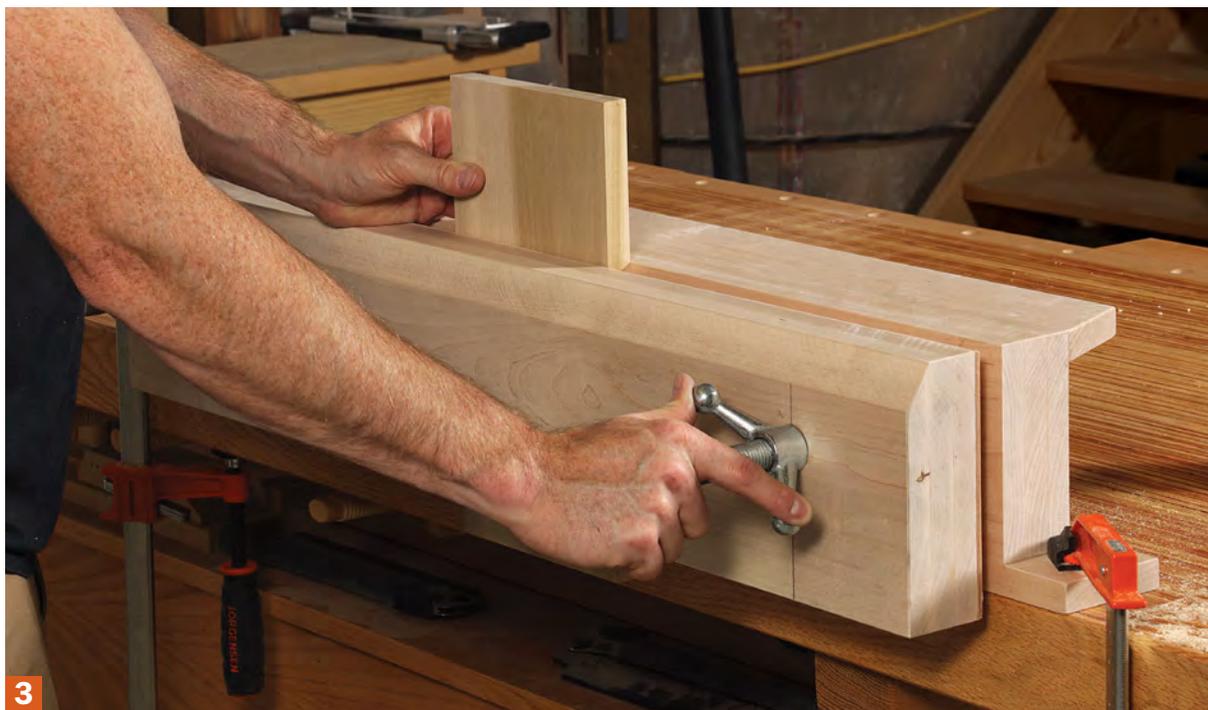
## Finishing touches

Don't skip the shelf, clamping cleat, or leather lining. They're all small additions with outside returns.

I consider the shelf in particular a necessity. I clamp workpieces to it when marking joinery so nothing shifts, like when transferring dovetails to a pin board. The shelf is also a nice spot for a task light.



**Set clamping pressure.** When clamping a narrow workpiece, tighten one side of the vise to a slip fit (1), then move the workpiece to the other side and repeat (2). Finally, bring the narrow workpiece to the middle and finish tightening the handles (3). This yields even clamping pressure across the workpiece. For wider stock, just do your best to get an even pressure from both screws.



# GETTING TO WORK

The cleat provides an out-of-the way surface for clamping the vise to the bench. Size yours to suit your clamps.

I use biscuits to align the shelf and cleat during glue-up. Other alignment methods, like Dominoes, screws, or splines, work too. Regardless, plane these surfaces flush to the jaws after the glue dries. You don't want anything interfering with the vise's grip or reference surfaces.

Finally, the tool-grade leather offers two advantages. It helps to reduce damage to the workpiece while improving grip, allowing the piece to be held in place with



**Vise holds your parts at working height.** Moxon vises raise the work up several inches from your benchtop while still keeping it secure. This can be a great help when doing close-up detail work, or a dovetailed case.



**The shelf is a helping hand.** When transferring joinery, like tails to a pin board, Farrington clamps one board to the shelf, letting him focus on the task at hand instead of worrying about shifting one of the workpieces and ruining his layout.



very little clamping force. In fact the leather holds so strongly that with a pin board in the vise, I can tap the tail board onto the pin board, and the pin board doesn't slide down. I don't add leather to the fixed jaw because I want that face to sit firmly in plane with the bench, and the leather's too squishy for that.

Wood glue works great for adhering the leather, but it makes an extremely secure bond. I opt for spray adhesive because it lets me remove and replace the leather when needed.

When the glue sets, trim the leather flush to the jaws, clamp the vise to your bench, and cut some dovetails. □

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**An outrigger is a longer helping hand.** This movable T-shaped fixture supports long boards that need more than the shelf alone. Its total height should match that of the vise.