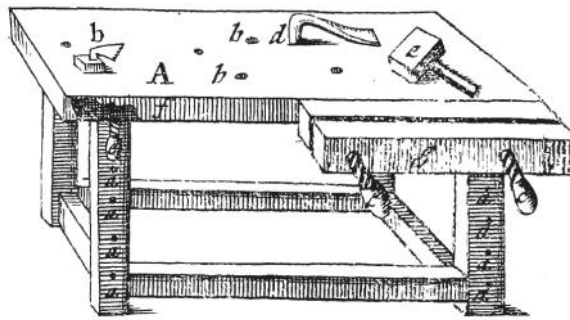




MOXON

Double-Screw Vice



Bench and vise from Moxon's "The Art of Joinery"

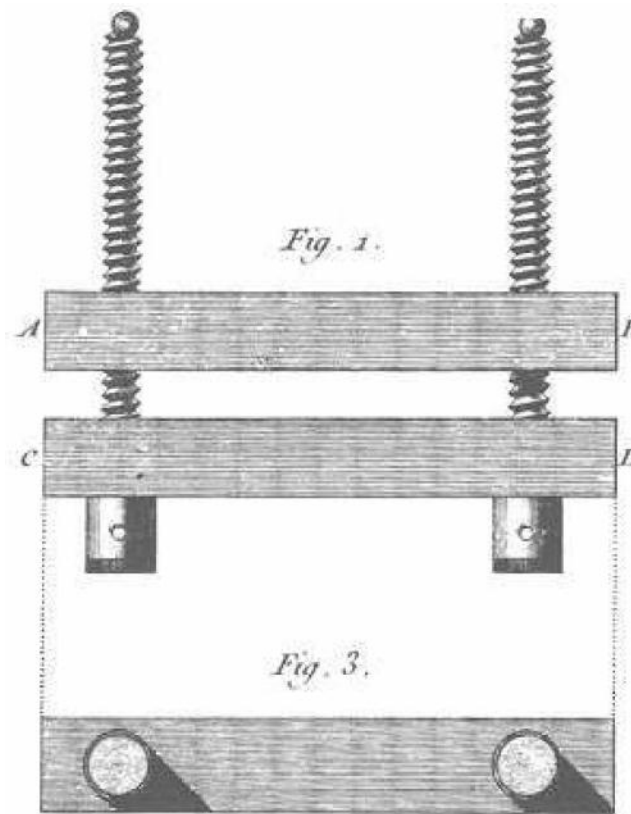
· History ·

In 2010, woodworking author Christopher Schwarz built a reproduction of Joseph Moxon's double-screw vise described in his 17th c. book "The Art of Joinery." Shortly thereafter his vise appeared in the December 2010 issue of Popular Woodworking Magazine and many woodworkers found the vise to be quite useful for dovetailing and other close work. Soon after the article appeared we received numerous requests for hardware to make a vise similar to Schwarz's version, without having to buy a tapping kit and deal with the frustration that many have experienced with these kits.

Joseph Moxon wasn't the only one to describe this type of vise. Roubo and Felebien also document a double-screw vise that is held to the top of a bench with clamps or holdfasts in order to facilitate certain work. The difference between these historical examples and our version is primarily the thickness of the jaws. Since most woodworkers discovered this vise they've used the general configuration from the Popular Woodworking article in lieu of using the thicker jaws in the historical examples. Thicker jaws will deflect less, and rack less. But because this vise is used primarily for working the ends of boards, where the entire board spans the vertical plane of the

jaws (and thus eliminates vertical racking) and most woodworkers are accustomed to this form, we've decided to make the jaws 1 3/4" thick using widely available 8/4 stock. We feel the comparatively thinner jaws function quite well, while keeping the vise light enough that you'll actually get it out and use it!

Although our vise isn't an exact copy of Moxon's or Roubo's, the term "Moxon vise" has been widely adopted to describe this type of vise.



Roubo's screw press from plate 280 of "L'art du Menuisier"

· The Benchcrafted Moxon ·

The Benchcrafted Moxon vise uses the same precision rolled acme screws as our Tail Vise and Glide Leg vise. Like those vises, we've outfitted our Moxon vise with cast iron handwheels for rapidity and ease. However, we've changed things around a bit. Instead of the handwheel turning the screws and having to work under the weight of the moveable jaw, we've fixed the screws to the vise itself (they don't move) and tapped the handwheels, allowing them to move in and out on the rigid screws. The mass of the cast iron and the polished acme threads allows the handwheels to spin freely and do the work of drawing the jaws together effortlessly. Setting one wheel for the workpiece thickness, the opposite wheel is

massive enough to literally push the jaw to the workpiece and hold it there solidly with only a quick spin of the wheel. In most cases, this is all that's necessary to hold work for typical operations.

The moveable jaw is lined with suede for a tenacious grip. Vise capacity is over 2", which will cover all work that this vise is intended for, and then some. Elongated holes in the moveable chop allow the vise to hold tapered pieces with ease.



· Building the Vise ·

To build the vise mill the parts to 1 3/4" thick. All three components are this thickness. On our complete vises we mill the mortise for the nut in the fixed chop with a template and router. But you can also chop this mortise by hand. Drill out most of the waste first, then clean up the corners. You can also drill a larger hole to house the nut and pare the six sides to create a hexagonal mortise. This has the distinct advantage of looking a lot nicer than the square mortise. Your call.

The moveable jaw is 1/8" wider than the fixed jaw (positioned at the bottom) to allow you to easily slide the closed vise up to the edge of your bench, thus lining up the front of the fixed jaw with the front edge of the bench.

The stabilizer is glued on and then planed flush to the bottom of the fixed jaw. Make sure it's square to the front of the fixed jaw.

Drill the elongated holes in the moveable jaw with a 3/4" Forstner bit, then shift the jaw over to elongate the hole, finishing up with a couple passes between the two to remove the web. Forstner bits can easily cut partial arcs, just make sure the jaw is clamped securely in your drill press. If you don't have a drill press you can elongate the hole with a round rasp or gouge. Make sure the mortise is no greater than 3/4" tall. You want the jaw to pivot horizontally, but have little vertical play.

To assemble the vise, thread a nut onto each screw so 1 3/4" of screw remains. Insert this end into the nut mortise on the fixed jaw. Place a nut behind the fixed jaw and cinch it down. Install the moveable jaw onto the screws, slip on the two washers then spin the handwheels on. A little lubrication used sparingly will keep the wheels spinning. A drying bicycle chain-type lubricant is a good choice. Plane the top edge of the jaws flush with the vise closed. Finally, glue the suede to the inside of the moveable jaw with contact cement, then trim it flush to the edges and holes.

The vise doesn't need to be finished, but it will stay clean longer and be nicer to use with a coat of oil or shellac. Don't apply finish to the inside of the fixed jaw, or to the bottom of the vise. You want these areas to stay grippy.

· Complete Vise Assembly ·

If you purchased a complete Moxon vise follow these assembly instructions.

The vise parts are sanded to medium grit. This is useful for the inside faces of the jaws, but you may want to smooth plane the outside surfaces for a nicer look and feel. Next, glue the stabilizer to the back of the fixed jaw and plane its bottom edge flush to the bottom edge of the fixed jaw. While the glue cures on the stabilizer glue the suede to the inside of the moveable jaw with contact cement, then trim it flush to the edges, and around the elongated holes. Finally, break the sharp edges and apply finish if you like (see above for finishing info). Assemble the vise according to the instructions in the previous section.

· Using the Vise ·

To use the vise for its most useful task, working the ends of boards narrow and wide as in dovetailing, place the closed vise on your benchtop and clamp the fixed jaw firmly to the benchtop at each end. If you have holdfasts, you can use these instead. If your bench is outfitted with a Benchcrafted Tail Vise or other wagon vise, and dogs positioned close to the front edge, you can trap the stabilizer between dogs and clamp firmly. Tap the dogs down with a hammer to bring the vise into firm contact with your benchtop.

To clamp a workpiece, first spin the wheels to open the jaws, insert your workpiece and slide it up to one of the screws (usually opposite your dominant hand). Spin the wheel until the jaw just touches the workpiece. You won't adjust this wheel again unless you change your workpiece thickness. Now center your workpiece between the screws and spin the other wheel. This will push the jaw up to the workpiece and clamp it securely. You won't need to tighten the vise further in most cases. Practice a few times to get a feel for how far you

need to open the jaw to move the workpiece. When you open the vise, use the workpiece to spread the jaws so when you reinsert another workpiece its quick and easy. When you have a whole chest of drawers to dovetail and you're moving numerous workpieces in and out of the vise, this sequence will translate into quick and effortless workholding. The vise is also excellent for cutting tenons.

· Benchtop Bench ·

You may wish to use your Moxon vise hardware to build a benchtop bench. This miniature bench is clamped to your regular height bench and used in the same way as the standard Moxon vise. The work surface behind the fixed jaw allows you to clamp work directly to the top, transfer dovetail locations to your pin board, or keep small tools at the ready. A variety of different versions can be built with the hardware depending on your application. If you'd like to include benchdogs in the moveable jaw we recommend beefing up the jaw to 3" thick or so. This will help eliminate vertical racking when using the dogs.



· Moxon the Short ·

Similar to the benchtop bench pictured above, you can build a shorter version of the Moxon vise with less distance between screws. In this example, just over 16". This size is very handy for most drawer and small to medium size case work. It's not often you need a full 24" capacity. Having several different vises at the ready is a nice convenience. But we're more frugal. Swapping out the hardware between jaw sets is a quick operation. But if you want to build several complete vises, we won't complain.

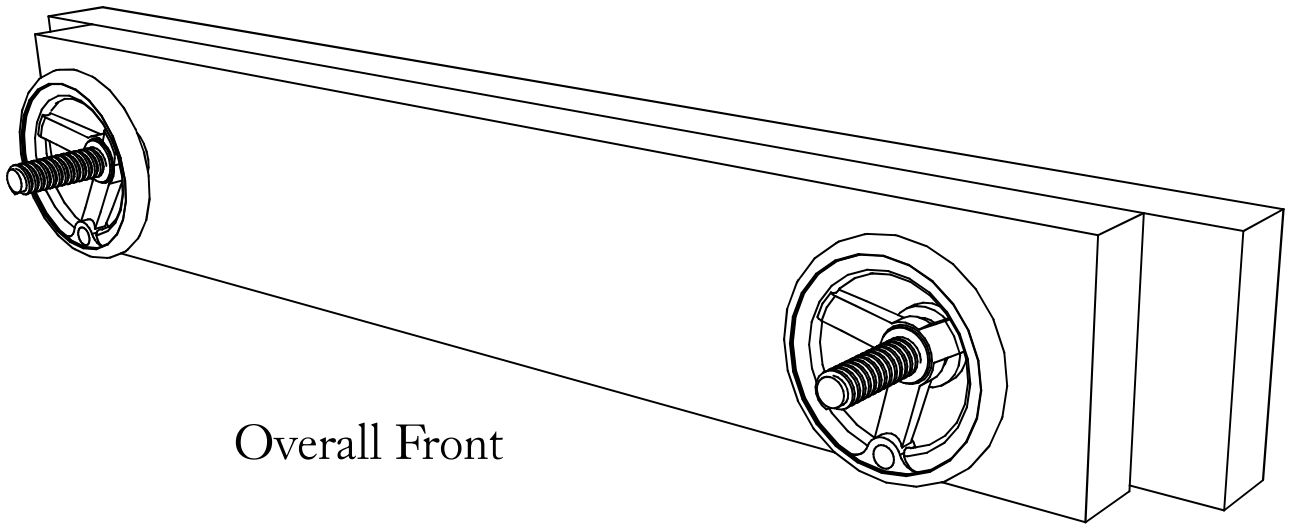
· Maintenance ·

The handwheels are made from cast iron, which will rust under the right circumstances. If your shop is not climate controlled, or you live in a particularly humid area, like along a seacoast, you will need to take the same measures as with any steel or iron implement in your shop. There are many recipes for preserving cast iron. One uses equal parts boiled linseed oil and beeswax. Brush on a coat and wipe most of it off, leaving a thin layer. Let this dry overnight. You can also brush on a coat of shellac, or spray lacquer. Use your own judgement depending on your local conditions. We keep our test shop heated and air-conditioned year-round and we don't have a problem with rust. The other parts of the vise being more highly polished are less susceptible to rust, but you should also take precautions with those as well.

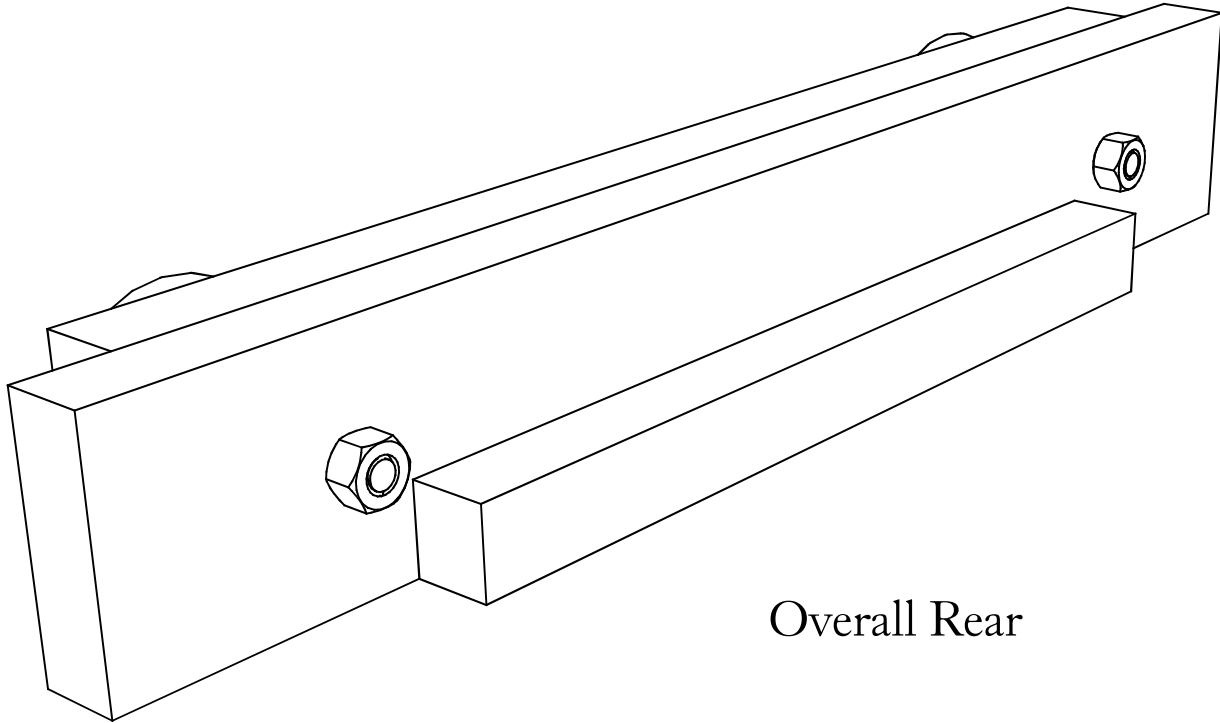
To keep the handwheels spinning freely its most important to keep the screws clean. A good brushing or blast of compressed air at the end of the session should do it. You may find that a new handwheel will vibrate a bit if you spin it aggressively. First, go easy. A steady but positive spin is all you need. Secondly, when we tap the handwheels' hub the thread's profile is sharp and crisp. After a bit of use the cast iron threads will ease and the handwheel's action will get even sweeter.

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MOXON VISE



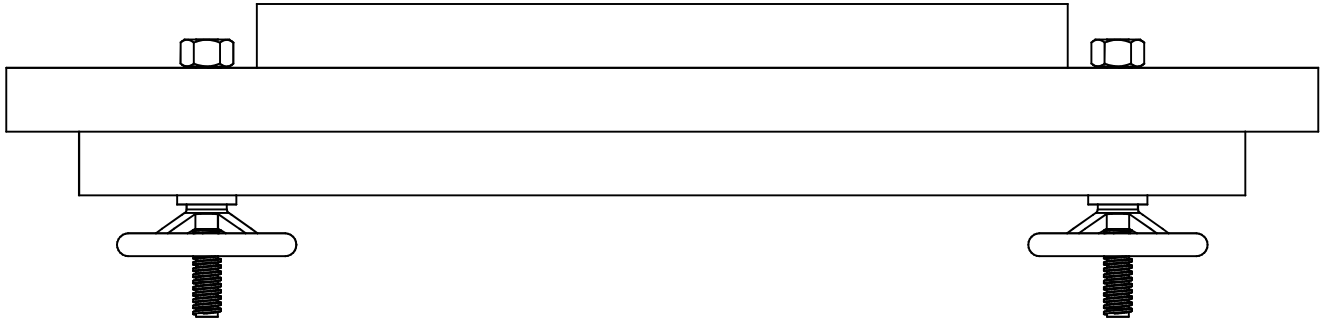
Overall Front



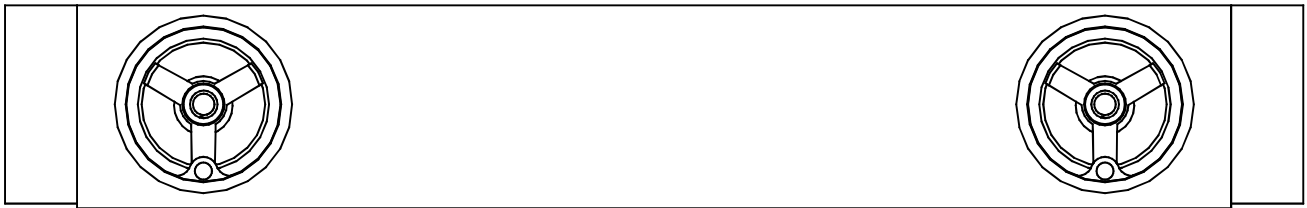
Overall Rear

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Plan



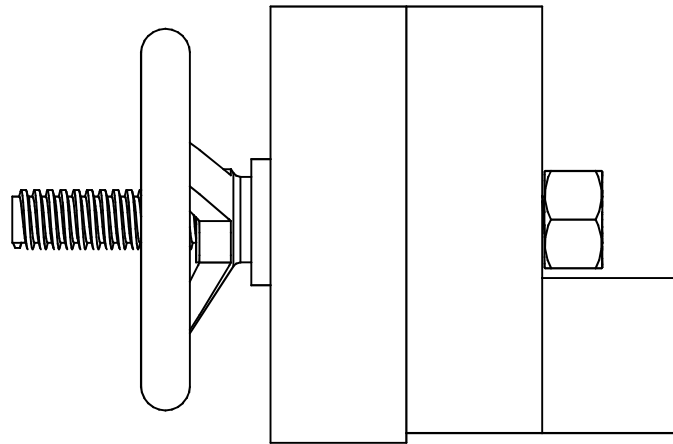
Elevation, Front



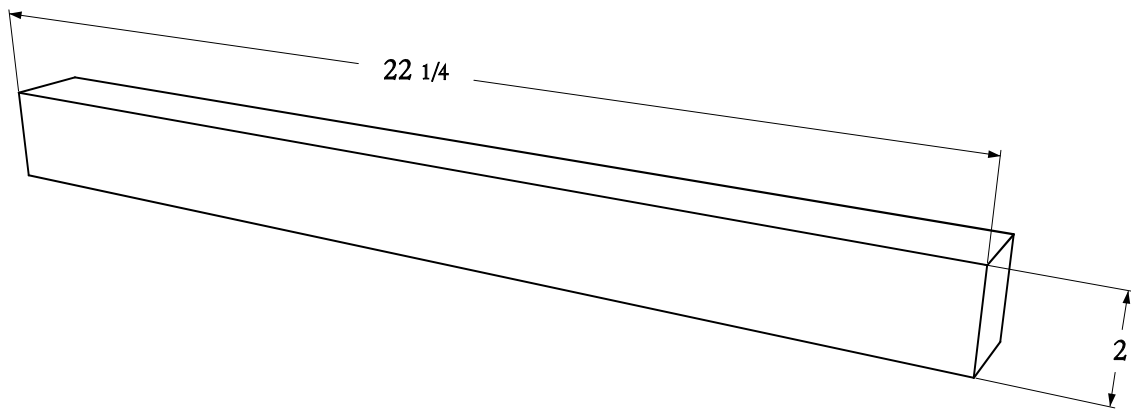
Elevation, Rear

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Profile

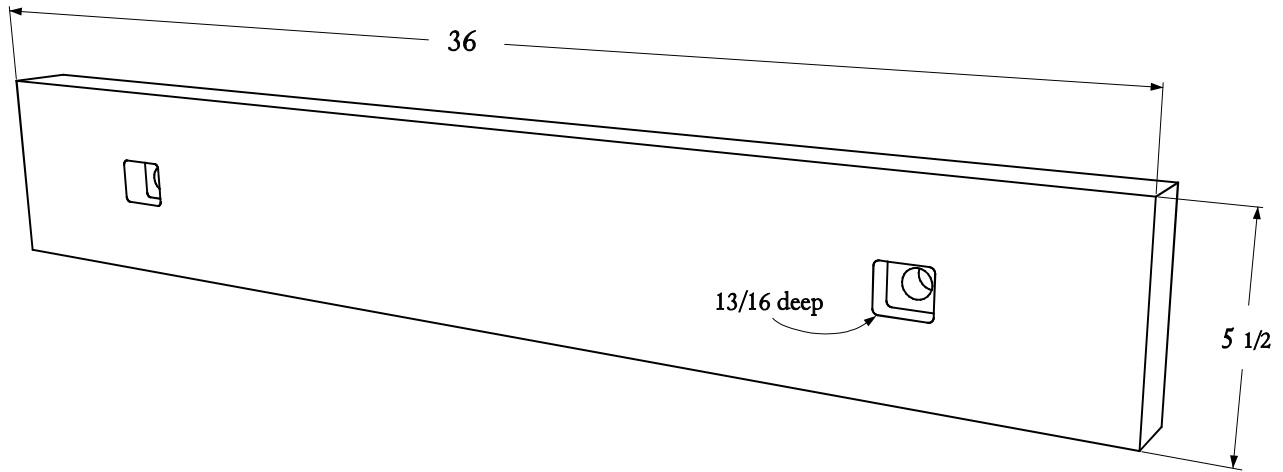


Stabilizer

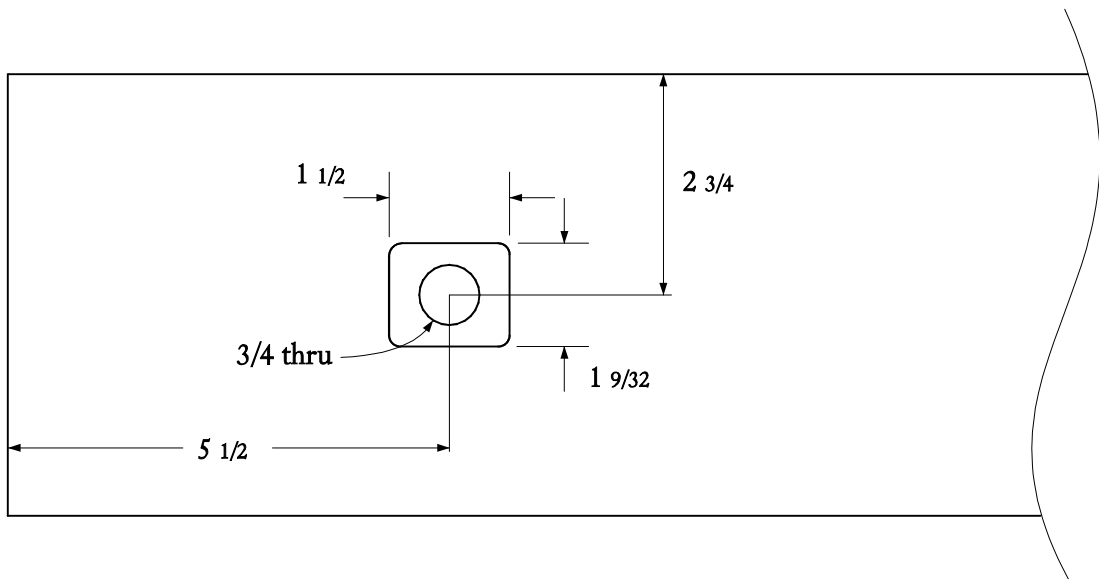
Note: All parts made from $1 \frac{3}{4}$ " stock

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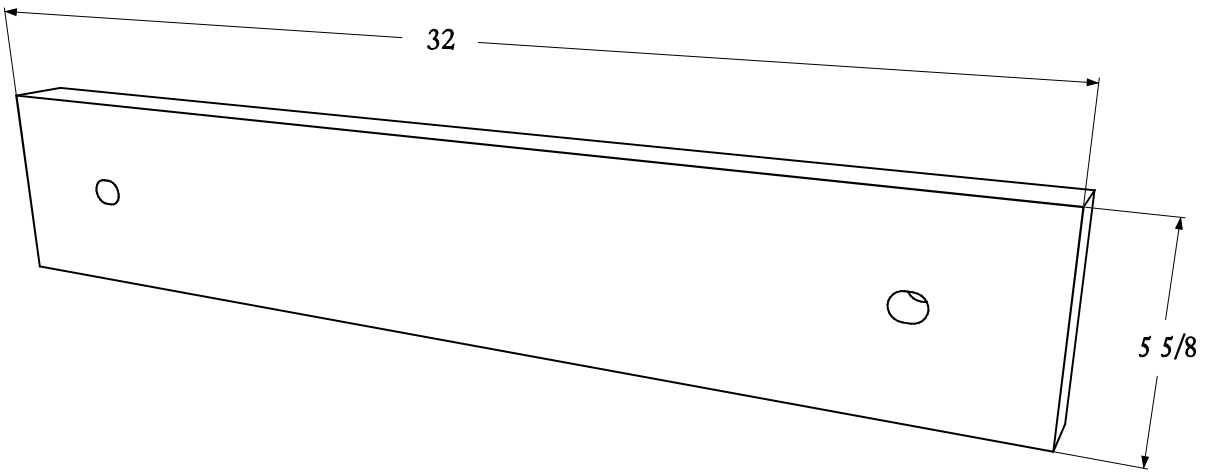
Fixed Jaw



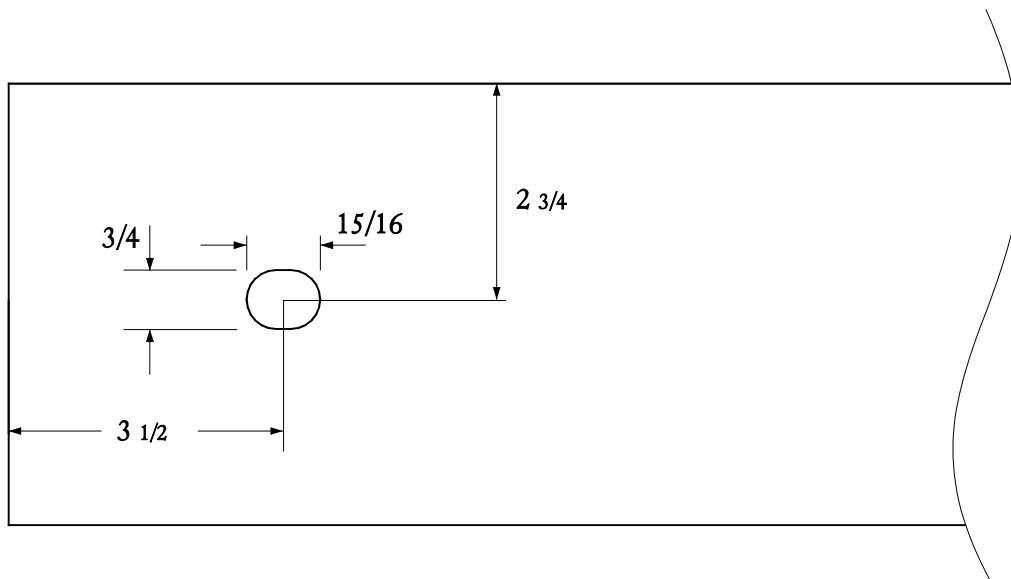
Fixed Jaw Details
cut at both ends

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MOXON VISE



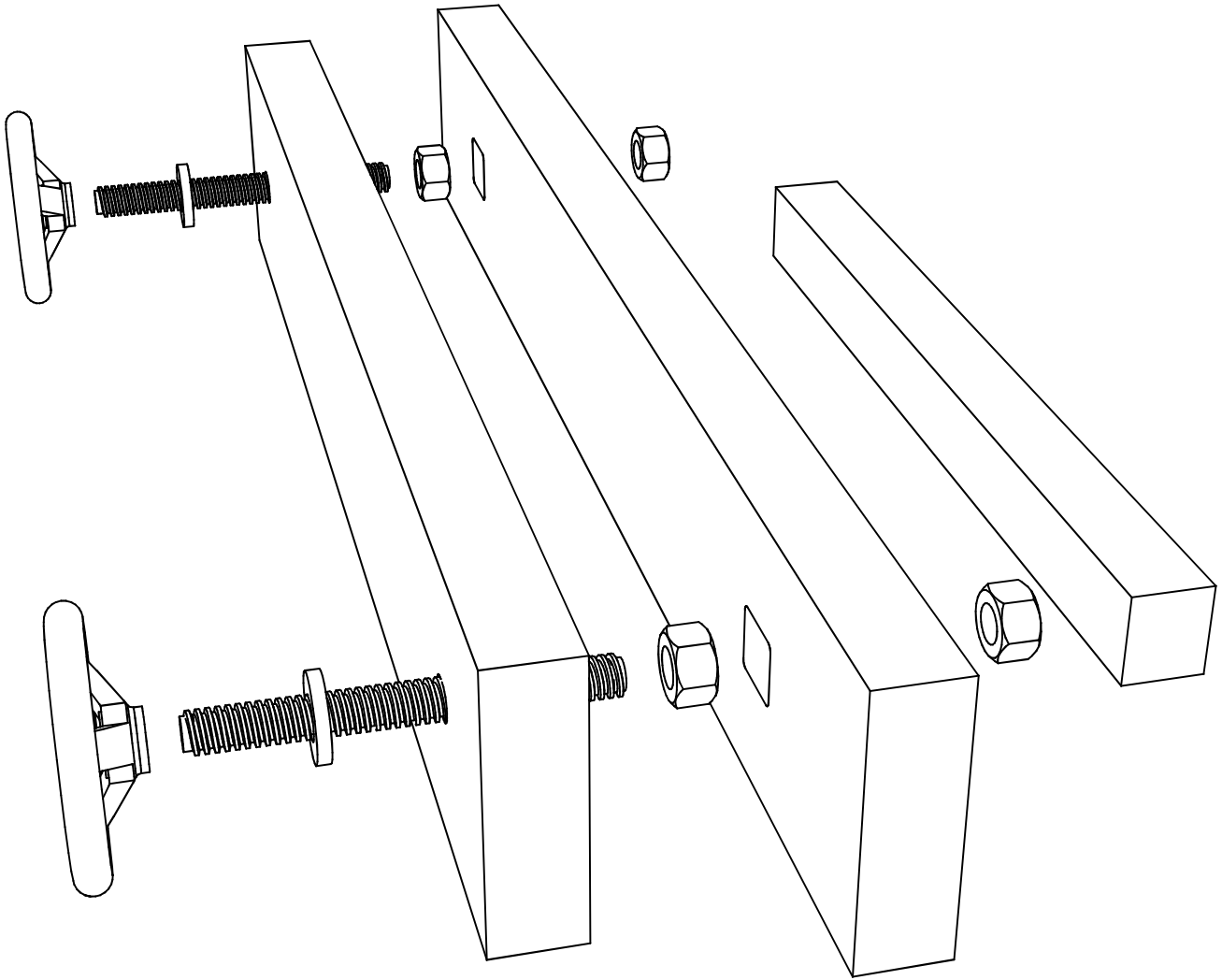
Movable Jaw



Movable Jaw Details
cut at both ends

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Exploded View

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