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This must-have jig allows you to take whisker-thin shavings off the end of a workpiece to fine-tune the fit of a joint.

# shop-made Shooting Board

■ One of our designers, Chris, was in the shop working on a prototype for a project a while back. I noticed he was fine-tuning the fit of a part using a shooting board that looked a bit familiar. It was from an issue we published about eight years ago. He decided it would be a good addition to his set of “tools,” but Chris made a few changes to improve its capabilities and make it work even better. You can see the result in the photo above. I really liked the new design and was sure it would make a great project to share.

The reason a shooting board is a must-have for the shop is it allows you to take a paper-thin shaving off the end of a workpiece with a hand plane — something that’s just about impossible to do with a tool like a table saw or miter saw. And the optional sanding “plane” (photo at right) lets you fit a joint or simply sand a surface smooth.



▲ **Sanding Block.** Another option for tweaking the fit of a workpiece is this shop-made sanding block. It slides along the base just like a hand plane.

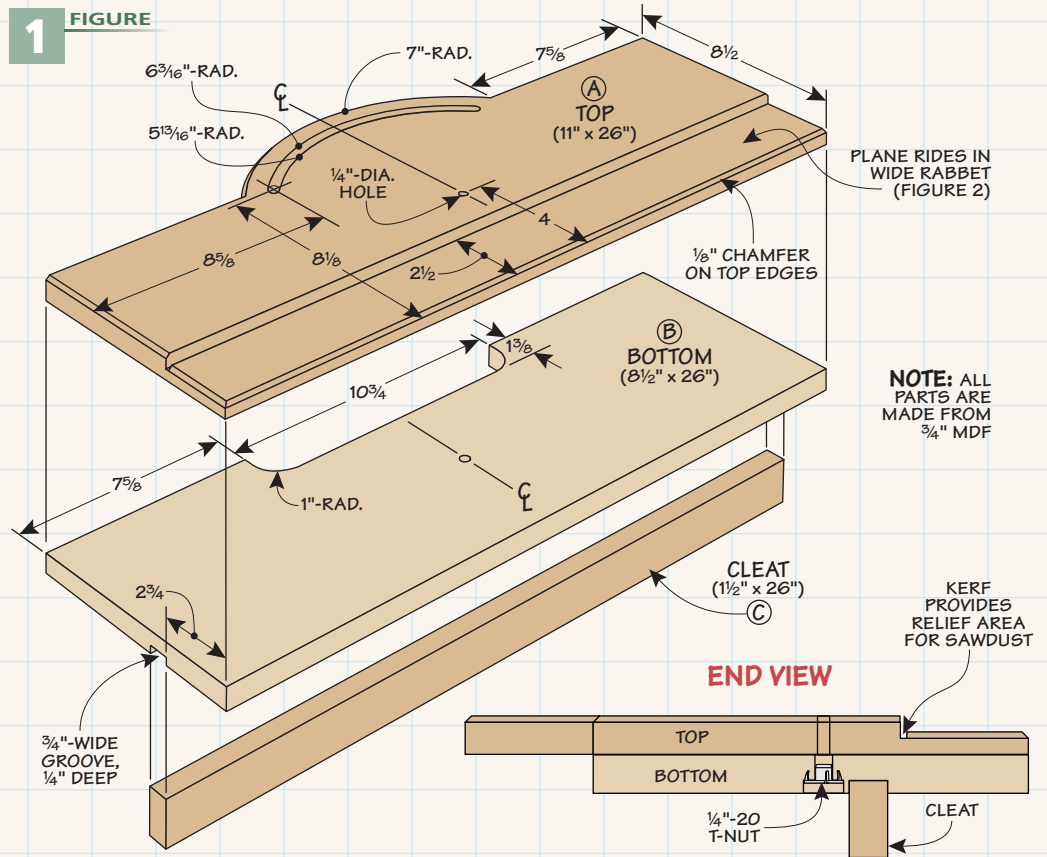
**Overview.** The shooting board is a base made from two layers of  $\frac{3}{4}$ " MDF with a cleat for clamping the jig in a bench vise (Figure 1). The base serves an important purpose. A rabbet along the edge of the base guides the hand plane (or sanding block) in a straight path as you trim the workpiece.

Later, a pair of fences are attached to an adjustable stop so you can quickly and easily set the fences to 45° or 90°, or lock in any angle in between. And the fences adjust to back up the workpiece and prevent tearout.

**Start with the Top.** Since most of the detailed work is on the top layer of the base, that's where I started. The first step is to cut the top to overall size and then do a little layout work.

The key to the layout is locating the hole for the pivot pin. It's used to mark the curve along the edge of the top as well as the location of the curved slot used to lock the pivoting stop block in place.

Once you have the layout work completed, you can cut the curved slot. To make quick work of this, I drilled out the ends of the slot and then used a jig saw to remove the waste. I used my jig saw to complete the shaping along the edge of the top, as well.



**Add the Bottom.** To build up the base, I added a bottom layer. As shown in Figure 1, the bottom is sized to match the overall length of the top and its width matches the width at the ends of the top.

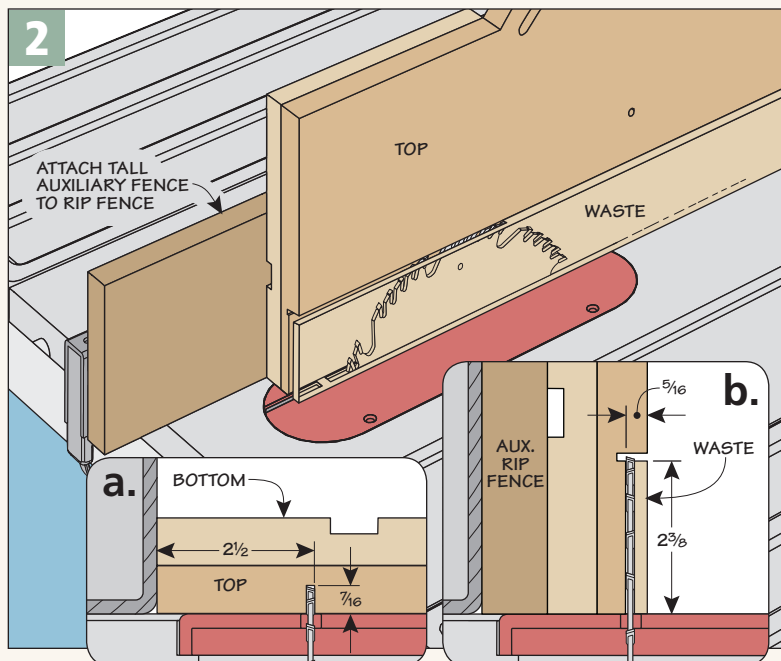
Before gluing it to the top, you'll need to create a notch along one edge for the fence locking system

that's added later. And to accept the  $\frac{3}{4}$ " MDF cleat, you'll need to cut a groove in the bottom face. The cleat allows you to secure the shooting board in a bench vise. You can cut the cleat to size now, but don't glue it in place yet.

**Completing the Base.** After gluing the top and bottom together, there are a few things left to do. The first is to drill the hole for the pivot pin through the glued up base. Then, on the bottom side, enlarge the hole and add a counterbore to accept a T-nut.

The last step is to create a wide rabbet in the top to guide the plane in a straight path as you trim a workpiece. As you can see in Figure 2, cutting the rabbet is a two-step process. First, to provide a dust relief, cut a kerf in the base (Figure 2a). To complete the rabbet, reposition the rip fence to cut away the waste, as in Figure 2b. Adding a tall auxiliary fence provides solid support as you make the cut.

All that's left to do on the base is add the cleat. It's simply glued into the groove you cut earlier.



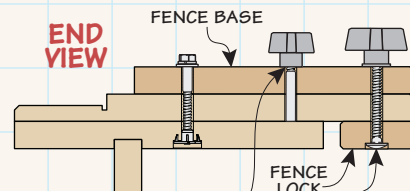
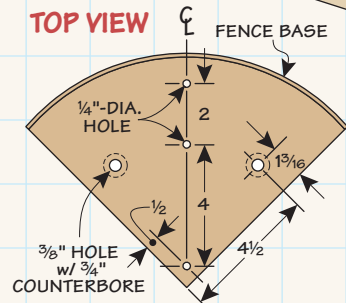
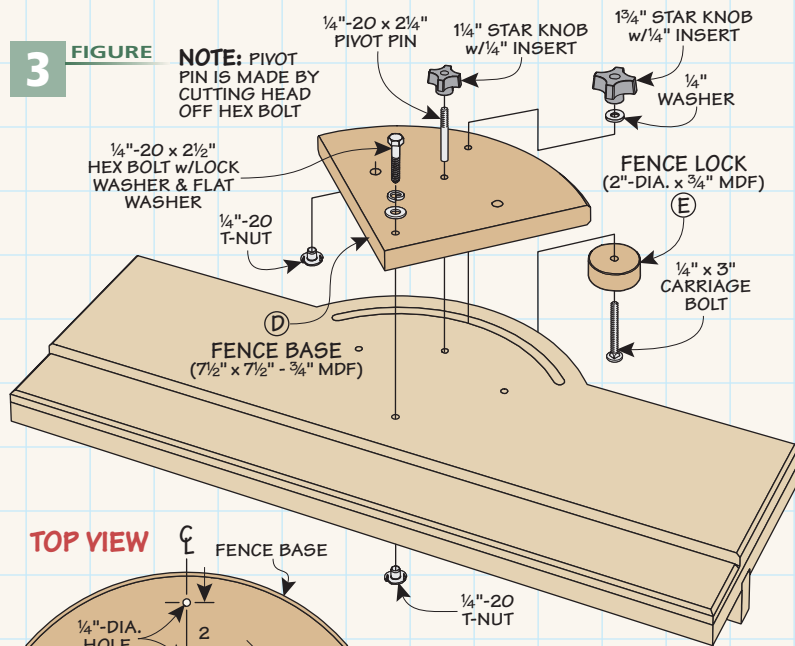
# adjustable fence System

The rabbet cut in the base of the shooting board guides the hand plane. But in order to make an accurate cut, you need a fence to securely hold the workpiece in place. The fence system on this shooting board is also designed to pivot so it can be set up to trim miters of almost any angle.

To provide adjustability, the system starts out as a fence base made from  $\frac{3}{4}$ " MDF (Figure 3). As you cut the blank to size, it's important that the base have a true, 90° corner.

The next step is to lay out a series of holes in the base (Top View in Figure 3). With the layout complete, drill the three  $\frac{1}{4}$ "-dia. holes for the pivot pin, locking pin, and locking knob. Then, to lock the fences in place, you'll need to drill a couple of counterbored holes for a pair of T-nuts (Figure 3). Finally, rout a small chamfer on the top and bottom of the curved edge of the base.

**Locking System.** Most of the time, a shooting board is used for trimming workpieces at 45° and 90°. To secure the fence system for other angles, you'll need to add a lock for the fence base. This is detailed in Figure 3.



**NOTE:** SECURE PIVOT PIN IN STAR KNOB WITH EPOXY

**NOTE:** SECURE CARRIAGE BOLT IN COUNTERBORE WITH EPOXY

The fence lock consists of a carriage bolt and a  $\frac{3}{4}$ " MDF disk (End View in Figure 3). A knob and washer lock it in place. I cut the disk with a hole saw and secured the bolt into a counterbore on the bottom of the disk with epoxy.

## SLIDING FENCES

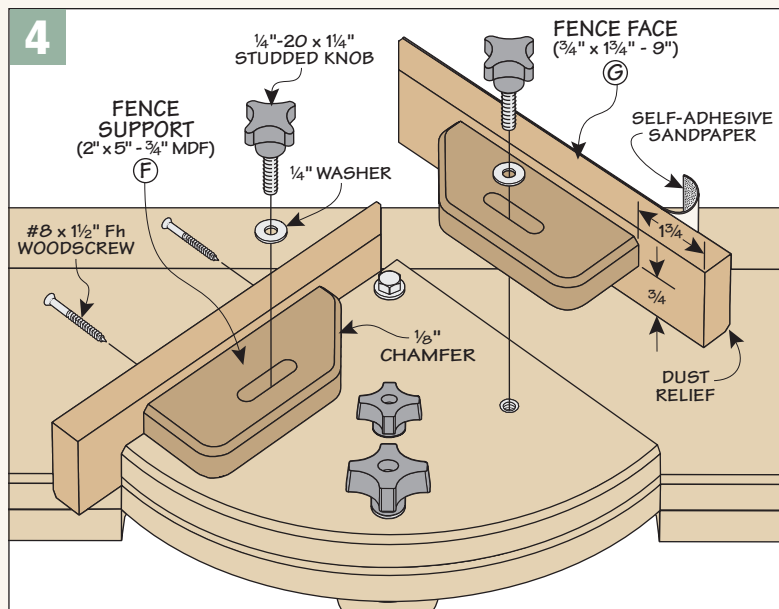
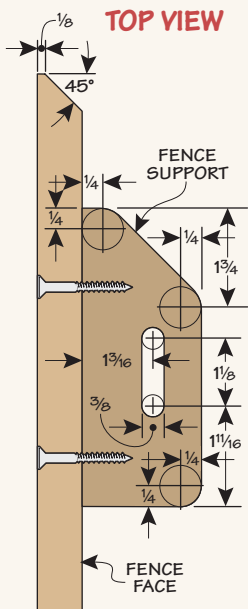
In order to back up the workpiece when "shooting" a miter, there's a pair of sliding fences attached

to the base. You can see these illustrated in Figure 4. The two sliding fences are mirror images and are made up of a fence support and a fence face. To lock the fences in place, you'll need to cut a slot in each support for a studded knob (margin drawing at left).

Once the slots are complete, you can chamfer the top edges of each support. The front edge is left square for adding the fence faces.

**Adding the Fence Faces.** The next step is to add the fence faces to the supports. The fence faces are just strips of  $\frac{3}{4}$ "-thick hardwood, mitered on one end (left margin drawing). I sanded a slight chamfer on the bottom, front edge to create a relief area for sawdust.

The fence faces are attached to the fence supports with screws. This way, you can replace them if they ever get chewed up. Finally, the sliding fences are mounted to the fence base with knobs and washers.



**Locking Pin.** There's one last step to complete the locking system for the fence. And that's to drill a few holes in the base of the shooting board for a locking pin, as in Figure 3. These holes make it easy to quickly set the stop for the 45° and 90° positions.

The photos at right show you how to use a combination square and the holes in the fence base to accurately drill into the main base of the shooting board. Just be sure to lock the fence base in place as you drill each hole and don't drill into your benchtop.

I made the locking pin by cutting the head off of a hex bolt and gluing it into a knob with epoxy. Finally, adding self-adhesive sandpaper to each of the fence faces provides a more secure grip during use.

**Sanding Option.** The shooting board is designed for use with a hand plane. But you can also fine-tune the fit or simply sand the end



▲ **Setup for 45°.** After positioning the fence, drill a hole in the base using the hole in the fence base as a guide.



▲ **Square It Up.** Repeat the process for drilling the two holes in the fence base for the pair of 90° settings.

grain of a workpiece smooth using a sanding block (Figure 5).

The sanding block is just a thick block of hardwood with a narrow rabbet cut along one face. This forms a reference edge that

rides against the shooting board to ensure accurate sanding.

After beveling the top edge of the block, I sanded a small flat on a dowel and screwed it to the beveled face. Finally, I mitered the ends of the block (and handle) to provide a more comfortable grip.

The shooting board makes quick work of taking a thin shaving off the end of a workpiece (photos at left). It's a sure way to fine-tune any workpiece for a perfect fit. If you'd like more information on using a shooting board, check out our website, ShopNotes.com. 🛠️

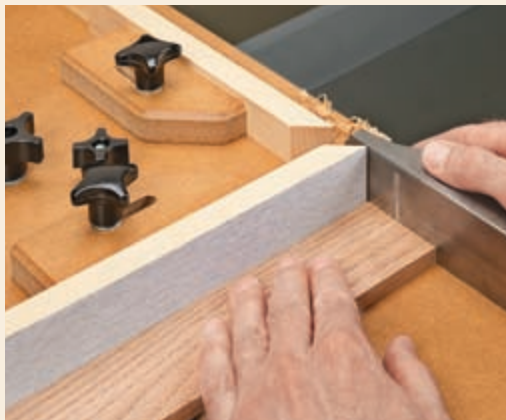


For an article on setting up and using a shooting board, go to: [ShopNotes.com](http://ShopNotes.com)

## Using the Shooting Board

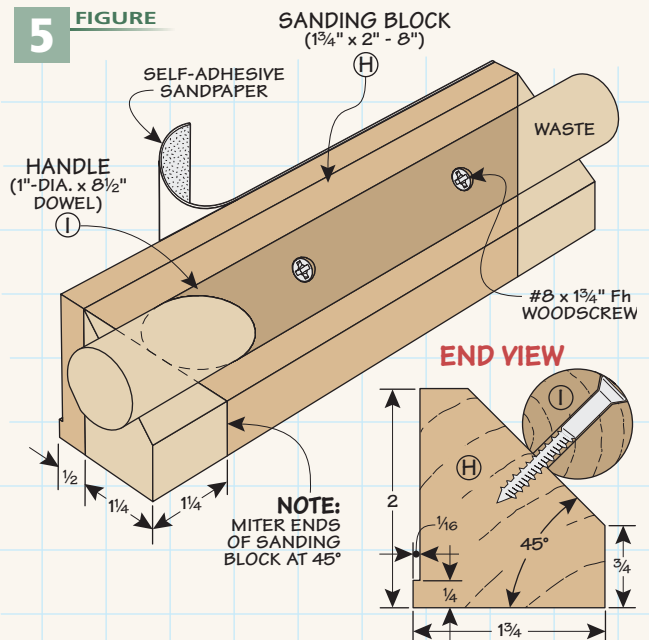
### ► **Square an End.**

With the fence set perpendicular to the edge of the shooting board, you can shave a hair off the end of a workpiece.



### ► **Other Angles.**

By disengaging the locking pin, you can adjust the fence for any angle. Simply lock it in place at the desired angle, adjust the fence, and you're ready to plane.



# Sources for Shooting Board

- **Reid Supply**

*1/4"-20 x 1 1/4" Stud. Knob ... RST-101*

*1/4"-20 T-Nuts ... WN-120*

*1/4"-20 Thr. Knob (1 3/4") ... DK-54*

*1/4"-20 Thr. Knobs (1 1/4") ... DK-81*

## These specific sources were also cited

- Reid Tools

[www.reidtool.com](http://www.reidtool.com)

800-253-0421