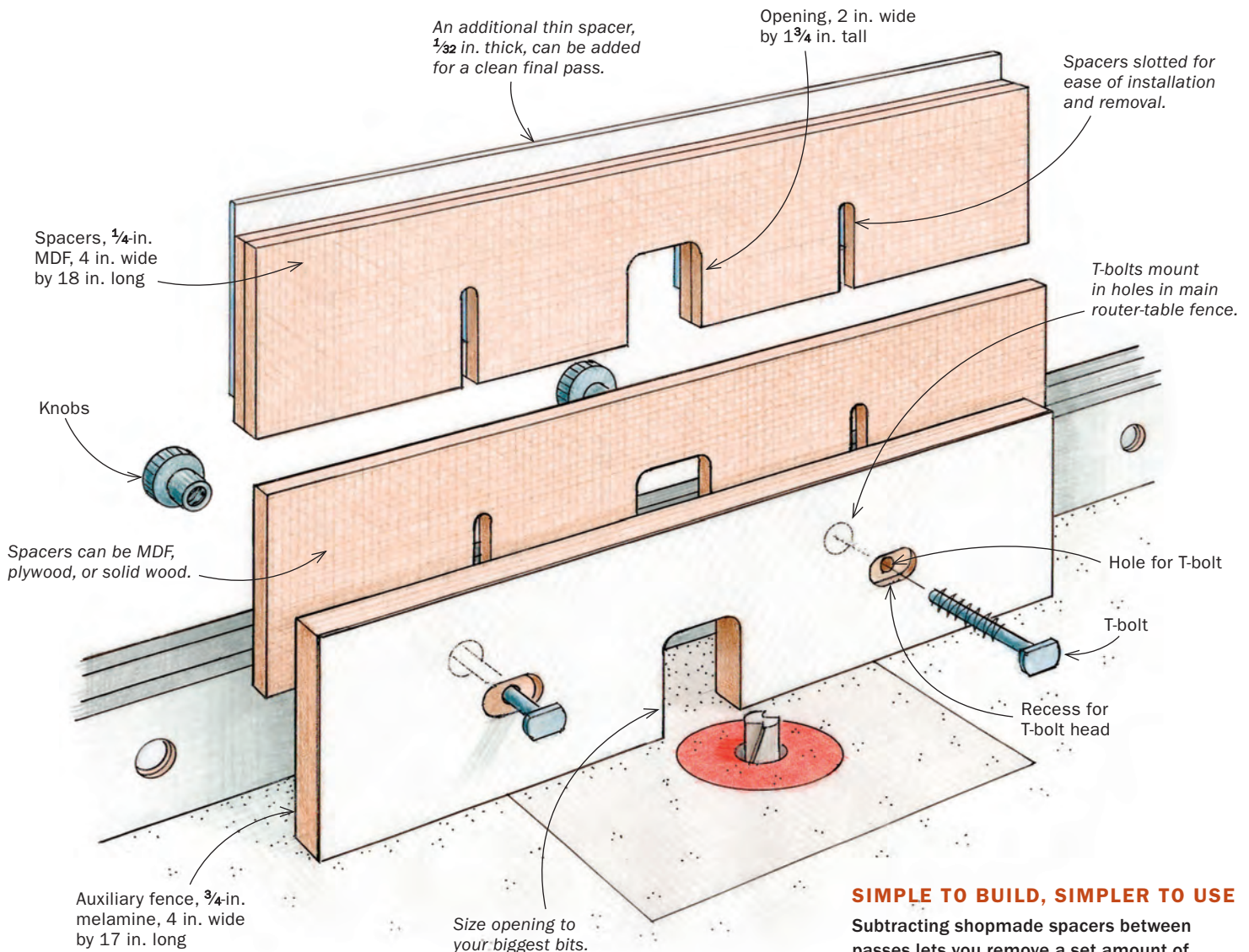


Adjustable Router Table Fence

Removable spacers guarantee accuracy and repeatability

BY TAMAR HANNAH



SIMPLE TO BUILD, SIMPLER TO USE

Subtracting shopmade spacers between passes lets you remove a set amount of material with just one setup. Size all parts to your specific router table.

From joinery to shaping, I use my router table a bunch. I've come to expect a lot from it, but I've also learned how to work efficiently within its limitations. For example, removing a lot of material in one pass with a router is a bad idea. Not only is it unsafe, but it can also damage your router, bits, and workpiece. To avoid these heavy cuts, it's typical to

keep adjusting the fence away from the bit between passes. This often means making small and deliberate changes slowly to make sure you don't blow past your desired dimension. Plus, if you're measuring each time you move the fence, the routine can disrupt your workflow even more.

This is where an auxiliary fence with spacers comes in handy, allowing you to

measure the distance between the fence and your bit just once. After that, all you need to do is remove a spacer between passes. The setup also guarantees safe, clean cuts. As a result, this jig, which is a breeze to make, will save plenty of time. It can also help in a pinch when you need to make a rabbet, groove, or dado bigger than your available bits.

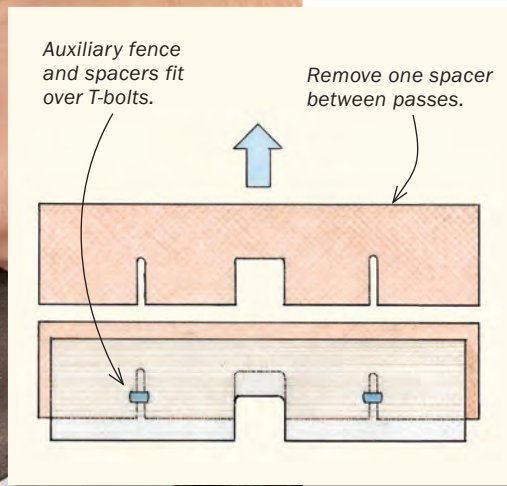
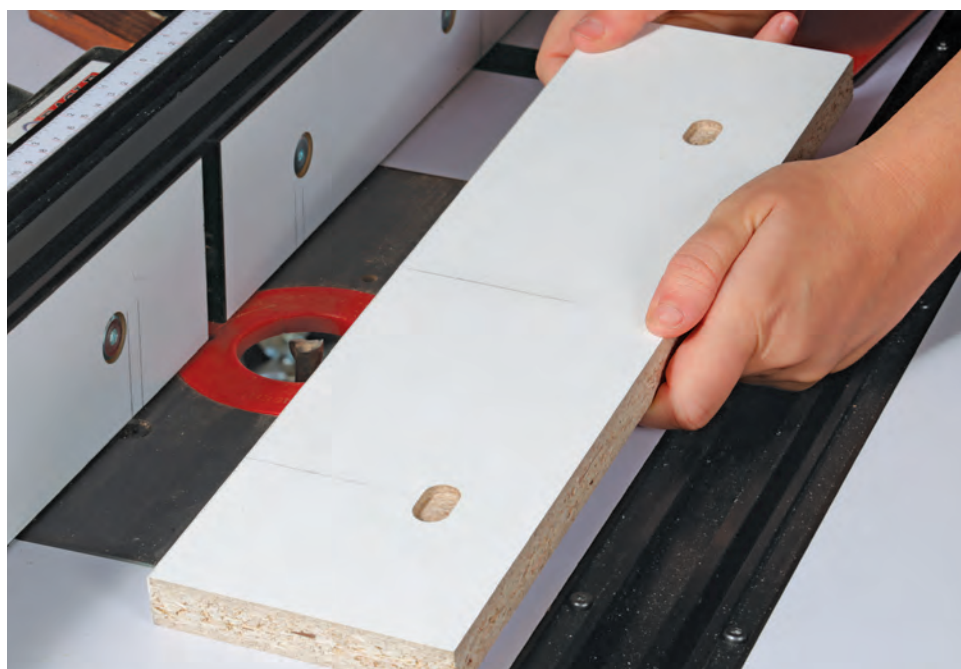


Making the jig

AUXILIARY FENCE

Plunge cuts let you recess the T-bolt heads.

Measure the recess spacing from your fence (above), and make two short, shallow plunge cuts, using start and stop lines penciled on the fence to guide the cuts. The recesses need to be deep enough to allow the T-bolts to be inset from the surface (below).



A breeze to build

The jig comprises a few simple elements. First, there's the auxiliary fence. This is what the stock rides against, so I make it from melamine. Second are the spacers. You don't want these thicker than half the diameter of the bit's shank. I typically use 1/2-in.-shank bits, so 1/4-in.-thick MDF works great. Having some 1/8-in. spacers is nice for smaller bits, as well as for overall versatility. I also like to resaw extrathin spacers, about 1/32 in. thick or so, for when I want to use lighter cuts for a superior finish.

Finally, there are the T-bolts and knobs, which secure the auxiliary fence and



Drill for the T-bolts. Eyeball this hole so it's roughly centered in the recess. Size the bit to your bolt.



The opening should fit your biggest bits. You will most likely use this auxiliary fence with large router bits, so use your largest bits, both in width and height, as a guide for laying out this opening.



Cut out the opening after drilling at the corners. Freehand cuts at the bandsaw make quick work of the opening. Drilling at the corners lets you navigate the turn with the bandsaw blade much more easily.

spacers to the main fence. These should be long enough to extend through both fences and the spacers while still having enough length left over for the knobs to engage the threads.

The auxiliary fence and spacers should be built to fit your particular router table. When sizing the auxiliary fence, simply rip the melamine to the height of your main fence. The length of the auxiliary fence involves a little more thought. I mount it (and the spacers) using only two T-bolts, one on either side of the cutter, and I don't want it so long that it will bow if it is not supported by more bolts. So, to determine the length, I open the main fence all the way and line up the melamine so that it extends past the bolts by about $3\frac{1}{2}$ in. on either side. Then I cut it to that length.

Rip the spacers to the same width as the auxiliary fence, but crosscut them slightly longer. This will make them easier to install and remove when you use the jig.

Next, locate the holes for the T-bolts. Measure the center-to-center dimension between the two bolts on the main fence and transfer that to the auxiliary fence and the spacers. Since the spacers are longer than the auxiliary fence, mark your pieces based on a centerline. For example, if the bolts are 10 in. apart center-to-center, make your marks 5 in. on either side of the centerline. Also use the main fence to determine the height of these holes on the auxiliary fence.

The T-bolts' heads need to be recessed in the auxiliary fence so they don't interfere with feeding the stock. So, before I

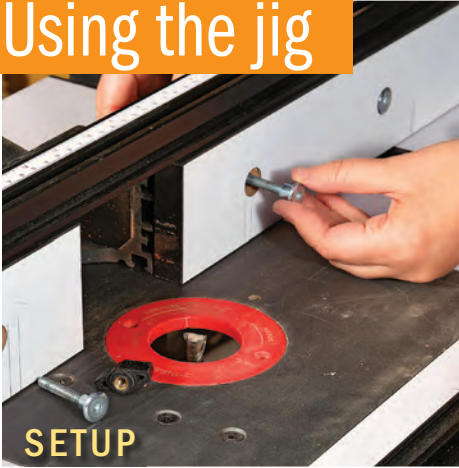


Drill bolt holes on spacers lower than on the auxiliary fence. Making the holes lower will leave a slight gap underneath a spacer when it is installed, so it's easier to remove. Use the drill bit you used on the auxiliary fence to mark the spacer (right).



Finish the spacers at the bandsaw. After drilling the bolt holes, turn them into slots at the bandsaw. The slots will allow you to slide the spacer over the bolts to insert or remove it. Having drilled out the corners of the bit opening, Hannah bandsaws it to final shape too.

Using the jig



Remove the fence's existing bolts nearest the bit. The auxiliary fence and spacers will mount to these holes, and the existing bolts are likely too short.



Install the auxiliary fence and long T-bolts. Don't tighten the knobs yet. Rather, leave space so you can install spacers later before cinching down the bolts.

Move the fence to the width of the joint without spacers in place. Spin the bit by hand to make sure the cutter just grazes the square's head. Lock the fence in place. Here, Hannah is setting up for a 1-in.-wide cut.



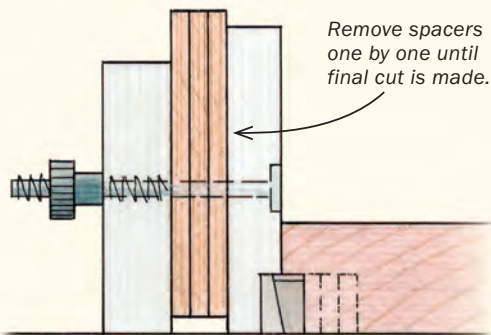
drill for the T-bolts, I plunge-cut short, shallow grooves on the router table to fit the heads. After that, drill through-holes for the bolts.

You can take a few steps to make the spacers easy to add to and remove from the auxiliary fence. First, drill the bolt hole about $\frac{1}{2}$ in. lower, which will leave a slight gap underneath the spacers when they're installed. This gap will make them easier to lift up and remove. Second, for a bit of wiggle room, the spacers' hole should be larger than the diameter of the T-bolt. After drilling these holes, remove the waste



Add the spacers. For safe cutting, it's important to install the spacers first and remove them between passes. If you do the reverse, you greatly risk a dangerous climb cut.

ACCURATE CUTS



below them at the bandsaw, creating a slot that will slide over the T-bolts.

Now that the auxiliary fence and spacers can be attached, you need to make room for the router bit. You will most likely be using this jig with large router bits, so use your biggest ones to lay out this opening in the auxiliary fence and spacers. To easily cut out the opening, drill out the corners at the drill press, then clear out the waste at the bandsaw.

As a last step, I put a very slight round-over on the opening's outfeed side to prevent workpieces from getting caught on it.

Tips for use

Using the jig may be easier than building it. You simply install the auxiliary fence, lock the main fence to the final width of the joint, and add the necessary spacers. Then, just remove them between passes.



RABBETS

Take the first pass. It's OK if this pass is lighter than the rest, since it's better to add too many spacers than use too few. A push pad helps Hannah apply pressure and keep her fingers away from the cutter as the wood passes over the bit.



Remove a spacer after each pass. Here you see why Hannah makes the spacers longer and mounts them higher than the auxiliary fence: There's plenty of room to lever them out.



Finish the rabbet with no spacers. Because a lot of stock has been removed, it's vital to keep the workpiece tight to the fence and apply more pressure over the table than the bit to avoid tipping the stock into the cutter. The result should be a flat, square, even rabbet.



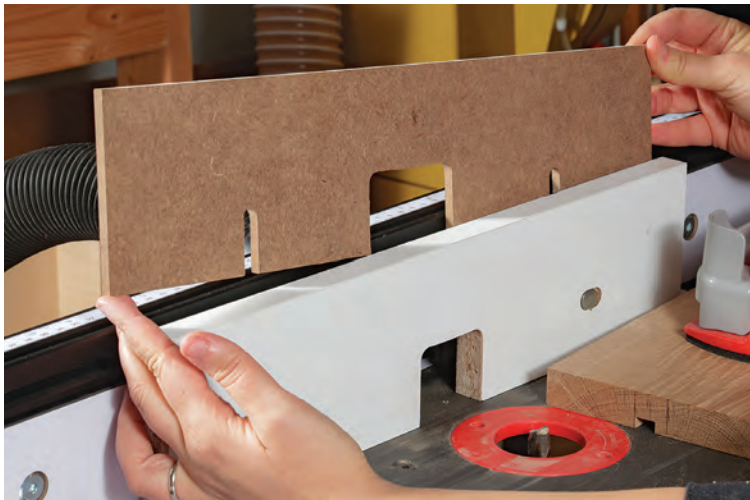
Using the jig continued

GROOVES AND DADOES



Add the spacers and make the first cut. Dialing in the fence and spacers is the same as with the rabbet: Move the fence to the near shoulder of the cut, and add spacers until you're at the far shoulder.

Remove a spacer before the next cut. The spacers should not be thicker than half the diameter of your router bit's shank. Because she's using a bit with a $\frac{1}{2}$ -in. shank, Hannah is using $\frac{1}{4}$ -in.-thick spacers.



Keep pressure over the cut during the last pass. Because there's wood supporting both sides of the joint, Hannah can maintain pressure right over the cutter, ensuring a flat bottom.



Before getting into the nitty-gritty, it's worth noting that you add all the spacers before cutting, and then remove them as you go. This is for safety purposes, since it guarantees you're feeding against the rotation of the bit every time. If you add spacers between passes, you risk a dangerous climb cut, which can yank the workpiece out of your hands and your fingers toward the spinning bit.

To use the jig, start by installing the auxiliary fence. You'll need to remove the two existing screws in the fence in order to exchange them with the T-bolts. Push the auxiliary fence tight to the main fence, but don't cinch down the T-bolts yet, since you'll add the spacers soon.

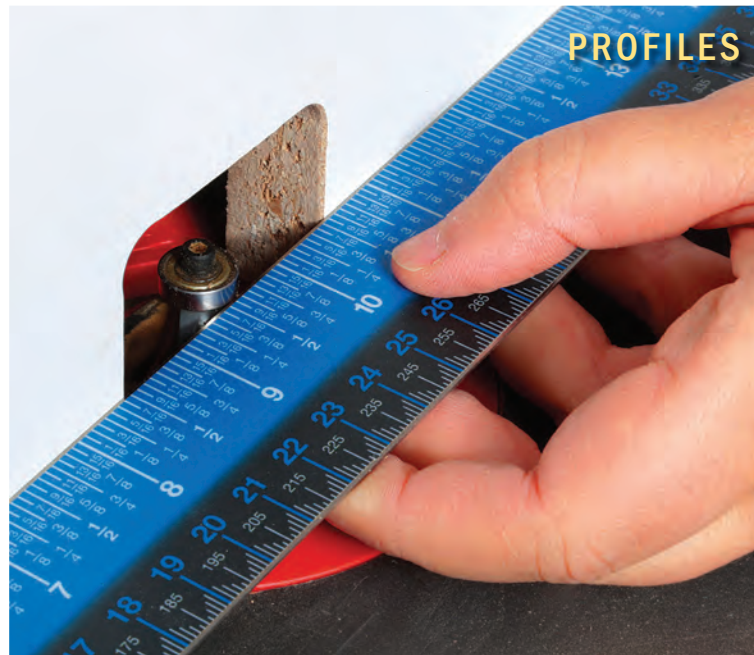
Lock down the main fence with the auxiliary fence positioned to take the last pass of your cut. This is easy to do with a combination square set to the width of the joint. For accuracy, spin the bit to make sure only the tip of the cutter is touching the square's body before locking the main fence where the square's ruler just touches the auxiliary fence. Now you can add the spacers you need and tighten the T-bolts on the auxiliary fence.

That's it for setup and measuring. Routing is easy. Make your first cut, and then keep removing spacers one by one between cuts until there are no more spacers

left. The accuracy and efficiency is guaranteed.

With large profiling bits, which are typically used to create show surfaces, it is preferable to take a very light final pass, since it will yield the cleanest result. To do this, make sure the last spacer is thin, like 1/8-in. plywood, or, for even thinner options and more versatility, something you've resawed yourself. I aim for 1/32 in. thick. It's not worth risking large tearout on a final surface, which can happen with heavy cuts. If the stock demands lighter cuts throughout, I won't hesitate to use thin spacers for more than just the final cut, too. □

Tamar Hannah runs 3x3 Custom, a YouTube-based woodworking business.



Align the auxiliary fence with the bearing. This ensures your final pass will be in line with the bearing, which aids both safety and accuracy.



Make your own spacers. While MDF is a convenient option, sometimes it's wise to take the time to make thin wooden spacers. This is particularly true with profiles, where the routed surface is a show surface. In these instances, Hannah resaws a 1/32-in.-thick hardwood.



The last spacer should be thin when routing profiles. No matter how many spacers you start with, be sure to use a thin one for the final pass. You want to leave very little material for the last, spacer-less pass.



The final pass is a light, clean cut. Because only 1/32 in. of wood was left, Hannah can easily produce burn-free, chatter-free profiles.

