



Woodsmith **PLANS**

# HINGE MORTISING JIG



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One of the “make it or break it” parts of a project comes when you install hardware, especially hinges. A poorly fit hinge looks bad and can affect how well a door or lid opens and closes.

This hinge mortising jig takes the hassle out of cutting a mortise for a hinge and makes it just about automatic. Worried about sizing the mortise to match the hinge? Don’t. Simply use the hinge to set the jig for a perfect fit. And with the adjustability designed into the jig, it’ll handle hinges as small as  $\frac{3}{4}$ " or as large as  $3\frac{1}{8}$ ".

**TRIM ROUTER.** One thing you’ll notice in the photo above is that I decided to use a trim router to rout the mortise rather than a full-size router. A trim router is most often used for working with laminate, but there are actually a few benefits to using one with this hinge mortising jig.

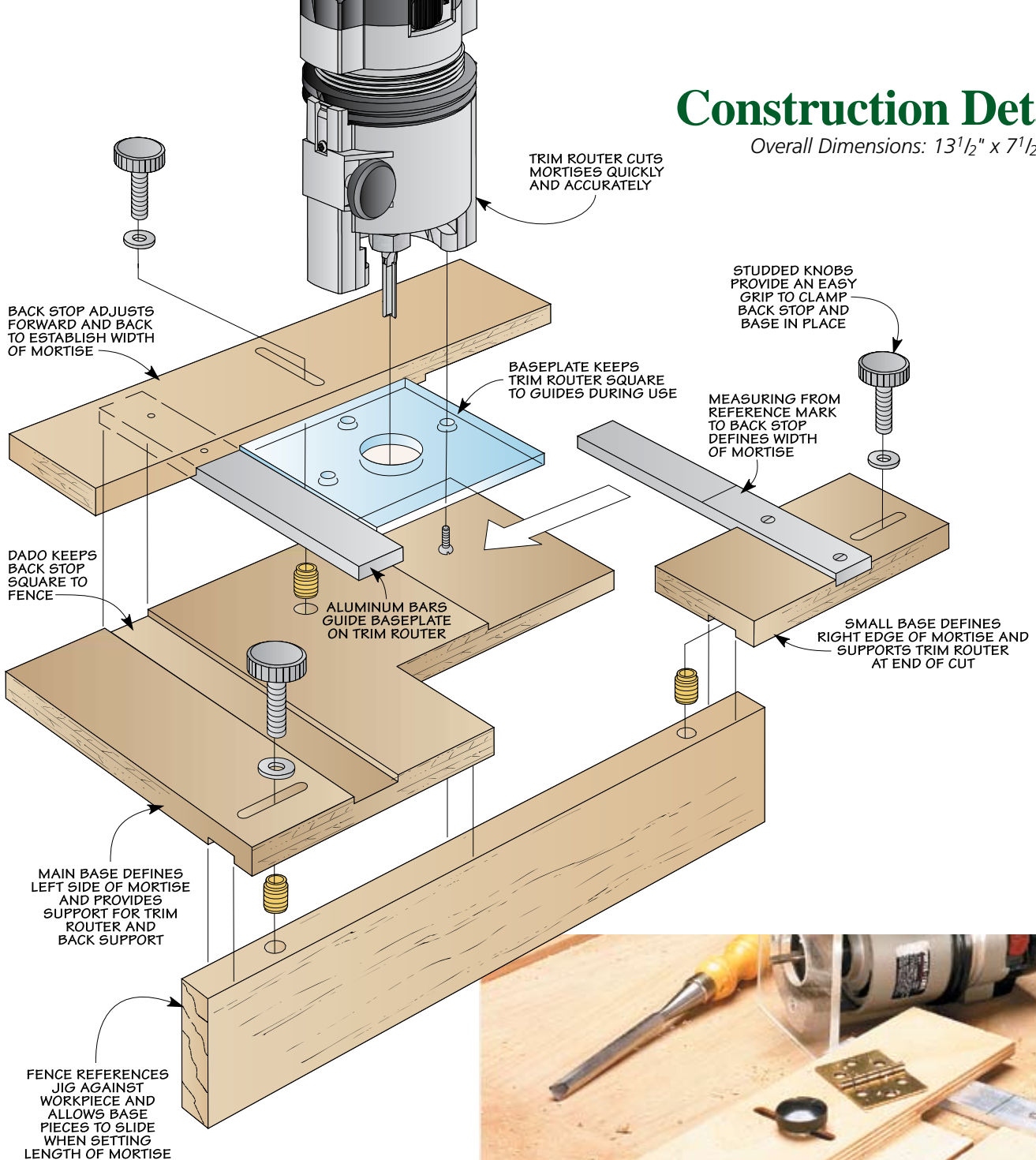
For starters, the jig can be smaller since it doesn’t have to support a large router base. On top of this, the small, compact size makes it easy to use with one hand. And finally, it’s quite a bit less noisy than a full-size router.



▲ **A Mortise for a Hinge.** Quick, clean, and accurate describe the mortise you get with a trim router and this hinge mortising jig.

# Construction Details

Overall Dimensions: 13<sup>1</sup>/<sub>2</sub>" x 7<sup>1</sup>/<sub>2</sub>" x 4<sup>1</sup>/<sub>2</sub>"



## MATERIALS & HARDWARE

- |                         |  |
|-------------------------|--|
| <b>A</b> Small Base (1) | 1/2 ply. - 2 <sup>1</sup> / <sub>16</sub> " x 5 <sup>7</sup> / <sub>16</sub> " |
| <b>B</b> Main Base (1)  | 1/2 ply. - 7 <sup>1</sup> / <sub>2</sub> " x 11"                               |
| <b>C</b> Back Stop (1)  | 1/2 ply. - 2 <sup>3</sup> / <sub>4</sub> " x 11"                               |
| <b>D</b> Fence (1)      | 3/4" x 2 <sup>3</sup> / <sub>4</sub> " - 13 <sup>1</sup> / <sub>2</sub> "      |
| <b>E</b> Baseplate (1)  | 4 x 4 - 1/4" Plexiglas   |

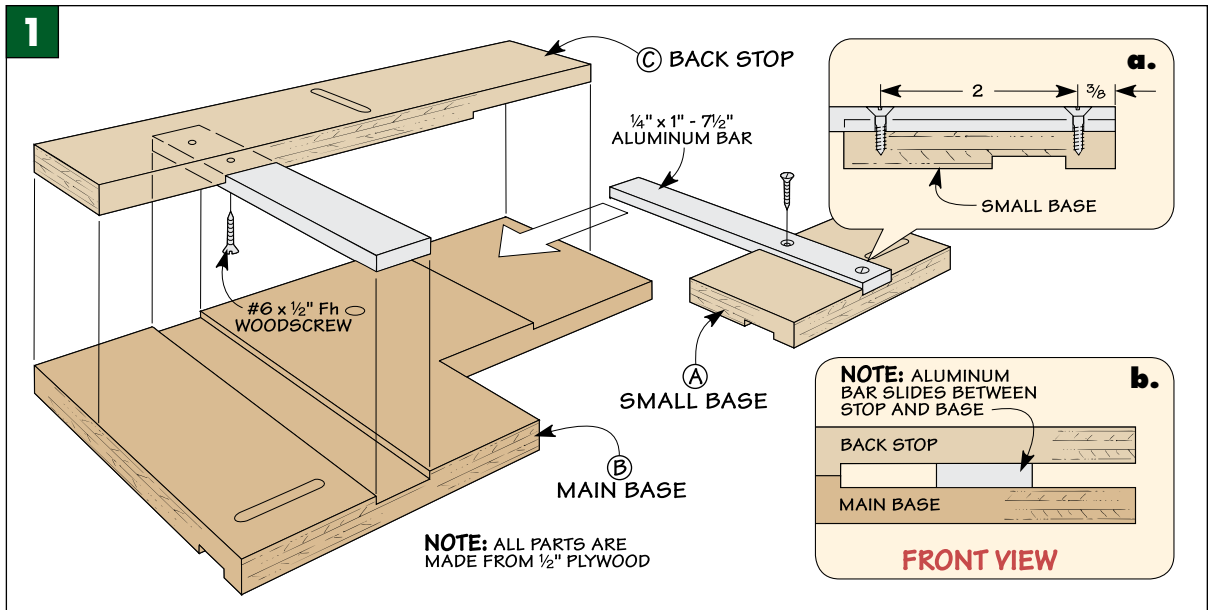
- (4) No. 6 x 1/2" Fh Woodscrews
- (2) 1/4" x 1" - 7<sup>1</sup>/<sub>2</sub>" Aluminum Bars
- (3) 1/4" Threaded Brass Inserts
- (3) 1/4" x 1" Round Studded Knobs
- (3) 1/4" Flat Washers



▲ **Face Mortise.** With the hinge mortising jig, you can rout a mortise in the face of a workpiece just as easily as the edge.



**▲ Countersink.** Drill a deep countersink to ensure the screw head is below the surface of the bar.



## Two Part Base, Stop & Fence

For a tight-fitting mortise, you need to control two things — the width and the length. To do this, the mortising jig consists of a two-part base, an adjustable stop, and a pair of aluminum guide bars (Figure 1).

**START WITH ONE PIECE.** As you can see in the drawing, the aluminum guide bars fit into dadoes and rabbets cut in the base parts and the adjustable stop. Instead of working with each part individually as you cut

the dadoes and rabbets, start with a single blank. Then you can cut it into separate pieces once the joinery is complete, as you see in Figure 2. Working with a larger piece is easier and safer. It also ensures that the dadoes and rabbets will align perfectly with each other.

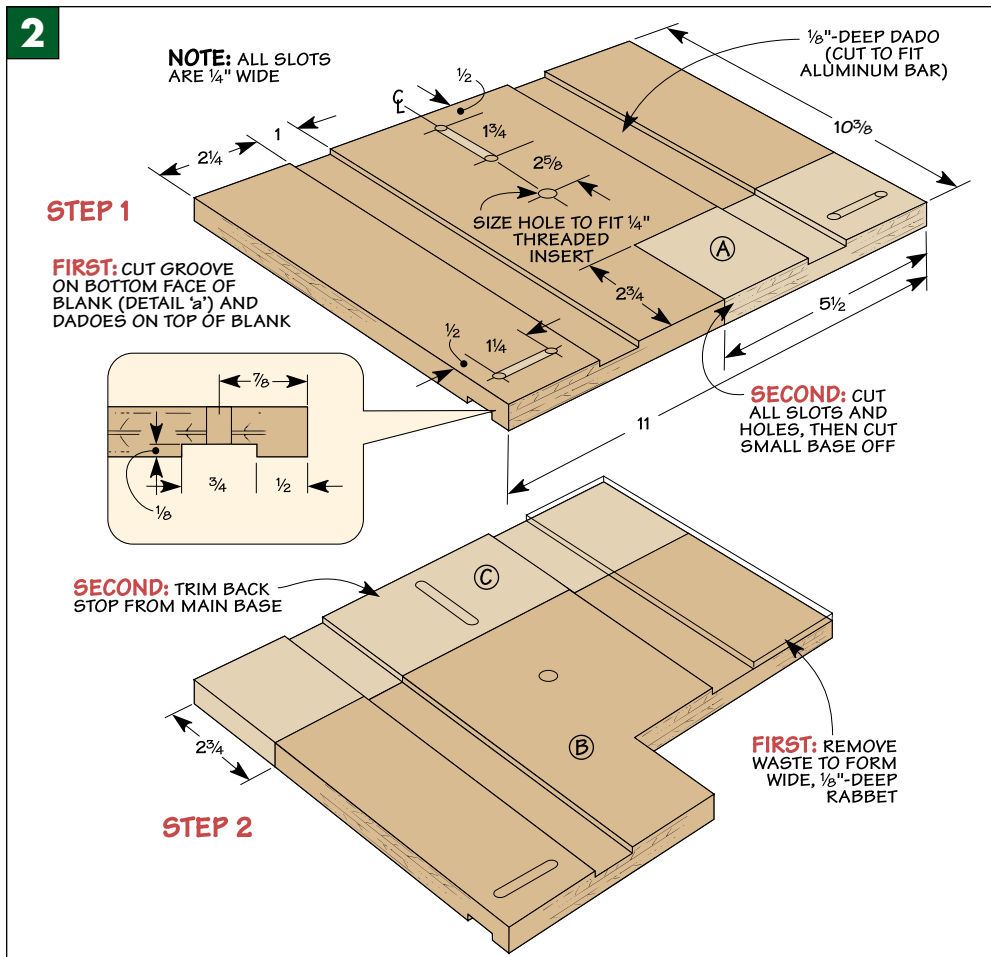
The first thing I did was cut a single groove in the bottom of the blank. This groove is sized to match the thickness of the fence ( $\frac{3}{4}$ ") that's added later, as in Figure 5.

With the groove complete, cut the dadoes as you see in Step 1 of Figure 2. These are cut in the top of the blank and sized to fit the aluminum bars that act as guides for the base of the trim router.

You'll want to cut the dadoes at least half the thickness of the bar (Figure 1b). A hair deeper is fine, but if they're too shallow the back stop on the jig won't rest against the base during use.

Finally, to allow you to lock the base pieces and back stop in place, you'll need to cut a series of slots and holes for the adjusting knobs and an insert. To figure out where these are located, take a look at Step 1 of Figure 2.

**CUT THE BASE APART.** Now you can start cutting the main parts of the jig from the blank. First, form the small base. To do this, make a pair of intersecting cuts on the band saw.



Doing this on the band saw allows you to leave your table saw and dado blade set up. This way, you can go back and cut the wide rabbet on the "leg" of the blank. You can see this in Step 2 of Figure 2 and in Figure 4.

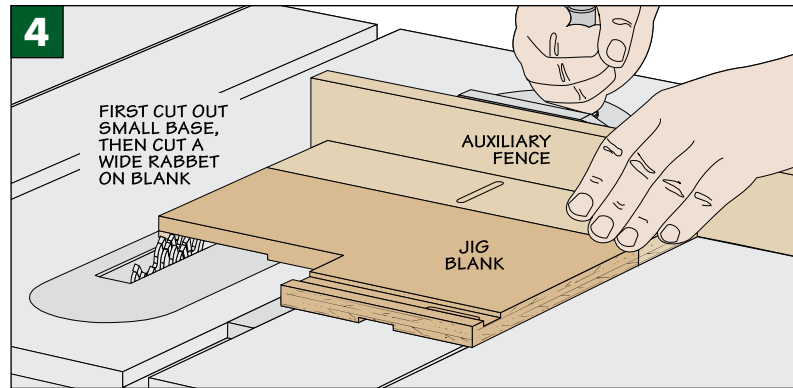
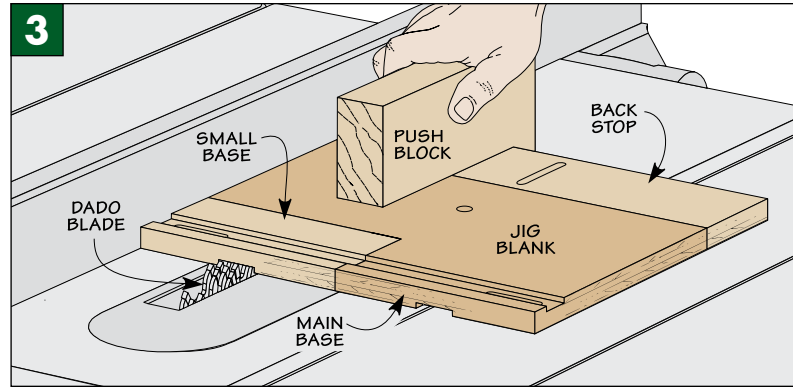
**FORM THE MAIN BASE & STOP.** Now you just need to trim a narrow strip off the back of the blank to form the main base and back stop. Once that's done, cut the aluminum guide bars to length and screw one to the back stop and the other to the small base, as illustrated in Figure 1.

To see how the construction process resulted in perfectly matched dadoes and rabbets, just flip the back stop over and set it in place.

**MAKE THE FENCE.** Now that the main part of the jig is assembled, you can get to work on the fence. The fence references the jig against the workpiece and provides a way to clamp the jig in place.

The fence is a piece of  $\frac{3}{4}$ "-thick hardwood that fits the groove cut in the bottom of the base.

**INSTALL THE INSERTS.** After cutting the fence to final size, add the rest of the hardware. A threaded insert at each end of the fence accepts the studded knobs that allow you to clamp the base pieces in place once you set the

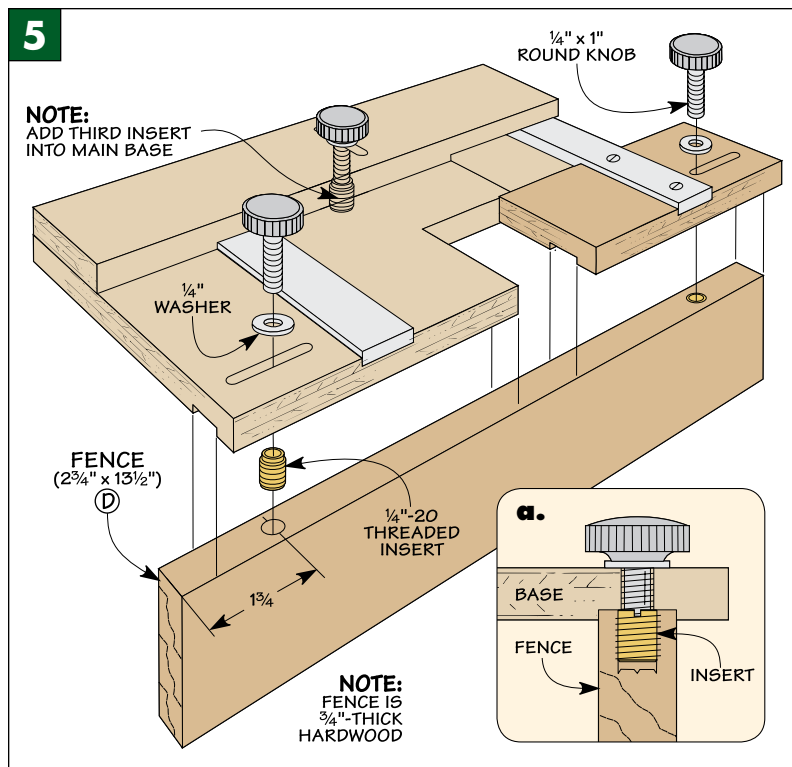


jig for the length of the mortise, as you see in Figure 5a.

The Shop Tip below shows a handy way to install the inserts perfectly straight. This method requires nothing more than a cut-off bolt and a couple of hex nuts. Just be sure to

turn the chuck by hand as you press it down with the drill press lever.

Finally, install a threaded insert in the main base. Depending on how thick your plywood is, you may have to file or sand the insert flush with the bottom face of the base.



## SHOP TIP



▲ **Installing Inserts.** A quick and easy way to install an insert perfectly straight is to use a cut-off bolt, a pair of hex nuts, and a drill press.

## Final Details

Although the basic construction of the jig is complete, there are a few things left to do before using it to rout a mortise for a hinge.

**ADD AN AUXILIARY PLATE.** The first thing you'll want to do is add an auxiliary baseplate to your trim router, as you see in the photo. The auxiliary baseplate serves two purposes.

First, using a square piece of clear plastic for the baseplate provides better visibility and more support during use. Second, it limits where the router bit cuts to match the hinge you're installing (Figure 6).

**CREATE A CUSTOM FIT.** As I mentioned earlier, the jig will automatically take care of sizing the mortise to match the width and length of the hinge. But to do this, you have to custom fit the opening for your baseplate and the router bit you'll be using to rout the mortises. Note: The jig is designed to be used with a 1/4"-dia. straight bit. This will allow you to rout a mortise for a hinge as small as 3/4" long.



▲ **Baseplate.** To improve visibility and accuracy while you rout, replace the round baseplate with a square piece of clear plastic.

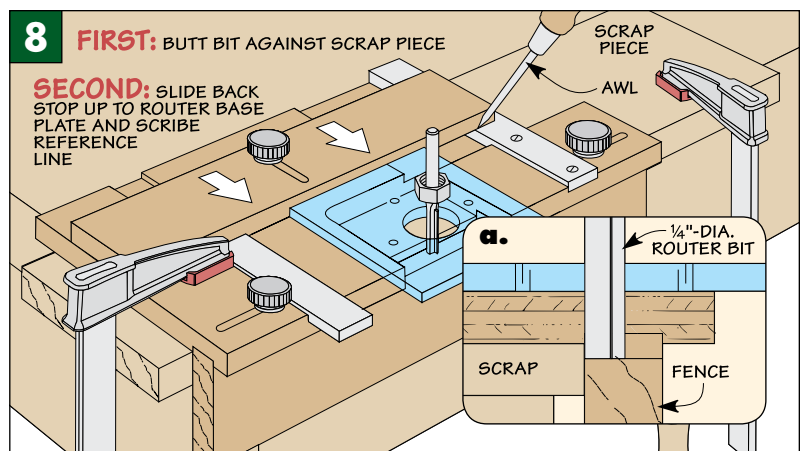
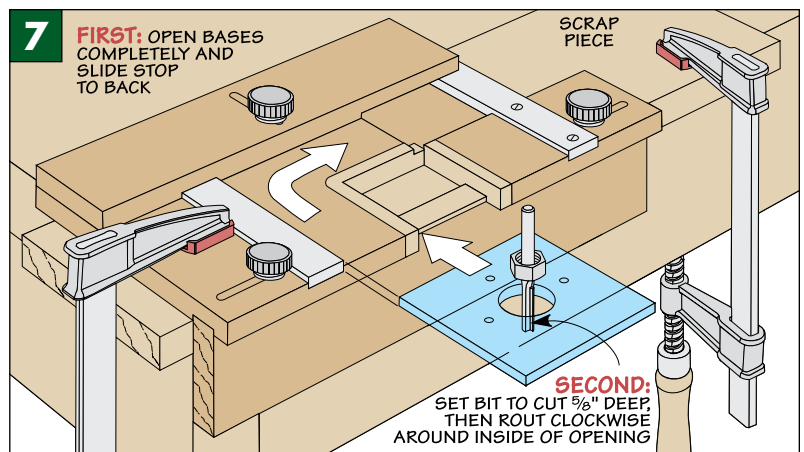
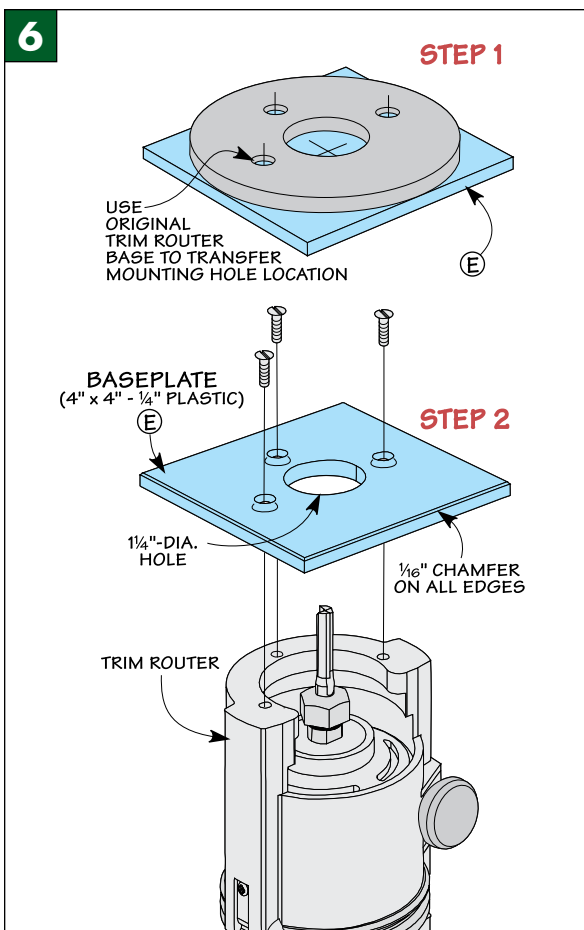
Start by sliding the two base pieces all the way open. And then slide the stop to the back. Next, you'll need to cut past the bottom face of each base. After adjusting the depth of cut to 5/8", rout clockwise around the inside of the jig, keeping the baseplate against the guides and stop, as shown in Figure 7.

**"ZEROING OUT" THE STOP.** The last step is to "zero out" the stop so you can easily set the width of the mortise. To do this, clamp a scrap against the

inside face of the fence and adjust the stop so the cutting edge of the router bit is just touching the scrap when the back edge of the baseplate is against the stop (Figure 8a).

After locking the back stop in place, use a scratch awl to scribe a mark on the top of the aluminum bar, as shown in Figure 8.

**USING THE JIG.** With the scribe mark in place, using the jig is just a matter of following the four-step process outlined on the following page.



## Using the Jig

Using the mortising jig is almost foolproof. The steps below show you just about everything you need to know. But there are a few additional things to keep in mind.

**HINGE LAY OUT.** Before you clamp the jig in place, you'll need to lay out the location of each hinge. Since the jig will handle the overall length of the mortise, all you need to do is locate one edge of each hinge (upper right photo). Once that's complete, you're ready to start.

**SETTING THE JIG.** Step 1 shows how to use the hinge to set the length of the mortise. And Step 2 indicates

how to use the hinge to set the width of the mortise.

**DEPTH OF CUT.** When it comes to setting the router bit to cut the mortise to depth, consider your project design, such as what size gap you want around the edges of a door and the overall thickness of the hinge.

Once you've determined the depth, account for the thickness of the jig base. Step 3 shows how I do this with a piece of scrap.

**ROUT THE MORTISE.** Once the jig is set, clamp it in place, aligning the inside edge of the jig with your layout mark. After turning on the router,



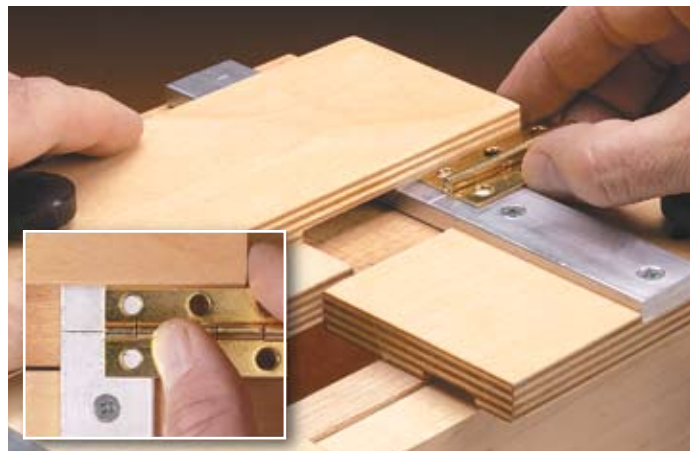
▲ **Lay Out Location.** The first step in routing a mortise for a hinge is to lay out the location of the hinge along the edge of the workpiece.

rouT clockwise around the inside of the opening, keeping the baseplate against the guides and back stop.

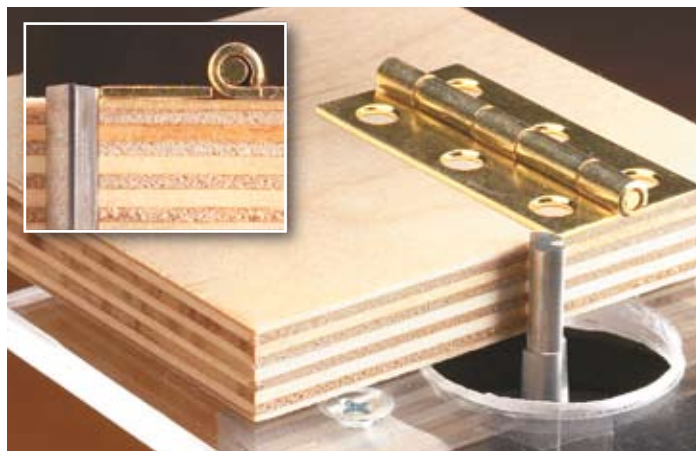
After that, you can remove the rest of the waste with the router. Then, remove the jig and square up the corners with a chisel.



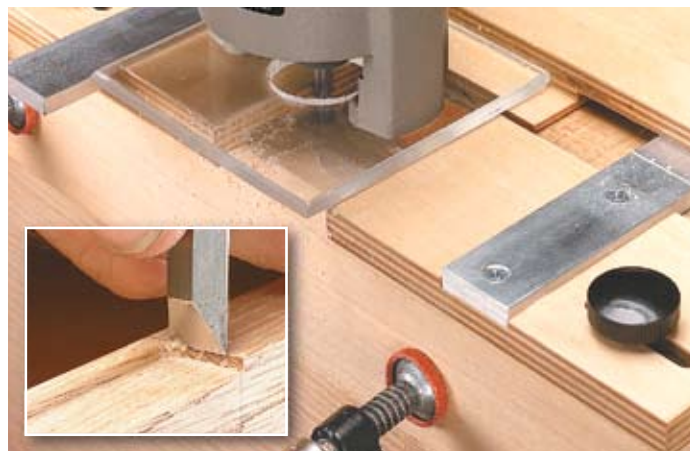
**1** To set the length of the mortise, you can use the hinge to position the two parts of the base. Just be sure the inside edge of each base contains the leaves of the hinge.



**2** Use the hinge to set the width of the mortise. A typical installation is to adjust the back stop until the centerline of the knuckle lines up with the scribe mark (inset).



**3** The depth of a hinge mortise often depends on the project design. Here, a 1/2" spacer simulates the base of the jig while setting the bit to match the depth of the hinge leaf.



**4** To remove most of the waste, rout clockwise around the inside edges of the guides and back stop. Use the mortise as a guide to square up the corners with a chisel (inset).