



Woodsmith **PLANS**

# ADJUSTABLE DADO JIG



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*This simple shop-built jig offers a quick setup and guarantees a perfect fit when routing dados.*



**I**t's hard to decide what I like best about this jig — the fact that it allows me to rout perfect dados with pinpoint accuracy, or how incredibly quick and easy it is to set up.

For starters, there's no need to fiddle with a straightedge to accurately position your jig for a cut. The adjustable dado jig takes care of that. Even if you have to make two passes (for a wide dado or a piece of plywood that's an odd thickness), there's no need to readjust the jig to zero in on the final width.

**TEMPLATE.** The reason for this is simple. The jig can be adjusted to

form an opening that's an exact template for the width of the dado. Once you set the opening to the correct width and rout the dado, what you see is what you get. You can see an example of how this works in the photos on the following page. Note: You can use this jig to rout dados from ½" to 1½" wide.

**QUICK CONSTRUCTION.** One of the best things about this jig is the ease with which it goes together. With just four strips of hardboard and a handful of hardware, you'll be cutting any size dado to perfection in a matter of hours. All you need to do

is set the width, clamp the jig to the workpiece, and cut one dado after another — all the same size.



▲ *The dado jig makes it easy to custom fit a dado for flawless results.*

**ADJUSTMENTS.** Setting the dado size is automatic. You simply insert the piece that's going to fit in the dado, and close the jig around it. Then lock in the adjustment, as shown in the left photo below. Since the thickness of the workpiece is what really determines the size of the dado opening, you're guaranteed to have a tight fit.

What's even easier than setting the size of the opening is positioning it on the workpiece. Instead of the guesswork that's usually involved, you simply clamp the jig to the workpiece so the opening aligns with the desired location of the dado. This is shown in the middle photo. A cleat at the front helps square the jig to the edge.

Note: This jig handles workpieces up to 25" wide.

**REFERENCE EDGES.** What makes all this work are the edges of the guide that form the opening. They serve as a reference to indicate the path of the router bit. So, as the base of the router rides against a guide strip, the bit cuts exactly along the reference edge (right photo).

## EASY AS 1,2,3



▲ To set the width of the dado, insert the workpiece that will fit in the dado. After that, snug the other guide against the workpiece and tighten it down.



▲ Now that the dado width is set, position the jig on the workpiece. Both sides of the opening should align with the location of the dado.



▲ You'll rout the dado in two passes. First, run the base of the router along one guide strip. Then turn, and rout along the other strip to complete the dado.

## Building the Hardboard Base

The base of the adjustable dado jig consists of two guides that work together to form a dado template. One of the guides is fixed, and the other is adjustable.

Except for the fact that one guide moves and the other doesn't, the two pieces are basically the same. So it's easiest to build one large blank, and then rip it into two equal parts after it's built.

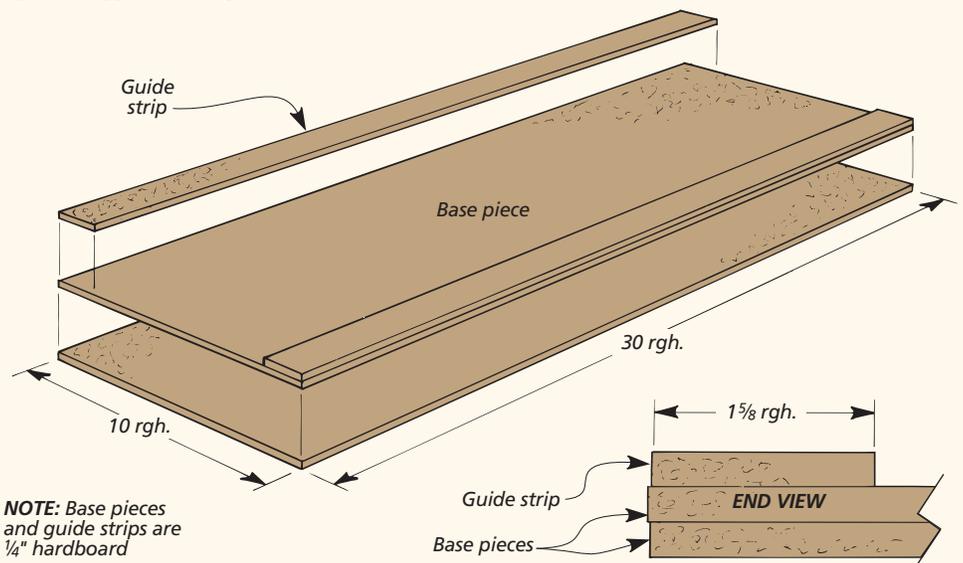
**BLANK.** The blank starts out as two, oversize base pieces, as you can see in the illustration at right. They're just pieces of 1/4" hardboard that are glued together to act as a platform for the router.

**GUIDE STRIPS.** The router is guided by a pair of hardboard strips that are glued to the base pieces, which are also shown in the drawing at right. Don't worry too much about getting the guide strips and the base pieces

perfectly flush. The accuracy will be built in as you true up the base.

Once the pieces are assembled, you can joint one edge, and then rip the opposite edge. With two

"good" outside edges, you can cut the base to its final length (29") and trim away the inside edges of the guide strips. These edges will guide the router.

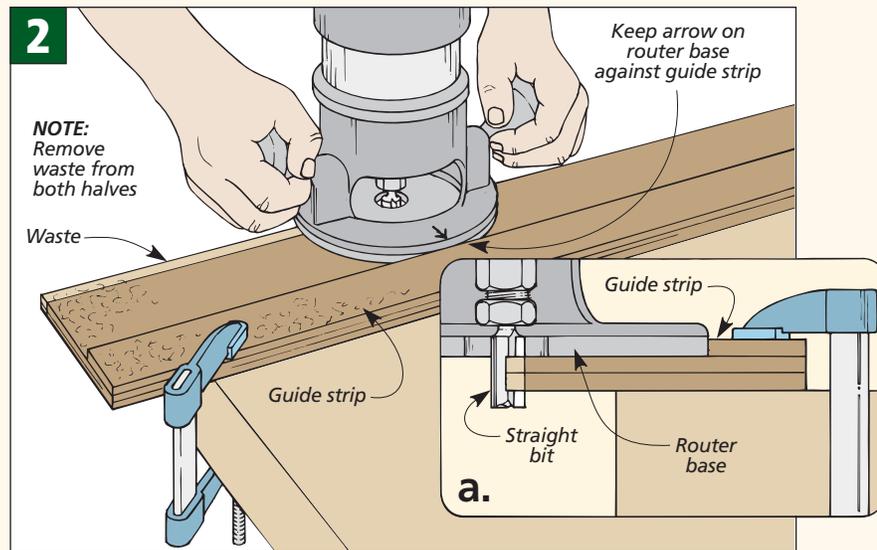
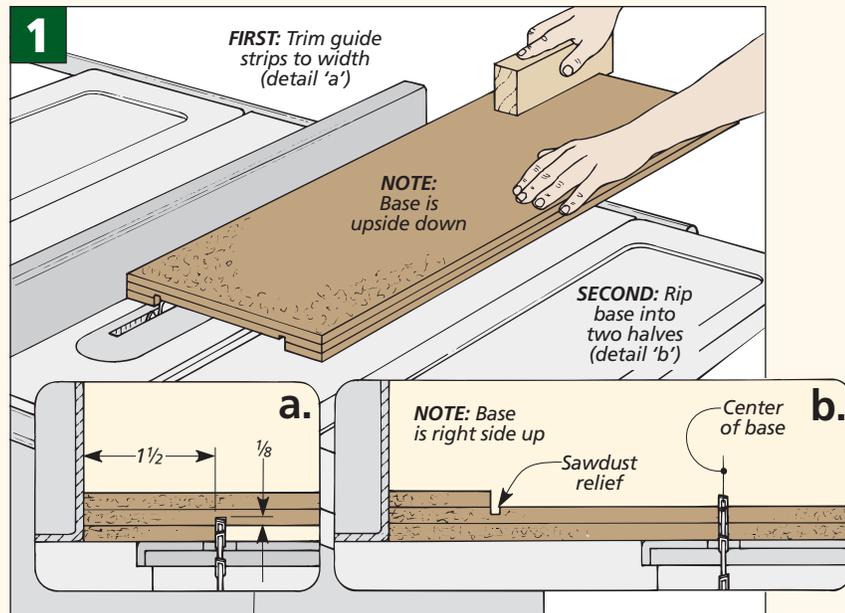


Trimming the edges serves yet another purpose. By cutting with the base upside down and adjusting the height of the saw blade so it cuts  $\frac{1}{8}$ " deep into the base piece, you create a relief groove for sawdust. You can see this in Figures 1a and 1b.

Next, to make two equal halves, all you need to do is rip the base piece down the middle (Figure 1).

**REFERENCE EDGE.** Now you can establish the reference edges by routing the waste from the base halves, as you can see in Figure 2. Keep in mind that these edges are only a reference for your router. So, you'll want to be sure to use the same router and bit as you plan to use with the jig. (I used a  $\frac{1}{2}$ " straight bit.)

One thing to be aware of is that the bit may not be exactly centered in the router base. So, if you twist the router slightly when routing a dado, the distance from the guide strip to the edge of the cut may not be consistent. To have an accurate reference edge, draw an arrow on the base of your router and keep it pointed at the guide strip, as shown at right. This will ensure your dados are sized accurately.



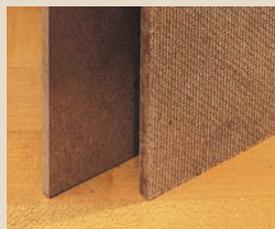
## HARDWARE

- (4) #8 x 1" Fh Woodscrews
- (4) #8 x  $1\frac{1}{4}$ " Fh Woodscrews
- (2)  $\frac{5}{16}$ " T-Nuts
- (2)  $\frac{5}{16}$ " Washers
- (4)  $\frac{5}{16}$ " x 1" Studded Knobs

## WORKING WITH HARDBOARD

Hardboard is an engineered wood product. It's a mixture of finely ground processed wood and resins, bonded under heat and pressure.

Hardboard is available at most lumberyards and home improvement centers in  $\frac{1}{8}$ " and  $\frac{1}{4}$ " thicknesses.



▲ This "waffle" imprint is typical of what you'll find on hardboard that's smooth on one side

It's hard, dense, and stable—even during changes in humidity. So I often use it for drawer bottoms, jigs, and fixtures. It's also an ideal

material for supporting the finished surface of tabletops and workbenches, for example.

**TWO TYPES.** Hardboard is available in both standard and service-tempered 4' x 8' sheets. I use service-tempered hardboard because it's harder and more resistant to moisture than standard hardboard.

Another reason I prefer service-tempered over standard is because it glues up better. In the past, I've had standard hardboard delaminate on me. But I've rarely experienced this problem with service-tempered hardboard.

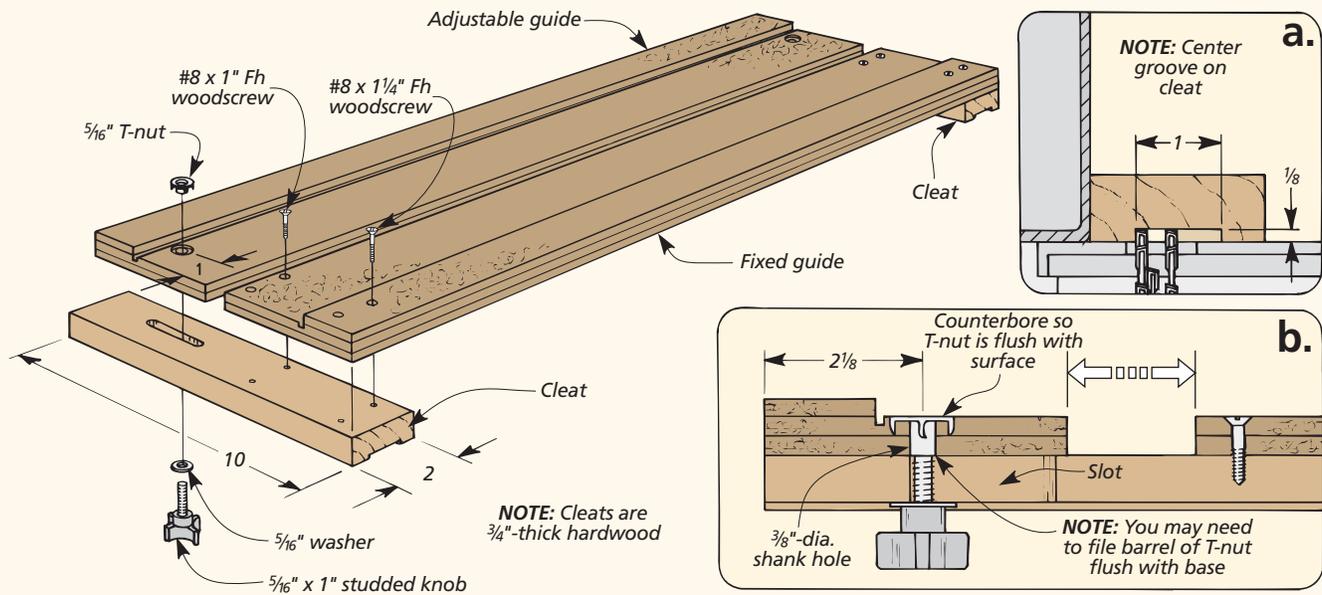
**SMOOTH BOTH SIDES.** There's one more thing that's important when buying a sheet of hardboard — to make sure it's smooth on both sides. Some hardboard comes with one side

smooth and the other side textured as a result of the equipment used to process it.

Like standard hardboard, I've had a few problems gluing up service-tempered hardboard with one side textured. For that reason, I faithfully stick to service-tempered hardboard that's smooth on both sides.

For such a low-cost product, hardboard is suitable for dozens of uses around the shop. With that in mind, keeping some on hand for your next project is a good idea.





## Adding the Cleats

Once you have completed the base, the next step is to add the two cleats. These cleats help keep the jig square to the workpiece and allow you to adjust the opening to match the desired dado width.

Each cleat, as shown in drawing above, is cut from  $\frac{3}{4}$ "-thick hardwood. (I used maple.) Then, to provide

a recess for a threaded knob and washer (installed later), I cut a shallow groove down the length of each cleat, as in detail 'a' above.

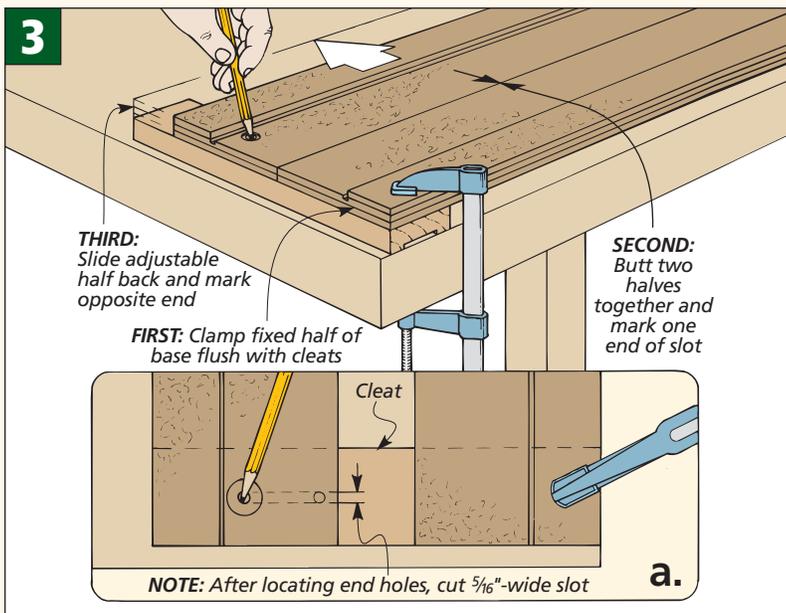
**SLOTS.** The next step is to cut a slot in each cleat. These slots allow you to slide the adjustable half of the base back and forth to change the width of the opening.

Before locating the slots, you'll need to first decide which half of the base will be the adjustable part. Then, after drilling a pair of counterbored shank holes for two T-nuts (added later), you can use the holes to locate the slots, as in detail 'b' above.

This is just a matter of clamping the fixed half of the base to the cleats and butting the adjustable half against it, as illustrated in Figure 3. Mark one end of each slot through the holes, slide the adjustable half back so it's flush with the ends of the cleats, and mark the other end.

**ASSEMBLY.** After cutting the slots, you're ready to attach the two halves of the base to the cleats. When attaching the fixed half, make sure the cleats are square to the base. Then, glue and screw them into place so the ends are flush with the edge of the base.

Finally, the adjustable part of the base is attached. Each end is held in place with a threaded knob (or machine screw) that passes through the slot in the cleat and into a T-nut, as shown in detail 'b' above.

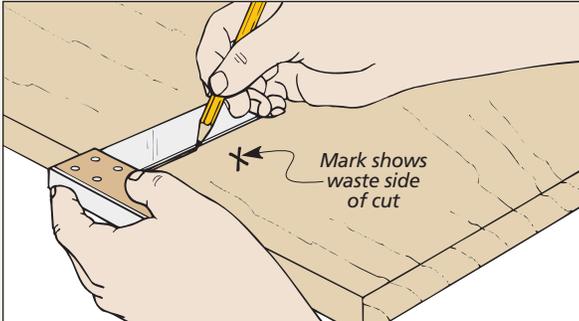


## How To: Using the Jig

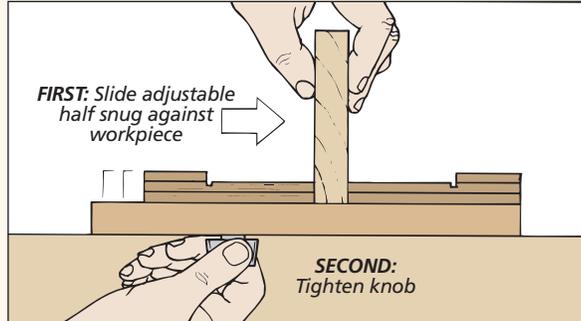
It's easy to get spoiled when using this adjustable dado jig. With a simple layout and quick adjustment, you're ready to clamp the jig in place and rout the dado.

To clamp the jig, you have several options. A long workpiece can be extended over the edge of the bench or supported on a pair of sawhorses. But to provide clearance for the

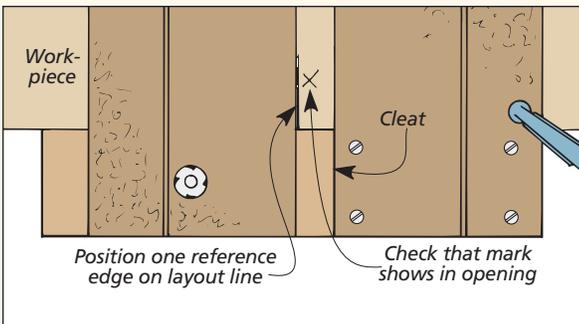
clamp heads when routing a smaller panel, you'll need to raise the workpiece off the bench with spacers. Once your workpiece is secured, follow the steps below to use the jig.



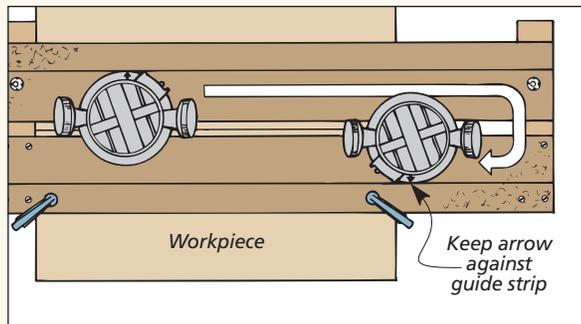
**1** Using a try square, lay out one side of the dado. To ensure that you rout on the correct side of the line, mark an 'X' to show the waste area.



**2** To set the width of the opening, insert the piece that fits in the dado and slide the adjustable half of the jig against it. Then tighten the knob.

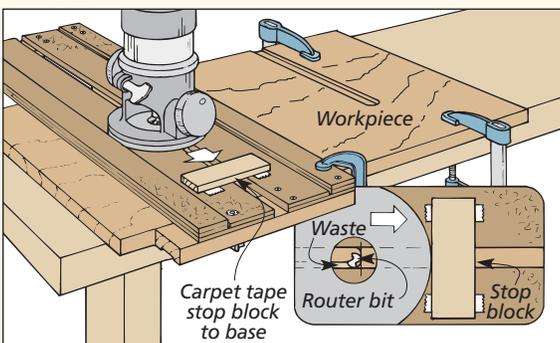


**3** With the cleft against the edge of the workpiece, clamp the jig so one reference edge is on the layout line and the 'X' shows in the opening.

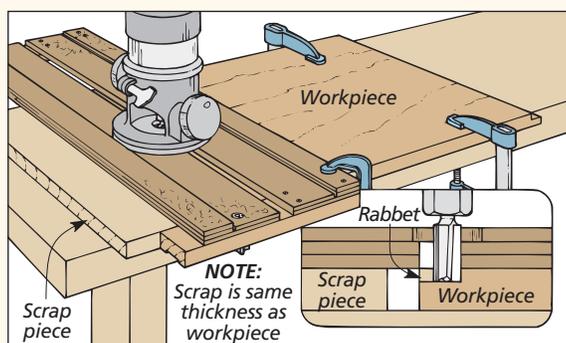


**4** After adjusting the depth of cut, rout in a clockwise direction. For consistency, keep the arrow on the router base against the guide strips.

## Stopped Dados and Rabbets



**Stopped Dados.** To rout a stopped dado, simply carpet tape a stop block to the jig. To position the block, align the edge of the router bit with the end of the dado.



**Rabbet.** You can also use this jig to cut a rabbet. To support the jig (and ensure a consistent cut depth), slide a scrap under the part that extends beyond the workpiece.