

WOODWORKER'S JOURNAL

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- Step by Step construction instruction.
- A complete bill of materials.
- Exploded view and elevation drawings.
- How-to photos with instructive captions.
- Tips to help you complete the project and become a better woodworker.



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Dado Jig



Published in Woodworker's Journal "From Shop to Home: Essential Projects, Tips and Techniques for Today's Home Woodworker"

\$7.95

WJ012



Accurate Dadoes ... In a Hurry



This jig provides quick and accurate set-ups when cutting through or stopped dados and sliding dovetails. The flip-up stops and hold-down clamp firmly control your workpiece. And when you're done, the jig conveniently hangs on a wall for storage.

Quick and Easy Grooves

Quick, easy and accurate ... that's what you'll get with this jig. It's quick to set up (both depth settings and dado placements), and it's quick when it comes to making repeatable cuts: the sliding hinged stops help you plow successive indexed dados (like those on matching bookcase sides) in a hurry. Because you move the router across the stock — not the stock across a table saw — it's also a lot easier (especially on your back). And if you do any type of cabinetry, from bookcases to entertainment centers, you'll find this jig indispensable for plowing three styles of common dados: stopped, through and sliding dovetail.

Through dados are the easiest to make, although not as attractive if they remain in plain view.

Stopped dados allow you to hide the forward aspect of the joint, but they also force you to accommodate the stopped portion of the joint with a matching notch or rebate.

Sliding dovetails are a more challenging variation of a dado. The familiar wedge-like shape creates a strong and attractive mechanical joint.

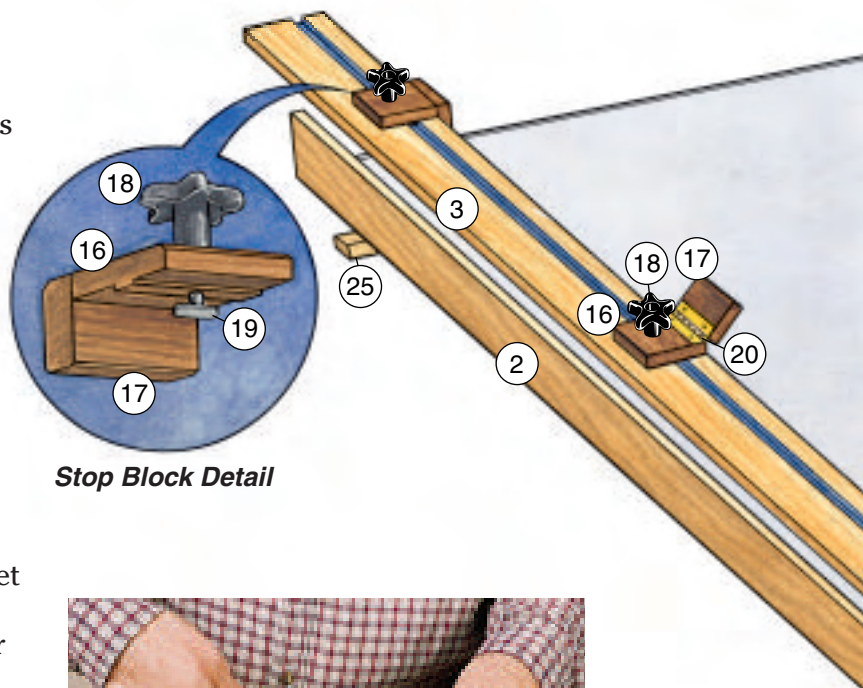
Scrap wood and a little know-how are all you need sometimes. For example, a bare-bones version of this jig hung in editor Rob Johnstone's father and uncle's woodworking shop from the day he set foot in it. It was made from fir plywood and nondescript scrap lumber, but it was constantly in demand as people worked through their various projects. As a matter of fact, the first bookcase Rob made for his wife was machined on that jig more than 20 years ago. Of course our version is a Mercedes when compared to that basic Volkswagen bug, but if you're looking for a valuable tool for your shop, feel free to use whatever hardwood scrap you have on hand to create your own version.

Start by cutting the deck (piece 1) from a sheet of melamine and the rails (pieces 2) from hardwood stock. Go ahead and cut the front and rear rail returns (pieces 3 and 4) at the same time. Move to your table saw, and with a dado head in place, plow the long grooves in the rails and the shallow rabbets on the front and rear rail returns. Look to the *Exploded Drawings* on the opposite page and *Technical Drawings* on pages 52 and 53 for the machining details. Remember most sheet stock these days is just a bit under a true $\frac{3}{4}$ " thickness. Check your grooves in scrap lumber to be sure they fit properly. Now take a few moments to find out how large an opening you will need to create for your router.

For this jig to be accurate, your router must fit snugly between the guide rails. And to ensure smooth sliding action, these rails are lined with plastic laminate. This also means they'll wear better for you. If the liners do begin to show wear, you can just peel them off and replace them with fresh laminate.

(Voila!, good as new!)

Measure the width of your router base plus the two pieces of the plastic laminate



Stop Block Detail



Figure 1: Determining the space required for your router is critical to the success of this jig. Measure your router and the two pieces of laminate to get the exact dimension.

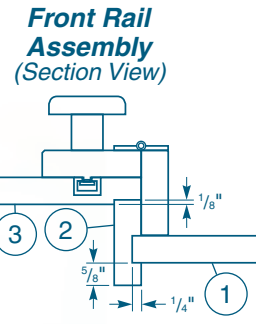
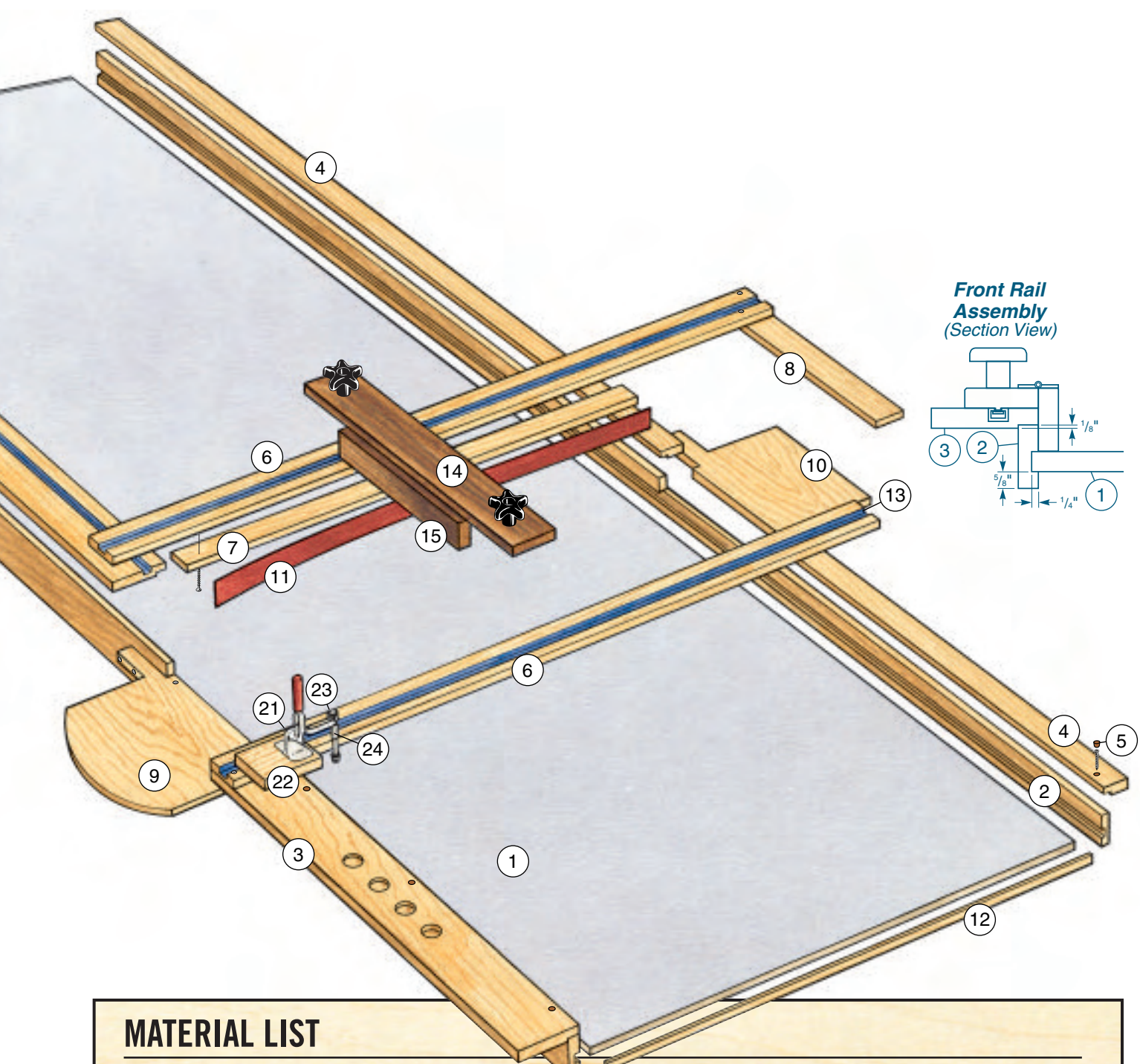
you will be using. This is the only way to arrive at the opening you'll need for your router, as shown in *Figure 1*, above.

Custom Measurements

Take the measurement you found for the router opening and transfer it to the top edges of the rails, 24" from one end (see the *Technical Drawings*). Form a notch on each rail to accommodate the router rest and receiver. We left the dado head in the saw to nibble out these notches with the help of a miter gauge.

Measure from the end of the rails to the edges of your notch and cut your front and rear rail

Melamine, an easy to find sheet stock, is a good choice for this shop jig, due to its hard plastic surface and dimensional stability. It is sized in sheets measuring 49" x 97" to allow for trimming. The factory edge is often damaged during shipping.



MATERIAL LIST

| | T x W x L | | T x W x L |
|--------------------------|--------------------------|---------------------------|------------------------|
| 1 Deck (1) | 3/4" x 26 1/2" x 72" | 14 Centering Stop (1) | 3/4" x 2 1/2" x (*) |
| 2 Rails (2) | 3/4" x 2 3/8" x 72" | 15 Center Stop Return (1) | 3/4" x 1 1/2" x (*) |
| 3 Front Rail Return (1) | 3/4" x 4" x 72" | 16 Side Stop Tops (3) | 3/4" x 2 3/4" x 2 7/8" |
| 4 Rear Rail Return (1) | 3/4" x 2 1/2" x 72" | 17 Side Stops (3) | 3/4" x 2 3/8" x 2 7/8" |
| 5 Walnut Plugs (bag) | 3/8" Dia. flat | 18 Stop Knobs (5) | Plastic, 5/16" thread |
| 6 Guide Rails (2) | 3/4" x 2 1/2" x 39" | 19 T-Bolts (5) | Steel |
| 7 Under Rails (2) | 3/4" x 2 1/4" x 25 7/8" | 20 Stop Hinge (1) | 1 1/2" x 36" (Piano) |
| 8 End Spacer (1) | 3/4" x 2 1/2" x (*) | 21 Hold Down Clamp (1) | Steel |
| 9 Router Rest (1) | 3/4" x 8 3/4" x 12" | 22 Clamp Spacer (1) | 3/4" x 2 1/2" x 4" |
| 10 Router Receiver (1) | 3/4" x 6 1/4" x 12" | 23 Hex Bolt (1) | 5/16" x 1" Steel |
| 11 Laminate liners (2) | 1/16" x 1 1/4" x 25 7/8" | 24 Connector Nut (1) | 5/16 ID |
| 12 Deck Trim (2) | 1/8" x 3/4" x 26 1/2" | 25 Hanger Cleats (2) | 3/4" x 1 3/4" x 24" |
| 13 Aluminum T-Tracks (3) | 48" | | |

(*) Adjust these pieces' lengths to accommodate your router.

Four holes drilled to specific depths become a feature that lets you quickly set your router to predetermined settings. Use a Forstner bit to bore these holes to $\frac{1}{8}$ ", $\frac{1}{4}$ ", $\frac{3}{8}$ " and $\frac{1}{2}$ ". It's quicker and safer than flipping the router over to measure from the base plate.



The center stop not only allows you to stop your dados accurately, but it also lines up your dado cuts to the path of the router bit. Use contrasting paint colors in shallow saw kerfs to identify where the center of the dado is, as well as where a full $\frac{3}{4}$ " dado will fall.



Flip-up sliding stops allow you to register multiple identical dados on matching pieces. Book-cases, display shelves and cabinets of all sorts are easier to make with this basic shop jig.



returns into properly sized segments. Then look to the *Technical Drawings* for the location of the track groove in the face of the left front rail return segment. While you're at it, find the locations of the quick depth-setting aids in the face of the right front rail return. Use a Forstner bit to bore these four 1" diameter stopped holes at exactly $\frac{1}{8}$ ", $\frac{1}{4}$ ", $\frac{3}{8}$ " and $\frac{1}{2}$ " depths. These holes serve as instant depth setters.

Now you're ready to start the first assembly phase. Predrill and counterbore pilot holes, then attach the rails to the deck with #8 x $\frac{1}{4}$ " screws and glue (see *Figure 2*). Cap the screw holes with walnut plugs (pieces 5). Next, join the front and rear rail return segments to the deck/rail subassembly, again using glue and screws capped with the walnut plugs. Check to be sure the rail segments are square as you proceed.



Figure 2: Attach the rails to the melamine deck with screws and glue. Cover the exposed screw holes with walnut plugs.

Cut the guide rails and under rails (pieces 6 and 7) to size. Move back to the table saw and plow grooves for more aluminum track down the length of each guide rail, then attach the under rails to the guide rails with glue and screws driven up



Keep your jig out of harm's way by machining matching beveled hanger cleats. One goes on the back of the jig, the other on the wall.

through the bottom. Clamp the guide rail subassemblies onto the deck subassembly exactly flush to the edges of the notches. Measure edge to edge across the guide rails to determine the exact length of the end spacer (piece 8). Cut this piece to length and secure it to the guide rails with countersunk screws and glue. Finally, go ahead and attach the guide rail subassembly to the deck subassembly with countersunk screws, but no glue.

Special Seating

The router rest and the router receiver (pieces 9 and 10) are made from hardwood and are mounted into the notched openings that you created earlier in the rails. Both of these pieces must be surface-sanded or planed down to the nominal thickness of manufactured sheet

stock (about $\frac{1}{16}$ "). This will keep your router from "stepping down" as it enters sheet stock that will be clamped to the deck.

On the bandsaw, shape both pieces to fit into the notched opening and form the rounded rest's back edge. Pre-drill for countersunk screws as shown on the *Exploded View*, page 49, and mount them to the jig with screws only. On your table saw, slice the laminate liners (pieces 11) from high-pressure plastic laminate. Then, using contact cement, glue the liners to the inside faces of the guide rail subassembly. Use a file to smooth the edges of the plastic laminate.

Slice the deck trim (pieces 12) from a piece of hardwood, cut two pieces to length and glue them to both ends of the deck. We used masking tape to "clamp" the trim in place until the glue cured.



Figure 3: The hold-down clamp is mounted on a spacer block and modified with a 1"-long hex head bolt and a connector nut.

Bells and Whistles

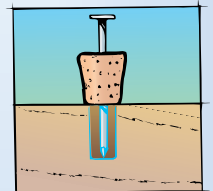
Now you've come to the features that really add to this jig's versatility. Start by mounting the aluminum tracks (pieces 13). Cut the pieces to length with a hack saw, and be sure to file or sand the ends smooth to remove any sharp edges. Next cut the centering stop (piece

Quick Tip

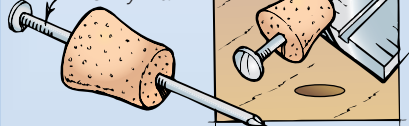
Poor Man's Depth Gauge

You can save a few bucks and make a fairly accurate depth gauge with a nail and a wine bottle cork. Set the cork on the surface of your workpiece and run the nail down through the cork until its point hits the bottom of the hole you're measuring. The distance between the cork's bottom and the point of the nail is the depth of the hole.

Use this quick and simple depth gauge when you need to know the exact depth of a hole or mortise.



Common Eight Penny Nail



14) to the same length as the end spacer and the center stop return (piece 15) so it's $\frac{1}{16}$ " less than the distance between the laminate liners. Glue these pieces together (as shown in the *Technical Drawings*). After the glue has cured, place the stop on the guide rails and drill $\frac{5}{16}$ " diameter holes to align with the aluminum track. Next, cut the side stop tops and side stops (pieces 16 and 17) to size. Reveal the top's raised tenon, which slides in the aluminum track, in two passes on your table saw. Drill the $\frac{5}{16}$ " holes to mount the knobs and T-bolts (pieces 18 and 19) and cut sections of piano hinge (piece 20) to join the tops and sides, form-

ing two flip-up sliding stops. Glue up the third side and top for the end stop, which does not flip up.

To hold your work in place as you are routing, mount a hold-down clamp (piece 21) just to the right of the guide rail. We found that to get the proper reach and clearance when operating the clamp, we needed to glue a clamp spacer (piece 22) to the front rail and add a hex head bolt and connector nut (pieces 23 and 24) to the clamp, as shown in *Figure 3*.

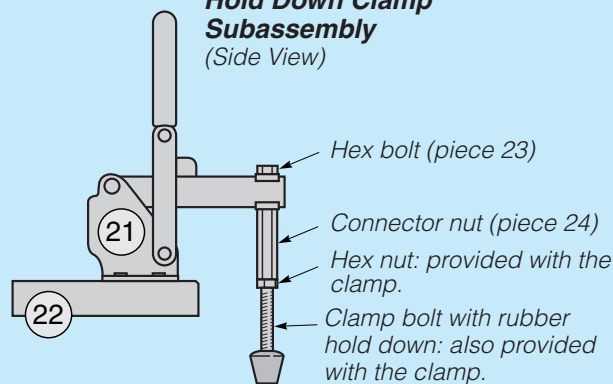
One quick note: This jig is designed to plow dados into $\frac{3}{4}$ " stock. If you need to work in $\frac{1}{2}$ " or $\frac{3}{8}$ " material, all you need to do is slide the appropriate thickness spacer on top of the deck. (Double-stick tape will help keep the spacer from sliding.)

Final Details

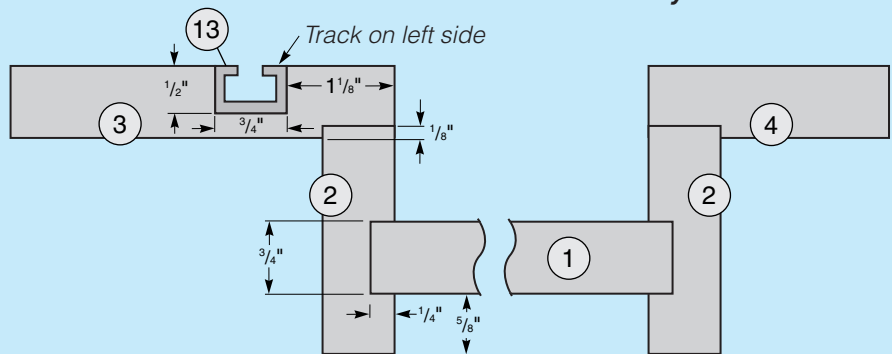
When properly marked, the center stop can help you line up one-off dados. To find your registration lines, use your router to plow a $\frac{3}{4}$ " dado in a scrap of plywood that is clamped in place. Slide the center stop over the dado and use a combination square to transfer the edges of the dado onto the stop. Find the halfway point and mark it. Take the center stop to the table saw and, with the blade just barely above the tabletop, scribe the three lines into the face of the center stop. Once you clean up the kerfs, you can paint them contrasting colors.

Now would be a good time to mount the hanger cleats (pieces 25) to the back of the jig and on a convenient spot on your shop's wall. Apply a couple of coats of an oil finish to it to keep the dust from sticking.

Hold Down Clamp Subassembly (Side View)



Front and Back Rail Subassembly Detail



Flip-up Sliding Stop (End View)

