When I bought my first router twenty years ago, visions of roundovers, chamfers, and ogees filled my head. Believing the router should be saved for edge treatments, it sat idle on the shelf as I struggled to build projects with a collection of rough carpentry tools and a rebuilt radial-arm saw. Now several years and four routers later, I view the tool as a multi-tasking Swiss-army knife, ready to partner with any numbers of jigs and accessories.

Additionally, jig-mounted routers provide great small-shop solutions. You can capitalize on their versatility in limited-space shops, performing tasks otherwise reserved for large heavy machinery. Beyond that, you can employ selected jigs to rout panels too unwieldy to safely machine on a router table.

Over the next few pages, we’ll help you build an arsenal of hardworking router jigs, some of which are fresh spins on old, reliable classics. I tweaked the designs and used quality materials to make a sweet collection of precision achievers that suit several needs while providing years of service. With just a small investment in time and materials the resulting jigs won’t just look good, they’ll ramp up your craftsmanship too.

**Note:** Some of the jig dimensions may require adjustments to fit your machine. See “Making the Jigs to Fit,” page 31.

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**Cutting circles, arcs, and ovals**

After hanging the final sheet of drywall in my last shop, my drywall square found a higher...

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Mark lines on the acrylic to indicate the bit’s location. Nip the corners off the bottom block for smaller circles.
calling. Attached to a router base, the 48” aluminum bar now serves as the trammel arm for my circle-and oval-cutting jigs. I made the pivots in similar fashion, allowing them to share the same router base.

The two-block pivot (shown opposite page) routs circles without drilling pivot holes in the workpiece. Instead, I adhered the bottom piece to the workpiece with double-faced tape. I’ve also found that a large 1-inch diameter dowel allows the blocks to spin more smoothly than smaller-diameter pivot pins. As shown in Figure 1, above, the acrylic piece on the top block clamps the trammel arm to the pivot block and shows the radius of the arc you’re routing. To set the radius gauge, etch the acrylic to match your bit and attach it to the pivot as shown at left. Attach the arm to the base, make a test cut at a known length, and then trim the bar so that the numbers match the cut.

The oval-cutting jig is a larger variation of the circle-cutting jig. Unlike related jigs that require fussy router-cut dovetailed grooves, this simpler stacked version can be easily made with your table saw. Cut the base to size. Then set the blade bevel angle to 7˚ and rip the top quadrant pieces and the UHMW guide strips. Use the guide strips as spacers during assembly of the quadrant pieces to ensure a snug sliding fit and screw the parts in place. Trim off the corners, or trim the entire jig to make smaller ovals.

Like the two-block pivot, tape the oval-cutting pivot to the workpiece. Secure the trammel arm with two bolts through same-size holes in the arm.

**Figure 1: Trammel Jigs**

**Circle-Cutting Jig**

- Traymel works with both pivots
- 1½" hole
- 1/8 x 1 x 4" spacers
- 1/8 x 4 x 4½" clear acrylic
- 1" holes, centered
- 1" dowel 7/8" long
- Double-sided tape
- Draw bullseye on block to position on your work.
- Trim arm after making test cut.

**Oval-Cutting Jig**

- Drill ½" holes as needed
- 1/4" hex head bolts 1½" long
- UHMW guide strip
- Trim corners after assembly
- 7° bevels
- 7° bevels
- 1¼" UHMW guide strip
- 1/2" Double-sided tape

Position the router so that the bit touches the minor axis. Then mark a hole for your pivot bolt. The minor axis guide strip is perpendicular to the arm.

Establish a centerpoint at the major and minor axes, and the jig will do the rest.

Rotate the router trammel to the major axis and drill a hole for the second pivot.
Making rabbets, dadoes, and grooves
Straightedge and T-Square guides rank as two of the simplest jigs going; offering great versatility when paired with a router. Both work well for rabbets, dadoes and grooves. You can also use them for neatly trimming the ends of plywood panels or wide glued-ups too large to cut on a tablesaw.

Working in tandem, these guides can help you make measure-free dadoes (see photo, above). Make the straightedge portion of your jig from a straight board about 6 inches longer than the material you expect to rout. (If you’re making the T-square guide, rip a second shorter strip and attach it to one end. Drive one screw then check the angle with a carpenter’s square to set the fence before driving the remaining fasteners.) Add the width of your straightedge to the bit-to-base edge distance of your router and rip a slightly oversized strip of \( \frac{1}{8} \)" thick Marlite or hardboard. Attach the strip to the straightedge with double-faced tape. Finally, trim the \( \frac{1}{8} \)" bottom with your router and straight bit.

Routing breadboard ends
The breadboard jig isn’t that different from the above straightedge, but the row of 1” diameter holes along the bar enables you to align the top and bottom fence so that you can rabbet both faces of a large panel for making the wide tenons found in breadboard ends. Make the jig as shown about a foot longer than you might typically need; three dowel pins provide better alignment than two.

Starting with a strip of 1\( \frac{1}{2} \)" thick by 4” wide maple (6/4 oak or a kiln-dried two-by stock would also work), joint and plane the faces and edges, and then drill a line of alignment holes where shown in Figure 3. Rip the blank in half then attach the guides with double-faced tape.

To set the jig, position the panel between the dowels (photo at left), align the sacrificial guide with the shoulder line, and clamp it together. Rout the top face of the workpiece, and then flip the assembly and workpiece to finish the opposite face. Test the fit of the tongue before removing the jig.
Ripping and jointing
If you think using a flush-trim bit with a straightedge in lieu of a jointer isn’t new, then check out this jig’s flip side. Outfitted with two 48”-long miter channels enables it to work with track-saw-style clamps so that you can setup your workpiece as needed, and then do your ripping and jointing on a pair of sawhorses or at your bench.

You can build this back-saving jig from a few strips of ½-thick MDF or plywood. Rabbet the jointer-edge so that the aluminum angle rests flush with the surface. Make the ripping guide strip wider than the blade-to-base dimension of your circular saw so that the first cut sets the cut line. Screw the guide strip to the assembly so that you can replace it if you change saw blades.

To put the jig in jointer mode, simply flip it over and position the stock so that the edge hangs over the aluminum angle. Routing edges with a flush-trim helical bit produces an edge as clean as you’d expect from a well-tuned jointer. Carbide should be used on materials that would quickly dull high-speed knives, such as melamine, MDF, and plywood.

Router-Table Jointer
This table-mounted router jig, Figure 5, offers a safe way to joint boards that might be too short to safely machine on a standard jointer. And since spiral or helical bits cause less tear-out than straight jointer knives, you’re likely to save stock when working figured woods. Two-cut settings make this jig different. It can rout a heavier ⅛”-deep cut for regular jointing, and a super-light cut equal to the thickness of plastic laminate (about ⅛”) for difficult materials.

To set up the jig, clamp one end to your router table. Use a straightedge to position the fence so the outfeed fence is tangent to the circumference of the bit, then clamp the remaining free end.
Removing the subbase transforms the jig into an offset base. Apply a little weight on the handled end to keep the router from tipping.

**Figure 6: Full-size Baseplate**

Use the two-level base to quickly and cleanly cut solid wood banding level with the a plywood face panel.

**Figure 7: Trimmer-sized Baseplate**

Removing the subbase transforms the jig into an offset base. Apply a little weight on the handled end to keep the router from tipping.
Flush-trimming and edging

The offset/flush trimming baseplate is another dual-purpose jig. With the subbase attached, the router works like a steroid-powered shaver. I use it for trimming plugs, inlays, bandings, even solid-wood edging. Remove the subbase and you have a comfortable two-handed edger that’s virtually tip proof, even when most of the router is hanging off the edge of your work.

Unlike some of the other jigs, this one is router specific. We provide rough dimensions in Figure 6, but you’ll need to adjust the design to fit your router (See the sidebar, “Making Jigs to Fit,” below.) I used phenolic faced plywood to make the baseplates that attach to both router and UHMW for the subbase smaller trim, but wound up sawing up a plastic cutting board I bought at the mall to make the subbase for the full-sized router.

Set the bit a hair above the surface, rout, and then finish up with a sanding block or card scraper. Remove the subbase for edge work.

Making the Jigs to Fit

If all routers were made exactly alike, it would be a cinch to provide patterns and or specific hole locations, but since they aren’t, you’ll need to use a little common sense.

To make a custom baseplate for your router, start with the base it came with as your master pattern. Trace its outline and use the shank end of drill bit to determine the diameter of the screw holes. (The screw holes should be slightly larger than the screws to allow for a little side-to-side adjustment.) Use a self-centering drill bit to start the holes.

Don’t be surprised if the factory-supplied screws are too short for custom bases. A single flute countersink can be used to counterbore a deeper hole, but if you overdo it, the screw may pull through your baseplate. To be safe, take the short screw to a hardware store, match the threads, and buy a handful of longer machine screws.
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