

Your first router

WHICH ONE TO BUY AND
HOW TO GET STARTED WITH IT

BY MARC ADAMS



In the early 1900s Oscar and Rudy Onsrud invented the router, a tool that has revolutionized our craft. Basically a motor with a collet that holds a cutting bit, this simple power tool is incredibly versatile. It can be guided by hand or mounted in a table. A router can be used to dimension stock and shape it in myriad ways, including turning square wood round. It can cut precise joinery and drill holes. With creative fixtures, the router can be used in ways we have yet to imagine. Called a “wonder tool” when it came out 100 years ago, the router still deserves that name.

Wonderful though it can be, the router intimidates new woodworkers. It turns on with a scream, leaving the operator holding onto a gyroscope that spins at 20,000-plus rpm. There are thousands of cutting bits available for it, yet the tool includes no

GO WITH A MIDSIZE, FIXED-BASE MODEL

A 2¼-hp, fixed-base router is powerful yet compact, with simple adjustments and a low center of gravity for excellent control. This versatile workhorse is the first router you should get.



obvious means of guidance. And with scores of routers in many different sizes available on the market—from plunge to fixed to trim—there is the first basic question of which one to buy.

Everyone needs a fixed-base router

In my opinion, a basic, fixed-base router should be the first one you purchase. I've found that the 2¼-hp size offers the best mix of power, affordability, and features. These midsize routers are rated around 12 amps, which won't trip the circuit breakers in your home shop. They are plenty powerful for everything you'll ask of them, yet still relatively light and compact, a real asset when working handheld. But they also work very well when mounted in a router table. At between \$100 and \$200 for a high-quality model, they are one of the best values in woodworking.

To be clear, the base on a fixed-base router actually does move up and down, but it must be "fixed," or set to a specific depth for routing, and it is not adjustable on the fly like the base on a plunge router. That means it can't cut deep mortises. Compared to its taller brother, however, the handles on a fixed-base router are much lower, putting your grip closer to the cutting action. I'll cover a few common tasks here, but to get even more from this versatile tool, see my companion article, "4 Jigs for a Fixed-Base Router," pp. 56-63.

A bit about bits

Although I prefer routers that can use both ¼-in.- and ½-in.-shank bits, I choose the larger bits whenever possible because they give the collet a better grip. Larger-shank bits also dissipate heat and vibration better, improving cut quality. The only downside is that they are a little more expensive.

Router bits keep getting bigger and bigger, with cutters that can range upward of 4 in. dia. Even if you dial down the speed on your router, a bit like that will generate too much force for handheld routing. I recommend that anything bigger than a ¾-in. roundover bit be used in a router table, where you have more control.

Router bits have carbide cutting tips. Carbide is a brittle material, so you want to keep the edges from coming in



Choose a bit with the thicker shank when possible. The router will hold these more firmly. The bigger shanks also flex less, which means less vibration.

CHOOSE 1/2-IN. BITS WHEN POSSIBLE

Router bits come in two sizes, ¼ in. and ½ in., which refers to the diameter of the shank.



The collet grabs the bit. Not every bit has a ½-in. shank, so be sure your router comes with both ½-in. and ¼-in. collet sizes. When installing a collet, make sure its mating surfaces are clean.

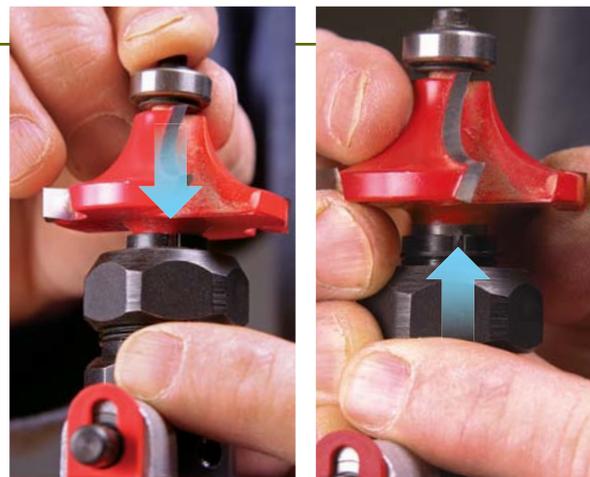
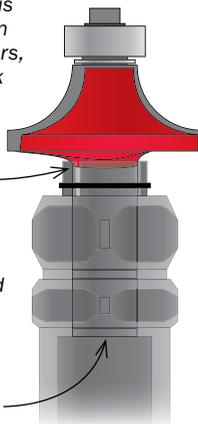
INSTALL THE BIT SECURELY

The last thing you want is for a bit to come loose while it's spinning at 22,000 rpm. Here's how to ensure that never happens.

AVOID THE TROUBLE SPOTS

If you tighten the collet on this rounded section below the cutters, the bit will work loose later.

The collet draws the bit downward as it tightens around it. So if the end of the shank hits the bottom of the opening in the router, the collet can't do its job.



Bottom it out, then pull up a bit. To be sure the collet can do its job properly, push the bit down as far as it will go (left), and then pull it back up ⅛ to ¼ in. (right) before tightening it.

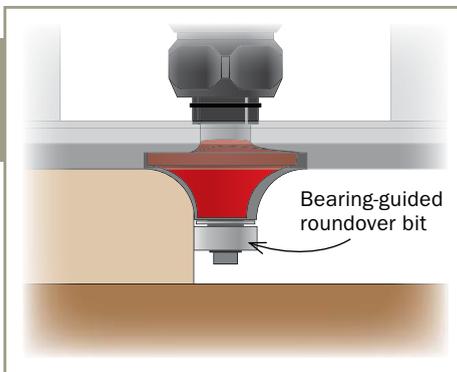
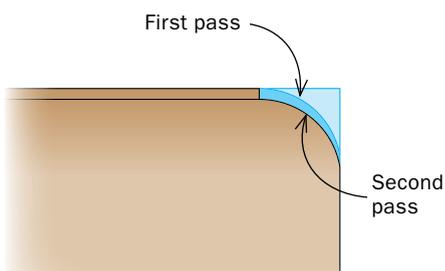


Tighten it firmly. Look for a router with two nuts and two wrenches for tightening the collet as shown. Routers with a spindle-lock button and one wrench are harder to hold onto as you tighten the bit.

BETTER RESULTS WITH BEARING-GUIDED BITS

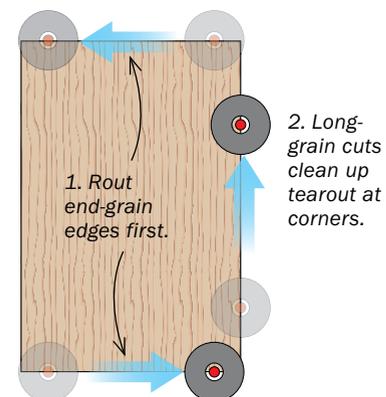
There are all types of bits with bearings, but the most common are molding bits, which ride the edge of the workpiece and cut a specific profile.

Take multiple passes. With almost every type of router bit, lighter cuts give cleaner results. Adams adjusts the depth to cut away most of this large profile on the first pass (right), leaving a lighter pass to get to final depth (far right).

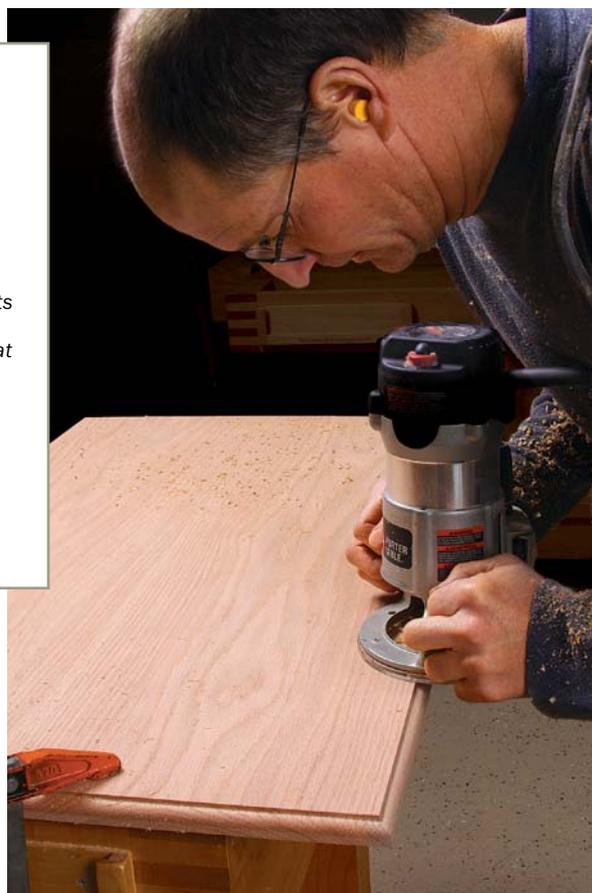


ORDER OF OPERATIONS

When routing around the edges of a workpiece, do the end-grain first.



Leave long-grain edges for last. Routing along end grain tends to break off wood at the end of the cut. Long-grain cuts don't have this problem, cleaning up that tearout and leaving clean corners.



contact with each other or with other hard materials. A piece of wood with a bunch of $\frac{1}{2}$ -in. and $\frac{1}{4}$ -in. holes will store bits safely in a drawer or on a shelf.

It's also important to keep your bits free of pitch and grime. I am always amazed at how a simple cleaning improves the quality of the cut. Hardened gunk will build up on the carbide from glue, sap, dust, and overheating. Hot water and dishwashing soap work just fine. Make sure you

remove any bearings first and then use an abrasive pad or brass-bristle brush to scrub away the debris.

Always unplug the router before changing the bit, and verify that the new bit is not loose before plugging back in.

Hold the work firmly

One of the challenges of handheld routing is that the router rides on the top surface of the workpiece, meaning it is difficult to hold that piece down without the clamps getting in the way of the router. Whatever clamping method you go with, be sure to grip the work firmly.

If your workpiece is big enough, you often can clamp from the top, using normal F-style clamps, toggle clamps, workbench holdfasts, or whatever you have. If the router base will run into clamps on top, a more convenient option is to grab from the sides. If you have a traditional workbench, benchdogs work great for holding a wide variety of workpieces without getting in the way. Double-stick carpet tape works well when all else fails.

A router needs guidance

For safe, precise work, a router needs a guidance system, and there are a host of good options. The simplest approach is using bearing-guided router bits. These can be molding bits, which ride the edge of the workpiece, or straight bits, where the bearing rides a pattern of some kind that is attached to the workpiece, ensuring the piece comes out identical to the pattern. Router bases also include holes for a simple edge-guide system, available as an accessory.

The only time you should use a router without guidance is when roughing out a shallow pocket, such as when doing inlay or routing a hinge mortise. These are very light cuts, making it easy to maintain control of this powerful tool.

Know your direction and work in stages

Understanding the forces at play when a bit cuts can make the difference between good control and kickback, and between a smooth, accurate cut and a bumpy or rough one. As you hold a router, looking down, the bit rotates in a clockwise motion. All routers rotate the same way.

When working handheld (vs. on a router table), with the workpiece in front of you, it is best to move left to right. That way the scooping motion of the bit will pull the router into the cut and against its guidance system, be that a bearing, fence, pattern, or edge guide.

If you feed from right to left, called “climb-cutting,” the cutting edge of the bit will be pulling the router in the same direction you are pushing, which can cause it to kick forward, out of control.

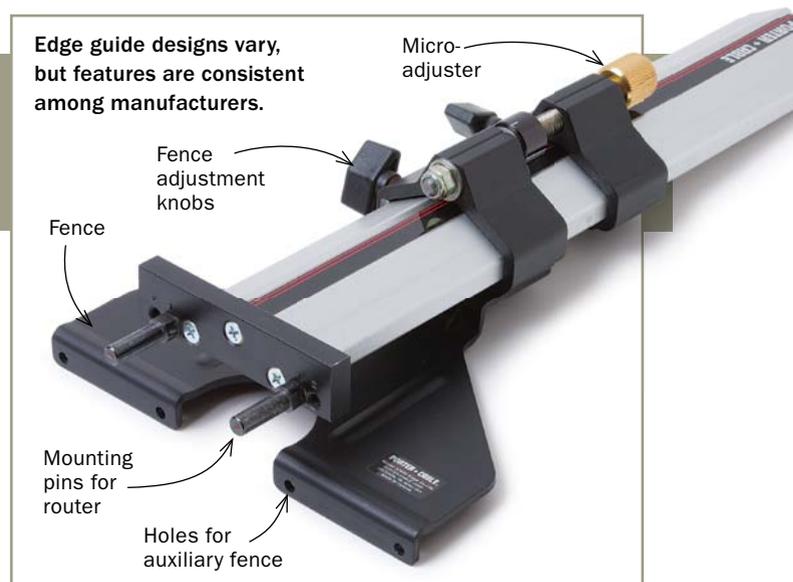
Heavy sanding tends to round over the crisp details you just created, so the less you have to do the better. To get the cleanest results with the router, take light cuts. These generate less heat, chatter, and kickback forces, improving your control and the quality of cut. Complete all but the lightest cuts in stages, instead of cutting to final depth all at once. Another key to clean cuts is to move as steadily as you can, without pausing. □

Marc Adams is a former cabinetmaker and runs the Marc Adams School of Woodworking in Franklin, Ind. Go to MarcAdams.com for a class schedule.

GET THE MOST FROM YOUR EDGE GUIDE

You can buy an edge guide for any fixed-base router. The guide rides the edge of the workpiece like a bearing-guided bit, but offers more versatility, letting you make cuts both at the edge, say for rabbets, or farther in, for dados and mortises.

Edge guide designs vary, but features are consistent among manufacturers.



Improve the fence. An edge guide's short fence halves have holes for screwing on extralong pieces. This auxiliary fence adds control, helping you keep the edge guide in good contact with the work. Flat, stable MDF is great for fences.



Quick rabbets. Teamed up with a straight bit, an edge guide makes accurate rabbets in the sides of a cabinet, to hold the back. Again, make multiple passes for best results. Note that Adams is holding the workpiece with benchdogs, which grip solidly without getting in the way.