

Ten Essential Router Bits

These bits will conquer the majority of woodworking tasks

BY GARY ROGOWSKI

You've bought a new router, unpacked it, and even found the switch on it. But that's only half the battle. Woodworkers new to the router will encounter a bewildering array of bits that do all sorts of work. Which ones do you buy first?

High-quality router bits are not cheap, and making the wrong choices can hurt your wallet and limit your woodworking. So I've come up with a basic set of bits that will do a lot of things well, from cutting joinery to shaping profiles to pattern-routing. You can get the entire kit for around \$260—well worth the money when you consider all the jobs you can complete with it.

Most of the bits in this group are carbide-tipped, which makes them more durable than high-speed steel bits but less expensive than solid carbide bits. Also, most have 1/2-in. shanks, which are less prone to breaking than bits with 1/4-in. shanks. I don't claim that these bits will be the only ones you'll ever need, but they will create a rock-solid, versatile foundation for routing that can be expanded as your woodworking repertoire expands.

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Operating: handheld vs. table mounted



For safety, Rogowski does most of his routing on a table, because it provides a stable worksurface. He uses a handheld router when a workpiece is too unwieldy to handle on a table or when the task simply is more suited to handheld routing, such as chopping mortises or running dados across a case side. When using a handheld router, work left to right. When routing on a table, work right to left.





A BASIC BIT KIT

- 1/4-in. straight bit
- 1/2-in. straight bit
- 3/8-in. spiral-fluted straight bit
- Rabbeting bit with four bearings
- 1/2-in. dovetail bit
- 1/4-in. roundover bit
- 3/8-in.-radius cove bit
- 45° chamfer bit
- Three-wing slot cutter
- 1/2-in. flush-trimming bit

Straight bits



Straight bits do the yeoman's work in a router-bit kit. Designed for square, uniform cuts such as grooves and dados, they also can be used to clean up edges and to cut mortises, tenons, and rabbets. Straight bits have straight or spiral flutes. Two useful sizes of straight-fluted bits are 1/4 in. and 1/2 in. (Choose a 1/4-in. shank for the 1/4-in. bit; a 1/2-in. shank will limit the depth of cut.) A 3/8-in.-dia. spiral-fluted up-cutting bit is perfect for chopping mortises.



GROOVES AND DADOES

A groove is cut along the long grain of a board, while a dado is cut across the grain. A sharp straight bit makes quick work of both tasks and gives you grooves and dados of uniform size.

Generally, grooves are easier to cut on a router table, but it's possible to cut them with a handheld router. Use a plunge router for stopped grooves. For accuracy, you'll need to employ the router's edge guide or secure a straightedge to the workpiece to guide the router.

Dadoes often are cut in multiples and on longer, wider stock for case goods, so it makes sense to cut them with a handheld router. For speed and accuracy, it's a good idea to use a right-angle jig that clamps to the workbench and across the stock (see photos, below). Fed properly, the router base will be pushed by the cutting action against the fence of the jig, ensuring a straight cut.

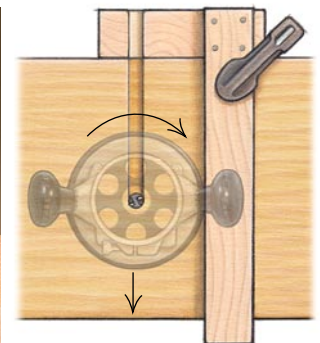
Make the jig out of 3/4-in.-thick plywood: Screw a fence to the base (both about 4 in. wide) at a precise 90° angle. Place the router base against the fence, then rout a dado in the base of the jig. Use that dado to align the jig with layout lines on the workpiece.



Grooves are best cut on the router table. For smooth cuts with little burning, take light passes, gradually raising the bit to full height.



Right-angle jig ensures straight dados. Align the dado in the jig with the layout lines on the workpiece, then clamp the jig in place.



Work on this side of the fence. Then the bit's rotation will pull the router base against the jig's fence, ensuring an accurate cut.

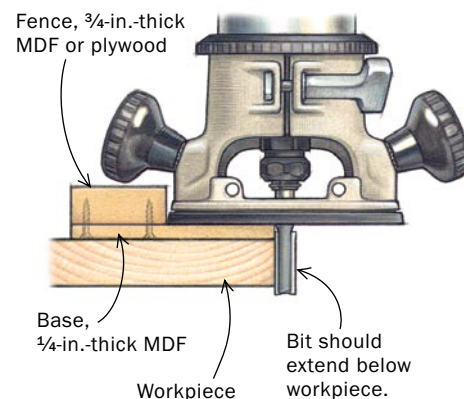
EDGE TRIMMING

You can use straight bits to make edge cuts just like a jointer. I often use this technique on workpieces such as tabletops that are too unwieldy to clean up on a jointer.

To ensure a straight cut, make a jig a bit longer than the longest edge you need to rout. The jig should have a base of $\frac{1}{4}$ -in.-thick medium-density fiberboard (MDF) and a $\frac{3}{4}$ -in.-thick fence (see drawing, right). Start by using the router to trim the edge of the base. Then just place that edge on the line you want to cut. Be sure the cutting edge of the bit is long enough to reach past the bottom of the workpiece.



Router as jointer. With the help of a jig, you can clean up rough-sawn edges on large workpieces such as tabletops. Work from left to right.



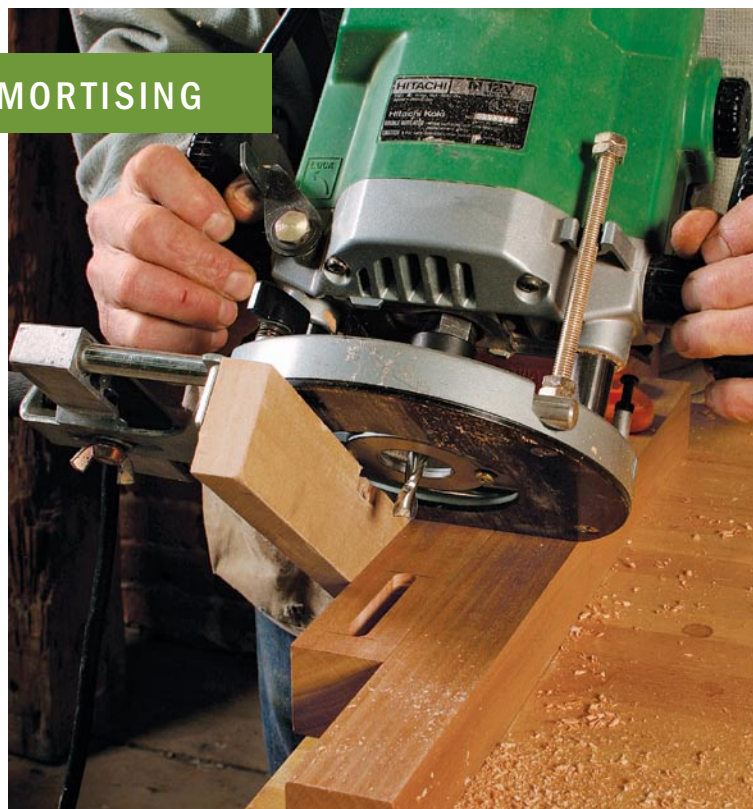
USE A SPIRAL BIT FOR MORTISING

TIP

Don't toss your loose bits in a drawer. If they roll around and bump into each other, the cutting edges could get chipped. Instead, hold bits in their original packaging, or drill a wood scrap to make a simple holder for the set.

It's tough to find carbide-tipped spiral bits these days, so I chose a solid carbide bit for the kit. It's an expensive piece of tooling, but if you plan to cut mortises with a router, this is the bit to have. The flutes spiral around the bit, similar to the way a drill bit is cut, so it pulls chips up and out of the mortise. And with spiral flutes, there are always two cutting edges in the work, making for a smooth, shearing cut.

Mortises in a flash. Mounted in a plunge router, a spiral bit cuts a mortise easily. Use a router fence for accuracy. To prevent the router base from wobbling on narrow stock, support it with an extra piece of stock.



Rabbeting bit

As the name implies, a bearing-guided rabbeting bit excels at cutting rabbets of varying sizes. Although a straight bit can do the job, the bearing-guided bit ensures uniformity, an advantage if you're cutting a number of identical rabbets.

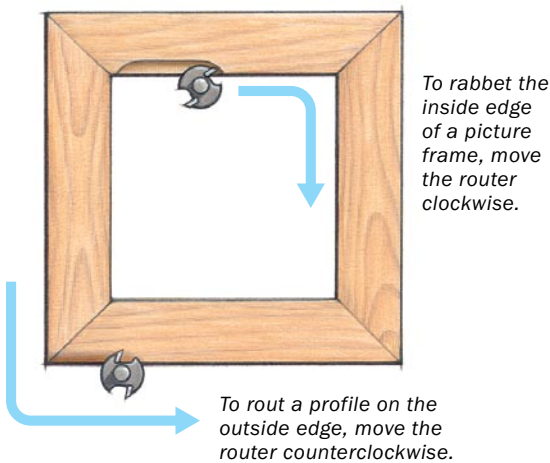
A rabbeting bit with a set of different-diameter bearings allows

you to change the width of the rabbet simply by switching out the bearings. Rabbets typically are not much deeper than 1/2 in., so the set I recommend adjusts to cut rabbets from 5/16 in. to 1/2 in. wide. You can use the bit in a router table or in a handheld router.

One advantage of a bearing-guided rabbeting bit is that you can cut rabbets in frames after they have been glued together, which ensures perfect alignment. The bearing controls the rabbet's width, so there's no need for a fence to guide the cut. Move the router clockwise around the inside of the frame (see drawing, left).



PROFILING THE EDGES OF A FRAME



Rabbets made easy. A bearing-guided rabbeting bit allows you to rabbet a glued-up picture frame. You can dial in the depth of the rabbet and prevent tearout by making a series of shallow passes (1/32 in. to 1/16 in. deep) until you reach the final depth. You'll have to clean up the corners with a chisel.

TIP

Buy quality bits from reputable sources. Generally, a cheap bit won't last as long as its pricier cousin because it's not as well made. You could end up spending twice as much to replace a bit that dulls prematurely, breaks, or chips.

Three-wing slot cutter, 1/4 in. thick

A slot cutter makes grooves to a specific, consistent depth and width, with a cleaner cutting action than a straight bit. It is used mainly for cutting grooves for a frame-and-panel assembly, but it also can be used to rabbet the edges of panels and to carve decorative grooves in panels or pilasters.

Each of these jobs is best done on a router table.

I chose a bit with three wings that cuts a 1/4-in. kerf. Three wings provide more balance than two. The smaller kerf allows you to cut grooves for 1/4-in.-thick panels as well as larger ones with a series of passes. You can change the depth of cut by changing the bearing.



1/2-in. dovetail bit



Dovetail bits are designed to make dovetails for drawers or carcasses as well as sliding dovetails. Most dovetail bits have angles ranging from 7° to 14°. I prefer the 10° angle, which works well for both hard and soft woods.

Both parts of a sliding dovetail joint can be cut on a router table. Dovetail bits are made to cut full depth. So before you cut a sliding dovetail slot, run a 1/4-in. straight bit through first to clean out most of the waste. Follow with the dovetail bit. This will extend the life of the bit and leave a cleaner cut.

Cut the slot first, with the stock held flat on the table and a backer board behind it to keep the workpiece square to the fence and prevent blowout. With the bit height unchanged, reset the fence to cut the dovetail on the end of the mating piece. Make test cuts in a scrap piece the same thickness as the stock.



Sliding dovetail: solid and sturdy. Make the slot first, holding the board flat on the table (above). Leave the height of the bit as-is, and adjust the fence to cut the mating dovetail with the stock held vertically against the fence (right). Again, use a backer board to prevent tearout and to keep the workpiece aligned.



45° chamfer bit



The chamfer bit is used to bevel the edge of a workpiece. The 45° model I've included in this kit (1 1/4 in. dia.) is the most common. It's faster than a block plane for creating uniform chamfers on legs, aprons, and tabletops. You also can use it to achieve great visual effects (see photo, far right). The bearing on the bottom of the bit allows you to make cuts without a fence. To increase the depth of the chamfer, raise the bit.



Eased edges. A 45° chamfer bit can soften the edges of legs, aprons, and tabletops.



Thick and thin. You can make a beefy top look thinner by chamfering the bottom edge (top), and a thin top look thicker by chamfering the top edge.

1/4-in. roundover bit

A bearing-guided roundover bit eases sharp corners and softens the look of a piece. The 1/4-in. bit is a good moderate size to start your collection, because it will cut roundovers with or without a step (fillet) and can be used to create 1/2-in.-thick loose tenon stock as well as molding profiles (see drawings, below).

To help prevent tearout, take light passes, gradually raising the bit until you're cutting at full depth. End grain is prone to blowout at the end where the wood fibers are unsupported. The solution is simple: Round over the end-grain edges first, then rout the long grain. Working this way removes any blowout that occurs on the end grain.



Two profiles, one bit. Use the roundover bit to create a soft edge (bottom) or a rounded edge with a step, or fillet, along the top of the profile.

3/8-in.-radius cove bit



Some router bits are designed simply to make decorative cuts. One example is the cove bit, which creates a simple concave edge. I use this bit often to create a hidden pull in a drawer front. Because the cove bit is designed to make profile cuts, this choice is simply a matter of taste (I like the shape). You might choose a different profile, depending on the work you do. The bonus of having both a cove and a roundover bit in your kit is that you can use the bits in tandem to create a complex profile (see photo and drawings, right), or a drop-leaf table edge if both bits are the same radius.



Hidden pull. You can use a cove bit to carve a drawer pull on the back lower edge of a drawer front.

ROUNDROVER AND COVE BITS CREATE A CLASSIC PROFILE

You can combine roundover and cove bits to create an ogee profile with a fillet. Make the first pass with the cove bit, then finish with the roundover cutting full depth.

FIRST ROUT THE COVE

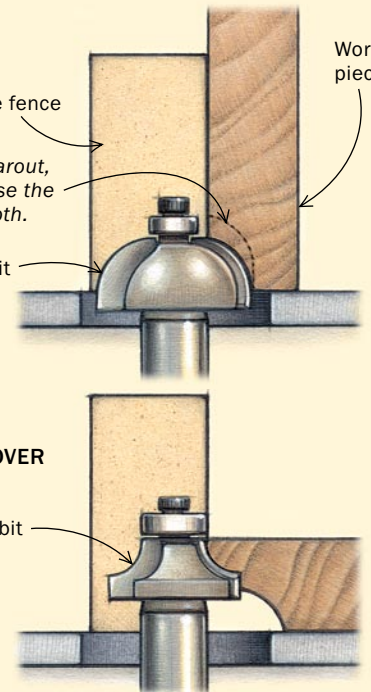
Router-table fence
To reduce tearout, gradually raise the bit to full depth.

Cove bit

Work-piece

THEN SHAPE THE ROUNDROVER

Roundover bit



1/2-in. flush-trimming bit



With a bearing-guided flush-trimming bit, 1/2 in. dia. is pretty standard, but you could choose a different diameter if you'd like. I recommend getting a 1 1/2-in.-long bit, though, because the extra length comes in handy when working with thick stock.

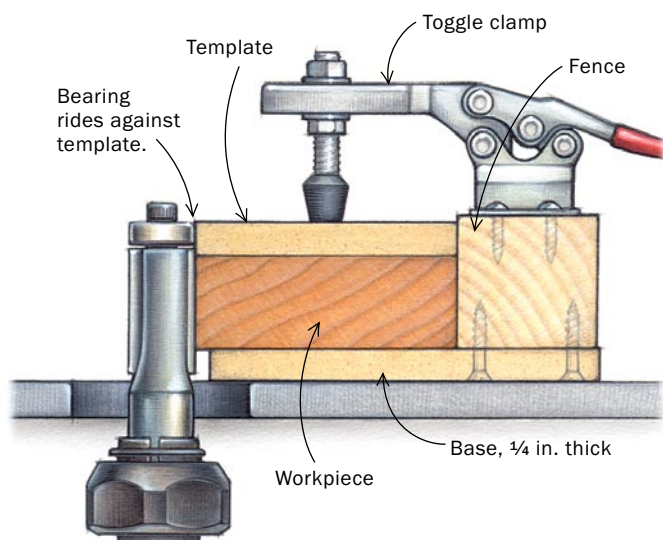
The flush-trimming bit is indispensable for trimming face frames flush to carcases, and for trimming edge-banding flush.

With the flush-trimming bit, you also can duplicate pieces easily on a router table (called pattern, or template, routing). The bearing rides either against the original piece or against a pattern or template secured in a jig with hold-down clamps (see drawing, below). Before mounting the workpiece in the jig, cut away most of the waste on the bandsaw. Be careful not to rout uphill (against the grain), which could cause severe tearout. When you reach the point where the grain changes direction, reverse the workpiece in the jig.



Trim face frames flush to case. The bearing on a flush-trimming bit is the same diameter as the cutter, allowing you to bring a frame flush to a carcass using a handheld router.

PATTERN-ROUTING JIG



Create identical parts on the router table. Cut away most of the waste on the bandsaw first, then place the workpiece in a jig with the template on top (see drawing). The bearing will ride against the template, making an exact copy of the original. Cut with the grain, and reverse the workpiece in the jig (if possible) when the grain changes direction.

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Visit our Web site for a demonstration of template routing.