

Browse more than 1,300 woodworking project plans, DVDs, back-issue collections, videos, tool reviews, books, & more.

Thank You!

Thank you for ordering this *WOOD*® magazine download. We hope you enjoy being part of our online experience and that you have fun expanding your woodworking skills.

Please remember that this copyrighted material is for your use only. It is unlawful to share this file with someone else or to reprint it in any form.



Dave Campbell
Editorial Content Chief, *WOOD* magazine



Adobe Acrobat Reader Troubleshooting Guide

If you can read this page, your Acrobat Reader program is working correctly! But you may still have problems or specific issues, such as printing and saving your downloadable file.

My printer won't print the text correctly

Almost all printing problems are due to not enough free system resources memory. The files are very memory intensive because they include graphics, text, and photos. Close all other programs/applications and print directly out of the Acrobat Reader program, not your Web browser.

Patterns are not printing full-size

Make sure your printer is set to print at 100 percent, "print to fit" is not checked and "page scaling" is set to "none". These settings are selected in the printer setup or printer options.

I can't find my file now that it's downloaded

Rather than viewing the plan in your browser, you must save it to your hard drive. Download the file again, except this time try right-clicking on the red download button. A menu window will open. Select "Save target as" or "Save link as" to save the file to your hard drive. Once saved, you can open it up with Adobe Acrobat Reader.

For more details on using Adobe Acrobat Reader please visit our online help section at:

woodmagazine.com/adobe

WOOD Store

Customer Favorites

Shop Tools & Accessories



Indoor Furniture



Outdoor Furniture



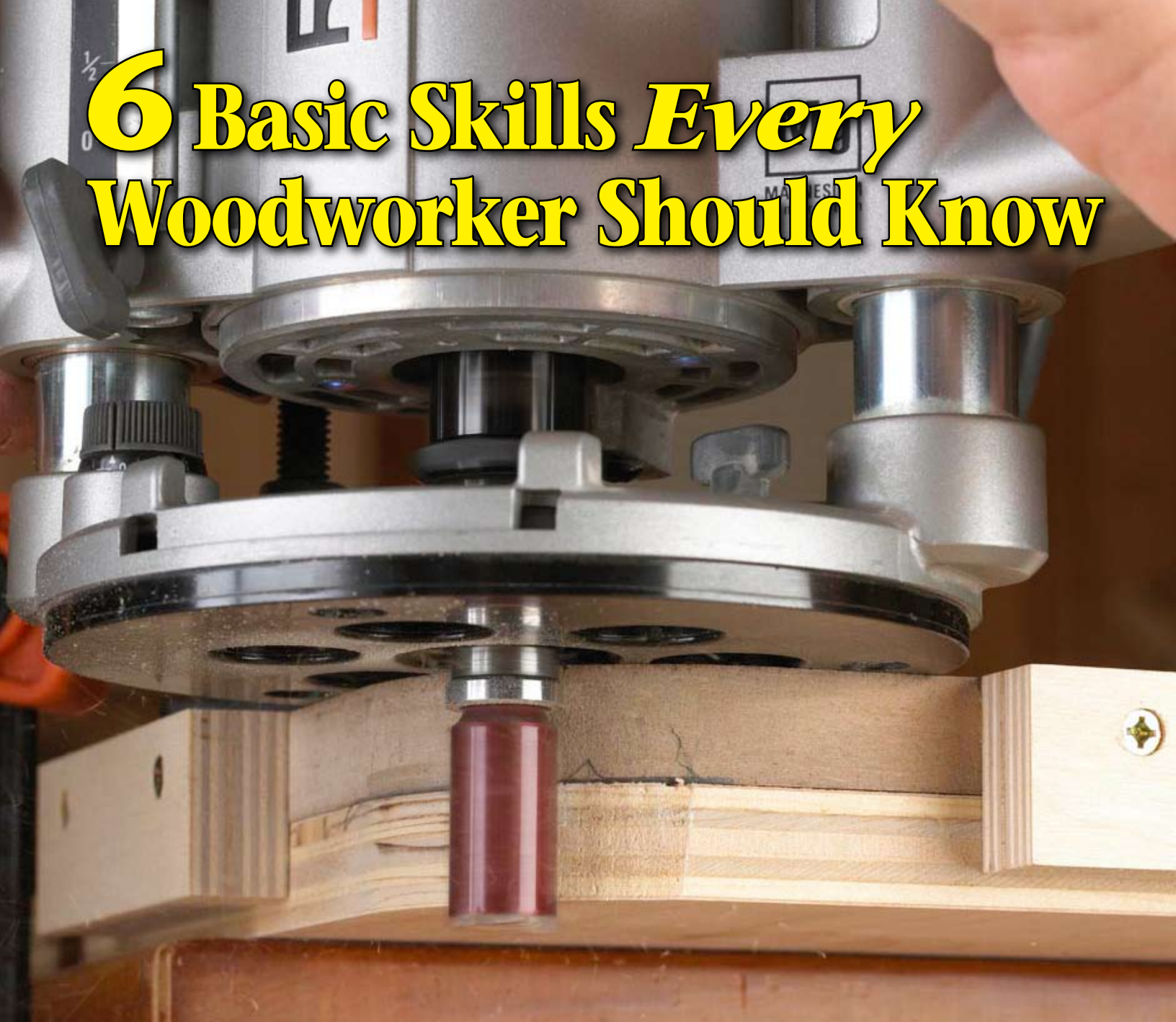
Mission Furniture



Visit the WOOD Store at:

WOODStore.net

6 Basic Skills *Every* Woodworker Should Know



A few simple tools are all you need to master six essential techniques to build most projects.

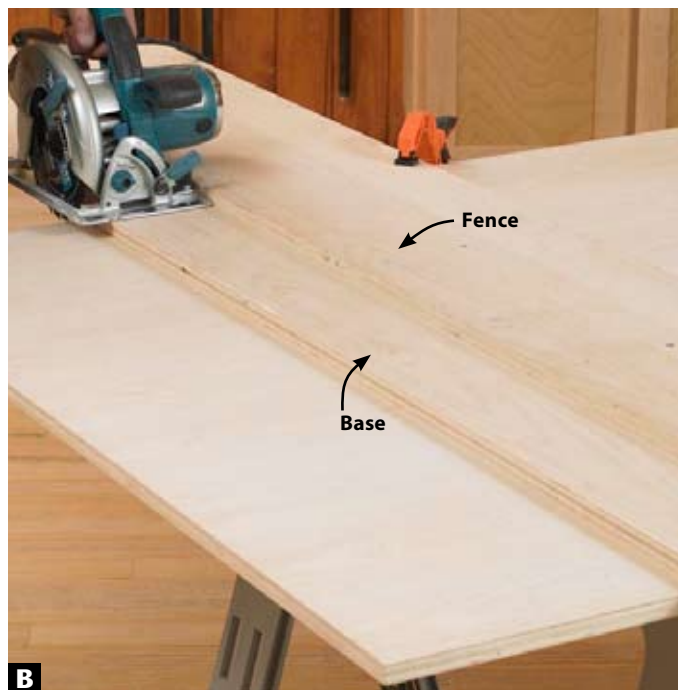
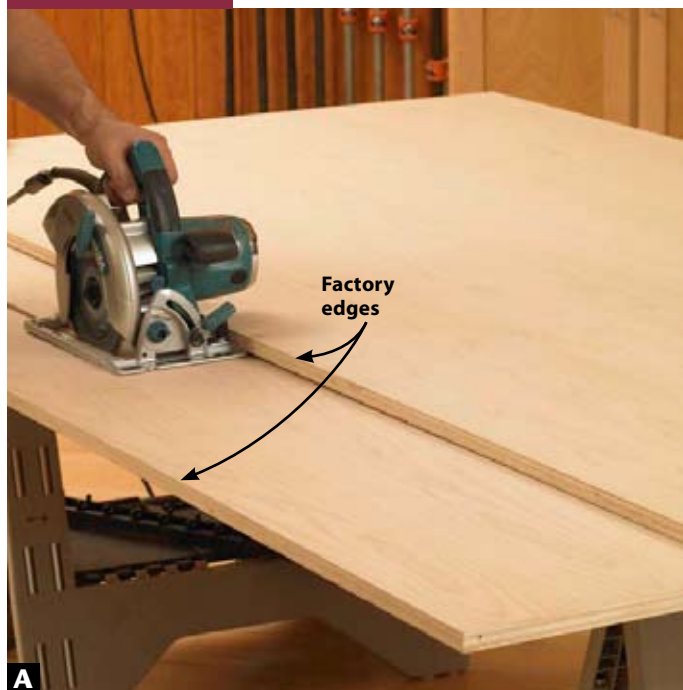


Watch FREE videos on these techniques at woodmagazine.com/videos

Sure, it's great to have a shop full of pro-quality tools, but you don't need them to craft the Basic-Built projects in *WOOD*® magazine. You can accurately cut, drill, joint, and glue up parts using only inexpensive equipment.

For starters, we're going to assume you have at least some common hand tools and measuring devices, and these few essential power tools shown at *left*: a benchtop tablesaw, circular saw, jigsaw, a plunge router with a basic assortment of bits, a cordless or electric drill, and a random-orbit sander. You'll also need a few inexpensive pipe clamps and budget-priced accessories such as a \$14 drilling guide. Now, let's see how much you can do with so few tools.

SKILL 1 SAW ARROW-STRAIGHT LINES WITH A CIRCULAR SAW



Large sheet goods, such as plywood or medium-density fiberboard (MDF), are too unwieldy to cut on a benchtop saw. By making an 8' straightedge, however, you can cut sheet goods precisely using only a circular saw.

1 You need a straight edge to make a straightedge, so either rough-cut a single plywood sheet in half or stagger two sheets so the top sheet's factory edge acts as a straightedge for ripping a 7"-wide strip off the lower sheet [Photo A]. Then, reposition the top sheet's factory edge to rip another strip roughly 16" wide off the bottom sheet.

2 With the circular saw unplugged, measure from the blade to the edge of the saw base beneath the saw's motor. Add up to 1" to that dimension and then screw the 7"-wide strip onto the 16"-wide lower strip that distance from one edge.

3 Place the saw base firmly against the edge of the upper strip (the *fence*) and cut away the surplus on the lower strip (the *base*) [Photo B]. Support the waste piece, or have a helper hold it steady to keep the saw from binding. Label the saw side of the straightedge. (You can turn the other side into a router guide—more on that in the next section.) If you have more than one circular saw, write on the straightedge the saw make and model.

4 To cut a project part, clamp the edge of the base onto the pencil marks defining your cutline. Then, run the saw-base edge against the upper strip [Photo C] to guide the cut.



SHOP TIP

Add teeth to your circ saw

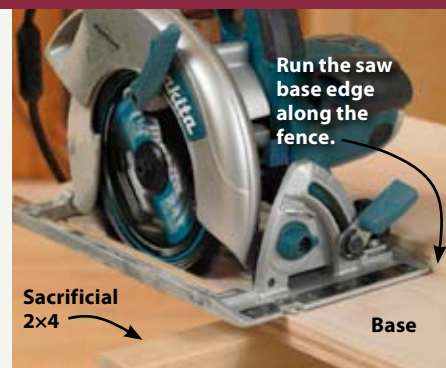
Most people buy circular saws for remodeling and construction work, not to make clean, splinter-free cuts for woodworking. If your circular saw produces too much tear-out, replace the original 24-tooth blade with a 40-tooth aftermarket blade.



SHOP TIP

Adjust blade depth to your stock thickness

We used sawhorses that could be topped with sacrificial 2x4s (see **Sources**) for cutting and routing sheet goods. If you're using other types of sawhorses, attach replaceable 2x4 tops with fasteners placed well clear of the saw blade. Set the blade or bit to cut no more than $\frac{3}{16}$ " into the sacrificial 2x4s.



SKILL 2 JOINT BOARDS FOR GAP-FREE EDGE-GLUING



No matter how straight a board looks in the home center, it's likely not straight enough to edge-glide without leaving unsightly gaps that weaken the glue joint. To make those edges true as can be, turn the other edge of your newly built saw guide into a router guide, and then straighten, or "joint," boards using a $\frac{1}{2}$ "-diameter straight bit or spiral bit. (Remember to use the same bit diameter for future edging.)

1 With the straight bit installed, measure from the edge of the bit to the edge of the router base.

2 Along the length of the guide's base, mark a line that distance from the fence. Saw off the excess base to within $\frac{1}{8}$ " of the waste side of the line.

3 Adjust the router bit height to cut just deeper than the thickness of the base [Photo D]. Then, clamp the guide to the sawhorses to keep it from shifting. While holding the router base tight against the fence, rout the rough edge smooth. Label the router guide side with the router used (if you have more than one), and a reminder arrow showing the correct router travel direction [Photo E].

4 To joint a board for a glue-up, place the guide-base edges near the edge of your workpiece, leaving a strip about $\frac{1}{16}$ " wide to be routed straight. Clamp the guide in position, and rout the board [Photo F]. If your tablesaw can handle the size workpiece you're jointing, place the routed edge against your tablesaw fence, and cut a straight and parallel edge on the opposite side. Otherwise, move and reclamp the guide to rout that edge, as you did the opposite one. You also can use this technique to remove rounded factory edges on 2x4s.

SKILL 3 CLAMP AND SAND PANELS FLAT



Purchased lumber can vary enough in thickness to show "steps" on an edge-glued panel. Fortunately, most panels need only one "good" face. To keep at least one surface flat, edge-glide panel pieces with the appearance side

down and pressed firmly against the clamp bars or pipes as you apply clamping pressure. (See the **Shop Tip** at right.)

1 Cover the clamp bars or pipes with painter's tape where the pieces will rest. That prevents the metal from discoloring the wood and simplifies removing glue squeeze-out.

2 Press the pieces down onto the clamps as you tighten them. Leave the glue-up clamped for an hour, then remove the clamps while the squeeze-out remains soft enough to scrape off. Allow the glue-up to dry overnight.

3 Working on only the appearance side, use a random-orbit sander with 80- or 100-grit abrasive to level the joint lines, as shown [Photo G]. Avoid creating a trough in the surface above each joint by continually moving the sander and smoothing the entire panel evenly.

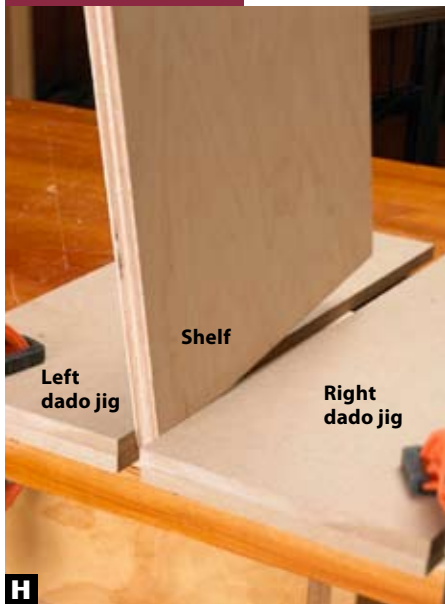
SHOP TIP

Flat panels on round pipe

You can't be too rich, too attractive, or have too many clamps, but you can have too varied an assortment of clamps. So when you buy pipe clamps, stick to one model. Identical clamps support a glue-up on a flat plane better than a mix of clamps with bars at varied heights.



SKILL 4 ROUT PERFECT-FIT DADOES FIRST TIME, EVERY TIME



Rout dados of any width using what may be the world's simplest jig. It works with any straight bit that is slightly narrower than the thickness of your stock.

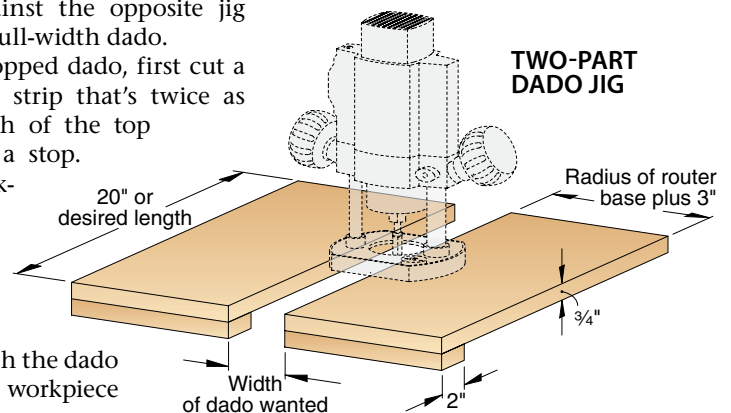
From $\frac{1}{2}$ " or $\frac{3}{4}$ " MDF, cut two jig top pieces the same size, as shown at *right*. Make both about 6" longer than the path of your dados. Then, cut two cleats 2" wide and as long as the width of the top pieces. Glue a cleat to the underside of each top piece, making it dead-on perpendicular to the long edge. Now, you're ready to dado.

1 Mark the left edge of where you'll dado the workpiece. Then, clamp one jig in place so the right edge of the jig touches the dado mark and the cleat presses against the workpiece edge. Butt the finish-sanded part you'll insert into the dado against the right edge of the jig, and slide the right dado jig up against the part. Clamp the right dado jig in place, and lift off the part between the jigs [Photo H].

2To dado the workpiece, install a $\frac{1}{2}$ "-diameter flush-trim bit (for dados wider than $\frac{1}{2}$ ") with a top-mounted bearing and a roughly $\frac{1}{2}$ " cutting depth. (See **Sources**.) Make the bit height the depth of your dado plus the thickness of the jig. Press the bit against the edge of one jig just off the workpiece, and turn on your router. Keeping the bit against the jig, work from left to right until you reach the opposite side of the workpiece. Then, repeat against the opposite jig until you have a full-width dado.

3To make a stopped dado, first cut a third 2"-wide strip that's twice as long as the width of the top pieces to use as a stop. Mark the workpiece where you want the dado to end, then position your jigs, as before. With the dado bit just above the workpiece

as the base rests on the jigs, position the router so the bit just touches the stop line. Using double-faced tape, attach the stop one of the jigs so the stop is perpendicular to the long edge of the jig and halts the router at the stop mark [Photo I]. Set the cutting depth, and rout to the stopblock. Repeat as needed to complete the dado [Photo J].



SHOP TIP

Start your router-bit collection with these essentials

Your router-bit investment can add up fast, but it pays to invest in top quality when buying bits you'll use frequently. Whenever possible, buy bits with sturdy $\frac{1}{2}$ " shanks. Here's what to include in a starter set:

- ① $\frac{1}{8}$ " round-over with a bottom bearing. (It's mounted at the end opposite the shank.)
- ② $\frac{1}{2}$ "-diameter flush-trim bit with a 1"-long cutting length and a top-mounted bearing.
- ③ $\frac{1}{4}$ " round-over with a bottom bearing.
- ④ $\frac{1}{2}$ "-diameter straight bit with a 1"-long cutting length.

Once you step up to a router table, you'll want a similar bit but with a bottom bearing.

- ⑤ 45° chamfer bit with a bottom bearing.
- ⑥ Rabbeting-bit kit with different-size guide bearings to adjust the depth of cut.



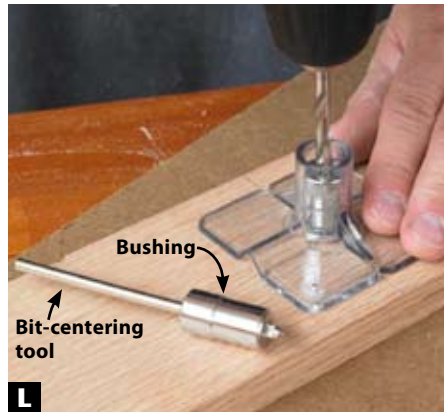
SKILL 5 BORE PERPENDICULAR HOLES WITHOUT A DRILL PRESS



K

Portable drills can't match the accuracy of a drill press for making perpendicular holes, but you can come close using either of these techniques.

A doweling jig [Photo K] (see Sources) can double as a drill guide by starting a hole using the appropriate guide bushing. Then, guided by the shallow starter hole, drill through the workpiece.



L

You also can drill more accurately aided by a \$14 jig [Photo L]. (See Sources.) You're limited to bits the same diameters as the six bushings provided, but that's more selection than with the doweling jig. Should you step up to a drill press someday, you still can use this jig to drill into spheres, the sides of dowels, or a workpiece edge.

SHOP TIP

Get the (brad) point

Nothing frustrates like watching a twist bit scoot away from the carefully marked location where you meant to drill a hole. With a brad-point bit, however, the tip stays planted where you want it. Start with a basic set, and save them just for woodworking.



Twist bit

Brad-point bit

SKILL 6 HONE YOUR CORNERING ABILITIES



M

Another easy-to-make jig lets you rout rounded corners of any diameter time after time. Make the jig from MDF or plywood about 6–8" square. On one corner of the square, use a compass to draw a quarter circle the radius you want. With a jigsaw, cut within $\frac{1}{16}$ " of the compass pencil mark without crossing it. Use a hardwood sanding block to smooth the curve down to the pencil mark. Then



N

attach a pair of cleats to the edges adjoining the curve, keeping the cleats at least 1" away from where the curve starts.

1 To start, press the jig cleats against the workpiece corner, as shown [Photo M], and trace the curve.

2 Jigsaw to within $\frac{1}{8}$ " of your pencil line, as shown [Photo N].

3 Now, turn your jig into a router template, clamping it to the workpiece



O

Bearing rides against template.

so your router can move freely around the corner.

4 Adjust a 1"-long pattern bit to make the top-mounted bearing ride against the jig atop the workpiece, as shown [Photo O]. Then, rout left to right to remove the rough jigsaw edge. 🌳

Written by **Robert Wilson** with **Chuck Hedlund**

SHOP TIP

Label jigs for future use

The more woodworking you do, the more jigs you'll collect. Write on the jig its name, important dimensions, and any specific projects where it's used. Then, keep frequently-used jigs within easy reach. Project-specific jigs or those with only a few uses can be stored atop cabinets, hung from overhead joists, or stacked on a high shelf.

Sources

Sawhorses. Storehorse XL, \$20. The Lehigh Group, 800-523-9382 or lehighgroup.com.

Doweling jig. Model G1874, \$32 from Grizzly Industrial, 800-523-4777 or grizzly.com.

Drill guide. No. 140876 with $\frac{3}{16}$ ", $\frac{1}{4}$ ", $\frac{5}{16}$ ", $\frac{3}{8}$ ", $\frac{7}{16}$ ", and $\frac{1}{2}$ " bushings and centering pin, \$14, Woodcraft, 800-225-1153 or woodcraft.com.

Top-mounted bearing flush-trim bit. Bit no. 16509 with a $\frac{1}{2}$ "-diameter by $\frac{1}{2}$ " cutting height, \$16, MLCS, 800-533-9298 or mlcswoodworking.com. Bit no. WL-1007-D with a $\frac{1}{2}$ "-diameter by $\frac{7}{16}$ " cutting height, \$14, Woodline, 800-472-6950 or woodline.com.

Visit the **WOOD**[®] family of helpful Web sites!

WOODStore.net

Browse more than 1,300 woodworking project plans, DVDs, back-issue collections, videos, tool reviews, books, & more.



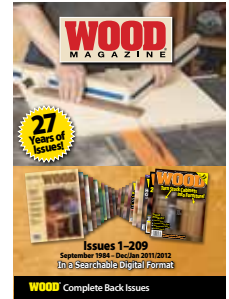
Plans



"Complete Guide" DVD-ROM's



Videos



Back-Issue Collections

WOODmagazine.com/videos

DVDs or downloads



The biggest names in woodworking help you build your skills with affordable videos (up to 2 hours long). Save money by doing the download.

FREE magazine support 24/7



WOOD magazine editors provide videos that enhance the content in the magazine. New videos added regularly.

By woodworkers, for woodworkers



Watch free videos of other woodworkers showing their stuff, from shop tips, to favorite jigs, to... well, just about anything!

Watch a demo before you buy



Don't spend a penny on a tool until you learn how it works. Tool School is like having a free woodworking show on your desktop!

WOODmagazine.com

A wealth of information just a click away.

WOODmagazine.com speaks to woodworkers of all skill levels with free woodworking plans, helpful forums, hundreds of articles, and more services to help you become a better woodworker.



toolreviews.woodmagazine.com

Everybody's a tool critic. Now it's your turn!

Readers rely on WOOD magazine for unbiased reviews of woodworking tools and accessories. You'll find them here, all in one place. While you're there, add reviews about the tools in your shop. Just click to compare specs, prices, and more.

